

INFORMING EFFECTIVE SIMULATION PEDAGOGY IN NURSING SIMULATION

by

Sherry Barnard

Bachelor of Science in Nursing
Sacred Heart University, 2003

Master of Nursing Education
Walden University, 2007

Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Education in

Educational Leadership

School of Education

Southern New Hampshire University

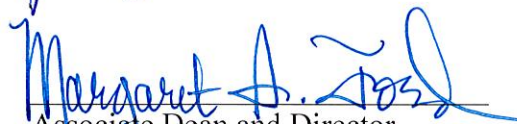
2016


Chair


Committee Member


Committee Member


External Reader


Associate Dean and Director
Ed.D. in Educational Leadership

Abstract

Simulation methods are now widely used in nursing education programs. Several studies have been conducted that examine the effect of simulation on student outcomes of learning (Alinier, Hunt, Gordon, & Harwood, 2006; Arnold, Johnson, Tucker, Malec, Hendrickson & Dunn, 2009; Rosen, Salas, Silvestri, Wu & Lazzara, 2008), however, little has been discovered regarding models of faculty support and guidance during simulation. The factors that influence student learning in the simulation experience suggest faculty be a guide by offering cueing and support before, during, and after the simulation process (Parsh, Roberts & Green, 2010). It is also suggested that debriefing be non-judgmental and a time for student reflection (Rudolph, Simon, Rivard, Dufrense and Raemer, 2007).

Due to the increase in nursing programs integrating simulation in their curriculum, more information and understanding is needed on outcomes of learning through or by simulation. Defining what faculty or clinical educators must know to use simulation as a learning tool is best explained by a framework designed by Jeffries (2007) and endorsed by the NLN. This case study offers an opportunity to understand simulation methods in one nursing site in a rural New England state. This study used a qualitative approach and provides findings regarding simulation design, deliberate practice, anxiety, preparation, cueing, and structured debriefing. Student and faculty perceptions have been investigated to support this study.

Key Words: critical thinking, critical judgment, cueing, debriefing, good judgmental approach, judgmental approach, learning objectives, learning outcomes, non-judgmental approach, reflection, simulation, simulators, high fidelity simulators, low fidelity simulation.

Contents

CHAPTER 1. INTRODUCTION.....	1
Introduction to the Problem.....	1
Theoretical Framework.....	4
Background, Context, and Significance of the Study.....	11
Purpose of the Study.....	15
Research Questions.....	39
Definition of Terms.....	16
Chapter 1 Summary.....	19
CHAPTER 2. LITERATURE REVIEW.....	20
Introduction to the Literature Review.....	20
Developing Simulation Curriculum.....	20
Debriefing and Learning Outcomes.....	25
Confidence and Knowledge of Educators.....	31
Critical Thinking Enhanced by Simulation.....	33
Theory in Simulation.....	35
Chapter 2 Summary of Literature Review.....	36
CHAPTER 3. METHODOLOGY.....	38
Introduction to Chapter 3.....	38
Research Questions.....	39
Participants.....	41
Overview of Information Obtained.....	41

Research Design.....	44
Procedure and Data Collection Methods.....	45
Data Analysis.....	48
Ethical Considerations.....	51
Issues of Trustworthiness.....	51
Limitations and Delimitations.....	52
Time Line.....	53
Chapter 3 Summary.....	54
CHAPTER 4. ANALYSIS AND THEMES.....	55
Introduction.....	55
Demographics of Participants	58
The Setting.....	60
Pre-Simulation.....	61
Simulation One.....	61
Other Simulations.....	64
Analysis of Themes.....	66
Theme One, Deliberate Practice.....	68
Deliberate Practice.....	68
Differentiated Roles.....	72
Blending Students.....	74
Progressing.....	76
Improved Critical Thinking.....	78
Summary.....	80

Theme Two, Anxiety.....	81
The Experience of Anxiety.....	81
Summary.....	87
Theme 3, Preparation.....	89
Preparation.....	89
Summary.....	98
Theme 4, Cueing.....	99
Cueing as an Intervention.....	99
Summary.....	102
Theme 5, Structured Debriefing.....	104
Structured Debriefing.....	104
Summary.....	111
Chapter 4 Summary.....	111
CHAPTER 5. THEMES AND CONCLUSIONS.....	114
Purpose of the Study.....	114
Conclusions of the Study.....	114
Recommendations for Faculty.....	120
Summary of Faculty Recommendations.....	122
Suggestions for Future Research.....	123
Chapter 5 Closing Summary.....	125
References.....	127
Appendices.....	140

Tables and Figures

Table 1: Study Concepts and Relationships.....	6
Table 2: Contrasting Judgmental, Nonjudgmental, and Good Judgment.....	13
Table 3: Overview of Information Needed.....	42
Table 4: SPECTS Instrument Results.....	55
Table 5: Student Participant Demographics	58
Table 6: Faculty Participant Demographics	60
Table 7: Deliberate Practice.....	68
Table 8: The Experience of Anxiety.....	81
Table 9: Preparation.....	89
Table 10: Cueing as an Intervention.....	100
Table 11: Structured Debriefing.....	104
Figure 1: Jeffries Theoretical Model	5
Figure 2: Preparation Questions.....	61
Figure 3: Handoff Report.....	63
Figure 4: Combination Simulation Patient Description.....	65
Figure 5: Last and Final Simulation Patient Description.....	65

Acknowledgements and Dedication

I would like to thank the many dedicated nursing and education colleagues in my career path who motivated and encouraged me to pursue a terminal degree and had the faith that I could do it. I also want to thank Southern New Hampshire University. It was a pleasure and an honor to be part of the first doctoral cohort (The Wolf Pack), where new and lasting friendships will continue. I want to thank Dr. Megan Paddack, Dr. Margaret Ford, and Dr. Nancy Charron for their expert guidance on this project and during my time at Southern New Hampshire University, as well as all of the faculty who were part of my learning. In addition, I want to thank Dr. Michelle Davignon, who was a huge advocate for my work, offering her home and time of which I spent many hours doing course work and completing this dissertation.

Lastly, I would like to thank Vermont Technical College's Nursing Faculty and program, since without their support I would not have been able to complete this study. The Vermont Technical College nursing community has been instrumental in my growth as a professor and in my ability to work on coursework and my research. A special thank you to Dr. Cynthia Martindill for her support and guidance by giving me time and considering my workload while working on my research.

Because of all the wonderful people in my life, including my family, this study was possible. This experience has me excited about the future of my nursing career and has me better prepared to make a change for the education of nursing students.

This research study is sincerely dedicated to my loving family, especially my husband Dale and my children Elizabeth, Meghan, Sandra, Jeremiah, and Jamie for being a supportive presence and sacrificing time, which allowed me to complete such an endeavor.

Chapter 1: Statement of the Problem

Introduction

Clinical simulation, an active event where students are immersed into a realistic clinical environment or situation, is now regular practice in nursing education programs. Jeffries (2007) defined simulation as “activities that mimic the reality of a clinical environment and are designed to demonstrate procedures, decision-making, and critical thinking through techniques such as role playing and the use of devices such as interactive videos or mannequins” (p. 97). Clinical simulations are a valuable alternative to teach students nursing skills by simulating nursing situations and medical conditions they can recognize and manage (Guimond & Salas, 2009). This learning method allows for students to practice skills, provide for health care needs, use critical thinking abilities, and connect the content learned in the classroom to their clinical experiences regardless of a clinical placement’s limitations.

The heightened use of clinical simulation as a teaching method is mainly due to limited clinical sites in specialty areas of practice for students, such as pediatrics and maternal child health, as well as a push for higher enrollments in nursing programs to meet health care needs. More recently, states are allowing a replacement of up to 25% of their required clinical time in simulation (Jeffries, 2009, Nehring, 2010).

Statement of the Problem

Simulation pedagogy is now common practice in nursing education programs. There continues to be limited evidence that confirms improvement of student learning with the use of simulation pedagogy. Learning has not been adequately linked to interventions support, or the lack of it, by faculty. There continues to be a need for research in the role of faculty to promote

learning prior to, and during the debriefing segment of simulation. An important element mentioned in the literature is debriefing, and how faculty engages students and promotes learning outcomes in the debriefing process (Bambini, Washburn & Perkins, 2009).

This study has been done to further understand the simulation process, the method of debriefing, and how faculty support, interventions, and methods used in simulation further learning in nursing students. The benefits of simulation to nursing education have been well described and documented (Nehring & Lashley, 2004, Lapkin, Levett-Jones, Bellchambers, & Fernandez, 2010). Even with the evidence of effective simulation, an important part often overlooked is the faculty intervention in simulation debriefing, and the effect this has on student learning.

Debriefing in simulation is described as a vital learning feature of the whole experience. This is when students have the opportunity to reflect on their decisions and thinking as it relates to course content. Experts explain that debriefing is the most important element of high fidelity simulation (HFS), yet a clear understanding of it remains missing from the literature (Issenberg, McGaphie, Petrusa, Lee Gordon, & Scalese, 2005). Debriefing is a learning tool, as Shinnick, Woo, Horwich and Steadman (2011) reported in their study that learners' exposure to a simulated learning experience would increase clinical knowledge if and when they are exposed to a guided reflective debriefing. Buckley and Gordon (2011) reported that participants rated debriefing as the most useful aspect of simulation training to improve students' ability to recognize an unstable patient and respond in a logical and thoughtful way. Debriefing is being used in all simulations; however, a gap in understanding the faculty role and the student needs has been recognized.

As a way to look at faculty effectiveness in simulation, Reese (2009) developed an instrument to be used after simulations. The Student Perception of Effective Teaching in Clinical Simulation (SPETCS) is a survey instrument developed to measure teacher effectiveness during simulations. It is scored on a 5-point Likert scale with two response scales: Extent and Importance. The Extent Response Scale measures participants' perception of the extent to which the instructor used a particular teaching strategy, including debriefing, during the simulation. The Importance Response Scale measures perception of the degree of importance of the teaching strategy toward meeting simulation learning outcomes. This instrument will be used in this study to determine efficacy of the debriefing from the student's perspective, and can be seen in Appendix D. Reese (2009) describes the lack of available evidence that explain roles or behaviors of faculty doing the simulation. The ability to analyze the effectiveness of faculty is critical to the overall efficacy of simulation pedagogy.

The use of simulators in nursing programs ranges from guiding the novice student in practicing basic skills to managing complex patient scenarios. Students can practice simple procedures such as identifying patients and introducing themselves, to much more complicated procedures of catheter placement or wound care. Students can be paired or grouped in more advanced, life-threatening scenarios that offer critical thinking practice and allow for mistakes to be made in a safe setting. The simulation scenarios can be presented after lecture or classroom content is covered, and can be repeated to allow for mastery of skills and the gaining of confidence. The students have no fear of hurting or injuring a real patient in these simulation scenarios (Miller, 2010). The use of this type of technology has its challenges, as does any teaching method. One challenge has been training educators in the operation of the simulation

equipment, including the computer and its software programs as well as preparation of the manikin.

Educators need to feel comfortable operating all the technology, and to find appropriate ways to integrate simulation into the curriculum (Kirkman, 2013). Student learning in simulation depends on teacher effectiveness and design. Learning outcomes must be defined so that the simulation seeks to achieve these outcomes. Research shows that students who engage in the simulation process will be more likely to achieve student learning outcomes, because students have the opportunity to connect more meaningfully to the content and produce satisfactory gains that meet learning objectives and course competencies (National League for Nursing Project, 2015).

Theoretical Framework

Educators are guided by a framework developed by Jeffries (2006) and adopted by the National League of Nurses (NLN) to offer preparation in the design and development of a simulation program. This blueprint allows a program to have the necessary components to have curriculum and learning outcomes in an organized method and framework. This framework was first known as the Nursing Education Simulation Framework (NESF), and is now called the NLN/Jeffries Framework. The framework provides guidance for the development, implementation, and evaluation of clinical simulations in nursing (Jeffries, 2007).

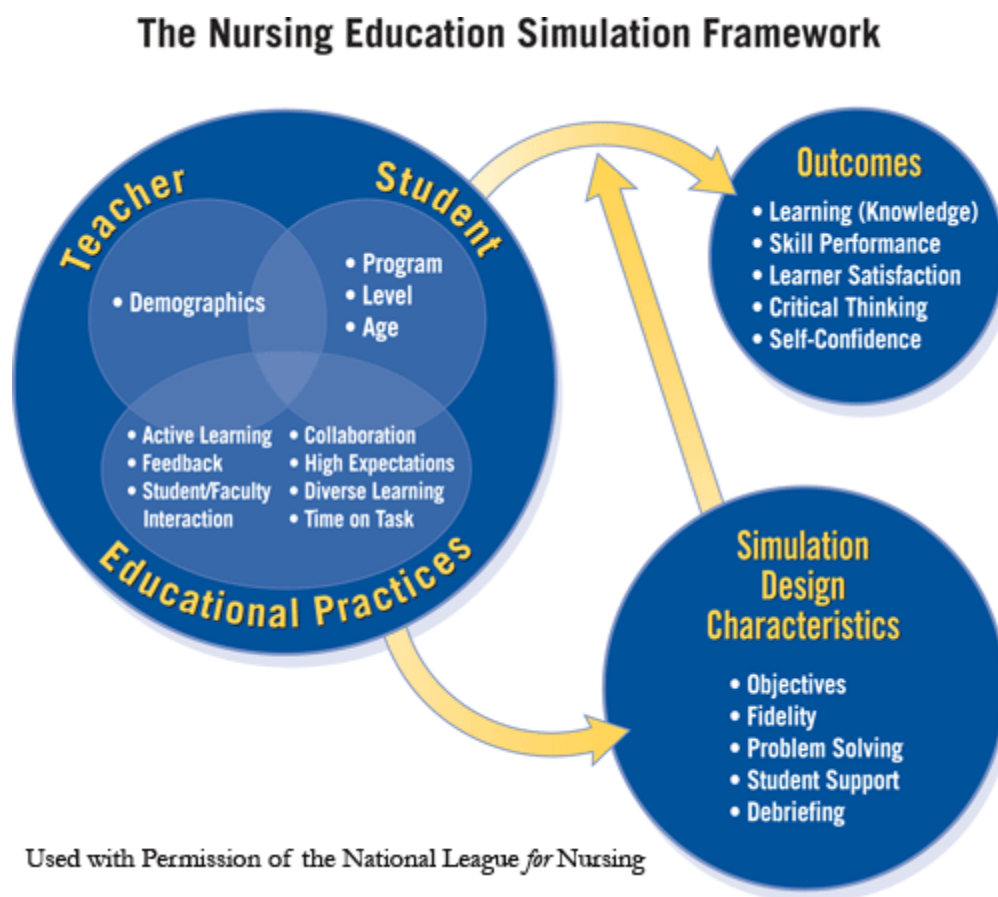


Figure 1, http://livingbooks.nln.org/Images/nursing_framework_figure.gif

The NLN/Jeffries Framework for the use of simulation in nursing education can direct educators and researchers in the best application of resources to achieve desired student learning outcomes, including the use of debriefing. The use of this framework will guide this study to identify how simulation debriefing and faculty interventions or teaching methods promote student learning. Jeffries and Rogers (2009) have identified five NLN/JSF concepts as significant: teacher, student, educational, simulation design characteristics, and outcomes. Jeffries and Rogers (2009) further identify variables or features of each framework concept (see Table 1). This framework consists of three major components: outcomes, contextual elements, and design elements (Jeffries & Rogers, 2007). The outcomes of a nursing simulation include

knowledge acquisition, skill performance, learner satisfaction, critical thinking, and self-confidence. Knowledge acquisition is the ability to apply what you have learned in the classroom to a clinical practice setting.

In nursing, we use clinical simulations as a way to bridge the gap between knowledge gained in the classroom and clinical practice with patients. Simulation is a learner-centered approach that offers a similar environment where participants can gain experience with procedures, critical pathways, and developing or emergency situations. Skill performance, critical thinking, and self-confidence can be assessed and evaluated during the simulation experience. Opportunities to develop these are available in a safe nonthreatening environment for the student. Learner satisfaction is enhanced in a supportive environment.

Table 1: *Study Concepts and Relationships*

Concept	Description of Concept	Associated Variables	Relational Propositions	Study Design Seeks to Determine
Teacher	Roles of facilitator and evaluator	Demographics: years of experience, age, clinical expertise	Demographics are associated with teacher's role, experience, comfort, and overall use of simulation	Teacher effectiveness with the use of specific interventions, SPETCS instrument, observations, interviews
Student	Self-directed and motivated	Program level Age Past nursing experiences* May be prior nursing roles or life experiences	Student variables may influence simulation experience, performance, and learning outcomes	Student perceptions of the debriefing SPETCS instrument, observations, interviews

Educational Practices	No specific description of this term, concept variables are listed and described	<p>Active learning: Through simulation, learners are directly engaged in the activity and obtain immediate feedback and reinforcement of learning. Learning activities can range from simple to complex.</p> <p>Diverse learning Styles: Nursing students in classrooms today are a diverse group with a range of learning needs and expectations. It is common to find traditional college-aged students and nontraditional adult learners in the same classroom setting</p> <p>Collaboration:</p> <p>High expectations: High teacher expectations are important during a learning experience. Expecting the student to do well tends to become a self-fulfilling prophecy. It is important for students to set goals with faculty and seek advice on how to achieve them.</p> <p>Feedback: Simulations provide students the opportunity to learn and practice nursing concepts with immediate feedback about how their performance, knowledge, and</p>	When associated concept variables are considered in simulation design, student satisfaction and performance improve	Teacher 's use of specific practices that promote learning during the debriefing SPETCS instrument, observations, interviews, documents
-----------------------	--	---	---	---

		<p>decision-making guide them toward desired learning outcomes</p> <p>Student/faculty interaction:</p> <p>This interaction can include discussion about course content and learning processes, as well as personal and professional goal setting.</p> <p>Time on task: Learning to use one's time well is important for faculty and students alike. Time on task can be increased with clear and realistic time frames for assignments, both verbal and written, as well as clear and focused objectives.</p>		
--	--	---	--	--

Simulation Design Characteristics	No specific description of this term, concept variables are listed and described	Debriefing: A debriefing activity reinforces the positive aspects of the experience and encourages reflective learning, which allows the participant to link theory to practice and research, think critically, and discuss how to intervene professionally in very complex situations	Each variable should be addressed in the design of a simulation experience. Extent of inclusion is reliant on intended outcomes	Debriefing will be the focus The design of the debriefing will be examined with observation and document analysis
-----------------------------------	--	---	---	--

Outcomes	Evaluation is essential to determine effectiveness of simulation experience	<p>Learning (knowledge): Research has shown that didactic knowledge gained from simulations is retained longer than knowledge gained through lectures</p> <p>Skill performance: Procedural skills are receiving increased attention because of their importance to patient care and the more rigorous competency standards being required by national organizations, credentialing bodies, and certification groups.</p> <p>Learner satisfaction: The simulation activity can be evaluated using quantitative or qualitative measures of students' responses to the experience.</p> <p>Critical thinking While definitions vary simulation can enhance critical thinking in students</p>	Outcomes are influenced to the extent best practices are employed (Jeffries 2005)	Debriefing has been identified as a critical learning step when faculty determine if students have met the outcomes, SPETCS instrument, observation, interviews and document analysis
----------	---	--	---	---

Background, Context, and Significance of the Study

Finding clinical placements to meet the needs of the curriculum in educating and preparing nursing students in specialized areas such as obstetrics and pediatrics has become increasingly more problematic. In order for nursing programs to provide adequate experiences for their students, simulation is now replacing these events. The limited availability of specialty sites is considered the major reason behind the increased use of high fidelity simulation (HFS) in nursing programs. A lack of trained and prepared faculty is yet another factor (Harder, Ross & Paul, 2012). Nursing has a long history of using forms of simulation and began using simulators called task trainers, models that provided specific skills such as catheter training, wound care, and cardiopulmonary resuscitation training (Nehring & Lashley, 2004, Medley & Home, 2005).

As the simulators have become more advanced with computerized technology, more can now be achieved with them. Depending on the level of technology, they can be attached to computers and can mimic signs and symptoms of a variety of medical conditions. These manikins also have basic functions such as a heart rate with pulses, bowel, and lung sounds. The simulators can speak or can be spoken through with the aid of a speaker, and can make other sounds such as moaning, coughing, or vomiting. “With the availability of increasingly realistic patient simulation and faced with a shortage of clinical sites as well as faculty, nursing programs are utilizing HFS” (Cato, Lasater, and Peeples, 2009, p.105).

The use of these simulators can offer students an opportunity to experience realistic medical scenarios in a variety of settings in health care. Simulation scenarios additionally can replace specialty training, such as working with pediatric and obstetrical patients not commonly found in rural environments where these clinical placements are challenging to find. HFS has the ability to present a patient’s progression from admission through discharge or death more

quickly than is seen in a real-life situation, offering students a more complete picture of the nursing care involving specific disease processes (Gates, Parr & Huguen 2012, p.9). One example is to offer a post-partum hemorrhage patient simulation, so that students can practice this in the lab and be better prepared when it happens in their practice, and to use debriefing as a way to reflect on student learning outcomes.

Debriefing or reflection is the period of time at the end of the simulation when the participants are asked to review the scenario in terms of how they met the learning objectives (Peltier et al, 2005). The debriefing is led by a faculty or facilitator or by a student. Student-led debriefing allows the learner to be actively involved in the process, decreasing the likelihood that the faculty member will use the time to lecture as they do in a classroom presentation (Teel, 2005).

There are different approaches a facilitator may use in the process of debriefing. Three approaches have been described: judgmental approach, nonjudgmental approach, and the good judgment approaches (See Table 2) (Rudolph, Simon, Rivard, Dufrense and Raemer, 2007). The judgmental approach is one where blame and criticism is applied, and it implies failure on the part of the student. Use of the judgmental approach can have long-lasting damaging effects, including humiliation, reluctance to answer questions, confusion, and lastly exiting of talented students from the field. A non-judgmental approach moves away from criticism or blaming and uses a few other methods, such as silence or sandwiching, when the instructor gives a compliment and a criticism together. This non-judgmental approach may seem better because of not being so harsh; however, it has serious flaws, including actually being judgmental with facial cueing and body language that evokes criticism. Also it does not adequately address learning outcomes out of a fear of criticism.

Lastly, Rudolph, Simon, Rivard, Dufrense and Raemer, (2006) describe that the instructor or facilitator can use good judgment in debriefing, and this is enabled by appreciating the instructor's expert opinion but also valuing the uniqueness of each student learner. The premise behind the good judgment approach is that you can celebrate both success and failures, and that they are inevitable in health care, to come to a problem-solving solution which ultimately facilitates learning.

Table 2: *Contrasting Judgmental, Nonjudgmental, and Good Judgment*

Contrasting judgmental, nonjudgmental, and good judgment	Judgmental	Nonjudgmental	Good Judgment
The effective instructor Primary focus of debriefing	Gets the trainee to change External: the action or inactions of the other person	Gets the trainee to change External: the actions or inactions of the other person	Creates a context for learning (and change) Internal: the meanings and assumptions of both instructor and trainee
How the trainee is seen	A mistake maker; a doer of actions	A mistake maker; a doer of actions	A meaning maker whose actions are the consequence of specific assumptions and knowledge
Who has the truth of the situation?	The instructor	The instructor	Possibly neither, either, or both

Who does not understand? Basic stance toward self and trainee	The trainee; “I (the instructor) will set you straight” “I’m right” or “You’re wrong.”	The trainee; “I (the instructor) will “I’m right” or “You’re wrong” but, “I don’t want you to get defensive so how do I tell you the bad news and get you to change in a nice way?”	Respect for self (I have a take on what happened in this simulation; that does lead me to think there were some problems, but ...)
Typical message	“I’m teaching you” “Here’s how you messed up.”	“What do you think you could have done better?”	I am going to approach this as a genuine puzzle; not paralysis or indecision, but holding my own view tentatively. I seek clarity by honest inquiry (we both may learn something and change our minds); “Help me understand why you?” “I noticed X. I was concerned about that because Y. I wonder how you saw it?”

Adapted from Kegan R, Lahey LL. How the way we talk can change the way we work. San Francisco (CA): Jossey-Bass; 2001. p. 134–5; with permission.

Debriefing as a teaching strategy supports a constructivist theoretical framework within problem-based learning experiences. Constructivist learning is a contextual and experiential process where knowledge is individually constructed and thought about as learning occurs (Richardson, 1997, Newton, Harris, & Pittiglio, 2013). With the predominance of simulation throughout all nursing programs, educators need to understand and develop best practices for debriefing to facilitate significant student learning during these experiences. Debriefing remains

critical to the learning of the objectives and student learning outcomes (Bambini, Washburn & Perkins, 2009).

Purpose of the Study

The purpose of this study was to determine faculty effectiveness in simulation debriefing, and to add to the knowledge and understanding about the use of high-fidelity simulation (HFS) in nursing education as it relates to student learning. The overarching research question of this study was: How can faculty interventions and support during the debriefing phase of simulation lead to improved learning in nursing students?

Debriefing is used at the end of the simulation scenario to reflect on what was done during the experience and how it connects to learning outcomes. The reflection offers the student the opportunity to learn from their behaviors and process the choices they made during the role as nurse or other participant. Faculty have the opportunity to structure the debriefing time to allow for reflection and to allow students to do the self-reflecting themselves. The role of the faculty as a facilitator is significant in the design of the simulation and in the debriefing stage. Faculty behaviors that influence learning warrant further investigation, because such behaviors directly influence student learning in a positive or negative way.

Definition of Key Terms

Simulation-Related Terms

Clinical judgment. Simmons (2010) defined clinical reasoning as a “complex cognitive process that uses formal and informal thinking strategies to gather and analyze patient information, evaluate the significance of this information and weigh alternative actions” (p. 1155). Tanner (2006), in a model based on a substantial review of the literature, defined the result of this cognitive process, the clinical judgment, as “an interpretation or conclusion about a patient's needs, concerns, or health problems, and/or the decision to take action (or not), use or modify standard approaches, or improvise new ones as deemed appropriate by the patient's response” (p. 204).

Critical thinking. A mental process that requires assessment and evaluation of information in order to form a judgment that combines scientific evidence with common sense. An ability to solve problems by making sense of information using creative, intuitive, logical, and analytical mental processes that are continually evaluated (Halpern, 2003).

Cueing. Jeffries and Rodgers (2007) defined cues as responses or actions that “offer enough information for the learner to continue with the simulation but do not interfere with his/her independent thought (p. 29).” INACSL (2011) defines cueing as “information provided that helps the participant progress through the clinical scenario to achieve stated objectives (p. S4).”

Deliberate Practice. Deliberate practice or repeating the simulation scenarios is when the same group repeats the scenario over again so that students can be successful. Mastery of

learning with deliberate practice is found in the literature to improve student outcomes as it relates to patient care (Barsuk, McGaghie, Cohen, O’Leary, and Wayne, 2009).

Fidelity. The degree to which a simulation and/or a simulation device accurately reproduces clinical and/or human parameters; realism (Jeffries, 2005).

High-Fidelity Technologies. A device with lifelike features, either whole body or partial body, that is able to respond to a learner’s actions or interventions (Nehring 2010).

Low-Fidelity Technologies. A device that does not respond to interventions or is unable to be altered in real time to create a response (Nehring, 2010).

Simulator. A device with lifelike features, either whole body or partial body, that is able to respond to a learner’s actions or interventions (Nehring, 2010).

Simulation. As a teaching methodology, a clinical simulation experience is an active event in which students are immersed into a realistic clinical environment or situation. During this authentic clinical experience, learners are required to integrate and synthesize core concepts and knowledge and apply appropriate interpersonal and psychomotor skills. Students must incorporate critical thinking and decision making skills using a process (e.g., nursing process) involving assessment, diagnosis, planning, implementation or intervention and evaluation (Jeffries, 2005).

Debriefing-Related Terms

Debriefing. An organized review of an incident or event after it occurs that utilizes guided, reflective questioning for the purpose of discerning learning points, improving care, and quality improvement. Patient simulation requires objective, thorough evaluation of the learners experience in the simulation (Jeffries & Rogers, 2007).

Good judgmental approach. A teaching approach used by the instructor or faculty to facilitate learning where both the instructor and students are valued for their knowledge and both successes and failures are emphasized and considered the norm (Rudolph, Simon, Rivard, Dufrense and Raemer, 2007).

Judgmental approach. A teaching approach where the faculty instructor uses harsh tone and criticism to make points about the student's choices and decision making. This approach is considered to cause harm to student learning and outcomes (Rudolph, Simon, Rivard, Dufrense and Raemer, 2007).

Learning objectives. A learning tool designed to focus an educational experience on desired goals. The objectives of the simulation must reflect the intended outcome of the experience, specify expected learner behavior, and include sufficient detail to allow the learner to participate in the simulation effectively (Jeffries, 2007).

Learning outcomes. A learning outcome is the particular knowledge, skill, or behavior that a student is expected to exhibit after a period of study. Learning outcomes reflect a nation's concern with the level of knowledge acquisition among its student population. Measuring learning outcomes provides information on what particular knowledge (cognitive), skill, or behavior (affective) students have gained after instruction is completed. They are typically measured by administering assessments at sub-national, national, regional, and international levels.

Non-judgmental approach. A teaching approach used to promote reflection that uses a combination of critical feedback and positive feedback to avoid feelings of shame or humiliation. This approach is considered not as effective as previously believed, because of flaws of not providing instruction on critical events due to a fear of being seen as a criticism. This approach

also can be judgmental but by non-verbal cueing, facial expression, or tone (Rudolph, Simon, Rivard, Dufrense and Raemer, 2007).

Reflection. An “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tend” (Dewey, 1997, p.6, Schon, 1991).

Chapter 1 Summary

Nursing programs have increased the use of simulation teaching methods due to the need to improve safety and better prepare students with experiences not available in clinical placement areas (Durham & Alden, 2008, IOM, 2011). Faculty teaching simulation must have adequate knowledge and confidence to guide students through the experience. Evidence is needed regarding faculty interventions and support during the simulation and during debriefing, an integral part of the simulation. Strategies to support debriefing have received little attention in the simulation literature (Henneman & Cunningham, 2006; Rudolf, Simon, Rivard, Dufresne, & Raemer, 2007; Seropian, Brown, Gavilanes, & Driggers, 2004). Understanding debriefing and the use of the Jeffries (2007) framework for faculty to support students allows for best practice and improved outcomes for students. This study looked at faculty support and interventions used to improve student learning during simulation.

Chapter 2: Literature Review

Developing Simulation Curriculum

A plan of implementation is critical when launching a simulation program in a nursing program. When designing and constructing a simulation lab, many facets need to be considered, including realism, fidelity, faculty support, and comfort with the equipment. Other factors to consider include debriefing, student outcomes, and critical thinking (Smith, 2012). Jeffries (2007) developed a theoretical framework and blueprint for design, implementation, and evaluation that organizes a plan for developing a simulation program. Other theories have been applied to simulation, such as Benner's (1984) model of skill acquisition and Kolb's (1984) experiential learning model. These models also could provide theoretical scaffolds for building the progression of simulation experiences helpful in the development of students' nursing knowledge. However, no theoretical framework has gained support from organizations in nursing such as the National League of Nurses (NLN), or has achieved such widespread use as the NLN/Jeffries framework.

Good practice in undergraduate education includes: active learning, feedback, student/faculty interaction, collaboration, time on task, diverse learning, and high expectations (Reese, Jeffries & Engum, 2010). Any of these individual practices can be used in simulation, and when all are used together the effects are synergistic (Chickering & Gamson, 1987). The NLN/Jeffries framework balances educational practices with design characteristics and outcomes with three separate areas: faculty and student characteristics with educational practices, student outcomes, and simulation design. The NLN/Jeffries framework is grounded in a synthesis of learner-centered, socio-cultural, and constructivist learning theories. Chickering and Gamson's

(1987) best practices in undergraduate education provided a framework for the development of the educational practices component of the model. The following discussion describes the theoretical underpinnings of the Nursing Education Simulation Framework (NESF), now known as the Jeffries Framework. The NLN/Jeffries framework is considered by the NLN to be a starting point in developing a simulation program, and will be used to identify education features examined in this study.

As faculty learn and develop simulation, ongoing support can be found to assist educators in implementing simulation scenarios. In 2007, with a grant funded by the Laerdal Medical Corporation, the NLN began a three-year research study on the use of simulation in nursing education. The project, called the Simulation Innovation and Resource Center (SIRC), involved educators from the United States and eight international educators from Australia, Canada, Chile, Japan, Norway, Scotland, and China (Hovancsek, Jeffries, Escudero, Foulds, Huseb, Iwamoto, et al., 2009). The goal of the project was to develop high-technology simulations using a web-based format. Out of this study came a resource center website that assists educators with scenario design (<http://sirc.nln.org/>).

Steps in teaching and evaluation are major elements in determining student application of classroom learning with simulation (Brewer, 2011). Schlairet (2011) used a mixed-methods research approach and allowed for use of student and faculty data derived from surveys, program evaluation data, faculty reports of simulation-related scholarly work, and use of externally validated data collection instruments (Jeffries et al, 2004). Study participants were junior-level and senior-level BSN students enrolled in a college of nursing at a regional university in the southeastern United States. The 161 students were all enrolled in BSN nursing coursework, and represented both the traditional and the accelerated program tracks. All students in the sample

were exposed to simulated clinical experiences throughout the BSN curriculum; amount, frequency, and complexity of exposure varied at the course level and by students' position in the curriculum. Two simulation laboratories equipped with high-fidelity and medium-fidelity adult and pediatric mannequins were available to faculty for scheduling student experiences. Simulated clinical experiences, although not included in every clinical course, were introduced in the first clinical course.

In most cases, faculty selected clinical scenarios appropriate to course content and learning objectives, and rotated students' assignments to various roles in the provision of client care. Faculty-guided group debriefing immediately followed the simulation session, and students completed homework assignments to facilitate development of critical thinking, problem solving, and clinical judgment (i.e., reflective journaling, care mapping, care plans). Twenty-six full-time nursing faculty were also targeted for data collection. Using convenience sampling, qualitative and quantitative data were collected to address information gaps, including data reflecting students' perceptions of simulation and faculty perceptions of the use, integration, and simulation-related outcomes. They identified possible areas of concern related to use of simulation among particular groups of BSN students, and the results of their study support a continued integration of simulation throughout the undergraduate nursing curriculum. Nonetheless, a clearer understanding of the simulation experience from the unique perspectives of accelerated program, senior-level, and non-white students is essential if we hope to promote success for a diverse group of future students using simulation pedagogy.

The NESF was helpful in both guiding evaluation of simulation and promoting ability to interpret results at the curriculum level from implementation and impact perspectives. The model components allowed easy identification and the ability to link variables in a heterogeneous

dataset and systematically consider simulation-related endpoints. They were also able to use the model's logical structure to highlight patterns in student outcomes, and to recognize strengths and weaknesses from faculty and student perspectives.

Finally, the NESF allowed faculty to clearly describe use of simulation across curriculum to drive systematic thinking about long-lasting learning goals and curriculum-wide simulation planning. The framework is helpful in both guiding the evaluation and interpreting the results at the curriculum level from implementation and impact perspectives. Although continued use and testing of the NESF is warranted, findings from the study supported the utility of the NESF in program evaluation of simulation at the curriculum level. Evaluation is critical in identifying what students are learning and what should be adjusted to meet the student's needs. By using evaluation methods, data can be collected to determine learning outcomes that can be used to design future curriculum. As student groups change, the data can assist in improving curriculum and enhancing learning.

Nursing knowledge and growth develop through high fidelity simulation (HFS), and over time can be evaluated and strengthened. Limogenes (2010) did an ethnographical examination of how nursing ideas, knowledge, and actions come into being and are sustained. The study concluded that the literature on HFS typically pays little attention to nursing-specific knowledge, nurses' unique contribution to patient care, or nurses' professional aspirations. Limogenes (2010) discovered that despite the trend for simulation to be directed toward a biomedical model and training of skills and tasks, there can be a focus to teach specific nursing knowledge and thought. Although the simulation lab is constructed as a student-centered learning space within the control of nursing education, the dominant discussions of biomedicine still permeate the learning context and organize the students' ideas of what is considered "important" to learn.

Cant and Cooper (2010) did a systematic review of quantitative studies used in the research on simulation, and found that simulation has some advantages over other teaching methods, such as lecture, depending on the context and subject methods used. Simulation enables nurses to first develop, synthesize, and apply their knowledge in a reproduction of the real experience. Twelve studies were included in the review, and they used experimental or quasi-experimental designs. All reported simulation as a valid teaching/learning strategy. Six of the studies showed additional gains in knowledge, critical thinking ability, satisfaction or confidence compared with a control group (range 7–11%). The validity and reliability of the studies varied due to differences in design and assessment methods. Medium and/or high fidelity simulation using manikins was found to be an effective teaching and learning method when best practice guidelines are adhered to. The authors suggest that further exploration is needed to determine the effect of team size on learning, and to develop a universal method of outcome measurement.

In a study done by Gantt and Webb-Corbett (2010) using SimMan (a HFS), students were randomly assigned to one of five 30-minute clinical scenarios and were evaluated using a competency checklist. Each simulation encompassed an average of two or three skills sets. Competency checklists for each scenario were adapted from materials obtained from another school of nursing, where they have been used in conjunction with skills and simulation evaluation. These competency checklists were previously reviewed and evaluated for content validity. Each checklist contains well-established patient safety practices, such as hand washing, patient identification, and patient allergy verification before medication administration.

Results of this study were disappointing. Forty-eight percent of students had omitted hand washing, patient identification, or both in the course of their scenarios. Thirty-eight percent of students had missed one or more required opportunities for hand washing, and 22% had

omitted a patient identification check one or more times. This study determined that more focus on safety and basic nursing should be emphasized.

A study done by Alinier, Hunt, Gordon and Harwood (2006) showed the effect of scenario-based simulation training on nursing students' clinical skills and competence. They did a pre- and post-test design and looked at scores on exams after simulation for the experimental group. Students did show improvement on the exams. They also looked at perceived levels of stress and confidence. Questionnaire results showed that the two groups differed only slightly with respect to perceptions of stress and confidence when measured using a five-point Likert scale.

These findings suggest that intermediate-fidelity simulation is a useful training technique. The study found that simulation enables small groups of students to practice in a safe and controlled environment. It also showed that students learned how and when to react adequately in a critical patient care situation. The study found that this type of training is shown to be valuable in preparing students with a minimum of technical and non-technical skills before they use them in practice settings.

Debriefing and Learning Outcomes

Measuring learning outcomes is defined as fundamental in clinical simulation. Bambini, Washburn, and Perkins (2009) describe how the evaluation of learning outcomes should be met in debriefing. Simulation ends with debriefing, a tool to reflect on what was done and why. Debriefing should focus on what the student did or did not achieve for outcomes. This is a chance for learners to assess their decisions, mistakes, communication, knowledge, and ability to act in unplanned events. However, debriefing as a teaching learning strategy continues to be poorly understood. In addition, the impact of debriefing priorities on students' clinical reasoning

skills remains unclear (Dismukes, Gaba, & Howard, 2006). Furthermore, faculty need to skillfully guide students through this process to facilitate transfer to the clinical environment. As such, the debriefing environment is an important component in fostering the transfer of learned knowledge, skills, and attitudes (KSAs) to the bedside (Bambini, Washburn & Perkins, 2009).

Skilled debriefing is described as central to the development of critical thinking skills, achievement of expected learning outcomes, reflective learning, and the intent to apply the knowledge that has been acquired. Debriefing is the key to evaluating student's connection of concepts to their nursing skills. Transfer of knowledge can also be evaluated in the clinical setting, when students take care of real patients in the hospital. Students fear that they may harm patients in their actions or inactions during clinical practice, and this fear can inhibit active learning (Cheung & Au, 2011; Jeffries, 2007; Melincavage, 2011). Moreover, the use of simulation provides the practice necessary prior to the live patient practice in the clinical setting.

Debriefing is most effective when it immediately follows the simulation. Debriefing is focused on the positive aspects of the simulation and areas for improvement. By making explicit student clinical reasoning during the simulation, debriefing has the potential to enhance learning (Rudolph, Simon, Dufresne, & Raemer, 2006).

The process of experiential learning requires active engagement (Warrick et al., 1979). To facilitate meaningful, active learning, students must have opportunities to "reflect on their experience in the simulation, have a period of emotional release, receive behavioral feedback, integrate their observations, behavior and feedback into a conceptual framework and create mechanisms and pathways for transferring learning to relevant outside situations" (Warrick et al., 1979). These attributes of reflection, emotion, reception, and integration and assimilation are the defining attributes of simulation debriefing. Reflection is the opportunity to reexamine the

experience. It can be done in a chronological review or thinking upon what comes to mind first and working through the experience from that starting point. It is a time to call out the thinking processes that took place during the simulation experience (Dreifuerst, 2009).

Kirkman (2013) did a time series design quantitative study to show the significance of simulation in the transfer of knowledge and skills learned in the classroom and with HFS. Students (n= 42) were first-semester undergraduates enrolled in a baccalaureate nursing program, and they were observed and rated on their ability to perform a respiratory assessment. The observations and ratings took place at the bedside, prior to a respiratory lecture, following the respiratory lecture, and following simulation clinical. Students were then evaluated using a scoring method after learning the content or didactic material in the classroom, and then were given a simulated learning experience on a patient with the respiratory complications addressed in class. Results showed an improvement of learning using a combination of these methods. This study showed a significant difference in student's ability to transfer what they learned from HFS clinical to the traditional clinical setting. Ultimately, students were able to transfer respiratory assessment knowledge gained from HFS clinical to human patients.

Secomb, McKenna, and Smith (2012) conducted a randomized control trial study to provide evidence on the effectiveness of simulation activities on the clinical decision-making abilities of undergraduate nursing students. Based on previous research, it was hypothesized that the higher the cognitive score, the greater the ability a nursing student would have to make informed valid decisions in their clinical practice. The student participants were final-year nursing students of a Bachelor of Nursing entry-to-practice program.

The students in the experimental group were given access to the self-directed computer-based activity Micro-SIM (Laerdal, 2007), a 2D, commercial, clinical decision-making

simulation activity. The software was purposefully chosen, for an orientation was included, enabling students to work autonomously. More specifically, participants were required to use inductive reasoning processes to work their way through two chosen cardiac scenarios. This course of action simulates the clinical decision processes a clinician would be required to make in a real-life practice setting following completion of the scenarios; the participants were given feedback on their performance in the form of a checklist and given an overall percentage score. Student participants in the control group were given the same scenarios in a traditional skills laboratory environment, using a Vital-Sim TM (Laerdal, 2007) computer-integrated manikin, and real-life equipment such as ECG machines, defibrillators, oximeters and blood pressure devices, with ECG tracings, authentic documentation, and blood analysis results. Participants were provided with the same subjective and objective cues, and were required to use the same inductive reasoning processes as the simulation software.

A clinical instructor facilitated this process as a one-on-one, face-to-face activity, and the clinical instructors were not known to the students. The instructor used a checklist to list a participant's progress, similar to an objective structured clinical examination (OSCE), and gave constant feedback and interjections on their actions throughout the activity. Again, on completion of the activity, student participants received an overall percentage score on their performance. The simulation activities required the student participants to use predominantly higher-order cognitive processes, and their development was tested before and after the simulation interventions. The results were ambiguous and furthermore, neither activity in the different simulated learning environment caused an effect; therefore, two simulation activities were insufficient to illicit a cognitive gain score for third-year nursing students across three Australian universities.

Mould, White, and Gallagher (2011) did a pre- and post-test design pilot study on confidence levels and perceptions of 252 nursing students after a series of simulations. The simulation series were developed in response to frequent expressions of anxiety associated with critical care practicums. The simulators in this study were medium-to-high-fidelity manikins that replicate movement and manually respond to increases and decreases in oxygenation. Data was collected using a self-report survey, which was completed immediately after the first week's clinical scenarios, so that students had a reference point for their level of confidence and competence, and immediately following the final week's clinical scenario. Results showed an increase in self-reported confidence levels and competence in critical care delivery.

Sinclair and Ferguson (2009) did a mixed methods study with a convenience sample of 250 students enrolled in the second year of a collaborative baccalaureate nursing program. This nursing program was delivered at two sites in an urban center in southwestern Ontario. Students at one site served as the intervention group (n=125), while those at the other site formed the control group (n=125). Students in the intervention group were exposed to a combination of lecture and simulation, and then asked to rate their perceptions of self-efficacy, satisfaction, and effectiveness of this combined teaching and learning strategy. Although students were required to attend lectures and/or simulated learning activities as part of their course requirements, completion of questionnaires and reflective review were voluntary and anonymous. Throughout the study, the response rate varied from 23 to 75 participants for the control group and 26 to 68 for the intervention group. As the academic year proceeded, the response rate decreased. Based on Bandura's (1991) theory of self-efficacy, this study provides data to suggest that students' self-confidence for nursing practice may be increased through the use of simulation as a method of teaching and learning. Students also reported higher levels of satisfaction, effectiveness, and

consistency with their learning style when exposed to the combination of lecture and simulation than the control group, who were exposed to lecture as the only method of teaching and learning.

Cardoza and Hood (2013) did a descriptive correlation design to examine self-efficacy. The specific aim of the study was to examine self-efficacy or confidence in providing family-centered care, using a preprogrammed high-fidelity patient simulator (manikin) at the beginning of the pediatric course and seven weeks later at the course conclusion. The General Self-Efficacy (GSE) scale was used to measure self-efficacy. A limitation of this methodology is that no causality can be inferred, and preexisting differences may offer a likely alternative explanation for any group.

The study demonstrated that the students had previously acquired transferable knowledge and practice gaps. Both groups of students were unable to recall previously acquired nursing knowledge, process critical patient changing events, and perform the corresponding nursing interventions in simulated patient scenarios. This study indicated that nursing students are not cognizant of their limited ability to anticipate and identify changing patient conditions before the pediatric clinical rotation, despite possessing transferable medical-surgical knowledge. The students had inaccurate assumptions of their nursing knowledge base and performance ability.

Adamson and Kardong-Edgren (2012) evaluated assessment tools used in simulation in order to determine if learning outcomes have been met. The authors noted that instruments used should always be tested for reliability and validity, to offer nurse faculty a way to collect important data regarding outcomes. The technique described in this article provides one tested method for assessing the reliability of existing instruments designed to measure student performance in simulation activities. This offers a way to change curriculum or learning

outcomes based on data obtained. In the future, nursing may decide to standardize evaluation methods in simulation.

Confidence and knowledge of educators

For simulation to be successful, educators must feel confident in their own skills and comfort in using the manikins in order to provide effective instruction in the classroom and lab setting. Nehring and Lashley (2008) reported that faculty members were “wary and fearful” of using high-fidelity simulation technology. Just having the equipment is not enough; educators must plan time to practice skills and develop their confidence in the use and in the process of the scenarios. The simulation operator, the instructor or facilitator, must also keep learning objectives in mind, whether designing or running the scenario. The outcomes in any program can be met by simulation, and can provide for a variety of patient experiences not always found in the real clinical setting due to a lack of site availability (Jensen, Meyer, & Sternberger, 2009, Gantt, 2012).

Retention of the subject matter in simulation is a concern of faculty. Elfrink, Kirkpatrick, Nininger, and Schubert (2010) focused on faculty methods for improving simulation instruction. They wanted to determine if students' knowledge about simulation subject matter improved and was retained following a simulation experience. Using a pre-test/post-test approach, the students were given National Council of Licensure Examination (NCLEX) style questions. The NCLEX exam is taken after a nursing student has finished his or her program and graduated. The questions pertained to the simulation subject matter content and were administered to nursing students from two pre licensure nursing courses three times: immediately preceding the simulation, immediately following the simulation, and then again at their final examination.

These findings helped faculty determine when their simulation instruction is effective, and have provided a guide for revising their simulation teaching. While this pre-test/post-test method offers insight into student learning outcomes, it more importantly created a systematic approach for evaluating simulation instruction.

Roberts and Greene (2010) describe the educator's role in facilitating and assisting the student's learning. They explain that teachers are the facilitators and prepare the setting or scene for the learners. Teachers also provide students with information prior to their participation, and carefully observe as the learners engage with the simulated patient. Once the educators are familiar with the equipment and gain a better knowledge of their roles and responsibilities, they will begin to trust the technology and embrace this new and exciting method of delivering clinical education (Roberts & Green, 2010). The opportunity to show skill and confidence allows students to trust their instructors when simulation is taking place (Reid-Searl, Eaton, Vieth, & Happell, 2011).

Identifying what makes an effective instructor during simulation is especially important for faculty to know. Parsh (2010) did a case study and interviewed students to determine effectiveness of instructors during simulation clinical experience (SCE). Students identified six important themes for SCE instructors: personality, teaching ability, evaluation, nursing competence, interpersonal relationships, and realism. These interviews suggest that students would like SCE instructors to be partners with them in the learning process, while providing support through their decision making. Findings also suggest that participants appreciate the combination of instructor guidance and student independence in the SCE.

Critical Thinking Enhanced by Simulation

Simulation provides an opportunity in the debriefing phase to reflect on decision making and critical thinking ability. Halpurn (2003) explains that critical thinking can be defined as purposeful and involves self-regulatory thinking skills. It is predicted that critical thinkers are more likely to become challenging performers of tasks requiring complex problem-solving skills, rather than passive recipients of crude knowledge (Mason, 2007).

“Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal-directed—the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions. It’s the kind of thinking that makes desirable outcomes more likely.” (Halpurn, 2003, p 8).

One adaptation of critical thinking to education can be found in the work of Dewey (1997), who proposed that critical thinking involved the suspension of judgment and healthy skepticism. A number of researchers (e.g., Boostrom, 1994; Brookfield, 1987; Ennis, 1962, 1985; Facione, 1984, 1990; Halpern, 1996, 2003; Kurfiss, 1988; McPeck, 1981; Paul, 1982; Siegel, 1991; Watson & Glaser, 1980) have put forth definitions regarding critical thinking.

Brunt (2005) defined critical thinking as the process of purposeful thinking and reflective reasoning where practitioners examine ideas, assumptions, principles, conclusions, beliefs, and actions in the context of nursing practice. In addition, this process is associated with a spirit of inquiry, discrimination, logical reasoning, and application of standards.

Teaching critical thinking can be traced back to the Socratic Method. Socrates famously instructed his students through a series of carefully constructed questions designed to force self-examination and lead them to a conclusion (Paul & Elder, 2009). This method for instilling

critical-thinking skills is invaluable to leaders in many circumstances as a way to influence and persuade, and can still be used today. The use of the Socratic Method can identify concepts prior to and after in simulation debriefing sessions. This allows for the instructor to identify gaps in learning.

Ironsides (2003) describes nursing practice as an “ongoing and interactive understanding of both the context of care and patients’ experiences of wellness and illness” (p. 510). As nurse educators have pointed out, nursing education experiences must enable nurses to be proficient thinkers, and nurses cannot realistically be expected to learn new and complex ways of thinking on their own without formal instruction and opportunities to practice these ways of thinking.

Goodstone, Goodstone, Cino, Glaser, Kupferman, and Dempster-Neal (2013) did a study to explore the development of critical thinking for students who received instruction using high-fidelity patient simulation (HFPS) versus low-fidelity simulation (instructor-written case studies). First-semester associate degree nursing students participated in this quasi-experimental study. One group of students received weekly HFPS patient simulations and the other group received weekly case studies. Both groups took a pre- and post-test using the Health Studies Reasoning Test. Both groups showed an increase in critical thinking skills; however, there was no statistically significant difference between the HFPS and case study groups. The authors suggest larger-scale studies looking at time spent in simulation, and further research on critical thinking measures in clinical settings.

Nurse educators continue to struggle to find innovative teaching methods to improve critical thinking skills in novice nurses (Staub, 2003, Rothgeb, 2008). Because of the advanced technology used in health care, promoting critical thinking skills and confidence in nursing students and graduates has become a crucial task for nursing education.

Theory in Simulation

Students gain the most from their simulation experience during the debriefing phase (Dreifuerst, 2009). The debriefing is based on constructing new meaning from their experience. Chikotas (2008) describes the constructivist theory, which was pioneered by philosopher and developmental psychologist Jean Piaget. According to this theory, learning, an active process during debriefing, constructs meaning and transforms understanding of the simulation experience. Simulation involves the idea that the faculty or instructor creates a learning environment where hands-on exploration and discovery is used to help the student make a connection between new knowledge and prior knowledge. Constructivists believe that students improve their critical thinking and problem-solving skills when they construct new knowledge that has been based on prior experiences, resources, and construction of meaning. “This occurs when they are able to interact with and interpret their environments” (Chikotas, 2008, p. 361).

Constructivist philosophy believes that learners actively construct knowledge in their attempts to make sense of their world (Murphy, 1997). A constructivist learning environment is an active-learning, student-centered approach to teaching (Huse, 2010, Burke & Mancuso, 2012). In order to be effective, simulation methods need to be part of a broader picture, “supporting and linking with actual clinical practice,” and simulation must have a solid theoretical foundation (Berragan 2011, p.663). Simulation-based training can become dominated by technology, losing its links with the wider world of health care and the important focus of enabling students to learn to be nurses (Berragan, 2011).

Summary of Literature Review

Simulation methods are now widely used in nursing education programs. While several studies have been conducted that examine the effect of simulation on student learning outcomes of learning (Alinier, Hunt, Gordon, & Harwood, 2006; Arnold, Johnson, Tucker, Malec, Hendrickson & Dunn, 2009; Rosen, Salas, Silvestri, Wu & Lazzara, 2008), little has been discovered regarding models of faculty support and guidance during simulation. The factors that influence student learning in the simulation experience are not clear, but suggest that faculty be a guide and offer cuing and support during the simulation process (Parsh, Roberts & Green, 2010). The debate over how students can or should be influenced remains unresolved.

There is limited evidence that faculty interventions used during simulation assist in promoting outcomes of learning for students (Reese, 2009). There has been little evidence on the empirical integration of simulation techniques throughout the nursing curriculum and toward the measurement of pedagogical outcomes (Schiavato, 2009). Due to the increase in nursing programs integrating simulation in their curriculum, more tools are needed on outcomes of learning through or by simulation. It has been found that faculty involvement and knowledge is critical in ensuring that the simulations are interactive and that goals of learning have been set (Nehring & Lashley, 2004, Roberts & Green, 2010).

Faculty or clinical educators must feel confident in using simulation and in working with the technology (Nehring & Lashley, 2008). Defining what faculty or clinical educators must know and do has been explained by a framework designed by Jeffries (2007) and endorsed by the NLN. Fidelity and realism in the simulated lab must also be considered (Smith, 2013). The

use of this framework assists faculty in implementation and design, but does not specify elements of guidance and support needed by students and given by faculty.

Lastly, critical thinking experiences are provided in simulation. Critical thinking is enhanced with the use of HFS pedagogy (Halpurn, 2003, Mason, 2007); and furthermore, critical thinking is developed by providing opportunities for students to make critical decisions and, if necessary, make mistakes in a safe environment.

Chapter 3: Methodology

Introduction

This research study employed a qualitative explanatory case-study approach to examining how faculty interaction prior to, and during, the debriefing phase of simulation can enhance or inhibit learning in nursing students. This study also investigated how learning takes place in simulation, and how that relates to faculty interventions and support. The NLN/Jeffries Framework was used as the conceptual model in this study, due to the relationship between the simulation design and the framework developed in the simulation debriefing phase. Yin (2014) explains that an explanatory study's purpose is to explain how or why something happens.

Debriefing is a key component of simulation pedagogy and the development of student outcomes in learning. Debriefing is the part of simulation that focuses on reflection of the experience for the student, and on the ability for faculty to identify if learning outcomes are met. The guiding instrument used was the Student Perception of Effective Teaching in Clinical Simulation scale (SPETCS). The SPETCS was developed as a means to examine the role of the teacher and evaluate teaching behaviors empirically within simulation contexts (Reese, 2009). The instrument was developed based on the views of socio-cultural, constructivist and learner-centered educational theories which underpin the NLN/Jeffries Framework. Certain areas in the framework will be studied—specifically, teacher interaction, feedback to students, and high expectations.

Research Questions

This study will center on this overarching research question: How can faculty interventions and support during the debriefing phase of simulation lead to improved learning in nursing students? The study will address six research sub questions:

Student Questions

- S1. How do students view their participation in the simulation debriefing?
- S2. How do students view the instructional effectiveness of the simulation experience?
- S3. How do students think about their decision making as it relates to knowledge, skills, and understanding of the topic? These questions will be answered by use of the SPETCS instrument, observation, and by semi-structured interviews.

Faculty Questions

- F1. How do faculty engage students during the simulation debriefing?
- F2. How do faculty organize the simulation debriefing to enhance learning?
- F3. How does faculty determine learning outcomes in the debriefing part of simulation?

These questions will be answered by observation, document analysis, and semi-structured interviews with the use of Seidman's (2013) three-step process.

In this study, nursing students participated in the clinical simulations on an adult or pediatric patient with disease states covered in their classroom curriculum. The case study protocol was composed of the same nursing students and faculty. The participants included a group of eight nursing students and two faculty members who participated in the simulations. Signed consent forms were obtained from faculty and students prior to collecting data.

After observing the simulation students in simulation and in their debriefing, they were given the SPETCS instrument (see Appendix D) immediately after their simulation debriefing was completed. Sample rating statements included “Appropriate questions were asked during the debriefing of the simulation experience” and “The instructor provided useful feedback after the simulation.” Results from this instrument are compiled in Table 4.

The SPECS instrument was used to inform interview questions for the semi-structured interviews. The interviews were scheduled with students to determine their personal views, attitudes, and meanings regarding the simulation experience. Student perceptions of what they felt contributed to the learning in the debriefing was discussed. This time was focused on both student and faculty sub questions.

The faculty was interviewed using a three interview approach developed by Seidman (2013). This approach will be described later in this section. The interviews helped the researcher gain personal background knowledge and perceptions of the faculty regarding what interventions were used to engage students during the debriefing phase of the simulation. Research questions that were investigated in the faculty interviews included: How did the faculty engage students during the simulation debriefing? How did the faculty organize the simulation debriefing to enhance learning? and lastly, How faculty did determine learning outcomes in the debriefing part of simulation?

After all interviews, observations, document analysis, and collection of jottings and field notes was complete, the data was analyzed by coding, using concepts of the NLN/Jeffries (2007) framework. The data was analyzed using semi-open coding, and further coded to identify emergent themes.

Participants

A purposeful sampling procedure was used to select this study's participants. To yield the most information about the phenomenon under study, purposeful sampling is a method typical of case study methodology (Silverman, 2010, 2011). The research sample consisted of one group of nursing students currently enrolled in a nursing program in a rural New England state and two faculty educators involved in HFS in the nursing program. One group of eight nursing students in an undergraduate nursing program in the clinical phase of their program participated. The school was located in a rural school district in northern New England. A prerequisite is that the nursing program must provide clinical experiences with patients in health settings through clinical placement learning in health care environments in the community. They must also use simulation as part of their required clinical hours and developed into their nursing curriculum. Students involved in the simulation participated in a variety of roles, including nurse, family member, observer, or other roles as assigned.

Overview of Information Obtained

This case study focused on faculty and students of a small rural college in northern New England. In seeking to understand the importance of debriefing in simulation, two faculty and eight students were studied before, during, and after the debriefing process. The setting was in a nursing simulation laboratory where a mock hospital setting had been established. The information obtained was sought to answer the six sub questions and was explored using Jeffries (2007) conceptual framework addressing these areas: teacher, student, age, demographics, program level, educational practices, learning outcomes, and debriefing, and is further explained in the following table.

Table 3: *Overview of Information Obtained*

Type of information gathered and research questions	What the researcher required	Method of data collection	Researcher or framework used?
Demographics of the participant	Age, gender, ethnicity, academic discipline, health care experience, faculty status, years of teaching experience.	Survey	None used
Student views and perceptions 1. How do students view their participation in the simulation debriefing?	Student descriptions of how they participated in the debriefing	Observations with the use of jottings, Transcribed into field notes, Emerson, Fretz, and Shaw, (1995) SPETCS, Semi structured interviews Semi-structured interviews	Reese, (2009) Jeffries (2007) Framework
2. How do students view the instructional effectiveness of the simulation experience?	Views of the student regarding faculty effectiveness	Observations with the use of jottings, Transcribed into field notes, Emerson, Fretz, and Shaw, (1995) SPETCS, Semi structured interviews Semi-structured interviews	Reese, (2009) Jeffries (2007) Framework

3. How do students think about their decision making as it relates to knowledge, skills, and understanding of the topic?	Views of the students on their choices during the simulation and did they feel prepared for the subject area?	Observations with the use of jottings, Transcribed into field notes, Emerson, Fretz, and Shaw, (1995) SPETCS, Semi structured interviews Semi-structured interviews	Reese, (2009) Jeffries (2007) Framework
Faculty views, experiences 1. How do faculty engage students during the simulation debriefing?	Perceptions on how faculty engage students, what specific practices are used?	Three semi structured interviews using Seidman's (2013) method Observations with the use of jottings, Transcribed into field notes, Emerson, Fretz, and Shaw, (1995)	Jeffries (2007)
2. How do faculty organize the simulation debriefing to enhance learning?	Perceptions of how the simulation was organized for student learning	Three semi structured interviews using Seidman's (2013) method Observations with the use of jottings, Transcribed into field notes, Emerson, Fretz, and Shaw, (1995)	Jeffries (2007)

3. How does faculty determine learning outcomes in the debriefing part of simulation?	Perceptions of how faculty know that learning outcomes are met	Three semi structured interviews using Seidman's (2013) method Observations with the use of jottings, Transcribed into field notes, Emerson, Fretz, and Shaw, (1995)	Jeffries (2007)
Personal documents, simulation preparation documents, physical evidence	Relationship to the learning for students	Document analysis Creswell (2013) Forms used by faculty to get students prepared for simulation	Jeffries (2007)

Research Design

A case study structure was selected as the strategy of inquiry for this study. Case study is described by Yin (2014) as seeking to investigate a contemporary phenomenon in its real-world context, especially when the boundaries of the environment and phenomenon are not clear. The study involved one nursing program delivered in different site locations. One location was studied. Students were from a licensed practical nursing program, and participated in simulation as part of their curriculum. The research sample included eight students and two faculty educators. Students and faculty were observed during the simulation and the focus of the observation took place in the debriefing part of the simulation. During the observation, field notes were used to collect data. A guide based on themes related to Jeffries' (2007) conceptual framework was used to gather notes.

The students were studied in the nursing simulation laboratory, a hospital-like area containing a high fidelity patient simulator. This took place during the spring semester of their

program, which included three semesters. Each student and faculty engaged in the simulation activity for approximately six hours, including repeating the scenario, which was done as a group activity. After the observations, each student participant was given a post-simulation questionnaire SPETCS instrument. Interviews were then scheduled and done on nursing students and faculty to answer the above student and faculty research questions.

Procedure and Data Collection Methods

Data collection in this study involved many steps, including interviewing, observation, and document analysis. As explained by Yin (2014), a case study researcher collects evidence from many sources including participants, participant observations, interviews, protocols, tests, examinations of records, collections of writing samples, and artifacts. Despite planning, unexpected patterns or linguistic features became evident during the course of this research. While not bearing directly on the researcher's guiding questions, these variables became the basis for new questions asked at the end of the study, thus linking to the possibility of further research. This section will detail how the data was collected, including faculty and student interviews, document analysis, and observation.

Faculty Interviews. Two nursing faculty were interviewed in three semi-structured interviews using Seidman's (2013) three-step method. Seidman (2013) explains that there are multiple methods for gathering information, and interviewing is just one of those methods (p. 11). Each research method holds its best source for extracting data, and interviewing works well when there are stories to be told. This allows the interviewer to share in the experiences and add subjective reasoning. In Seidman's (2013) protocol, the first interview was done to gather demographic and background data. The second interview was done to understand how the

faculty member came to be involved in simulation pedagogy. Lastly, the final interview provided a reflection on the meaning the participant attaches to the simulation experiences. During this discussion, the intellectual and emotional connections are teased out.

This last and third interview focused on the debriefing session and what teaching practices were used, including any use of forms or documents to organize the simulation. The researcher interviewed each faculty participant for responses to questions pertaining to his or her involvement and experience with debriefing and simulation. Document analysis, which will be further discussed below, and observation data will be used to direct the last interview. The interviews were recorded through the use of an Echo Livescribe smart pen.

Student interviews. Interviews were scheduled prior to the end of the spring semester with the eight nursing students. The interviews of students included information found in the SPECTS instrument that guided the researcher in further understanding the interplay between the use of educational practices and learning outcomes during the simulation and debriefing with student perceptions. All eight students were interviewed one time, with each interview lasting approximately 45 minutes to one hour. The interviews were recorded through the use of an Echo Livescribe smart pen. Sample student interview questions included: How did the simulation help you understand nursing knowledge? How has faculty assisted you during the simulation to better understand nursing care for the patient during the simulation?

SPECTS Instrument. The structured participant instrument survey (SPECTS) (see Appendix D) was given to all eight student participants and analyzed for significant findings important to further investigate in their interview. This survey was used to inform the basis of the interview questions and to answer student sub questions.

Document Analysis. Document analysis was done prior to the student individual interviews and the three interviews of faculty. Document analysis included collecting and reviewing any forms used to prepare students for the simulation and any forms used to organize or record the simulation. These documents were reviewed and used to inform the interviews with both students and faculty, especially how students are prepared for the simulation.

Observations. Observations were done on students and faculty during their simulation activity. The observations were done on the same students and faculty during the debriefing part of the simulation to help answer all research sub questions. The researcher utilized an ethnographic fieldwork methodology during the observations. Emerson, Fretz, and Shaw (1995) explain that the ethnographer participates in the daily routines of this setting, develops ongoing relations with the people in it, and observes all the while what is going on. The ethnographer seeks a deeper immersion in the student's world in order to grasp what they experience as meaningful and important. Observations were done on multiple simulations done by the same group of students and faculty in which field notes were written. The students and faculty participated and engaged in their simulated medical and surgical scenarios, similar to those seen in their clinical environments and related to classroom content recently given to the students. Students were assigned by their faculty instructor an active or observant role in the scenario as a nurse, family member, recorder, or other participant.

Jottings. Jottings, according to Emerson, Fetz, and Shaw (1995), are written accounts of things happening during the observation. Often field researchers develop their own way of taking notes, since every word cannot be written. The jottings should be an authentic representation of the experience. Jottings included environment such as noise level, comfort of room, discussions,

expressions, emotions, reactions, and any cueing or prompting done by faculty. Jottings will be categorized according to the Jeffries (2007) framework.

One simulation was observed from beginning to end. Several repeat simulations were also observed along with the debriefings that followed. Three different simulation days were included in this study, with observations of the simulations and the debriefings. Field notes provided ethnographic accounts of participants in their real world experiences (Emerson, Fitz, & Shaw, 1995). Data collected was coded related to the Jeffries (2007) conceptual framework. Specifically, both students and faculty activities were observed looking to see the interplay of educational practices, debriefing, and student learning outcomes. Other data was observed and recorded using a guide to collect data in themes based on the Jeffries (2007) conceptual model (Miles, Huberman, & Saldana, p. 123, 2014).

Data Analysis

The components of this research included interviewing, observation, and document analysis. During the observation, episodes data was captured using direct and indirect quotes in field notes. Whenever possible, direct and indirect quotes are used to gain the real-life experiences of the participants (Emerson, Fretz, & Shaw, 1995). While taking field notes, organization of this data was considered. During and after observations, the researcher thought about the meanings of information collected in terms of what it may imply. This thinking led to ideas about new types of information required in order to confirm existing interpretations, or rule out alternative explanations (this is equivalent to theoretical sampling). By using themes from Jeffries' (2007) conceptual framework, data was categorized using these themes. As Emerson,

Fretz and Shaw (1995) explain, during the process of collecting field notes new themes may emerge, which were anticipated and summarized as they relate to the framework.

Coding

The data was analyzed by semi-open coding. “A code is a qualitative inquiry such as a word or phrase that symbolically assigns a salient, essence-capturing, and or evocative attribute for a portion of language-based or visual data” (Saldana, p.3, 2008). The codes were analyzed using the framework design with headings: ***Educational practices:*** active learning, diverse learning, styles, collaboration, high expectations, feedback, student/faculty interaction, and time on task. This category was further examined by contrasting judgmental, nonjudgmental, and good judgment. ***Simulation design characteristics:*** Debriefing was the only theme looked at in this part of the framework. ***Outcomes:*** Learning (knowledge), skill performance, learner satisfaction, and critical thinking (definitions stated in table, and further explained in Figure 2).

Pattern Finding

The analysis stage relies on theoretical propositions and other strategies, considers and employs analytic techniques, explores rival explanations, and displays data (facts) apart from interpretations (Saldana, 2008). Qualitative analysis has been described as both the most difficult and the least codified part of the case study process. Coding is not done by one cycle only, but by a second cycle as well to grasp meaning and further identify connections.

Episodic Threads

Episodic threads are episodes are events taking place in a short period of time—and often these episodes show significant or interesting events that have meaning to the researcher (Emerson, Fretz, & Shaw, 1995). During the observation, episodes were documented in short phrases or paragraphs regarding debriefing events. Some of the events in debriefing were selected to describe as episodic threads, such as reactions of students to debriefing questions, or emotions of participants. These were coded using the Jeffries (2007) framework and further developed into themes.

Themes

A theme is an outcome of coding and further explains codes. An example of a code found would be “support,” and “supportive feeling” can be a theme. For this study, codes were used from the framework to look for themes related to them such as active learning, feedback, student and faculty interactions, and diverse learning styles, to name a few. Emerging themes were anticipated and expected. The observation, document analysis, and interviews were transcribed and put in codes and further developed into themes according to the framework described above. The results were arranged related by themes for comparison.

“By developing convergent evidence, data triangulation helps to strengthen the construct validity of your case study” (Yin, 2014). Analyses of themes are for understanding the complexity of the case and to make meaning of findings from the case (Creswell, 2013). Emergent findings were coded using semi-open coding, and explored by descriptive accounts of participants using quotes and translated into meaning. After coding, categories from Jeffries (2007) were used, such as educational practices and learning outcomes. Saldana (2008) explains

that to remain focused, keeping a copy of the research question and goals of the study whenever coding field notes is important.

Ethical Considerations

Ethical considerations in qualitative theory studies include the relationship of this study to qualitative research, the quality of the process conducted during the research, the relationship with the participants, and the relationship to research integrity and data reporting (Miles & Huberman, and Saldana, 2014). The interviewing process involves analyzing the integration of this work into current research, being aware of potential harm or risks to participants, ensuring that participants are provided informed consent, and lastly, providing confidentiality and privacy (Shaw, 2008). The participants were given full information regarding the study, and given an estimate of the time involved. It is not anticipated that this study caused any harm or had any risks to the participants. The relationships established with the participants was based on honesty and trust. Participants interviewed were asked to ensure a location of privacy during the interview, to safeguard that the information was secured. The identification of the individuals and the organization studied has been safeguarded using pseudonyms and a numbers approach. From an ethical perspective, it is important to check back with the participants as to how information gathered was represented in the study.

Issues of Trustworthiness

Participants were offered the opportunity to participate ahead of time, so that during the simulation debriefing the students and faculty were informed of an observer. The interviews were done during planned times chosen by participants. The researcher sought to control the potential biases present throughout the design, implementation, and analysis of the study.

Limitations and Delimitations of the study

Because the study used a single case study sample, the results cannot be generalized to the general population of nursing students. Due to the varied knowledge or experience, student participants had in health care careers data collected was varied. Additionally, the sample size was small in this study and may limit results. Although they were discouraged from doing so, the students may have discussed the simulation experience with other students, thereby altering survey results. One potential field issue included technology breakdowns that could have impacted the flow of the interviews. Another field issue could have been entry and access to the research site; however, this was not an issue. Additionally, building rapport was a challenge with the short timeframe of the interviews.

A limitation to this study is researcher bias. Despite all attempts to control bias, this researcher may have had preconceived ideas of what simulation should include. Finally, the level of growth and development of the students varied due to age, exposures to health careers, or other non-defining factors which may have influenced the results of this study.

Timeline

The following is a summary of dates that the researcher proposed as an identifiable model for conducting and gathering data.

Phase One: October-December, 2014

- Select one school site to participate, send out invitational letters, and secure interviews.

Phase Two: January-May, 2015

- Conduct observations. Collect and analyze data.
- Conduct survey instrument. Collect and analyze data.
- Conduct interviews with all participants. Collect and analyze data.
- Gather documents. Analyze data.

Phase Three: May-September, 2015

- Analyze data to identify patterns and themes of teacher/ faculty interventions, and methods used and perceptions of students.

Chapter 3 Summary

In order to investigate simulation debriefing and determine the effectiveness of this teaching pedagogy, a case study approach was used. Nursing has accelerated the practice of simulation teaching methods due to the lack of specialty clinical areas and a lack of faculty. There are varied levels of experience of faculty teaching simulation, and best practice has not been identified. More evidence is needed regarding faculty support and involvement during simulation and the debriefing process. The case study offered an opportunity to collect rich data on one simulation site in a college in a rural New England state. This study offers insight to other nursing programs regarding simulation debriefing and faculty knowledge and involvement.

Chapter 4: Analysis and Themes

Introduction

The purpose of this study was to explore nursing simulation pedagogy with a focus on debriefing. This study looked at perceptions of students and faculty regarding participation, instructional effectiveness, decision making, learning outcomes, engagement, and design of the debriefing. This researcher believes that a better understanding of faculty interventions, together with guidance and support prior, during, and after simulation, will provide some guidance for future faculty to facilitate this frequently used pedagogy. This chapter will present an analysis from 14 in-depth interviews, a student instrument, five observations of debriefings, and a document analysis in order to triangulate data for validity.

This study used a theoretical framework developed by Jeffries (2007) and adopted by the National League of Nursing (NLN) that is used to design and implement a nursing simulation program. Three focus areas in the NLN/Jeffries (2007) framework were used as a guide to further understand the research questions. These areas included educational practices, outcomes, and design. Five themes emerged from the data that relate to the NLN Framework areas and include: Deliberate Practice, anxiety, preparation, cueing, and debriefing, all related to the simulation.

A Likert scale instrument developed by Reese (2009) was used to evaluate student perceptions of faculty effectiveness during the simulation. This instrument is called the Student Perception of Effective Teaching in Clinical Simulation Scale (SPETCS) (see Appendix D). A summary of the results of the instrument is included in Table 4.

Table 4: *SPETCS Instrument Results*

Student Perception of Effective Teaching in Clinical Simulation Scale										
Extent of Arrangement						Importance				
SD	Strongly agree					1	Not Important			
D	Disagree					2	Slightly Important			
N	Neutral (neither agree or disagree)					3	Moderately Important			
A	Agree					4	Very Important			
SA	Strongly agree					5	Extremely Important			

Items	SD	D	N	A	SA	1	2	3	4	5
Item 1	0	0	0	3	5	0	0	1	1	6
Item 2	0	0	0	4	4	0	0	0	3	5
Item 3	0	0	0	5	3	0	0	1	3	4
Item 4	0	0	0	3	5	0	0	0	1	7
Item 5	0	0	0	2	6	0	0	1	1	6
Item 6	0	0	0	3	5	0	0	1	1	6
Item 7	0	0	0	3	5	0	0	1	1	6
Item 8	0	0	1	1	6	0	0	0	4	4
Item 9	0	0	1	3	4	0	0	2	1	5
Item 10	0	0	0	4	4	0	0	1	3	4
Item 11	0	0	2	6	0	0	0	1	1	6
Item 12	0	0	0	2	6	0	0	0	2	6
Item 13	0	0	1	2	5	0	1	0	2	5
Item 14	0	0	0	2	6	0	0	0	4	4
Item 15	0	0	0	2	6	0	0	0	1	7
Item 16	0	0	1	4	3	0	0	0	3	5
Item 17	0	0	2	5	1	0	0	2	4	2
Item 18	0	0	0	2	6	0	0	1	2	5
Item 19	0	0	0	3	5	0	0	0	3	5
Item 20	0	0	0	4	4	0	0	0	4	4
Item 21	0	0	1	3	4	0	0	1	1	6
Item 22	0	0	0	3	5	0	0	0	2	6
Item 23	0	0	0	2	6	0	0	0	1	7
Item 24	0	0	0	4	4	0	0	0	1	7
Item 25	0	0	1	5	2	0	1	0	4	3
Item 26	0	0	0	3	5	0	0	0	2	6
Item 27	0	0	0	5	3	0	0	0	3	5
Item 28	0	0	2	2	4	0	0	2	0	6
Item 29	0	0	1	6	1	0	0	1	1	6
Item 30	0	0	0	2	6	0	0	1	1	6
Item 31	0	0	1	5	2	0	0	1	2	5
Item 32	0	0	1	2	5	0	0	0	1	7
Item 33	0	0	0	2	6	0	0	0	2	6

The SPETCS instrument looked at several key areas of student perceptions related to this study, to inform student interviews and further understand student perceptions of the simulation. All eight student participants answered the 33 Likert Scale instrument questions. Most of the students answered agree or strongly agree for most of the answers. The statements found to be neutral were asked about during student interviews. For example, one student, Bessie, said she was neutral on the statement, “The instructor was comfortable with the simulation experience,” and she rated the importance on the scale of this statement as a 4, very important. Her comment about this was:

She wasn't in there with us so much, the only one who came into the room was Faculty Mandy during our exam, I believe she came in as the respiratory therapist I think. I think they were great during the debriefing and like the pre, the pre-conference thing that we did.

All questions were reviewed and several were discussed with student participants to gain information in the interviews about the support and effectiveness of the faculty that facilitated their simulations.

A qualitative study provides the researcher with the ability to explore what each participant thinks and feels about a particular experience (Miles, Huberman & Saldana, 2014). Over the course of one semester, one group of eight students and two faculty members were observed as they participated in several simulations. All eight students were interviewed once and two faculty members were interviewed three times each for a total of 14 interviews. This chapter explains what was observed and what both students and faculty shared in their own words about how they felt when participating in the simulations. In addition, data from the SPECTS instrument, completed by the students after their first simulation, was used to guide

student interviews as a way to further understand complexities of their simulation experiences. This was a way to triangulate data.

Participant Demographics

All eight students were in the second semester of their first year LPN program, which after completion would qualify them to test for licensure as a licensed practical nurse and go on for their second year as an ADN. In their demographic survey, three students noted previous simulation experiences. Students were observed for a total of three simulation days and for each debriefing during these simulations. The first simulation was a basic scenario on a chronic obstructive pulmonary disease (COPD) patient. The second simulation was a collaborative in-depth simulation with the second year ADN (RN) students and faculty. This simulation involved a pediatric patient with a septic appendicitis.

Lastly, the student participant group did a third and final simulation of the year. The last simulation was on a patient with an asthma exacerbation. Student participants were observed during four different debriefings for the first simulation and one for each of the last two. A brief summary of the patient of these simulations will be included.

The table below describes student ages, gender, race, GPA, other degrees, simulation experience, and lastly, healthcare experience. All of these factors can possibly impact the overall experience of simulation.

Table 5: Student Participants Demographics

Student Participants	Age	Gen-der	Ethnicity	Race	GPA	Other Degrees	Simulation experience by number	Healthcare experience in years
Delaney	34	F	Non-Hispanic	White	Not listed	None	2	8
Mindy	44	F	Non-Hispanic	White	4	None	2	22
Madilyn	27	F	Non-Hispanic	White	4	None	2	6
Sonya	44	F	Non-Hispanic	White	3.7	None	0	5
Casey	31	F	Non-Hispanic	White	3.5	AS Early Childhood	0	6
Bessie	29	F	Non-Hispanic	White	3.21	AD Liberal Arts	0	5
Michelle	37	F	Non-Hispanic	White	3.89	None	1	0
Karin	24	F	Non-Hispanic	White	3.2	AS Health Science	0	12

Faculty participants included one full-time faculty with over five years of simulation experience, and another part-time faculty with one year of student simulation experience and over five years of simulation experience in a hospital setting. See Table 6 below for demographic details of faculty including age, gender, race, professional certifications, educational preparation, teaching experience, and experience with simulation. These have the ability to impact interactions and interventions done with students in simulation.

Table 6: *Faculty Participant Demographics*

Faculty Participants	Age	Gender	Ethnicity	Race	Current Professional Certifications	Education preparation	Teaching experience	Simulation experience
Professor Kyle	62	F	Non - Hispanic	White	RN	MSN	6	6
Professor Mandy	57	F	Non-Hispanic	White	RN, CCRN	MSN, administration	3	1

The Setting

The simulation room, located in the basement of a rural hospital used for simulation training, was approximately 16 feet wide by 24 feet long. It housed two electric hospital beds, each of which contained a computerized manikin; one was removed prior to the simulation. Located next to the manikin used for the simulation was a computer station on wheels. The monitor on the wall showed various physiological readings such as blood pressure, pulse, respiratory rate, temperature, and oxygenation level. Across the room was a cabinet with supplies, and to the left of the bed was a cart, with medications and IV equipment that acted as a makeshift medication cart.

On the other side of the hospital bed was another cart with equipment not commonly used; it held a glucometer and a Doppler, to name a few of the items. The wall behind the manikin contained a setup for oxygen and suction. Near the patient's bed was an intravenous (IV) pump with an IV bag hanging but not connected to the patient. Across from the bed was a set of cabinets with a counter for writing or for putting equipment. The cabinets held more useful supplies for nursing students. Above the counter and cabinet was the control room with a

microphone and a one-way viewing window, where the faculty watched and communicated with the students. The room was brightly lit with florescent lighting.

The First Simulation

Pre-simulation. Students were given a schedule prior to the simulation and what to bring for equipment as well as eight preparation questions to complete and bring (see appendix E). The expectation was that students spent three to four hours on the preparation questions, as part of their lab time of six hours. The questions below were included in the preparation for the first simulation.

Figure 2: *Preparation Questions*

1. Describe the pathophysiology of COPD. What other respiratory disease processes contribute to COPD? How are they different? How are they the same?
2. Identify 5 risk factors for developing COPD.
3. What are elements of a focused respiratory assessment?
4. What are appropriate interventions for mild respiratory distress? Moderate respiratory distress?
5. Why can delivering high flow oxygen to a COPD patient be counterproductive?
6. List 4 classes of medication commonly given to improve ventilation in COPD patients? What is their method of action? What are common side effects? What are major teaching points?
7. Discuss 3 areas of discharge planning for Mr. Brody.
8. What are 3 ways a nursing student can experience less anxiety, learn more and possibly enjoy a simulation experience?

Simulation One. At the start of the simulation, students were welcomed and initially given a quick review of the manikin (5-10 minutes) and where to find equipment, including oxygen supplies, IV supplies, medications, and the computer. The students were asked if they had any questions and were offered time to look around. They were then brought in to a small

conference room, where the faculty member asked them if they completed their preparation questions, as it was an expectation that these were done prior to participating in the simulation. The faculty gave them a handoff report (see below) of their patient, which described the patient and the patient problem, reviewed their roles, and went over a few of the preparation questions. Not all of the preparation questions were discussed with each group.

Figure 3: *Handoff Report*

Report Given to Students	Medical Orders to Follow
<p>The clinical picture given to students prior to the simulation was that their patient Mr. Vincent Brody, a 67-year-old retired construction worker, is being admitted from his physician's office for an exacerbation of chronic obstructive pulmonary disease (COPD). Mr. Brody has a 50-year history of smoking two packs a day. He has continued to smoke despite health care provider's recommendations to quit. During the last year he has had two exacerbations. Recently, he has experienced increasing fatigue with activity and inability to sleep well at night. His wife is with him and is very attentive.</p> <p>Report given to students just before starting this simulation included: Time: 11:00 am. Vincent Brody a 67-year-old male admitted directly from his physician's office for exacerbation of COPD. He has been assisted into a patient gown and in the hospital bed. He is hunched forward in apparent distress. His wife is very attentive at his side. Physician orders have been obtained and include:</p>	<p>Diet: Regular Activity: up as tolerated Vital signs with SpO2 levels every 4 hours Oxygen per nasal cannula at 1-2 L/min IV: D51/2 Normal Saline with 20 meq KCL at 100 ml/hour Incentive Spirometry every 2 hours Medications: Proventil 2.5mg in 2.5 ml of Normal Saline via nebulizer every 4 hours Solumedrol 125 mg IV every 6 hours Labs: CBC Chest X-Ray</p>

Included in the preparation of the students were instructions given about their roles. In each group of three, one student was assigned as lead nurse, one as assistant nurse, and one as the family member or wife in this case. Students were also given a few minutes to discuss their plan for starting the simulation. The pre-simulation time allowed was 15 minutes for the quick

review and to discuss the preparation questions. When it was time to start the simulation, students went in to the simulation room and faculty went in the observation room, where there is a one-way viewing glass and a microphone so that faculty could see and hear students and also talk through the HFS or simulator and role-play the patient. The student who was the family member was given some cueing as to what how she should respond when being asked questions. Students had approximately 40 minutes to complete the simulation and then 20 minutes for the debriefing. The debriefing was a roundtable-like discussion of what they rated the experience on a scale of 0-10, where 0 was the worse and 10 was the best. The students were also asked what they thought went well and not so well. The faculty allowed time for responses and feedback. This study includes observations, interviews, and documents related to this first simulation day.

Other Simulations

Combination Simulation. Student in this study participated in a combination simulation that was coordinated by several faculty in the same site. The simulation was designed that the LPN students would be in an assistant role during this simulation and participate as part of the team. Students were asked to meet in a pre-simulation waiting area where they were given pre-simulation paperwork; they also had a chance to meet with the RN students and their faculty to discuss the simulation and the roles that each would play. This study includes observations, interview questions, and documents on this combination simulation. The figure below is a description of the combination simulation patient.

Figure 4: *Patient Description for the Combination Simulation*

The patient is an eight-year-old male brought to the Emergency Department (ED) with complaints of severe localized pain in the right lower quadrant of the abdomen, nausea, vomiting, and fever. His symptoms began two days ago when he began complaining of loss of appetite and cramping type pain, which was generalized in his abdomen. His mother states he just wasn't acting like himself. She says the only thing he has had to eat in the last two days was some crackers and soda this morning. This Simulated Clinical Experience (SCE) has four states, which are transitioned manually at the discretion of the facilitator. Interventions are necessary when the patient is admitted in the ED, experiences a rupture of the appendix, develops sepsis postoperatively, and is eventually discharged home on IV antibiotics on post-op day 5.

Last and Final Simulation. This simulation was the third and last simulation day that students participated in for the semester. It was planned similar to the first one. Students ran through the scenario three times in groups of three, each playing the roles of primary nurse, assistant nurse, and family member. The patient had an asthma exacerbation. The pre-simulation questions were given to students prior to the simulation so that they could answer them and be prepared for the type of patient they would encounter. This study includes observations, interview questions, and documents on this simulation. The figure below is a description of the final and last simulation patient.

Figure 5: *Patient Description for Last Simulation*

The patient is a six-year-old female who is brought to the Emergency Department (ED) by her mother because she is wheezing. The mother reports the child has asthma and has been

experiencing increasing shortness of breath for the past two days. The Peak Expiratory Flow value has been between 50%-80%. The mother has been giving her nebulizer treatments more frequently, but the child is still wheezing. The child currently uses albuterol aerosol (short-acting beta2-agonist) for relief of acute symptoms, salmeterol xinafoate inhaler (long-acting beta2-agonist), and fluticasone (corticosteroid) inhaler for control therapy. The child is treated, improves, and is released to home. She returns to the ED with a 16-year-old babysitter who is not knowledgeable of asthma management. The condition does not improve with the treatment regimen and progresses to status asthmaticus. The Simulated Clinical Experience (SCE) has six states, which are transitioned manually as the child progresses to imminent respiratory failure.

The learner is expected to identify the child's developmental level and communicate and care for the child based on those findings. The learner is to notify the healthcare provider of the findings. After the learner receives orders from the healthcare provider for albuterol, prednisolone, and to notify the healthcare provider of the patient's status after completion, there is the expectation that the learner will administer the albuterol nebulizer treatment up to three times, 20 minutes apart, and administer the prednisolone ($1 \text{ mg} \times \text{kg} = 20 \text{ mg} = 6.7 \text{ ml}$) demonstrating the Six Rights.

Analysis of Themes

This section reviews data analysis from interviews, observation, field notes and documents. Based on observations of several simulations and debriefings as well as student and faculty interviews, five major themes have emerged: 1) Deliberate practice, 2) Anxiety of participants, 3) Preparation, 4) Cueing as an intervention, and 5) Structured debriefing. In this

chapter these five themes are analyzed and supported with excerpts from transcripts of interviews, observations, and documents.

This first section includes the first theme of deliberate practice, which also includes several sub-themes that relate to this finding. One area that emerged from the data was the use of deliberate practice or repetition. Different simulation designs can be used in delivering the repetitions. These repetitive designs were deliberately planned into the simulation experience to enhance the learning outcomes.

Four themes have emerged from the data that enhance student learning: repetition of the scenario, differentiated roles, blending of the levels of students, and progressing or increasing complexity. An outcome due to the use of these deliberate practices was improved critical thinking. The first sub theme is differentiated roles, which are described as important to the simulation as participants have explained that supportive roles were preferred over being put in a primary nurse role. The second sub theme of blending students was found to be important to students in a variety of ways, including role modeling and peer learning. Blending was described as mixing the LPN students with RN students and their faculty in more complex simulation scenarios. Lastly, critical thinking was improved in the participants when students as an outcome of deliberate practice as students progressed through progression of scenarios.

Theme One

Deliberate Practice

Repeating the simulation scenario, also called deliberate practice, was found to provide students an opportunity to gain a higher level of knowledge and confidence in their skill performance. Deliberate practice or repeating the simulation scenarios is when the same group repeats the scenario over again so that students can be successful. Mastery of learning with deliberate practice is found in the literature to improve student outcomes as it relates to patient care (Barsuk, McGaghie, Cohen, O’Leary, and Wayne, 2009). Participants were able to participate in the same simulation twice after switching roles. Roles included in the simulation scenario included: the primary nurse, the secondary or assistant nurse, and lastly the family member of the simulated patient. All of the student and faculty participants found that repeating the simulation was important for learning and confidence.

Table 7: *Deliberate Practice*

Context	Faculty response	Student response
Repeating scenarios over	Positive reflection	Skill improvement
Differentiated roles	Good teamwork	Less anxiety
Blending students		Felt better about simulation
Progressing		Peer learning/ Role play
Improved critical thinking		Increased confidence

Faculty responses. Faculty describe that having students repeat the same simulation scenario over offers them the ability to improve and feel less stress and anxiety in performing

during the simulation. The faculty gave positive feedback to students in their debriefing that reflects improvement. Faculty Kyle offers a positive reflection of student improvement in their last debriefing: “I thought it was really good teamwork, very good teamwork. And it did go much more smoothly this time than last time.” Students Madilynn and Bessie were told how well they had worked together during their last simulation, which improved after repeating.

Instructors in this study also stressed the benefits of repeating the simulations for reducing anxiety and improving learning outcomes. Faculty planned ahead to have students repeat the scenario. By repeating the scenarios students got the chance to gain important feedback from both faculty and peers. Professor Kyle described reading about research on repeating simulations, so she felt it was important to offer this in the design of her simulation plan. She also knew by previous experience with simulations that students have a high level of anxiety and fear going in, and that repeating the simulation offers them a chance to be successful in the end.

It’s really a pretty uncomfortable situation for people, and in past years since we’ve done this they leave not feeling good. With repeating the simulation they leave happy that they made it through and that it is over, and they leave feeling good. So I think the more people can repeat it, the more likely that they will leave feeling good.

Professor Kyle explained that repeating allowed students to feel successful and more willing to participate in another simulation without the same level of fear. “They were inclined to not be terrified to do it again, and have learned from the things that didn’t go well, I think the whole idea of repeating it is good for them and it is good for me.”

Professor Mandy believes in the benefits of repeating the scenarios, and saw an improvement in students being the primary nurse in their last simulation day, as well as knowing where to find equipment and supplies improved their ability to perform.

What's interesting to me that in this last simulation when there was only one nurse without a real helper they liked it better/ It was like it was not as confusing for them and it seemed like the one who was the nurse sort of took it on better. I think perhaps this is due to a couple of factors – one: it wasn't the first time through, and two: they had a better idea after where stuff was.

Both students and faculty voiced the benefits of repeating scenarios over and believed there was an improvement in their skill and performance. In observation of the simulation in the viewing control room, this observer noted that students performed appropriate skills of lifting the head of the bed, putting on O2, checking orders for medications, and calling the respiratory therapist for a breathing treatment (observation, April 14, 2015).

Student responses. The student participants described the difficulties in performing in the simulation when they were participating for the first time. Their ability to perform their assigned roles the first time in the scenario was limited due to many factors: being unfamiliar with the functions and limitations of the manikin and the lab space, not being able to find the proper equipment. Frustration with the technology or equipment is described by several students. Mindy explains her frustration with getting the vital signs on the manikin. "It started out as a bad experience, because I couldn't find, I mean, I couldn't hear any of the vital signs that I was supposed to." She further explains not knowing the sounds of the manikin and not knowing if the challenge was part of the scenario.

I was kind of stuck with whether that was part of the sim, or should I just move on, and we never could get it. You know, we never felt comfortable with hearing the vital signs and then, in hindsight, we realized that it wasn't really on at first and, you know the pulse went away when I tried to feel it, and then there was definitely a malfunction, which I think it would have been helpful if they had us stop to check the manikin before we moved on.

Subsequently students explained that they noticed an improvement in the second simulation. Mindy sums this up well. "When we ran through it the second time, it was like we were trying to think if we were missing something, and with more experiences we had a chance to think it through, and change what we were doing." Students in the last debriefing describe the simulation as going faster and improving: "it went faster." Bessie also says the second time through for her was critical. "For me, definitely the second time we ran it through, the scenario, it was easier, just because I knew what to expect and I knew where everything was at that point." Having the chance to repeat the scenario allowed students to practice the steps that they would take. Their performance visibly improved during the second scenario.

More of the participants explained challenges with the manikin that made it difficult for them to perform well. Michelle explains the difficulty with their performance was the manikin, and that they were challenged by not being able to get the vital signs. "I think not really being accustomed to that manikin was difficult." The nuances of the manikin slowed their movement through the skills during the scenario.

Participants wanted more time practicing with the manikin and in getting accustomed to the simulation lab to find equipment and resources. Bessie explains this well.

I felt like it was a little disjointed because we were thrown into there and we didn't know where anything was, and I felt like there wasn't much guidance as far as that went.

Otherwise, I think it went okay, but, I, I just feel like we should have had a reintroduction and made sure we could get on the computers, and things like that, in the sim lab ahead of time.

All of the student participants expressed wanting more time in the simulation lab and in getting familiar with the lab, the equipment, and the supplies. They felt this would have improved their experiences.

Differentiated Roles. Differentiated roles in simulation involved having students participate in role-playing, in either a lead role or a supportive role. Repeating included changing roles so that students performed as different characters in successive simulations. Students were given either the lead role of the nurse or a supporting role of assistant nurse, or family member. Participants described that having different roles in the simulation gave them the opportunity to see the scenario play out more than one time. They felt this was helpful to their learning, and that those who were playing family members or observers were able to learn more readily from the primary nurse. The following quotes explain what all student participants felt about being in these roles.

Supportive role. Madilynn was in supportive role of the family member in her first scenario and explained that, "As the supportive wife, I got to see it play out, so it was—it took some pressure off of me." For Madilynn, being the family member first allowed her to think more clearly about what decisions needed to be made. Student participants explained that being able to perform in the simulation in supportive roles, they had a chance to learn from their

colleagues. Karin was asked how it felt to play the family member first, and she said that it gave her a chance to observe her peers in action before having to perform.

It was nice that I played the supportive wife in the first time we did it. But then we did a second run through, and I got to be the lead nurse, so it was nice to play both sides of it. You know you've learned from what your fellow students are asking of you, and the way that they are doing things, so when you're in the supportive family role, you then turn around and do the nurse's role, you are able to show them things that you think they should have asked, or should have done, you know, vice-versa.

Being in the supportive role was important to all of the students. Students felt it was more difficult to be the primary nurse first; they also felt that having the opportunity to be an assistant nurse or family member, they could watch and think about what is going on and not having to decide anything, was imperative for the first time in simulation.

Lead role. The lead nurse role was less favored by students because of the pressure to perform. All students put in the lead role first, felt the pressure to perform and this caused anxiety and poor skill performance. Michelle described that she was the primary nurse the first time in her scenario and explains that this made her extremely nervous, so that she forgot simple things like handwashing. "I felt like I was very prepared for it but when it came down to actually being in the room I was a nervous wreck. I was the one in charge and it made me really nervous and I would forget what I was doing." The pressure of being in the lead and making the important decisions created enough stress that this student froze."

Sonya further explains:

Being the lead nurse it seemed like all the pressure was on but as the assistant it was like you could think more clearly and step in and do things. You know, the primary nurse is thinking so intently on what they have to do next that they're not looking at the bigger picture.

Participants said that being the primary or lead nurse the first time was challenging, but could have been a better experience for them if they had practiced it first before being put in charge of the scenario. Bessie was the primary nurse the first time in the first simulation, and she said that more experience with the manikin and the simulation would have been better.

I mean, we're going to have a first day in the sim lab, no matter what. If it's the first time to run through sim or to see it and to actually run through a scenario that day, it would have been nice to actually have some experience prior to it, before actually running the scenario.

All participants had difficulty being the primary nurse, due to not knowing the equipment and the simulation lab. More time in the simulation lab getting familiar with the manikin and the equipment was mentioned by participants, especially after the first time through their simulation.

Blending students. Two different academic levels of students were joined together to participate in one scenario. Each student was assigned a role that reflected the practice role of that student. By combining students from their first year LPN and second year RN, there were many benefits in repeating. Putting different students (RN and LPN) together and then repeating the scenarios over was described as important to all of the participants for several reasons. The combination simulation offered critical thinking, role modeling and support from the RN

students. Bessie explained that working with the RN students and the different faculty in the second simulation day was more of a critical thinking exercise with a team approach.

I really thought the second simulation day, the combo-sim was more about the critical thinking just because you're working more with that team and you're bouncing the ideas off of each other a little bit more. I feel like we, in the combo-sim, were relying more on each other versus information that maybe the instructors had given us during the sim itself.

Participants found that working with the RN students and instructors offered them more critical thinking situations. One student felt that it was helpful to her to work with the RN students for their encouragement. Madilyn describes them as being supportive. "It was just nice having the ADN's encourage us to keep going, and they could give us some tips for the end of class coming up, and it was just nice to be able to associate with them."

Most of the students think that working with the RN students in simulation offered them a role model and a place they could build relationships. Karen describes this well.

I think it would be nice for all PN students to have more contact with the ADN students. I mean, they've been in our shoes. They have a lot of knowledge and experience to offer to us, and you know they helped alleviate a lot of the stress that we were feeling. They talked to us about the NCLEX exam and what to expect in next year's classes, and it would be nice to build a relationship with them.

Participants stated the benefits of working with the RN students and faculty included role modeling by watching the RN student be the lead role, support and encouragement from the RN

students, and practice with unfamiliar team members. They also felt this was more realistic that could be related to real patient situations.

Progressing from Simple to Complex. Progressing was moving from a simple basic scenario where students do vital signs and some beginning level skills to a complex simulation, where they complete several tasks and must make more complex decisions about their patient. In the combination simulation, students were able to see the difference in basic and complex skills and understand the variety of challenges they could be exposed to in real nursing.

Bessie felt that moving from simple to complex in the simulation helped her to understand more about a patient's changing conditions. "We haven't had a patient where their status is rapidly changing, and we haven't really had any situations like that, and I feel like if we have had a simulation that was very stable, like the one we had first, and then worked our way up to something a little more complex." Bessie explains that this exposure provided a way for them to make decisions based on the changing needs of the patient, which she feels is more about critical thinking. "We were able to make decisions based on knowledge, being able to adapt to a situation, being able to assess the patient, and figure out what their changing needs are as their condition changes, and being able to respond appropriately." Students felt that the combination simulation offered more complex situations where they could practice decision making.

Deliberate practice with a more complex scenario, as in the combination simulation, increased participants' skill performance because they were not in the lead role and they were able to think through the challenging parts of the simulation and use critical thinking skills. Michelle stated that during the combination simulation she was constantly thinking about the

patient's changing condition. She was thinking about what should be done at that time but not necessarily saying it to the other students.

And then, observing, cause they're in the moment but when all of a sudden the patient said, um, I don't feel any pain anymore because he didn't want to get an NG tube or something like that. And I was thinking, to me, oh, if he's not feeling pain anymore you want to take that seriously not that just he's saying that so he doesn't have anything wrong. If the patient has appendicitis and they're saying nothing hurts anymore then you want to check and make sure their appendix hasn't burst.

This opportunity for thinking was beneficial to the participants and their learning. One participant felt that the first simulation was more helpful to her learning over the combination simulation. Michelle thought that the first simulation offered her more opportunity to make decisions, and she says that her experience in the combination simulation did not go well.

I think the first one offered the most thinking where you know we had a lot of teaching to do based on the questions or based on, the subjective assessment when the patient would say, oh my heart's racing, or we'd have to go back, well that's connected to this and that thing. I think the second sim I had a worse time probably because I was getting the vitals and the head nurse that I was with, I told her a couple of times that we had to report that off to the doctor because that's what it said in the sheet but she did not report it.

Most of the participants expressed that they had an opportunity to use their critical skills in the combination simulation due to the complex situations that were presented.

Faculty participants also felt that the combination simulation with mixing student groups of RN and LPN had students better prepared. LPN students were able to observe more in the

combination simulation day. The RN level student was put in the primary nurse or lead role for each of these simulations. This allowed the LPN student to observe the RN student lead and process or think about the more complicated scenario. Faculty Kyle comments: “There was two weeks separating the simulations so they were less scared, and they went into it knowing they were in an assistant role and the pressure wasn’t on them to be doing the main evaluation and calling the shots.”

Combining students offered the LPN students the opportunity to be in the assistant role and gave them the ability to assist and make suggestions but not make all the decisions. Progressing from simple tasks to complex scenarios gave a more realistic presentation of changing conditions of patients.

Improved Critical thinking. Repeating the simulation offers more opportunities for critical thinking. This study shows that during simulation, students are put in challenging situations that tests them to make decisions—and that this improved after repeating the simulation or when doing more than one simulation day. All of the participants thought that repeating simulation offered them the ability to think critically. Madilyn describes that she had to think about the scenario when she read about it in the pre-simulation questions, and then had to decide what to do during the actual simulation.

Having the information before going into sim, like a couple days before I was kind of like, I knew all about COPD a couple months ago, what’s going on with your lungs. So I definitely tried to critically think it through myself, and then I used my book and my other resources and looked it up. It also is critical thinking just being in the sim itself, because you’ve got to, got to know what to do.

The repeated scenarios allowed for practice of decision making and critical thinking skills. Delaney was asked about the use of critical thinking, and she responded that more practice allowed her to learn.

You get experience practicing and there are things you haven't dealt with on med-surg or in clinical as well. I mean what the next step should be or what should I do. I definitely was thinking the whole time, like, what do we really need to get done.

Students felt that being put in the simulation scenario forces them to have to think about making decisions and use their previous knowledge to decide what to do. Sonya describes how being placed in the simulation allowed her to use prior knowledge to make decisions.

I think it added to our level of knowledge and by taking us out of our comfort zone so we have to think about it, I think when we're in the situation again with a real patient we will be more comfortable in saying, oh yeah, we did this in sim."

Being put in stressful situations allowed students the opportunity for critical thinking and decision making during the scenarios.

Having students engaged in simulation scenarios that they are likely to see in real nursing clinical experiences will allow them to practice their skills and be more prepared for them. Students were involved in a common diagnosis scenario called chronic obstructive pulmonary disease (COPD) for their first simulation. One student, Sonya, says that the simulations prepared her for caring for real patients in these same situations.

It makes you think. I think that it's a key thing to helping you when you're in the real scenario. I understand that it's not the same but at least to give you the practice of listening to the breathing, checking the vital signs, before we do it on real patients.

The scenarios were explained as helping them prepare for real patient situations. Students had the opportunity in the scenarios to practice skills and make decisions on key steps in care of the patient.

Summary. Deliberate practice or repeating simulation scenarios in this study shows several benefits for students and faculty. The students gained confidence and improved their skills after repeating the same scenario. Rotating roles offered them the ability to gain knowledge from their colleagues. Students preferred being in the supportive role first and that observing this done first was important for their ability to perform successfully. Repeating simulation with new roles and with new members of the team as with the RN students, the LPN students gained understanding of being part of a team and moving from basic to more complex scenarios. This allowed for more decision making and critical thinking.

Theme 2

The Anxiety Experience

This theme describes the anxiety that was observed, and voiced by student participants in the study. Student participants explained in the debriefings and in their interviews how the stress and anxiety they felt caused them to forget simple tasks and to perform them poorly. Faculty participants also recognized that anxiety was a factor in student performance in the simulations. Faculty discussed how the manikins are flawed enough that it was troublesome for the students.

Anxiety, nervousness, and stress were shown to alter the student's ability to perform in this study. Anxiety can be described as an unpleasant feeling causing both physical and emotional symptoms, as well as an inability to focus and remember previously learned skills (Townsend, 2015). However, this feeling is usually temporary and is considered normal. All eight students expressed some form of anxiety and an inability to remember simple skills going into their first simulation. During observations of the simulations, students were noted to be anxious and also stated being nervous. Their faces were stressed and they paused several times looking confused. Students looked at each other not sure what to do (Observation, April, 2015).

Table 8: *The Experience of Anxiety*

Context:	Faculty Response:	Student Response:
Simulation caused anxiety	Lack of didelity of the manikin	Fear of performing poorly
	Lack of student preparation	Confusion
		Forgetting tasks
		Dislike of sim

Faculty Responses. Faculty instructors felt that the simulator and the technology involved with it made the simulations challenging, causing anxiety and stress in the students. They believe that these manikins are not even close to being like real patients. Fidelity is described as the degree to which simulation appears, feels, and sounds like the real thing (Alessi, 2000, Issenberg, McGaghie, Petrusa, Gordon, & Scalese, 2005; Jeffries, 2005). Faculty participant Kyle explains that she feels that this lack of fidelity causes anxiety for students. However, she also feels this could have been alleviated by more time with the simulator to show students the special sounds and limitations of them.

The simulators are flawed enough so that Mindy got very unsettled unnecessarily, and it was not her fault. I kind of feel like, an amount of my huge take-away is before they are subjected to a real scenario, I need to bring them down into the lab so they are very used to what the sim man's blood pressure sounds like. We're still into wanting sim to be a safe experience.

Faculty participant Kyle also felt that the experience of students not being able to get the vital signs was devastating for the one student. "This student was extremely distraught by the experience." She also feels that being watched in the simulation made them feel like they were being evaluated on their performance. She explains that this puts too much pressure on students and they no longer feel good during the simulation.

Because it makes it, well you're being evaluated. It's not that it makes it more unsafe but it ups the level of pressure. And is it that you're pressing too hard or not pressing hard enough or it is a real variability in the sim, I couldn't tell you. But I know what she's

talking about and it's very unsettling. And that pulled the rug out from under her pretty much when she couldn't even get a basic set of vital signs.

Faculty participant Kyle also describes the student's stress as feeling like they are performing in front of an audience, and this in itself is enough to cause stress and fear. She feels that being in the spotlight is a part of simulation that continues to be difficult for students. "It feels like a performance to them, whereas at the bedside it doesn't feel like a performance. In clinical it feels like, here's a patient that I need to give care to." Furthermore, she felt that being watched was more than students could take. "The performance piece is actually more intense in simulation because we are watching."

Faculty participant Kyle also describes the manikins as being challenging for students because they are not like the real patient and things do not work as expected. She feels that if students knew this and planned for it they may not be set back each time.

They don't perform particularly well but I hold the manikin itself, in part, responsible for that because the saturation monitor doesn't really work, so the student have to say, what's the saturation, and I have to come in over the intercom and you have all these mechanical sounds and there are just many little problems that I think, therefore, reasonably sets them back in their process and we have to do it for them to get them more comfortable and kind of be able to show us their real skills.

Faculty participants also feel that simulation itself can provoke anxiety in students. Faculty Kyle explains that she thinks simulation is a safe place to not harm the patient but emotionally she feels it is not really a safe place for students. She feels that we take a chance

with the students in causing a great deal of anxiety; however she feels that because they are choosing to be nurses, there is only so much we can do as instructors to alleviate that feeling.

I think that sim is safe. It's safe because you're not going to kill anyone and you're not going to hurt a patient. It's safe in that sense but it is not remotely an emotionally safe experience for many students. I kind of fault us for the fact that it feels so unsafe, but on the other hand there's only so much we can do. There is only so much we can do, and they're adults and they have to learn, they're going to be nurses. They're going to be in this stuff for real.

This faculty participant feels that they must get more comfortable in these simulation situations. The second faculty participant describes that they spent most of the time in these simulations getting them to feel more comfortable and confident. She felt that this is important but they need to move to the skills and the critical thinking. Faculty Mandy explains:

Confidence is great and the ability to have confidence – that's an important thing. That seemed to be a big, an overall big emphasis on all of these sims was getting the students to feel comfortable and confident just being in the environment. And I think you can spend time with that but that certainly shouldn't be the only goal.

This confidence is important, but moving into higher learning is described by this faculty as more important. Mandy suggests starting earlier in the semester so that more can be gained by the simulation experiences. She states:

Starting out in the fall getting this confidence stuff down, ok, getting the experience nailed down. OK, here's the sim lab and all this and that and then move into some higher level thinking for students. Not that they didn't get that, because I think there's some that

did get that but I think you could have, you can push the envelope even further if you start earlier.

Faculty explained that students lacked the confidence and comfort in the simulation because of their lack of experience with the manikin, and equipment. This could be avoided if students worked in the simulation lab earlier in the semester to gain that comfort.

Student responses. When students were asked about being nervous going in to the simulation during their interviews, they expressed a high level of anxiety or stress. This anxiety impacted their ability to remember previously learned concepts and to apply these concepts during the scenario in the simulation, and contributes to their dissatisfaction of the simulation. During observations, students were visibly nervous by facial expressions and overhearing them discuss being nervous. (Observation, April 2015)

The anxiety in students played a role in the participants forgetting simple tasks during their simulation. Bessie was asked about her nervousness, and she says that despite her knowledge and preparation, she forgot simple skills she normally would not forget.

All three of us walked in and just started caring for the patient, without doing any hand hygiene, which is something we're trained to do from day 1, and there's no way we would walk into a patient's room and not perform hand hygiene before assessing them, but just under the stress of the situation, and not knowing what to expect, it just completely blew our minds, and it didn't even cross our minds.

All of the participants felt the anxiety especially in their first simulation. Karin described being nervous and that she was not sure what to expect going into the simulation the first time. "I

was extremely nervous, just because we had never done anything like that before and we really didn't know what to expect from the experience." Students were nervous the first time going into simulation, and being evaluated made their nervousness worse. Delaney explains that she was very nervous especially because she did not know what to expect as it related to being evaluated. "I was definitely nervous, not having been through it and not knowing how harshly we might be critiqued or what exactly was expected. I felt awful if I didn't know the answer right off the top of my head."

The simulation lab included a one-way viewing window, so that instructors can see the students perform in the simulation without students seeing the instructors. This viewing window caused another level of stress and anxiety for students. Delaney explains how she felt stressed because of being watched behind a glass window, which she explains, is different from her clinical experience.

Well in clinical we're not watched the whole time. We go in and do assessments and vitals and, you know, the patient doesn't necessarily know if you're doing something wrong or not – not that you would with that type of thing; you're not going to mess it up. Usually when we go in with the teacher we're giving medications, we're doing a treatment and we've already had time to look it up and we know exactly what we're dealing with.

Participants stated that they were feeling apprehensive due to the viewing window and that they were not sure about how they were being evaluated. One student expressed her nervousness while being watched but also explains that despite this feeling, she enjoyed the experience. Madilynn explains:

I was nervous yeah definitely. It's just nerve wracking you know, because sometimes you know what to do, but it's a lot of pressure on you when your professor and clinical instructor is behind a window watching you. It's like, oh, I feel like an idiot, but, but I liked it, I did like it. And after it was completed, I feel like I stressed out for no reason. I didn't need to be that stressed out about it.

Participant Karin felt that being with the RN students in the combination simulation made her feel less able to perform because of her anxiety and lack of confidence. She felt that the RN student's level of knowledge was much greater than her own. This gave her another level of anxiety and stress. "I was so consumed with anxiety with the second one, working with the RN students that I think I just concentrated more on not making a fool of myself." This participant was worried due to feeling inadequate around the RN students, which caused her anxiety.

Summary. Anxiety and nervousness was evident in students participating in simulation. Students forgot simple skills due to the stress of being in the environment. Students were unsure of what steps to take. Causes of this anxiety included student fears of being watched, not knowing how they were being evaluated, a lack of preparation to the room and equipment, and faulty technology. The anxiety caused students to dislike the experience of simulation.

Some level of anxiety was discussed as being expected in simulation by both students and faculty. Both students and faculty believe that if more time was spent in the simulation lab, students would have more comfort with the experience of simulation. This extra time or preparation discussed in the next finding would also have familiarized students with the nuances of the manikin, which was seen as a direct cause for their anxiety in the first simulation. More time in the simulation lab and with the manikin would have helped students realize that the equipment can be faulty and it is not their skills that are a problem. Lastly, LPN students were

nervous and anxious working with the RN students, which improved after spending more time with them.

Theme 3

Preparation

Preparation for simulation was found to be important to get students to a level of knowing so that they can have less anxiety and perform successfully in the simulation. Students felt that they were not well-prepared, especially for their first simulation, and described several reasons for this. The first area they discussed was faculty not reviewing their preparation worksheets that they were expected to complete. Next they described being unfamiliar with the simulation lab, the equipment, where to find needed supplies, the manikin, and the scenario in which they needed to perform. Lastly, preparing students for the debriefing was found to be important for identifying the learning outcomes and skill acquisition. This section describes participant views on the simulation preparation.

Table 9: *Preparation*

Context:	Faculty Response:	Student Response:
Simulation preparation	They need more practice	Felt unprepared
	Future simulations affected	Could not find things
	Lack of realism	Wanted to review their prep questions
	Plans to make changes	Manikins had unfamiliar sounds

Faculty responses. Faculty Kyle acknowledged her responsibility in the students feeling unprepared by not giving them practice in the simulation lab well enough ahead of time; but she also faults the simulator and its lack of realism. “I’m sorry but I hold sim-man 50% accountable and me 50% accountable for not giving them enough experience in advance.” Faculty Kyle

explains that during her evaluations of students she tried to discuss the difficulties of the manikin with the students, and says that they now had a new understanding of what the simulator sounds like; but she has concerns that the experience will impact future simulations with this group of students. She hopes they will feel good about their next simulation.

We had our evaluative conferences the next day and I asked them how are you doing? I know you had really tried hard to be prepared and actually I could see that you were and you did the right things. And student Mindy said, I'm over it, I'm over it. I just realized I didn't know what sim-man's blood pressure was supposed to sound like and now I get it. Now I know what I'm listening for. She says she's over it and I hope she is, but I guess, I think, in reality she'll go into the next sim experience with a little more nervousness even though she says she's over it, I think it wasn't a great experience for her.

Faculty Kyle realized that students had challenges with the manikin and that students were not as prepared for that going into the simulation. She also felt that more time with the preparation questions was important and she did not review them but reflected on planning this for her next simulation.

I did put together a list of things to think about for another time that, maybe having them submit their prep questions in advance so I could have looked over their prep questions before they would definitely have them done in advance, and I could have looked them over.

Faculty Mandy feels that nervousness is necessary and expected for students. "I guess my thought is just, if they're nervous in sim, some of that's okay. I mean, in real life you're going to be nervous, and you're not always going to have all the answers."

Faculty Mandy also believes that learning styles of the student have more to do with designing simulation than preparation or knowledge. She explains that throwing them in and letting them feel uncomfortable is a good thing. “So much of this depends on the personality and learning style of the student and what are they going to retain, what they are going to hang on to. There isn’t one way that’s going to work for everyone.” She also brings it back to the faculty to have a better understanding of the simulation lab, and to push students out of their comfort zone so that they can be tested with uncomfortable situations. She feels this is important to see how they will handle the challenge in the simulation lab before taking care of real patients with complex problems.

I guess that’s sort of where I’m coming from, too, is after spending years being on the hiring end of this and watching these students come in and flounder because they just can’t even handle two patients; they can’t think through this, and this happened and they lost it. So, I think that I feel like my role as the instructor is to push them and to throw some scary stuff at them and see how they do, and how do they think about it and that that’s something that happens in the sim lab or in class before they get out there in the real world and maybe the reality shock wouldn’t be quite as bad. And I think some of that is our comfort level with the scenario and with the sim lab.

Faculty instructors felt that students should have some preparation of the simulation lab and the manikin. They also felt that the lack of fidelity is a problem for the students during simulation and that this causes anxiety and stress. Faculty described that some level of discomfort in the simulations are necessary and better to prepare them for the real challenges patients can bring.

Student responses. The preparation time and the preparation worksheet were considered very important to the students in the simulation. When students were asked about the preparation worksheets, they said that they spent a great deal of time answering these questions and expected the questions to be reviewed or referred to in the simulation. They further explained that questions were helpful but they were not consistently reviewed or examined by faculty. One student wanted to keep the paperwork with her during the simulation. Madilynn said she felt prepared when going in to the simulation, but then without having these questions to help her remember, she was nervous. “I mean, I spent hours working on the paperwork but then when I get in there and I don’t have my papers in front of me I get nervous.”

All of the participants spent time preparing for the simulation by answering the preparation questions, and felt they should have been reviewed by the instructor. Mindy explains this in her interview that she would have liked more time reviewing the pre-simulation paperwork, which she feels would have made her more comfortable with the simulation. “Going over our pre-assessment paperwork would have been more helpful.” Students thought that since they were expected to have the preparation questions answered to be prepared that faculty would be reviewing these.

Participants had very little preparation in the simulation lab for their first simulation. All of the participants commented on the lack of preparation for this first simulation. One student commented on wanting to use the simulation for practicing skills and not use it for performance in any way. Mindy felt that the simulation should be for practice and not like an exam where you are expected to perform a certain way. “I would like to do it more often, and not be so on the spot. It should be practice, not that you’re going to do this and everyone’s going to watch you.”

As previously stated all of the students describe the frustration of not knowing where things are in the simulation lab got in the way of doing tasks more efficiently. Students did not spend much time in the simulation lab before, during, or after clinical time. Sonya explains that not knowing where things were became extremely challenging.

It was actually kind of difficult. I mean I know it set out to put you in the situation that you're not used to so it makes you think a little bit, it's actually quite an uncomfortable situation because you don't know where anything is and everything is really unfamiliar to you. Because we had a quick overview of the room, you know, prior to starting classes but, you know, nobody is really familiar with, and of course you're uncomfortable and you're nervous and it's like, oh now I can't find anything.

It was noted in observation and in the interviews that the first simulation attempt was challenging for students because of the lack of preparation. Students Madilyn and Mindy were going through draws trying to find O2 equipment (observation April, 15, 2015). These students did not know the environment or where the equipment was and they had not spent much time working with the simulator, which contributed to the feeling of disorganization. Madilynn described the disorganization this first time going through it not knowing where things were.

It was our first time really doing it so I feel like us as a group, we were a little bit disorganized, but everything was in the room like it should have been and where it should be, but we just didn't know where it was.

One student participant explains that the reality in healthcare is that they will not know what to expect with their patients on most days in the real environment. Casey justifies that the

not knowing is also an important part of the learning; despite that, she would feel more prepared if she had done more simulation prior to this day.

In healthcare you're quite often going to walk into the unknown, but like for a simulation, like a skit, or role-playing, if I know a little bit, I tend to be more comfortable because I feel very on the spot otherwise. Whereas walking into a patient's room I don't feel that necessarily, because I don't necessarily think I have someone looking over my shoulder. I think it would have been helpful to do simulations earlier because I think we would have had, you know, that higher comfort level.

Bessie and Sonya thought they should have been doing simulation on a regular basis to avoid being stressed. She and all the participants think having done more simulations would make them more at ease where they could actually have some fun with it.

It feels really stressful for all of us. I mean, you feel like if we had been doing that regularly throughout the year, at this point, we might be more comfortable and we might find it fun, and I realize that the goal of this is to make it a little, I mean, they try to make it fun, and, you know, just in the learning, but I feel like, at this point, we're still so stressed by it that no amount of enthusiasm from the instructor is going to make it a good time.

Sonya explains that more time doing simulation would relieve the feelings of nervousness and lessen anxiety if they knew what to expect and be more familiar with what simulation was like.

I think we really need more simulation time so we're more comfortable. I know that we understand that this is to put us in an uncomfortable situation and make us think but to be

more familiar so we're not intimidated with the room when we walk in, to be, like, oh, you know, this is the sim lab, we're used to being here. I just think, you know, and even if it's just a few times in the simulation I just think it would be better for us.

The time students had preparing for their roles in the simulation was also important to them. Prior to the combination simulation, students were brought in a room where they had time to review the scenario in detail as well as plan who would take each role. Casey felt that preparing ahead during the pre-simulation time on who would be doing what in the scenario was less stressful for her. "Having twenty minutes at the end of our pre-sim, where we were able to discuss it all and kind of figure out who was doing what, it certainly helped alleviate some of that apprehension."

While observing students in the combination simulation, they clearly had more time planning the scenarios for the combination simulation and what each student's role would be in the simulation. Students were at a large conference table in a large conference room, reviewing their scenario and their roles. Faculty was there guiding them (observation April 28, 2015). The students described the combination simulation as being intimidating but somewhat easier having had a prior simulation experience. Madilynn as well as Mindy and Karen felt more at ease at the second simulation with the ADN students. Madilyn explains this well.

I felt a little intimidated still, because I'm like, oh, I'm with all these ADNs and I don't want to mess up, and they'll be like, what is she doing? You know? But I felt like okay, I know what at least I'm getting into. I know what to expect.

Madilynn described that they were more prepared working with the RN students but that she would always have some level of anxiety going into a simulation.

Overall it is a good experience but I still think every time I have to go in that room I'm going to be really nervous. Going in and being with a bunch of people that we had never even met before was, was very intimidating. Some, some of the instructors that were there, we had only met at orientation. We had no interaction at all, so you're just kind of thrown into the shark's tank with a bunch of people that you don't know. Which is scary in itself, but then you have to do a simulation, and everybody's relying on you, and it's hard.

One student explains that having new instructors in the combination simulation was good since not having their own instructor there watching them was less stressful.

It was nice to have the instructors there, because it almost felt like, you know, Professor Kyle wasn't watching us, and like having that extra pressure of your own clinical instructor, even though it's still a little bit of pressure because there are two clinical instructors.

Casey felt that she enjoyed the combination simulation the most out of all of the simulations. She also thought that the time with the RN students was important since they had been in a previous situation before so knew what they were going through.

I think I've actually enjoyed the combo-sim day more. Because I was more comfortable in the situation it being the second time through, but, it was also really nice to be able to work with the RN students. They may have been out in the field longer. They've got more of that experience, but yet, we know they're still in that same position that we are, and that they are learning new techniques. We're learning everything. We still have that student role.

Of particular importance was that the LPN students noticed during this simulation that the RN students were just as nervous as they were, which helped put them at ease. They did not expect the RN students to be nervous and realized that despite having previous experiences in simulation, some level of discomfort is normal. Sonya realized that the RN students were also nervous and uncomfortable. “I was actually surprised that the RN students were as uncomfortable as we were. I really expected them to be much quicker with things and more familiar, and they were as uncomfortable as we were when we did ours.”

Bessie felt the combination simulation was intimidating at first, but overall had a good experience with the RNs and instructors.

At first it was a little intimidating so we were a little intimidated that they were going to make us feel less than adequate, compared to them, but, the group that I was with was extremely supportive, and they were really great people to work with, so, it turned out to be an extremely positive experience.

Students noticed that the RN students had just as much anxiety as they were having, and this was important to them because they then realized that this is an expected feeling. Madilynn describes that being watched in the simulation is uncomfortable but necessary to learn how to care for the patient.

But after watching and being in with the RN students the second time it's, like, ok this is supposed to make you nervous and make you uncomfortable so you think out what you're doing and then when you're in this position again you're like, I did this in sim, this is nothing.

Sonya realized that the RN students were just as nervous about being in the simulation and that the complexity of the simulation was going to be increased. “Seeing that the RNs were as uncomfortable as we were when we did ours it was, like, ok, you know, you’re not supposed to be comfortable in this situation and that’s a good thing.”

Summary. Preparation was found to be important for students and faculty. Preparation described in this study included preparation questions prior to the simulation, and preparation of being in the environment with the simulation manikin. One first step in the preparation for simulation is the pre-simulation paperwork, which prepares students for the simulation scenario. The students were given preparation questions prior to the simulation day, so that they had some knowledge of the patient condition and medications or treatments expected. Most students in this study wanted more time spent on these preparation questions, and also want to have them available to them during the simulation. At least one student and one faculty felt that an extensive preparation is not necessary and that some level of the unexpected is appropriate and necessary. Faculty described that the manikins are faulty and that this contributes to students feeling unprepared. However, faculty also admitted to not giving enough time in the simulation lab to familiarize the students with the manikin sounds and challenges. Faculty also felt more time on the preparation questions would be helpful to students. Overall, both students and faculty feel more time preparing students in the simulation lab with the manikin and more time reviewing preparation questions allows students the ability to perform more effectively in the simulation.

Theme 4

Cueing as an Intervention

This theme describes the intervention of cueing that faculty provided during the simulation. Jeffries and Rodgers (2007) define cues as responses or actions that “offer enough information for the learner to continue with the simulation but do not interfere with his/her independent thought (p. 29).” INACSL (2011) defines cueing as “information provided that helps the participant progress through the clinical scenario to achieve stated objectives (p. S4).” Despite these definitions, what remains missing is an additional description of what this information means and how cues should be executed in simulation.

Cueing was felt by participants to be helpful but at times they would rather have to struggle to figure it out on their own. Participants felt that cueing during the simulation was both a positive and a negative for their learning.

Cueing was used from the faculty to keep the simulation going at points when students either could not find things or when students were stumped on figuring out equipment. This type of cuing is called conceptual cuing, and provides information to move the students forward in the scenario. Cueing, in this respect, is a form of instructional support with the intent to provide the learner further information or feedback that will move him or her forward in the scenario to reach instructional objectives (Paige & Morin, 2013).

Cueing can be delivered in one of two ways—with equipment or the environment. Cueing can also be delivered through role responses planned by the simulation facilitator. “For example, a manikin programmed to increase urine output reflects the pharmacologic response to a diuretic” (Paige & Morin, 2013). In addition, the manikin can make statements that cause the

learner to do a task. For example, I am feeling dizzy and lightheaded, which may clue the student to check the vital signs again.

Table 10: *Cueing*

Context:	Faculty Responses:	Student Responses:
Cueing during simulation	Balancing when to help	Appreciated the help Wanted to think through challenges

Faculty response. In one of the first simulation scenarios, students were having difficulties on doing the vital signs on the simulator manikin and could not get a reading. Faculty let students struggle to hear the vital signs for some time before saying, Here are the vital signs and let's move on.

Mindy explains that she felt anxious when she could not obtain the vital signs on the manikin during the simulation. "I remember being the first one to try to listen, the manikin wasn't even on, so I couldn't find the pulse or blood pressure, so that threw me off, because I thought that was a part of the simulation." The faculty finally jumped in over the microphone and told the student what the vital signs were. "Go ahead and continue with these vital signs."

At another point, students got hung up on the intravenous medication and how to hang it. The student was not able to assemble to equipment needed to hang the intravenous medication and give to the patient. The student struggled through the process of hanging the medication for at least 10 minutes before the faculty offered cueing to move the student past this point. Faculty went on the microphone and said, "Don't worry about giving the medication."

Faculty let them struggle for some time and again jumped in to get them moving along. Students thought cueing was helpful especially for the first simulation, but after that it was not as important to them since they had been through it once.

Student responses. Conceptual cueing helped with the frustration students felt using the equipment. At two points during the simulations, students were held up by equipment issues or just not being able to figure things out, and were not able to progress through to the next step. Cueing was used to move students in the right direction of what task or intervention they should try. Students felt that the faculty correcting them was necessary, and that this was important for the first simulation; but they wanted to think through the steps they would take in the second and third simulations. Student participant Karen explains:

Cueing the first time through you know was helpful without really knowing what's going to happen and the second time you can kind of correct your actions. But by the third time it was just basically repeating what we did the second time. She kind of hinted around like that we needed to get going with the IV because we would put the head up and we gave the oxygen and gave the neb but she's like, oh my, you know, chest feels tight and, so we needed to intervene further.

Students thought that the help from faculty was important since they were stuck on trying to figure things out with the medication and setting up the IV equipment. Another student, Bessie, thought that even more time to think through the scenario would have been better for her. She states:

I feel like she gave us some time, but then when we got stuck, like you said, she did kind of try to redirect us in the middle of a thought, and maybe, I mean, in reality, as a nurse, we wouldn't have someone pushing us saying okay, well keep going. So I feel like maybe we could have been given a little bit more time to work through things, because it is a learning experience, and we need to learn when to just keep going, when to move on, when you're stuck on something.

Madilynn also discussed the benefits of cueing. She explains that faculty called it a message from God.

She would tell us, you know when the pulse ox wasn't working correctly, or something, and she would yell out the pulse is 98% something like that, and that the IV wasn't correct, or she would yell out, just pretend it's there and you're hooking it up you know, because not everything can be real in a simulation, so that was helpful.

This student wanted more time to think through the challenges of the simulation before faculty would jump in and move them along.

Summary. Cueing and guiding students through challenging parts of the simulation was thought to be both a positive and a negative for students and faculty. Cueing is an area that was found to be important but not well-understood. Some students felt that they wanted to be helped through issues with the simulator, so they then would know it was not them having trouble but the simulator was at fault. However, some students wanted to struggle through it so that they could figure it out themselves. For the faculty, cueing students was helpful to both move the

scenario in the right direction and to limit frustration in students having challenges with equipment or technology such as vital signs, or setting up equipment.

Theme 5

Structured Debriefing

This theme describes how participants viewed the debriefing process. Both student and faculty explain that the debriefing was helpful to student learning, and reflection on the positive and negative is important to review. Student responses of how their simulation experience went is important for several reasons, including how they felt about role playing, decision making, skills, and learning outcomes.

Debriefing is cited to be a key element in simulation and offers the opportunity for students to review their choices in care and decision making (Aduddell, Bennett & VanGeest, 2006, Nickerson, Morrison & Pollard, 2011). The importance of debriefing makes this finding significant.

Table 11: *Structured Debriefing*

Context:	Faculty Responses:	Student Responses:
Debriefing and reflecting	Support, feedback	Uncertainty Wanted more feedback

In this study, students in debriefing were engaged in reflecting on their experience and how they felt it went; however, there were some improvements suggested to facilitate greater learning from students. During the observations of the debriefing, faculty brought students in to the debriefing room in a circle-like fashion. Each student was asked to rate their comfort and then discuss what went well. It was noted that the faculty had a checklist with her. This checklist

was a list of skills or completed tasks that students did or did not do (observation, April 15, 2015).

One student participant, Michelle, describes that the faculty did a review of what she had on her checklist. “She went through the checklist that she had of what we did and didn’t do and that was helpful to know the good things that we did along with some of the critique.” Students explained that the faculty used a checklist of skills that were done or not done.

Faculty responses. Faculty participants in this study were highly supportive and offered subjective feedback regarding student participation in the simulation. Faculty responded to any negative comments by offering some positive feedback to students to assure them that they did do many of the correct interventions during the simulation. Faculty offered support in the debriefing to the students. Faculty Kyle describes specific details to this student.

I think, actually you got to starting the IV and you got farther than a lot of groups in the past get. For the first time through, I know it feels slow but for a new environment, um, you were on it in many ways. And it will take, it would take doing it a number of times in this environment before you could really get so that you’re feeling like, yes. And a number of things were problems with me getting it to work.

Faculty gave students positive and supportive comments to help them realize that they did complete many of the important tasks to successfully care for the simulated patient. Faculty Mandy discusses offering student’s positive feedback during the debriefing, but also what she would like to include in debriefing in the future.

I wonder if you started a debriefing with just sort of a quick overview of this was the scenario, and here were the points, the major points that we were looking for. And then let them kind of talk it out, like, well, what did you do right, or what would you, you know, and just let them talk through it, but make sure each one person has a chance, because you always have those quiet people, but just let them reflect oh, I got that and that right, but I missed this one entirely, or whatever.

The faculty described ways to cover major points of the simulation scenario with students in debriefing and how she could include every student.

Student responses. In the debriefing, students described their comfort ratings of the simulation. They said that faculty reviewed their reflection of what went well and what did not, and what could they have done differently. In this study, students felt that faculty promoted a positive and supportive debriefing. One student summed it up well.

It was more along the lines of us self-evaluating, you know, what you think went well, and what you think should have been done better, and then after we had voiced our opinion of the situation, then she said, okay, these are a few things that I noticed, both positive and negative. She gave us the opportunity to evaluate ourselves individually and as a group before she pointed out her view of it.

Students felt that faculty gave them each a chance to describe their experience and then offered them a summary of their view of the experience.

During the interviews, students discussed the questions used in debriefing about what went well. When told they did appropriate interventions, they felt good about the simulation in the

end. Karin describes that they were asked about what went well, and what did not go so well in her debriefing. Students were encouraged to reflect on the things they did remember to do or decisions they made that were positive.

As Jeffries' (2007) model suggests, debriefing is a key factor in student learning outcomes and a place for students to review their actions and choices. One element found in the literature that supports student learning is allowing students to reflect on their experience by explaining, analyzing, and synthesizing, and to process their emotions to be better prepared for similar real life situations (Rudolph, Simon, Rivard, Dufrense and Raemer, 2007). Student Madilynn enjoyed the debriefing and felt it was a positive experience. She felt it was a good way to review both the positive and negative parts of the simulation. She describes the debriefing.

And during the debriefing, they not only pointed out, you know, they first started off saying, what went wrong. They said, you know, what went right? What did you like? And each person said something that one of the other, you know, co-nurses did that was positive. It wasn't just all about the negative, like what went wrong. You know, it was more, what went right and what we could do to make it better.

Mindy explains that the faculty reviewed what went well and that they did do things right, which reinforced her confidence in her ability. "She reiterated that we did well with the scenario. We did all the right things. We were nervous and we did know the appropriate things to do, so, or that we did better than we thought." This student felt this positive support was helpful for their confidence. Another student described the debriefing as being positive. Karen describes her experience as learning how she can improve.

What did you like? And each person said something that one of the other, you know, co-nurses did that was positive. And that's something that they can brag about so. It wasn't just all about the negative, like what went wrong. You know, it was more, what went right and what we could do to make it better.

This student felt the debriefing was meant to be a positive review of the simulation. She thought it was more of a review of what they could do better for the next time. Students wanted to be critiqued and to be given feedback on their skills and decision making. Sonya thought the debriefing was helpful to review what they did well but also to think about what they might have missed and could have improved upon for the next time.

I think it was helpful because it let us re-think what we were doing and, you know, so that we could say, you know, these were our strong points and this is what we really needed to work on. She made us think, you know, a lot about what we thought went well and what we thought we needed to work on, rather than her saying, well, you did this and you did that. That way it let us reflect on what we thought.

Students liked the supportive way that faculty offered feedback. Despite the supportive and positive nature faculty provided in the debriefing, students often focused on the negative aspects of what they did not do right or about their nervousness. Two students felt ill prepared and shared this in the debriefing. "Because I feel like he was sitting there gasping and I didn't know where the oxygen tubing was and I didn't know where everything was and I felt like I couldn't help him."

In this study two students felt it would be helpful for them to have a checklist of some type to offer them the ability to reflect on their strengths and weaknesses. When asked about specific

feedback, Michelle says she was completely passed over in her debriefing and felt uncomfortable because she was reviewing with other students what had happened.

I guess it would be nice to have more feedback, the second time around I felt kind of awkward because she went around the room and, like, we were talking about, you know, teamwork and whatever, what we saw, times when we saw really good teamwork. And she went around with everybody and said something, you know, and you did this good and you did this well, and totally skipped over me.

Student Casey suggested bringing the care plan into debriefing as a way to review what was done for the patient and the family members. This was also suggested by another student. Casey suggests:

I think would have been really helpful was in debriefing, to maybe take a little more time and kind of bring in the care plan aspect of involving the family members, because it is something that we've got into since the sim lab, is that we're not just doing—the care plan is not just involving the patient, or the pediatric patient, we're also involved in the family members, and what they may need to learn, and I kind of wish we had touched on that a little bit.

Mindy also mentions bringing the care plan aspect into the debriefing. “You teach us about the nursing care plans and that would be a way to evaluate what we are doing and we're supposed to go back and evaluate what we've done, that piece was kind of missing for me.”

Bessie was one student who was not feeling very confident in the simulation and did not feel being asked what went well or did not go well added to her experience. She wanted more of a formal feedback process where she was being critiqued.

I wasn't feeling incredibly confident about it, and hearing the feedback saying that we had done well it really hadn't taken as long as we'd thought it had to get the patient stable and comfortable. I feel like the debriefing should have been more of this is what you should have done, or maybe you could have done this differently. I feel like that would have been a lot more helpful, so that the next time that we're facing that kind of a situation in clinical, we can say, well I remember in simulation she said we should have maybe tried to do it this way.

Mindy also left the debriefing feeling something was missing and she would like a process where she is given a list of what she did right and wrong. She thinks it would have been more helpful to review the pre simulation questions to see if they did the right interventions. She also wanted a review of the scenario being done correctly.

You know I think it would have helped my learning, to actually, to go over the pre-work, and tell us what's right or wrong, because I still left not knowing whether we did it right or wrong. I mean some aspects of it they told us. You know, because I asked whether I think clinically that you noticed that we did wrong, but I think it would help me if they actually went over the scenario in detail.

This student wanted a more detailed or formal review of the simulation and a review of the pre simulation questions to understand what she did right and wrong.

During observations, students were often complimented and reminded of the positive steps they took during the simulation. They were also encouraged to improve in some of the steps in the care of the patient. Faculty Kyle commented at the end of the debriefings, "OK are you ready to go back in and do this again now that we reviewed some of the interventions or

improvements you might make?” Faculty was supportive, and made suggestions of how they could improve.

Summary. Students had positive things to say about the simulation debriefing. All of the students felt it was good to review what had happened; going over what went well and what did not go so well was also helpful to them. Most of the students wanted to review the paperwork at the beginning or end, to summarize what could have been done that they missed, like going through a checklist of some sort. One student mentioned that a review was something she would benefit from, as a critique of what she did or did not do. This student thought that this would be a way to be evaluated, so that she had something tangible to use to guide her. While the faculty member did have a checklist, she did not share or give it to the students to review during the debriefing. Debriefing is meant to be the time when students reflect on what they did well, and the emphasis in most simulation trainings is to focus on the positive so that students feel good about their experience and do not feel a sense of judgement.

Chapter 4 Summary

This chapter presented the five themes discovered to be significant by this study. Themes were organized according to Jeffries’ (2007) framework. Three focus areas in the framework were used: educational practices, outcomes, and design. The five themes that emerged from the data analysis included: repeating the simulation, anxiety levels of students, preparation of students, cueing as an intervention, and structured debriefing. Data included findings from observations, interviews, and document analysis that revealed participants’ perceptions of their

experiences in the simulation process. As is typical of qualitative research, extensive sample quotations from the participants were included.

Repeating simulations was the first theme that was identified as a critical element in design of the simulation. Repeating allowed students to gain confidence by first watching another student, or as mentioned a faculty member could role model the first simulation as a way to improve student confidence and engagement. Repeating also lessened anxiety among students, allowing for improved skill acquisition to meet learning outcomes. Designing the simulation to allow for role modeling by planning ahead to show students how the simulation could play out would allow for success. Students should have the opportunity to practice their skills during the simulation without the barriers of fear, anxiety, stress, and unrealistic expectations.

The second theme of anxiety, which could also be named fear or stress, is very real in the simulations of students. The anxiety causes students to have reluctance in their approach to participation in the simulation, and a loss of previously learned skills. Students discussed many causes of anxiety—including a fear of the unknown, being put on the spot, being watched, not sure of expectations of them, a lack of practice or experience with the simulator, and if put with peers of higher levels, they felt inferior. Several design elements are suggested as ways to reduce student anxiety in simulations, including more time with the simulator manikin and more time in the simulation lab. Other important design elements include role modeling either by other students or by faculty, having students go behind the viewing mirror to observe, and allowing them to bring in their pre-simulation paperwork.

The third theme, preparation, which also involves design elements and educational practices. Students felt they needed more time with their preparation questions, reviewing them and if possible having the questions and answers with them during the simulation. Students also

wanted more time in the simulation lab and with the manikin, with more simulations prior to this first one. They explained that this would offer them familiarity with the manikin, equipment, and supplies. Faculty are split on how much preparation is needed ahead of time and during the simulation; however, both felt that some level of preparation is necessary. One faculty felt that more preparation would alleviate fear and anxiety and improve performance of students, while the other faculty believed the unexpected is better and more realistic for students.

The fourth theme of cueing, an educational practice, was found to be important and valuable for both students and faculty. Students felt that in the first simulation, cueing was most important but that after that it was not needed as much. Faculty felt that cueing is necessary to move students through the simulation when they get stuck on either equipment or challenges in the simulation. Both students and faculty felt there is importance in allowing students to struggle through the challenges, but how much time to struggle is a matter of debate. Neither group could identify how much time was best. Cueing is important for the simulation process in many ways, including when students struggle in an area or when faculty wish to emphasize a teaching moment.

The fifth and final theme is in the debriefing process of the simulation. Debriefing has been identified as a fundamental element in simulation for design and for student outcomes. In this study, observations and interviews revealed that students were generally happy with the debriefing experience; however, some of the students wanted more of an understanding of what they did well and what they could have improved upon. Two students suggested that a checklist would have been helpful, and other students wanted more individualized critique of their work during the simulations. Two students suggested using the patient's care plan as a way to review how the care of the patient went.

Chapter 5: Themes and Conclusions

Purpose of the Study

The purpose of this study was to explore best practices used during simulation and the debriefing process in nursing simulation. This study looked at perceptions of students and faculty regarding participation, instructional effectiveness, decision making, design of the debriefing, learning outcomes, and engagement. This researcher believes that a better understanding of faculty interventions, guidance and support during and prior to simulation and debriefing will provide a guide for future faculty to facilitate this frequently used pedagogy. This study explored the overarching question of how can faculty interventions and support during the debriefing phase of simulation lead to improved learning in nursing students. A focus on debriefing was intended; however, other findings related to design and planning became evident.

This study revealed five themes found in this study, which included: deliberate practice, anxiety of students, preparation of students, cueing as an intervention, and structured debriefing. These five themes are reviewed in this chapter for significance to the nursing community and profession. Each theme is discussed in relation to what makes this finding relevant to nurses planning simulation. Since simulation is an integral part of all nursing programs, these findings suggest changes in the design and implementation of simulation practices. The chapter then follows with a discussion of the researcher's recommendations of the study for future research.

Conclusions of the study

Deliberate Practice. The first theme in this study showed that deliberate practice was significant in developing confidence and skill acquisition in nursing students during simulation. In Jeffries' (2007) simulation framework, learning outcomes are met when effective teaching strategies and design characteristics support learning outcomes. Deliberate practice is when

students repeat the simulation scenario more than one time. This can be done by repeating the simulation two times or several times, depending on the time allowed for simulation or factors like student groups and learning goals. Students and faculty felt it was important to repeat the same scenario, to gain success in learning the planning and skills needed to effectively care for patients with conditions previously taught in the classroom setting. Students felt that repeating allowed them to be successful and to review the steps taken previously. Faculty felt that students improved, and felt good about the simulation when they were allowed to repeat the same scenario.

Changing roles. Designing the scenario to allow students to be observers and family members before being the primary nurse allows for role modeling and skill acquisition. Changing roles and repeating improved transfer of previously learned concepts by allowing students to practice the skills instead of a one-time observation of their performance. Designing the scenario to allow students to be observers and family members before being the primary nurse supports student success. Additionally, instead of focusing on mistakes made, students can instead focus on successful interventions made during the simulation.

Based on the data from this study, anxiety levels were much lower for those students who participated in the scenario in a role other than the lead nurse. Being in support roles such as assistant nurse or family member and repeating lowered anxiety levels when students performed the scenario at least once before being in the lead role. Therefore, one theory of best practice we can ascertain from this study would be to create situations where the instructors or other practicing nurses participate in the first run-through of the scenario as the lead nurse, and the students are all given supporting roles. This would offer a supportive environment to the student nurses, and would better prepare them for taking on the lead role to be successful.

Blending students. Students explained their perceived benefits of working with the RN students and other instructors of those students. They described that it was helpful for them to see the RN students perform and role model correct behaviors during the simulation. Another best practice would be to have students work in unfamiliar groups, which in this study provided them some realistic practice using their skills in an unfamiliar setting. Working with the RN students offered opportunities for the LPN students, such as team building, role modeling, diversity of roles, and support by students.

Faculty found that blending students was important so that the LPN student could see the roles they would be play in the next year of their schooling, and how the LPN could function in a patient situation with an RN. Faculty could plan simulations that offer students collaboration and teamwork opportunities, and time with the RN students where they can ask them questions in a peer-learning environment. Students in this study gained valuable experience by practicing their skills with other student groups, and by participating as a team member in a more advanced scenario where higher level thinking skills were needed. Blending students showed that higher-level critical thinking skills were used by students in these combination simulations.

Critical thinking. Critical thinking has been shown to improve in repeating simulations (Goodstone, Goodstone, Cino, Glaser, Kupferman, and Demper-Neal, 2013). Students explain that critical thinking was important to them, and most of them felt that the simulation with the RN students offered them more clinical challenges. Students felt that repeating also helped them with critical thinking. Students felt that when they had more opportunities in simulation, they had time to think about the many skills that they would be using. Moving from simple skills to more complex skills during the simulations was described as providing more critical thinking.

Anxiety. For the second finding, the study suggested that there was significant anxiety in the nursing students, especially during their first simulation. The presence of anxiety in nursing students in the clinical setting has been well-documented in the literature (Sharif & Masoumi, 2005, Shipton, 2002). Jeffries' (2007) framework includes student support but does not specifically mention anxiety. It will be important for faculty to structure and plan their simulations to decrease the level of anxiety as best they can in order to support students in this learning method. Some ways to do this include having a student observe the simulation behind the one way viewing window which was described as an area of concern for the students. This may help reduce stress and give some context of what is happening behind the viewing window. Having faculty role model being the lead nurse can minimize the feelings of being watched described by students. Study results suggest that anxiety can be relieved with more time and orientation in the simulation environment, and more time spent doing simulation.

Fidelity of the simulation must be considered and planned for when designing simulation. This study suggests that both students and faculty had ambivalence in working with the manikin and the technology. Students struggled with the sounds of the manikin and how they were different from real patient sounds. Faculty expressed concern over the challenges that the manikin provided students, and that these challenges caused anxiety and stress, making it difficult for students to feel successful. This study suggests that several sessions would be needed to familiarize students with the manikin prior to a full day of simulation. This extra time can offer comfort with the technology that students explained would be necessary for them to feel confident with the sounds and providing care of the manikin patient.

Lastly, it is important to mention that some level of anxiety may always be present despite design and preparation, because of students being watched and having to perform in front

of other students and their instructors. Both students and faculty mentioned that they expected some anxiety in simulation. However, how much anxiety to expect and how much should be avoided warrants further investigation.

Preparation. This study suggests the importance of preparing students by getting them familiar with the room and manikin, so that their experience is enhanced and not impaired due to a lack of locating and working with equipment. Preparation for students includes both the pre-simulation paperwork and the knowledge of the simulation lab, equipment and supplies, and lastly the manikin. Students and faculty felt that more time in simulation and the lab would be of benefit to students for both their confidence and comfort in simulation. This time would allow for enhanced learning of the objectives and learning outcomes for students.

Students in this study mentioned several times that they would like to review their preparation questions with the faculty instructors before the simulation. This review would give students validation that they have the right answers about the patient scenario, and that they have prepared for the care of their patient. This study implies that the time it may take to do this will be time well-spent for success of the students in the simulation.

Spending time in the simulation lab and using the equipment several times prior to the simulation day was significant for students. Students felt that they would rather spend less time trying to find things and more time giving care to their simulated patient. The study suggests that several days of orientation or practice in the simulation lab prior to their first simulation would benefit students, and would gain them some familiarity with the room and where things are located. As previously mentioned, knowing the manikin, especially the sounds to expect from the manikin, was also found to be essential for success of students in their simulation. Students

should spend a minimum of two hours each week during their clinical hours to become more familiar with the room and equipment.

Cueing. Cueing was provided for students to allow for the simulation to flow, and for students to have help when stuck on equipment challenges. The type of cueing provided was conceptual cueing, where students were given information so that the simulation could continue. One student got stuck on getting the vital signs because of not knowing or understanding the manikin sounds and had trouble hearing them. Another student got stuck on hanging a medication, because of not knowing where to find equipment or how to find the information on the drug. Knowing exactly how long to allow students to struggle or think through these challenges was not determined in this study. This study suggests that both too much time and not enough time may alter students' thinking and learning, and that more information is needed on the amount of time students should be allowed to struggle or think through the challenges of the simulation.

Structured Debriefing. Debriefing was an important element in the simulations in this study. Students were allowed time to reflect on their choices and decisions made during the simulation. This study suggests that students wanted more feedback using a formal process or checklist. They wanted to find out more about what they could have done differently to improve.

In this study, students were allowed to reflect on what was done in the simulation. This reflection was critical in the students identifying how they thought about what steps they chose to take. Students were able to explain some of their choices in care and where they struggled. Students described this as being helpful to their learning. However, it was found that students wanted a formal method to review their choices in care. A checklist was mentioned by two

students as a way they could go back and think about what was checked off on the list and what they may have missed. Two students mentioned wanting to use the care plan as a method of reviewing their choices of tasks that they did.

It was discovered that faculty were supportive of the students, and offered compliments and suggestions; however, the students felt that they needed a checklist or a form to help them remember how to improve their performance during the next simulation experience. They felt the direct feedback or critique by the faculty was critical in their learning about what they could do better.

Recommendations for Faculty Educators

This study has shown several areas of importance for faculty to consider when designing and planning simulation with their nursing students. These will be discussed by themes as mentioned above.

The first theme is deliberate practice. It was found that designing deliberate practice is necessary. Having students repeat their simulation over was found to be significant for their learning. A plan to rotate students in a variety of roles and repeating the scenario would be suggested. Students showed improvement in their skills and a reduction in anxiety when they changed roles and did the scenario over again. Students felt better when they were in supportive roles versus the primary role during the simulation. Planning to put students in a supportive role first will be important. Lastly, blending the RN students with the LPN students showed some value. Students felt they could learn from the RN students and that they watched them perform and felt this was helpful to them to see. The students also felt that interacting and developing relationships with the higher-level students was significant.

The second theme found was anxiety. Students were extremely anxious and fearful when in the simulation. This anxiety was due to several reasons: not being prepared adequately, not knowing where to find supplies, not understanding how the manikin worked, not knowing how to use equipment, being put in the lead role, and being watched behind a viewing mirror. Addressing all of these prior to the simulation will benefit students.

Fear and anxiety were a challenge for students. Students in this study were anxious and fearful, due to knowing they were being watched and evaluated. They were being watched behind a viewing mirror and this made them uncomfortable. One possible solution to reduce the fear is by rotating students behind the viewing mirror to watch the simulation. Another way to reduce anxiety would be to allow students to have their preparation questions with them to reference.

Students described wanting their preparation questions reviewed and wanting to have them available. Lastly, allowing students who demonstrate anxiety to watch the simulation before performing would accommodate learners who show significant signs of anxiety or stress.

Preparation is the third theme. It would be important to plan an appropriate amount of orientation to the simulation lab and equipment, where students would spend time getting familiar with the room space and how to locate items they may need. This orientation needs to be timely as well, so that when students are scheduled to perform in a simulation, this orientation is fresh in their memory. Students need to know where to find equipment, so maybe a list of where supplies can be found would be helpful.

Students mentioned several times that they felt inadequately prepared for their simulation experience because of not knowing where basic supplies were located, not knowing the details of

the manikin. A review prior to the simulation of the supplies needed during the simulation may help students. A good review of how the manikin works, the details and challenges of the manikin are important. One example of this is to review the manikin sounds and what to expect when handling it including how the manikin feels.

Cueing was found to be important in the simulation; however, how much cueing is of debate. Students felt that cueing was good, but also wanted to struggle through the simulation by having time to figure things out themselves. Faculty felt cueing was necessary when information should be shared, or when students need to progress to the next point in the simulation scenario. Despite finding cueing as important, there remains a lack of understanding of how much cueing or how long students should struggle to make decisions.

Structured debriefing was found to be a significant part of the design of simulation. Faculty must consider structuring debriefing so that students: 1. Reflect on their experience; 2. Have something the student can leave with such as a checklist that offers feedback; 3. Allow students to leave feeling good about the experience; and 4. Gain knowledge of nursing care based on the objectives of the simulation.

Summary of Faculty Recommendations

In summary, several recommendations are offered for faculty to consider based on themes found from this study. The first recommendation is to use deliberate practice two to three times to promote success. Students should be in supportive roles for the first time participating in simulation. This can be done by having faculty or an RN student perform as the lead nurse the first time, and then allow the student to be the lead nurse. This will decrease anxiety and allow for confidence and success as well as enjoying the experience.

Blending students was found to be successful, and may have added benefits of networking and socializing students to the role of nursing. It was also suggested to move from basic to complex with the scenarios, so that students could progress in their understanding and further their critical thinking skills.

The second recommendation is to prepare for some anxiety, but to do as much as possible to prevent it. Prevention can be done by several steps, including preparing students by reviewing and practicing the details of the manikin, the simulation lab, and where to find equipment. Use familiar equipment so that students do not have to learn additional new skills on top of the simulation skills required. Review preparation questions and allow students to keep them during the simulation for reference. Faculty should offer cueing during areas of challenge, or when students need help from their instructor. Faculty must be allow enough time for students to think through the challenge before intervening.

Lastly, in debriefing students should be allowed to review and reflect on their experience as well as leave with an understanding of the skills and critical thinking that was expected by them to perform. A checklist or guide for them to take home was suggested. A way for students to know how they performed and what the scenario could look like was also suggested.

Suggestions for Future Research

A thorough examination of this study provides insight into relevant future research. Further research would benefit from examining faculty design choices—especially student preparation, anxiety, and comfort with the simulation equipment and lab setting. Further research would benefit from deliberate practice, and how changing roles and repeating could benefit

students as it relates to learning outcomes. Lastly, future research would benefit from cueing as an intervention in simulation design and planning.

1. Quantitatively, it would increase the research base on this topic by having a larger sample size of students. Having a large sample size with the use of the Reese instrument, or another survey that involves questions about faculty support and effectiveness, may show different findings of design and preparation of the simulation.

2. Quantitatively, a larger sample size of students participating in simulation, using an instrument to determine levels of anxiety and preparation of students before and after the simulation, would help to determine the significance of anxiety in students and how it correlates to preparation.

3. Qualitatively, this study could be replicated by using several sites in the program with a group of students from each site. Additionally, RN students could be used instead of LPN students, thus allowing for a comparison of each group. A focus group could be used in a subsequent study to show how students may agree or disagree on areas of importance of the simulation.

4. Qualitatively, it would be beneficial to study teachers or faculty preparation in delivering this learning method. Teacher preparation could be studied and teachers or faculty could be surveyed and interviewed on their perceptions of readiness or preparation in delivery of simulation.

5. Qualitatively, it would be beneficial to explore the first year student during simulation and the second year student during simulation to compare the preparation and anxiety levels.

5. Qualitatively, it would be helpful to study the choices of design of simulation. Faculty that deliver simulation vary in the types of simulation they provide. For example some offer smaller short and more frequent simulation scenarios, while some offer longer multi-faceted simulations with several roles and several phases. Investigating why faculty choose one simulation design over another and if these designs are successful would be helpful.

Chapter 5 Closing Summary

This chapter reviewed the five themes discovered in this study. These themes are described and related to how the practice of simulation can be impacted.

Deliberate practice or repeating scenarios over in this study was found to be important for best practice in simulation, because it offered students the ability to refine their skills and decision making. The experience of anxiety was found to be significant for students and was described as being relieved or minimized by several factors found in this study.

Anxiety was relieved in students when they had more than one experience with simulation, when they were prepared by knowing their roles, when they were given opportunities to learn by example with role modeling from their peers or more experienced nurses, and when they had more practice with the simulation lab, equipment, and manikin. Suggestions for designing this in the simulation plan was described. Anxiety and preparation were exceedingly connected in this study. Faculty was intentional in using deliberate practice and in blending students as interventions to the anxiety, but did not fully address or eliminate the anxiety.

Cueing as an intervention was used successfully in this study when students needed help with sounds and actions made by the manikin during the simulation. Faculty used cueing in situations where students were unable to complete a task or move to the next step in the scenario.

This was found to be a useful intervention for faculty; however, cueing should be further investigated to determine the correct amount of cueing or appropriate timing of cueing.

Finally, structured debriefing was found to be minimal or lacking in this study. Students were supported and encouraged to reflect on their simulation experience; however, the lack of feedback on their skills and decision making was described by students as missing. Students wanted a formal process of evaluation with a checklist or some way to know how they performed. They made suggestions of providing a checklist or by using the simulated patient's care plan to offer them more feedback. Faculty described the debriefing more in terms of wanting it to be a positive experience, so that students would feel good about being involved in more simulation experiences. However, students wanted more constructive or more substantial feedback.

Suggestions for future research include both qualitative and quantitative studies that would look at simulation methods of design, support, interventions, and debriefing techniques. Larger sample sizes and use of more sites may be beneficial to the faculty using simulation in their nursing programs. These studies could also look at anxiety levels and preparation needed for nursing students participating in simulation.

References

- Adamson, K. A., & Kardong-Edgren, S. (2012). A method and resource's for assessing the reliability of simulation evaluation instruments. *Nursing Education Perspectives*, 33(5), 334-339.
- Alinier, G., Hunt, B., Gordon, R., & Harwood, C. (2006). Effectiveness of intermediate-fidelity simulation training technology in undergraduate nursing education. *Journal of Advanced Nursing*, 54(3), 359-369. doi:10.1111/j.1365-2648.2006.03810.x.
- Arnold, J. Johnson, L, Tucker, S. Malec, J., Henrickson, S, Dunn, W. (2009). Evaluation Tools in Simulation Learning: Performance and Self-Efficacy in Emergency Response. *Clinical Simulation in Nursing*, 5 (1) 35-43.DOI: <http://dx.doi.org/10.1016/j.ecns.2008.10.003>.
- Bambini,D.,Washburn, J., & Perkins, R. (2009). OUTCOMES of clinical simulation for novice nursing students: Communication, confidence, clinical judgment. *Nursing Education Perspectives*, 30(2), 79-82
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50, 248-287.
- Barsuk, J., McGaghie, W., Cohen, E., OLeary, K., & Wayne, D. (2009). Simulation-based mastery learning reduces complications during central venous catheter insertion in a medical intensive care unit. *Critical Care Medicine*. 37 (10), 2697-2701.
- Benner, P. (1984). From novice to expert: Excellence and power in clinical nursing practice. Menlo Park: Addison-Wesley, pp. 13-34.
- Berragan, L. (2011). Simulation: An effective pedagogical approach for nursing? *Nurse Education Today*, 31(7

- Bland, A. J., Topping, A., & Wood, B. (2011). A concept analysis of simulation as a learning strategy in the education of undergraduate nursing students. *Nurse Education Today*, 31(7), 664.
- Boostrum, R. (1994). A curriculum of caring. *Journal of Curriculum Studies*, 26, (1). 97-114.
- Brewer, Evelyn. (2011). Successful techniques for using human patient simulation in nursing education. *Journal of Nursing Scholarship*, 43(3), 311-7.
- Brookfield, S. D. (1987). *Developing critical thinkers*. Milton Keynes: Open University Press.
- Brunt, B. (2005). Critical thinking in nursing: an integrated review. *Journal of Continuing Education in Nursing*. (36), 60–67.
- Burke, H., & Mancuso, L. (2012). Social cognitive theory, metacognition, and simulation learning in nursing education. *Journal of Nursing Education*, 51(10), 543-8.
- Buckley, T., Gordon, C. (2011). The effectiveness of high fidelity simulation on medical-surgical registered nurses' ability to recognize and respond to clinical emergencies. *Nurse Education Today*, 31(7), 716-721. <http://dx.doi.org/10.1016/j.nedt.2010.04.004>.
- Cant, R. P., & Cooper, S. J. (2010). Simulation-based learning in nurse education: Systematic review. *Journal of Advanced Nursing*, 66(1).
- Cardoza, M., Hood, P.A. (2013). *Comparative Study of Baccalaureate Nursing Student Self-Efficacy Before/After Simulation*. *Computers, Informatics, Nursing*. Vol 31(TC 5), 187-192. DOI: 10.1097/01.NCN.0000434975.54093.6f

- Cato, M. L., Lasater, K., & Peeples, A. I. (2009). Nursing students' self-assessment of their simulation experiences. *Nursing Education Perspectives*, 30(2), 105-8.
- Cheung, R., & Au, T. (2011). Nursing students' anxiety and clinical performance. *Journal of Nursing Education*, 50, 286-289.
- Chikotas, N. (2008). Theoretical links supporting the Use of Problem-Based Learning in the Education of the Nurse Practitioner. *Nursing Education Perspectives*, 29(6), 359-362.
- Chickering, A., & Gamson, Z. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, 39(7): 3-7.
- Creswell, J. W. (2013). *Qualitative Inquiry & Research Design* (3rd ed.). Washington, D.C.: Sage.
- Dewey, J. (1997). *How we think*. New York: Houghton Mifflin. (Original work published 1909).
- Dismukes, R. K. P., Gaba, D. M., & Howard, S. K. (2006). So many roads: Facilitated debriefing in healthcare. *Simulation in Healthcare: The Journal of the Society for Medical Simulation*, 1(1), 23-25.
- Dreifuerst, K. (2009). The essentials of debriefing in simulation learning: a concept analysis. *Nursing Education Perspectives*, 30(2), 109-114.
- Durham C. & Alden K. (2008). *Enhancing patient safety in nursing education through patient simulation*. In *Patient Safety and Quality: An Evidence-Based Handbook for Nurses* (Hughes R.G., ed.), Agency for Healthcare Research and Quality. Rockville, MD, Retrieved from <http://www.ncbi.nlm.nih.gov/books/NBK2628/> on 3 June 2014.

- Eggenberger, S. K., & Regan, M. (2010). Expanding simulation to teach family nursing. *Journal of Nursing Education*, 49(10), 550-8.
- Emerson, R., Fretz, R & Shaw, L. (1995). *Writing Ethnographic Fieldnotes*. Chicago: University of Chicago Press.
- Ennis, R. H. (1962). A concept of critical thinking. *Harvard Educational Review*. 22, 81-111.
- Ennis, R. H. (1985). A logical basis for measuring critical thinking skills, *Educational Leadership*, 43(2), 44-48.
- Elfrink, V., Kirkpatrick, B., Nininger, J., & Schubert, C. (2010). Using learning outcomes to inform teaching practices in human patient simulation. *Nursing Education Perspectives*, 31(2), 97-100.
- Facione, P. (1984). *Toward a theory of critical thinking*. *Liberal Education*, 70, 253-261.
- Facione, P. (1990). *Executive summary – critical thinking. A statement of expert consensus for purposes of educational assessment and instruction*. Millbrae, CA: California Academic Press.
- Gantt, L. (2010). Strategic planning for skills and simulation labs in colleges of nursing. *Nursing Economics*, 28(5), 308-13.
- Gantt, L. (2012). Who's driving? The role and training of the human patient simulator operator. *Computers Informatics Nursing*. 30, (11) 579-586.
- Gantt, L., & Webb-Corbett, R. (2010). Using simulation to teach patient safety behaviors in undergraduate nursing education. *Journal of Nursing Education*, 49(1), 48-51.
doi:10.3928/01484834-20090918-10

- Gates, M. G., Parr, M. B., & Huguen, J. E. (2012). Enhancing nursing knowledge using high-fidelity simulation. *Journal of Nursing Education, 51*(1), 9-15.
- Goodstone, L., Goodstone, M. S., Cino, K., Glaser, C. A., Kupferman, K., & Dember-Neal, T. (2013). Effect of Simulation on the Development of Critical Thinking in Associate Degree Nursing Students. *Nursing Education Perspectives, 34*(3), 159-162.
- Guimond, M. E, & Salas, E. (2009). Linking the science of training to nursing simulation. *Nurse Educator, 34*(3), 105. Jeffries, P. (2005). Technology trends in nursing education: Next steps. *Journal of Nursing Education, 44*(1), 3-4.
- Halpern, D.F. (1996). *Thought and knowledge: An introduction to critical thinking (3rd ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Halpern, D.F. (2003). The "how" and "why" of critical thinking assessment. In D. Fasko, Jr.(ed.), *Critical thinking and reasoning: Current research, theory, and practice* (pp. 355-366).
- Harder, B., Ross, C., & Paul, P. (2012). Instructor comfort level in high-fidelity simulation. *Nurse Education Today*. Advance online publication. doi: 10.1016/j.nedt.2012.09.003
- Henneman, E. H., & Cunningham, H. (2006). Using clinical simulation to teach patient safety in and acute/critical care nursing course. *Nurse Educator, 30*(4), 172-177.
- Hovancsek, M., Jeffries, P. R., Escudero, E., Foulds, B. J., Huseb, S. E., Iwamoto, Y., et al. (2009). Creating simulation communities of practice: An international perspective. *Nursing Education Perspectives, 30*(2), 121-125.

- Huse, J. S. (2010). *Comparison of teaching strategies on teaching drug dosage calculation skills in fundamental nursing students* (Unpublished doctoral dissertation). University of Northern Colorado, Greeley, CO.
- Institute of Medicine. (2011). *The future of nursing: Leading change, advancing health*. Washington DC; National Academies Press.
- International Nursing Association for Clinical Simulation and Learning. (2013). Standards of best practice: Simulation. Retrieved from <http://www.inacsl.org/files/journal/Complete%202013%20Standards.pdf>
- Ironside, P. (2003). Trying something new: Implementing and evaluating narrative pedagogy use a multi method approach. *Nursing Education Perspectives*, 24, 122-128.
- Issenberg, B. Mcgaghie, W. Petrusa, E. Lee Gordon, D. & Scalese, R. (2005). Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Medical Teacher*. 27, (1), 10-28.
- Jeffries, P.R. (2005). A Framework for Designing, Implementing and Evaluating Simulations Used as Teaching Strategies in Nursing. *Nursing Education Perspectives*, 26(2), 96-103.
- Jeffries, P.R. (2007). *Simulation in nursing education: From conceptualization to evaluation*. New York, NY: National League for Nursing.
- Jeffries, P.R. (2009). Dreams for the future of clinical simulation. *Nursing Education Perspectives*, 30(2), 71.
- Jeffries, P. R., & Rogers, K. J. (2007). Theoretical framework for simulation design. In P. R. Jeffries (Ed.), *Simulation in nursing: From conceptualization to evaluation* (pp. 21-33). New York: National League for Nursing.

- Jensen, R., Meyer, L., & Sternberger, C. (2009). Three technological enhancements in nursing education: Informatics instruction, personal response systems, and human patient simulation. *Nurse Education in Practice*, 9(2), 86-90
- Kegan, R. Lahey, L. 2001. *How the Way We Talk Can Change the Way We Work: Seven Languages for Transformation*. San Francisco, CA: Jossey-Bass.
- Kirkman, T. R. (2013). High Fidelity Simulation Effectiveness in Nursing Students' Transfer of Learning. *International Journal Of Nursing Education Scholarship*, 10(1), 1-6.
doi:10.1515/ijnes-2012-0009
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Kurfiss, J. (1988). *Critical Thinking: Theory, Research, Practice and Possibilities*. ASHE-ERIC Higher Education Reports No. 2. Washington, DC: Association for the Study of Higher Education.
- Laerdal Corporation (2007). www.laerdal.co.uk, site accessed November, 2012.
- Lapkin, S. , Levett-Jones, T., Bellchambers, H. & Fernandez, R. (2006). Effectiveness of patient simulation manikins in teaching clinical reasoning skills to undergraduate nursing students: A systematic review. *Clinical Simulation In Nursing*, 6, (6) , 207 – 222.
- Limoges, J. (2010). An exploration of ruling relations and how they organize and regulate nursing education in the high-fidelity patient simulation laboratory. *Nursing Inquiry*, 17(1), 57-63. doi:10.1111/j.1440-1800.2009.00484.x.

- Mason, M. (2007). Critical Thinking and Learning. *Educational philosophy and theory*, 39(4), 339-349.
- McGaughey, J. (2009). Acute care teaching in the undergraduate nursing curriculum. *Nursing In Critical Care*, 14(1), 11-16. doi:10.1111/j.1478-5153.2008.00303.x
- McPeck, J. (1981). Critical thinking in education. New York: St. Martin's Press.
- Medley, C. & Home, C. (2005). Using simulation technology for undergraduate nursing education. *Journal of Nursing Education*, 44(1), 31-34.
- Melincavage, S.M. (2011). Student nurses' experiences of anxiety in the clinical setting. *Nurse Education Today*, 31, 785-789.
- Miles, B. M., Huberman, A. M. & Saldaña, J. (2014). *Qualitative data analysis: an expanded sourcebook* (3rd Ed.). California: SAGE Publications.
- Miller, S. (2010). Implications for incorporating simulation in nursing education. *Journal of Practical Nursing*, 60(3), 2-5.
- Mould, J., White, H., & Gallagher, R. (2011). Evaluation of a critical care simulation series for undergraduate nursing students. *Contemporary Nurse: A Journal For The Australian Nursing Profession*, 38(1/2), 180-190. doi:10.5172/conu.2011.38.1-2.180
- Murphy, E. (1997). Constructivism: From philosophy to practice. Retrieved October 19, 2015 from <http://www.cdli.ca/~elmurphy/emurphy/cle.html>.

The National League for Nursing Project to Explore the Use of Simulation for High-Stakes Assessment: Process, Outcomes, and Recommendations. (2015). *Nursing Education Perspectives*, 36(5), 299-303 5p. doi:10.5480/15-1639

Nehring, W.M., & Lashley, F.R., (2004). Current use and opinions regarding human patient simulators in nursing education: an international survey. *Nursing Educational Perspectives* 25, 244–248.

Nehring, W.(2010), *History of simulation in nursing in Nehring & Lashley*, High-Fidelity Patient Simulation in Nursing Practice, Jones & Bartlett Publishers.

Newton, S, R.N., Harris, M. & Pittiglio, L. (2013). Constructivist philosophy and nursing student medication calculations. *Research and Theory for Nursing Practice*, 27(2), 88-94. Retrieved from <http://ezproxy.snhu.edu/login?url=http://search.proquest.com/docview/1435379458?accountid=3783>

Paige, J. B., & Morin, K. H. (2013). Simulation Fidelity and Cueing: A Systematic Review of the Literature. *Clinical Simulation In Nursing*, 9(11), e481-9 1p
doi:10.1016/j.ecns.2013.01.001

Paul, R. (1982). Teaching critical thinking in the 'strong' sense. A focus on the self-deception, coordinating views and a dialectical mode of analysis. *Informed Logic Newsletter*, 4, 2-7.

Paul, R.W. (1993). *Critical thinking: What every person needs to survive in a rapidly changing world*. Santa Rosa, CA: Foundation for Critical Thinking.

- Paul, R., & Elder, L. (2009). Critical thinking: ethical reasoning and fair-minded thinking, part 1. *Journal of Developmental Education*, 33(1), 38-39. Retrieved from <http://www.ncde.appstate.edu/publications/jde/>.
- Parsh, B. (2010). Characteristics of Effective Simulated Clinical Experience Instructors: Interviews with Undergraduate Nursing Students. *Journal Of Nursing Education*, 49(10), 569-572. doi:10.3928/01484834-20100730-04
- Reese, C. (2009). Effective teaching in clinical simulation: Development of the student perception of effective teaching in clinical simulation scale. Dissertation.
- Reese, C., Jeffries, P., & Engum, S. (2010). Learning together: using simulations to develop nursing and medical student collaboration. *Nursing Education Perspectives*, 31(1), 33-37.
- Reid-Searl, K., Eaton, A., Vieth, L., & Happell, B. (2011). The educator inside the patient: students' insights into the use of high fidelity silicone patient simulation. *Journal of Clinical Nursing*, 20(19/20), 2752-2760. doi:10.1111/j.1365-2702.2011.03795.x.
- Richardson, V. (Ed). (1997). Constructivist teacher education, building a world of new understandings. London: Falmer.
- Roberts, D., & Greene, L. (2010). The theatre of high-fidelity simulation education. *Nurse Education Today*, doi:10.1016/j.nedt.2010.06.003
- Rosen, M., Salas, E., Wu, T., Silvestri, S., Lazzara (2008). A measurement tool for simulation-based training in emergency medicine: the simulation module for assessment of resident targeted event responses (SMARTER) approach. *Simulation Healthcare*, 3 (3). 170-179. doi: 10.1097/SIH.0b013e318173038d

- Rothgeb, M. (2008). Creating a nursing simulation laboratory: A literature review. *Journal of Nursing Education*, 47(11), 489-94.
- Rudolph, J. W., Simon, R., Rivard, P., Dufresne, R. L., & Raemer, D. B. (2007). Debriefing with good judgment: Combining rigorous feedback with genuine inquiry. *Anesthesiology Clinics*, 25(2), 361-376.
- Rudolph, J. W., Simon, R., Dufresne, R. L., & Raemer, D. B. (2006). There's no such thing as a "nonjudgmental" debriefing: A theory and method for debriefing with good judgment. *Simulation in Healthcare*, 1(1), 49-55.
- Saldana, J. (2008). *Coding manual for qualitative researchers*. Los Angeles, Calif: Sage Publications.
- Sanford, P. G. (2010). Simulation in nursing education: A review of the research. *The Qualitative Report*, 15(4), 1006-1011.
- Secomb, J., McKenna, L., & Smith, C. (2012). The effectiveness of simulation activities on the cognitive abilities of undergraduate third-year nursing students: a randomized control trial. *Journal of Clinical Nursing*, 21(23/24), 3475-3484. doi:10.1111/j.1365-2702.2012.04257.x
- Schiavenato, M. (2009). Re-evaluating simulation in nursing education: Beyond the human patient simulator. *Journal of Nursing Education*, 48(7), 388-94.
- Schlauret, M. C. (2011). Simulation in an undergraduate nursing curriculum: Implementation and impact evaluation. *Journal of Nursing Education*, 50(10), 561-8. doi: <http://dx.doi.org/10.3928/01484834-20110630-04>

- Seidman, I. (2013). *Interviewing as qualitative research (4th ed.) A guide for researchers in education and the social sciences*. New York, NY; Teachers College Press.
- Seropian, M. A., Brown, K., Gavilanes, J. S., & Driggers, B. (2004). Simulation: Not just a manikin. *Journal of Nursing Education*, 43(4), 164-169.
- Sharif, F., & Masoumi, S. (2005). A qualitative study of nursing student experiences of clinical practice. *BMC Nursing*, 4, 6. <http://doi.org/10.1186/1472-6955-4-6>.
- Shipton, S. (2002). The process of seeking stress-care: coping as experienced by senior baccalaureate nursing students in response to appraised clinical stress. *Journal of Nursing Education*, 41, (6). 243-256.
- Shinnick, M., Woo, M. Horwich, T. & Steadman, R. (2011). Debriefing: The most important component in simulation? *Clinical Simulation in Nursing*.7, (3). 105-111.
- Siegel, H. (1991). The generalizability of critical thinking. *Educational Philosophy and Theory*, 23, 18-30.
- Simmons, B. (2010). Clinical reasoning; concept analysis. *Journal of Advanced Nursing*, 66, (5). 1161-1158.
- Sinclair, B., & Ferguson, K. (2009). Integrating simulated teaching/learning strategies in undergraduate nursing education. *International Journal of Nursing Education Scholarship*, 6(1), 1-11. doi:10.2202/1548-923X.1676.
- Silverman, D. (2010). *Doing qualitative research (3rd ed.)*. Thousand Oaks, CA: Sage.
- Silverman, D. (2011). *Qualitative research; Issues of theory, method, and practice (3rded.)*. Thousand Oaks, CA; Sage.

Smith, L. (2012). Human simulation for nursing and health professions. *JAMA*, 308(9), 926.

Schon D. (1991) 'The Reflective Practitioner How Professionals Think in Action', London:

Avebury

Staub, S. (2003). Teaching and measuring critical thinking. *Journal of Nursing Education*, 42, (11), 498-508.

Tanner, C.A. (2006). Thinking like a nurse: a research-based model of clinical judgment. *Journal of Nursing Education*, 45(6), 204-211

Warrick, D. D., Hunsaker, P. L., Cook, C. W., & Altman, S. (1979). Debriefing experiential learning exercises. *Journal of Experiential Learning and Simulation*, 1, 91-100.

Watson, G., & Glaser, E. M. (1980). *Watson-Glaser critical thinking appraisal*. San Antonio, TX: The Psychological Corporation.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Thousand Oaks, CA: Sage.

Appendix A

Invitation to participate

Dear Named person,

I am a current doctoral student at the Southern New Hampshire University Educational Leadership Doctoral program under the direction of Dr. Margaret Ford. I am writing to ask you, if you would be prepared to take part in an interview, concerning your involvement and experiences with high fidelity simulation and debriefing.

The purpose of this qualitative case study is to investigate effective approaches used in simulation pedagogy to inform best practice in nursing programs for the benefit of contributing knowledge to the nursing field.

During our meeting I will give you more details about the type of interview, the questions that will be asked and my assurances to you. There is a list of these assurances at the end of this email.

I hope that this project which will inform my work as a researcher. Thank you for your consideration.

Regards,

Sherry Barnard, sherry.barnard@snhu.edu

Assurances to interviewees:

If you agree to an individual interview anything you tell me will be treated in confidence.

In all instances:

*I will respect your right to decide not to answer any questions which I may ask you, and without explanation

* I will respect your right to withdraw from the interview at any time

* I may wish to use quotes, but would only quote you under a pseudonym and with your express permission

Appendix B

Project Title: Informing Effective Simulation Pedagogy in Nursing Education

Informed Consent Agreement

Please read this consent agreement carefully before you decide to participate in the study.

Purpose of the research study: The purpose of this qualitative case study is to investigate effective approaches of simulation debriefing to inform best practice and contribute to nursing knowledge regarding simulation pedagogy.

What you will do in the study: As a participant in the study, you will be given details regarding the research and an opportunity to consent. You will be observed and interviewed by a researcher in regards to your involvement and experience with the simulation.

Time required: The study will require 45 minutes to one hour of your own time.

Risks: There are no anticipated risks in this study.

Benefits: There are no direct benefits to you for participating in this research study. The report from this study may benefit future simulations. The report will be made available to you by request.

Confidentiality: Participant's information will be kept private and confidential. The data will be collected and is limited to recorded text only. Your information will be assigned a code number. The list connecting your name to this code will be kept in a locked file. When the study is completed and the data has been analyzed, this list will be destroyed. Your name will not be used in any report.

Voluntary participation: Your participation in the study is completely voluntary.

IRB-SBS Office Use Only	
Protocol #	
Approved SBS Staff	from: _____ to: _____

Right to withdraw from the study: You have the right to withdraw from the study at any time without penalty.

How to withdraw from the study: To withdraw from the study, simply notify Sherry Barnard sherry.barnard@snhu.edu.

If you have questions about the study, please contact any of the team members:

Sherry Barnard, sherry.barnard@snhu.edu

If you have questions about your rights in the study, contact:

Dr. Margaret Ford
Southern New Hampshire University
2500 North River Rd.
Manchester, NH 03106
Phone (800) 626-9100 ext. 2077

Agreement:

I agree to participate in this study (please check one): YES____ NO____

Participant's Name: _____

Signature: _____ Date: _____

Researcher's Name: _____

Signature: _____ Date: _____

You will receive a copy of this form for your records.

IRB-SBS Office Use Only	
Protocol #	_____
Approved SBS Staff	from: _____ to: _____

Appendix C

Permission from President or Director of Nursing Programs

Project Title:

Dear Ms.

I am a student in the Southern New Hampshire University Educational Leadership Doctoral program conducting a research study under the direction of Dr. Margaret Ford. I am interested in studying a rural nursing program on the use of their simulation debriefing method. The purpose of this qualitative case study is to investigate effective approaches to simulation for the benefit of informing best practice.

My sample will consist of one-two faculty who teach simulation and 5-6 nursing students or one group that engages in a series of simulations. Your faculty and student member participants will be given a survey instrument and interviewed by asking a series of questions about their involvement and experience with simulation and the debriefing process. I will also do one observation of a simulation. The results will be summarized to determine important and effective elements of a simulation program. There is no risk to you/your staff or participants.

We are writing to request your permission to proceed with this study. Please respond at your earliest convenience to sherry.barnard@snhu.edu.

If you have any questions or concerns about the study, please contact me at:
Sherry Barnard, sherry.barnard@snhu.edu

If you have questions about your rights as a research participant, please contact:

Dr. Margaret Ford
Southern New Hampshire University
2500 North River Rd.
Manchester, NH 03106
Phone (800) 626-9100 ext. 2077

Sincerely,
Sherry Barnard

Appendix D

Student Perception of Effective Teaching in Clinical Simulation Scale Directions: Using the 5 point scales below circle the numbers or letters that reflect your agreement or disagreement with each item and how important each item is for meeting the learning objectives of this simulation.		
Extent of agreement: SD – strongly disagree D – disagree N – neutral (neither agree or disagree) A – agree SA – strongly agree		Importance: 1 – not important 2 – slightly important 3 – moderately important 4 – very important 5 – extremely important
	Extent of Agreement	Importance
1. The instructor allowed me time to think through challenging areas of the simulation.	SD D N A SA	1 2 3 4 5
2. Questions asked by the instructor after the simulation helped guide my thinking about the simulation experience.	SD D N A SA	1 2 3 4 5
3. The instructor provides me enough autonomy in the simulation to promote my learning.	SD D N A SA	1 2 3 4 5
4. The instructor provided useful feedback after the simulation.	SD D N A SA	1 2 3 4 5
5. The instructor facilitated my learning in this simulation.	SD D N A SA	1 2 3 4 5
6. Discussing the simulation during debriefing supports my understanding and reasoning.	SD D N A SA	1 2 3 4 5
7. An instructor-led debriefing is an important aspect of my simulation experience.	SD D N A SA	1 2 3 4 5
8. The instructor was comfortable with the simulation experience.	SD D N A SA	1 2 3 4 5
9. The simulation was interesting.	SD D N A SA	1 2 3 4 5
10. Appropriate questions were asked during the debriefing of the simulation experience	SD D N A SA	1 2 3 4 5

	Extent of Agreement	Importance
11. The simulation was realistic.	SD D N A SA	1 2 3 4 5
12. The simulation fit with the objectives of this course.	SD D N A SA	1 2 3 4 5
13. I will be better able to care for a patient with this type of problem in clinical because I participated in this simulation.	SD D N A SA	1 2 3 4 5
14. Questioning by the instructor helps me to better understand the clinical situation experienced even though it is a simulated environment.	SD D N A SA	1 2 3 4 5
15. This simulation helped develop my critical thinking skills.	SD D N A SA	1 2 3 4 5
16. Cues were used in the simulation to help me progress through the experience.	SD D N A SA	1 2 3 4 5
17. The instructor served as a role model during the simulation.	SD D N A SA	1 2 3 4 5
18. The instructor demonstrated clinical expertise during this simulation experience.	SD D N A SA	1 2 3 4 5
19. The instructor was receptive to feedback.	SD D N A SA	1 2 3 4 5
20. Participation in this simulation was a valuable learning activity.	SD D N A SA	1 2 3 4 5
21. The instructor encouraged helpful collaboration among participants during debriefing.	SD D N A SA	1 2 3 4 5
22. The difficulty of the simulation was appropriate.	SD D N A SA	1 2 3 4 5
23. Participation in clinical simulations helps me to meet clinical expectations when caring for real patients.	SD D N A SA	1 2 3 4 5

	Extent of Agreement	Importance
24. Cues were provided at appropriate times during the simulation.	SD D N A SA	1 2 3 4 5
25. Participation in this simulation helped me to understand classroom theory.	SD D N A SA	1 2 3 4 5
26. The instructor encouraged helpful collaboration among simulation participants during the simulation.	SD D N A SA	1 2 3 4 5
27. Clinical simulations are an effective learning strategy for me to problem-solve and to make decisions.	SD D N A SA	1 2 3 4 5
28. The instructor used a variety of questions during the debriefing	SD D N A SA	1 2 3 4 5
29. The clinical simulation experience was well- organized.	SD D N A SA	1 2 3 4 5
30. The instructor was enthusiastic during the simulation.	SD D N A SA	1 2 3 4 5
31. My learning expectations were met in this clinical simulation	SD D N A SA	1 2 3 4 5
32. The simulation experience allows me to model a professional role in a realistic manner	SD D N A SA	1 2 3 4 5
33. Questions asked after the simulation helped me to understand the clinical decision-making necessary for this experience.	SD D N A SA	1 2 3 4 5

Appendix E**Instructor Demographic Survey****Please complete the following:****Age:** _____**Gender:**

_____ Female

_____ Male

Ethnicity:

_____ Hispanic or Latino

_____ Not Hispanic or Latino

Race:

_____ American Indian or Alaska Native

_____ Asian

_____ Black or African American

_____ Native Hawaiian or other Pacific Islander

_____ White

_____ Other or Unknown: Please specify _____

Current professional certifications: _____.**Educational Preparation and year of graduation:** _____.**Years of teaching experience:** _____.**Years of teaching experience with clinical simulations:** _____.

Appendix F**Student Demographic Survey****Please complete the following:****Age:** _____**Gender:**

_____ Female

_____ Male

Ethnicity:

_____ Hispanic or Latino

_____ Not Hispanic or Latino

Race:

_____ American Indian or Alaska Native

_____ Asian

_____ Black or African American

_____ Native Hawaiian or other Pacific Islander

_____ White

_____ Other or Unknown: Please specify _____

Current Grade Point Average: _____**Other college degree:**

_____ Yes: Please specify degree held _____

_____ No

Previous experience with clinical simulations:

_____ Yes: If yes,

Please specify number of simulations you have participated in _____

_____ No

Years of experience working in healthcare:
