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The Effect of Simulation with Debriefing for Meaningful Learning in Courses of Nursing Theory and Practicum on Student Knowledge and Perception of Instruction

Kathleen L. Shea
University of San Francisco, kshea@sfsu.edu

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The University of San Francisco

THE EFFECT OF CLINICAL SIMULATION WITH DEBRIEFING FOR MEANINGFUL LEARNING IN COURSES OF NURSING THEORY AND PRACTICUM ON STUDENT KNOWLEDGE AND PERCEPTION OF INSTRUCTION

A Dissertation Presented
to
The Faculty of the School of Education
Learning and Instruction Program

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
Kathleen Shea
San Francisco
December 2015

THE UNIVERSITY OF SAN FRANCISCO
Dissertation Abstract

The Effect of Simulation with Debriefing for Meaningful Learning in Courses of Nursing Theory and Practicum on Student Knowledge and Perception of Instruction

Nursing students are expected to apply knowledge from lectures and laboratories to the clinical setting. One major challenge of nursing educators is facilitating the transfer of knowledge to the clinical-practice setting. Simulation-based education provides students with an experiential-learning activity within the context of a simulated clinical environment. Following the simulation activity, the instructor facilitates a debriefing session and guides student discussion and reflection related to the experience. Debriefing promotes understanding of nursing concepts (Benner, Sutphen, Leonard, & Day, 2010).

The purpose of this research is to compare two debriefing methods: traditional method and Debriefing for Meaningful Learning DML (Dreifuerst, 2012). Using a mixed method design, the researcher examined whether there were differences in student knowledge and perceptions of instruction based on debriefing method.

Data collection included midterm examination scores, Debriefing Assessment for Simulation in Healthcare-Student Version (DASH-SV) scores on perceptions of instruction, DML worksheets, and a Simulation and Debriefing Experience questionnaire. Additionally, a correlation between examination scores and DASH-Scores was calculated.

The researcher invited a class of undergraduate nursing students enrolled in a pediatric nursing theory course to participate in the research. Participants completed

demographic forms and consents. Each student group of 8 attended a 4-hour simulation session and participated in 4 simulation scenarios involving a 6-month old patient. Simulation scenario concepts included infant growth and development, respirator, and neurology systems. The researcher facilitated the debriefing sessions utilizing the DML or traditional method. Data were analyzed through descriptive statistics and independent samples *t* test.

There were no statistically significant differences in examination scores or DASH-SV scores based on debriefing method. There was a moderate correlation ($r = .40$) between examination scores and DASH-SV scores. Data from the DML and the Simulation and Debriefing questionnaire suggested that students valued the nursing role, teamwork, and communication experiences during the simulation. Students offered feedback that has implications for practice and future debriefing research.

This dissertation, written under the direction of the candidate's dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

Kathleen Shea November 19, 2015
Candidate Date

Dissertation Committee

Dr. Patricia Busk November 19, 2015

Dr. Mathew Mitchell November 19, 2015

Dr. KT Waxman November 19, 2015

DEDICATION

My parents were immigrants from the Philippine Islands, their example of hard work and respect for education encouraged me to achieve this educational goal. Although my father had very little formal education, he completed a vocational school in the 1960's and began working as a machinist in a Palo Alto firm at the dawn of the Silicon Valley era. My mother earned B.A. in Education from the Far Eastern University in the Philippines; she attended night school and worked full time during the day to help her parents and 9 siblings.

My beautiful daughter, Loren Shea, was diagnosed with schizophrenia during my second year in the doctoral program. She takes medication every day to relieve the symptoms of her illness; some days she feels as if she cannot go on living. Thankfully, she never gives up and she is continuing to recover. Her strength and ability to continue moving forward has inspired me in many ways.

I dedicate this dissertation to my parents, Amado and Lourdes Lloren, because they provided love and a foundation for me to achieve my goals. I dedicate this work to my amazing daughter, Loren Shea, who inspires me by facing challenges in her life with dignity and demonstrating perseverance while achieving her goals each and everyday.

ACKNOWLEDGEMENTS

I would like to thank my dissertation committee for their guidance and support during the years that I spent at USF and while writing this dissertation. The dissertation process has been a challenging experience and I could not have completed this journey without the support of my committee chair, Dr. Patricia Busk, her energy and dedication are unparalleled. Dr. Mathew Mitchell's intelligence and sense of humor encouraged me to continue with challenging courses and with the writing process. I was honored to have Dr. KT Waxman on my committee; she is an awesome role model for the nursing profession and her expertise in clinical simulation was invaluable.

I wish to acknowledge the many friends who stood by me even though I did not call, text, or email for weeks or months at a time; I am thankful that you are all still there for me once I finished my final defense. A special thanks to my colleagues, Mr. Ed Rovera, Dr. Meg Gorzycki, Ms. Pamela Howard, and Dr. Stacy Serber who helped me in many ways over the past 6 years. A million thanks to my dear friend, Dr. Lopez who inspired me to continue my education, your support and feedback kept me going when I thought I could not move forward. Last but not least, heartfelt appreciation to the many nursing colleagues who provided love and support throughout my nursing career and academic endeavors.

To my husband, Kevin, thank you for your love and encouragement and especially for keeping up with the household activities in my absence. Hugs and kisses to my children Brett, Monette, Brian, and Loren and my grandchildren, Adam and Oliver. I hope that I have made you proud; I am so lucky and grateful to have you in my life.

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CHAPTER I
STATEMENT OF THE PROBLEM

In the traditional undergraduate nursing program, students learn nursing theory in classrooms and laboratory settings. Subsequently, students are expected to apply nursing knowledge to patient care in a hospital or outpatient clinical setting during their clinical practicum assignments. Nursing students are required to demonstrate the application of newly acquired nursing knowledge in clinical practice; however, most undergraduate nursing students are not accustomed to working in clinical settings. In an attempt to provide opportunities for nursing students to rehearse the application of nursing knowledge, schools of nursing have implemented creative teaching strategies such as simulation-based education (Benner, Sutphen, Leonard, & Day, 2010).

Simulation-based education is an international curriculum standard utilized in undergraduate nursing schools that provides clinical experiences to nursing students within a realistic and nonthreatening or *safe* environment (Broussard, 2008; Neill & Wotton, 2011; Waxman, Nichols, O'Leary-Kelley, & Miller, 2011). The simulated clinical activity takes place in a space designed to look like a hospital or clinic; this environment contextualizes the patient-care experience. Clinically accurate, simulation-based patient-care scenarios are designed to create an authentic environment where nursing students experience a patient encounter, develop clinical judgments, make decisions, and practice the nursing role.

After students have participated in the simulation activity, an instructor-led debriefing session occurs. The postsimulation debriefing is a discussion between the participants, the student observers, and the instructor of the class to review a simulated

clinical activity. During the debriefing, the students have the opportunity to explore their emotions, thought processes, nursing care, and clinical decisions immediately after the simulated clinical activity (Jeffries & Rogers, 2007; Nehring, Ellis, & Lashley, 2002). During the debriefing experience, students receive immediate feedback from instructors and peers regarding their clinical performance. Additional prompts from the instructor aim to help the students understand the connections between the patient data, clinical condition, and the appropriate nursing response (Broussard, 2008; Gaba, 2004; Neill & Wotton, 2011; Ravert, 2004). Prompting and open-ended statements during debriefing assist students in identification of appropriate nursing responses to the patient's physiological condition. The goal of the debriefing experience is to examine the student's understanding about the patient needs, to evaluate the students' performance during the simulation activity, to promote student's reflective thinking, and to provide feedback (Dreifuerst, 2009; Fanning & Gaba, 2007; Jeffries, 2005, 2007; Wickers, 2010).

Experts agree that the most important component of the simulation experience is the reflection that occurs during the postsimulation debriefing (Cato & Murray, 2010; Decker et al., 2013; Dreifuerst, 2009; Katz, Peifer, & Armstrong, 2010; Neill & Wotton, 2011; Shinnick, Woo, Horwich, & Steadman, 2011). Although the body of literature regarding postsimulation debriefing has grown rapidly since 2010, there are few empirical studies that address specific strategies to support successful debriefing or demonstrate the advantage of using one debriefing method over another (Arafeh, Hansen, Snyder, & Nichols, 2010; Cant & Cooper, 2010; Chronister & Brown, 2012; Dreifuerst, 2009; Fanning & Gaba, 2007; Fey, Scrandis, Daniels, & Haut, 2014; Nehring, Ellis, & Lashley, 2009; Neill & Wotton, 2011). Moreover, debriefing techniques have been

developed with little objective evidence of their quality or clinical-judgment outcomes (Arafeh et al., 2010; Cant & Cooper, 2010; Mariani, Cantrell, Meakim, Preito, & Dreifuerst, 2013). Raemer et al. 2011 reported that "research is sparse and limited in presentation for all important topic areas where debriefing is a primary variable" (p. 52). The current study addressed the gap in the literature regarding postsimulation debriefing and compared postsimulation debriefing methods for differences in knowledge retention as well as perceptions regarding quality of instruction. The following sections contain the purpose of the study, the background and need, the conceptual framework, the research questions, the significance of the study, as well as the definition of terms.

Purpose of the Study

The purpose of this research is to investigate whether there were differences in retention of knowledge, as evidenced by scores on unit examinations, when undergraduate nursing students participated in a "traditional debriefing method" compared with students who participated in the Debriefing for Meaningful Learning (DML) method developed by Dreifuerst (2009). Additionally, nursing student's evaluation and perceptions of the quality of instruction were investigated for differences based on the type of debriefing they received. Finally, student perceptions evaluating the quality of instruction were analyzed for correlation with unit-examination scores on questions related to concepts in simulation activities. The researcher was interested in investigating if participant's perceptions of the quality of instruction (DASH-SV scores) correlate with their knowledge retention (exam scores). If the students rate the instruction methods differently, would the difference have any correlation with their knowledge retention? This study may provide information that would be useful for curriculum

planning and faculty development for simulation and debriefing in undergraduate nursing schools.

Quantitative and qualitative data were gathered from undergraduate nursing student's demographic surveys, unit examination scores, and perceptions of instruction using the Debriefing Assessment of Simulation in Healthcare-Student Version (DASH-SV). These instruments do not involve extraordinary instruction. All students completed the DASH-SV and the unit examinations whether or not they choose to participate in the study; informed consent and demographic information were collected from participants.

The mixed-methods research was conducted at a public university in the San Francisco Bay Area; the participants were a convenience sample of undergraduate nursing students enrolled in standard pediatric nursing theory and practicum courses. The nursing courses include didactic instruction for the theoretical portion of the course; the practicum experiences occur in actual clinical settings as well as in the clinical simulation setting.

Background and Need

The American Association for Colleges of Nursing (2008) publication, *Essentials in Baccalaureate Education for the Nursing Profession*, called for nursing education reform and provided the curricular elements and a framework for transforming nursing education curriculum for the 21st century. One of the major challenges of nursing educators is to facilitate the transfer and application of theoretical knowledge to the practice setting. Technological innovation coupled with the nursing education reform movement, has moved simulation-based education into the forefront of nursing education. Simulation-based education is a teaching strategy that creates a virtual reality where nursing students can rehearse patient-care and nursing interventions without the risk of harm to actual

patients. Simulation-based education in nursing provides students with the opportunity to practice the nursing role and perform nursing interventions within the context of a hospital environment (Jeffries & Rizzolo, 2006).

In the context of a simulated hospital room furnished with medical supplies, medical equipment, and patient simulators, an "authentic environment" is created. The *authentic environment* combined with the simulation experience is believed to create a more memorable learning environment for nursing students. McCaughey and Traynor, (2010) suggested that students who participated in clinical-simulation experiences would be more prepared for actual clinical assignments.

Students enter the clinical-simulation setting with nursing knowledge acquired through multiple teaching strategies such as readings, lectures, study groups, homework assignments, quizzes, clinical experience, and laboratory practice. Clinical simulation and debriefing experiences create a contextual frame of reference that will shape the learner's understanding of the situation. Subsequent simulated clinical experiences combined with actual clinical experiences are thought to scaffold and build upon each other, with each new experience adding a new opportunity for intellectual growth and improved performance (Dreifuerst, 2009).

Proponents of clinical-simulation posited that the debriefing aspect of simulation-based nursing education is a key component of influence on the development of clinical-judgment abilities and deep understanding of nursing concepts in undergraduate nursing students (Benner et al., 2010; Decker et al., 2013; Fanning & Gaba, 2007). Methods of debriefing likely evolve from the natural order of human processing: experiencing an event, reflecting upon the event, discussing the event with others, learning from the

event, and modifying behaviors in future similar events based on the experience (Gaba & Fanning, 2007). The reflective process facilitated by nurse educators during the postsimulation debriefing session is thought to be central to the understanding about how nursing students learn to make clinical decisions in the clinical setting. The focus of the current research was the comparison of postsimulation debriefing methods; debriefing methods are presented in the following section.

Debriefing: A Process for Guided Reflection

Nursing educators have learned that guided reflections are often the most effective strategy for promoting learning and deep understanding because students often vary widely in their ability to reflect upon their own practice (Lasater, 2011). Consequently, students need guidance to learn what is clinically important to notice and how to develop their clinical thinking (Lasater & Nielsen, 2009). Postsimulation debriefing is a guided-reflection process that supports the development of clinical-judgment abilities in undergraduate nursing students (Benner et al., 2010; Lasater & Nielsen, 2009).

During the debriefing process, nursing students reflect upon their simulation experience and revisit their assessments, nursing interventions, observations, and patient responses. A nurse educator coaches the students to review the patient data and reflect upon the nursing interventions performed in response to the clinical situation presented during the simulation experience. This process facilitates student's analysis of their own thought processes and gives the educator an opportunity to provide feedback and evaluate the student's rationale regarding the nursing interventions performed.

The reflective process that takes place during a postsimulation debriefing session is thought to be a key element in the development of clinical judgment in nursing (Cantrell, 2008; Cato & Murray, 2010; Jeffries 2007; Katz, Peifer, & Armstrong, 2010). Participants examine and reflect on their own performance and make connections between theoretical knowledge, application of that knowledge, and clinical decisions made in the simulated patient care setting. Gordon and Buckley (2009) revealed that participants rated the debriefing session the most useful part of the simulation experience.

Debriefing Methods

The traditional and the DML methods were chosen for this study because they have both been utilized in large-scale, multisite nursing-education research within the United States. Jeffries and Rizzolo (2006) used traditional debriefing methods for their research with the National League for Nursing (NLN) that identified a framework for design, implementation, and evaluation of simulation-based nursing education. Dreifuerst's (2012) DML model was utilized by primary investigator, Jennifer Hayden (2014), in collaboration with the National Council of State Boards of Nursing (NCSBN) to investigate the result of replacing 25% of clinical hours with simulation experiences in undergraduate nursing schools.

The traditional method is a model first developed by the military for aircraft pilots; the model utilizes a verbal discussion format and is focused on the nonjudgmental evaluation of performance, prompted by facilitators asking participants to describe what went well, what did not go well, and what they would do differently in the future (Decker 2007; Flannagan, 2008; Sawyer & Deering, 2013). The traditional method of debriefing was employed in a large-scale multisite study sponsored by the National League for

Nursing and the Laerdal Corporation in an effort to address the best teaching and learning practices for simulation-based nursing education (Jeffries & Rizzolo, 2006). Jeffries and Rizzolo's (2006) research resulted in the development of a standard framework for building simulation programs for healthcare education. For the purpose of this research, the traditional method of debriefing was utilized and is referred to as the *traditional NLN method*.

Dreifuerst (2009, 2012) developed the Debriefing for Meaningful Learning (DML) model, a systematic written process designed to assist participants in the release of emotions and to facilitate a critical analysis of the simulation experience. In preparation for an educator-facilitated verbal debriefing session, modeled after the traditional model, a written activity utilizing the "DML worksheet" guides students through written exercises to promote self-reflection and develop a deeper understanding of nursing concepts. The DML is utilized to guide students beyond reflection and critical thinking andto promote higher thinking skills of clinical judgment and clinical decision-making. Moreover, through analysis of the simulation experience, learners are encouraged to visualize future clinical situations that could be informed by the current simulation experience (Dreifuerst, 2012). Because of its widespread use, the DML model of debriefing was utilized in the current study.

Rudolph, Simon, Rivard, Dufresne, and Raemer (2007) promoted a verbal discussion format, the advocacy-inquiry method of nonjudgmental debriefing. This method begins with the facilitator stating an observation or assumption related to the simulation activity, then invites the student to validate or explain their own perspective on the observation or assumption. This strategy uses inquiry to test the facilitator's assumption

about what occurred in the simulation. Additionally, this method prompts students to verbalize their mental representations to help them make sense of their assumptions and articulate their frames of reference (Rudolph et al., 2007).

Kuiper, Heinrich, Matthias, Graham, and Bell-Kotwall (2008) described a structured debriefing model, the Outcome Present State-Test model (OTP), of clinical reasoning. The OTP model uses a printed worksheet for students to diagram the patient's present state compared with the desired goal or the outcome state. Using the worksheet, students create and evaluate interactions associated with the patient's nursing diagnosis, then choose the priority focus of care that will address the most important patient issues. The researchers determined that the worksheets provided scaffolding for reflection and review of the clinical reasoning activities during simulation activities.

The paucity of studies related to how best to facilitate postsimulation debriefing that enhances learning outcomes, clinical judgment, and decision-making abilities of nursing students underpins the need for the proposed study (Arafeh et al., 2010; Raemer et al., 2011). The focus of this study was to compare the traditional debriefing method and the DML method to gain insight related to students' knowledge retention and perceptions of instruction related to simulation-based education.

The two debriefing methods utilized in this research include a traditional verbal debriefing component; the DML method adds a written component to the verbal discussion format. As aforementioned, the written DML exercises promote self-reflection and are meant to assist the participant in the development a deeper understanding of nursing concepts (Dreifuerst, 2012).

Conceptual Framework

One important goal of nurse educators is to empower undergraduate nursing students to become autonomous thinkers with the ability to thrive in the complex healthcare environment (Parker & Myrick, 2009). Educators are often challenged with how best to support nursing students in developing clinical judgment and critical-thinking skills (Forneris, 2004; Forneris & McAlpine, 2006) as well as developing knowledge that can be applied to the practice setting (Parker & Myrick, 2009). Postsimulation debriefing has the potential to promote transformative learning through providing nursing students with new experiences. The conceptual framework underpinning the current research is Mezirow's Transformative Learning Theory, Schön's Reflective Practice Theory, and Vygotsky's Social Development Theory; the following subsection describe the conceptual framework.

Transformative Learning Theory

The basic concept of the transformative learning theory (Mezirow, 1991) is that learners develop an understanding of the world through their experiences, and it is through experience that learners reformulate their cognitive frames. Mezirow's (1991) transformative-learning theory provides the foundation for the analysis of the postsimulation debriefing process in transforming cognitive frames of reference that enable the nursing student to apply nursing theory in the practice setting.

The key concepts of Mezirow's (1991) transformative- learning theory reflect three themes related to adult learning: the role of experience, critical reflection, and rational discourse in knowledge development. Although all experiences contribute to the intellectual development of a learner, merely having an experience is not sufficient to

promote transformation (Merriam, 2004). The learner must engage in reflection and in rational discourse before he or she develops new frames of reference relative to the specific experience (Merriam, 2004). Learners develop a frame of reference for a specific experience that informs subsequent behaviors (Cranton & King, 2003).

Postsimulation debriefing relates to the transformative learning theory; through debriefing, students explore and analyze the simulated clinical experience. During debriefing, students participate in rational discourse by addressing a dilemma faced in the simulation activity. The facilitator or students initiate dialogue related to the disorienting dilemmas faced during the simulation experience. Through discussion and guided reflection, in the presence of peers and content experts, students begin to form new frames. During the debriefing sessions, the discussion and the feedback that occurs and its assimilation into the student's cognition are thought to produce long-lasting learning (Gaba & Fanning, 2007). The process of developing new frames of reference or schemas is the central focus of the transformational-learning theory (Mezirow, 1991). Merriam (2004) maintained that one must engage in a developmental process before transformative learning may occur. Contextual experience, reflection, and rational discourse during the debriefing process all contribute to students' development of new meanings and frames of reference.

Reflective Practice Theory

Schön (1987) studied professional learning, learning processes in organizations, and self-reflection practice; his work investigated how students are prepared and how they learned to function in professional-practice occupations such as medicine, counseling, and studio art. Although Schön (1987) did not address the nursing profession,

his reflective practice theory may be applied to the nursing profession because nursing best practices are supported by the creative application of models, theories, and principles from nursing and behavioral and humanistic sciences (Schön ,1987).

Schön (1987) proposed that "reflection" was central to the understanding of what professional practitioners do. Schön (1987) described the concept of the reflective practicum and proposed that students of professional-practice occupations use self-reflection as a method for learning their craft or artistry. Reflective practicum assists students in acquiring the knowledge and skills needed to become competent in unique professional-practice situations (Schön, 1987).

Understanding and analyzing what occurred in the clinical-simulation experience is the first step in the development and transformation of student thinking about clinical practice. Nursing students are expected to utilize new knowledge gained from the debriefing sessions and to apply that knowledge to actual clinical settings. Reflection is used in debriefing sessions for the purpose of extending thinking about clinical performance and identifying rationale for nursing-care behaviors (Benner et al., 2010). Moreover, guided reflection during debriefing is used to improve critical-thinking skills and assist the nursing student to consider alternative patient-care behaviors that can be applied in future clinical situations (Benner et al., 2010).

Social Development Theory

Vygotsky's (1978) work in child development has become the foundation for the theory in cognitive development over the past several decades and has become what is known as the Social Development Theory (Moll, 1990). The basic themes of the Social Development Theory are that mental activity is uniquely human and that learning is a

result of community, social interaction, social relationships, and internalization of culture (Moll, 1990). According to Vygotsky (1978), children and adults construct knowledge with others through social interaction (Moll, 1990). Vygotsky (1978) contended that social interaction and language play a fundamental role in one's cognitive development and learning. By looking at nursing educational practice through the lens of the social-development theory, the nursing student will construct new knowledge during the postsimulation debriefing activity by experiencing social interaction and dialogue with his or her instructor and peers. Moreover, the social-development theory is represented in nursing by the cultural influences that are embedded throughout the nursing educational process.

Educators are responsible for teaching knowledge, skills, and attitudes related to nursing practice as well as teaching and role modeling the expectations of the professional nurse. Nursing standards practice focus on knowledge and attitudes that support patient-centered care and the collaborative efforts of the healthcare team. Through daily social interactions and events in the classroom as well as the clinical settings, nursing students learn to function in the healthcare environment and to interact with a community of nurses, physicians, educators, and healthcare team members.

The idea of social interaction preceding individual development underlies Vygotsky's (1978) concept of the zone of proximal development (ZPD). Vygotsky (1978) defined ZPD as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). This concept applied to adult learning describes nursing students'

experience in an apprentice model of learning where nursing students are assisted and coached by experienced nurses to develop from their actual development level to their potential development level.

Vygotsky (1978) proposed that cognition occurs on the social level and is then internalized for individual development. This sociocultural theory of learning intersects with nursing education and practice because of the underlying constructs of socialization and acculturation that are inherent in nursing practice. Social development theory is demonstrated in the simulation and debriefing activities of nursing students. First, students rehearse nursing care in the context of an authentic hospital environment, the simulation center within a university setting. During the postsimulation debriefing, students meet with a community of peers and educators to discuss and reflect upon the simulation experience. Through the debriefing activity, the students have the opportunity develop new meanings and frames of reference to inform their nursing practice. Aligned with Vygotsky's (1978) social-development theory, students engage first at the social level and then have the opportunity to cognitively internalize their experience.

Research Questions

1. To what extent do nursing students who participate in DML debriefing in simulation exercises perform better on unit exams than do students who participate in traditional debriefing?
2. To what extent do nursing students who experience the DML perceive the quality of instruction differently from those students experience the traditional debriefing protocols?

3. To what extent do perceptions of the quality of instruction correlate with unit examination scores for questions related to concepts in simulation activities?

Significance of the Study

Cheng et al. (2014) conducted a systemic review and meta-analysis of simulation and debriefing research; they recommended more robust debriefing research comparing debriefing methods and including key characteristics such as duration, educator presence, content, structure, methodology, and use of video. A key component of simulation-based education in healthcare is self-reflection and dialogue during the debriefing session; however, there have been few direct comparisons of various debriefing approaches (Van Heukelom, Begaz, & Treat**,** 2010). The paucity of studies related to how reflective practice during postsimulation debriefing enhances learning outcomes, clinical judgment, and decision-making abilities of nursing students underpins the need for the current study (Arafeh et al., 2010). The current study attempts to address the gap in the simulation and debriefing literature by investigating the effect of two methods of postsimulation debriefing on learning outcomes of undergraduate nursing students.

The aim of the current research is to better understand what participants are experiencing and learning from the simulation experience and whether the structure of the debriefing method affects the participants' retention of knowledge as measured by examination scores. The information gathered by the research will inform educators about the influence of the traditional NLN method of postsimulation debriefing compared with the DML method developed by Dreifuerst (2009) in relation to student knowledge retention. Currently, there are approximately 15 doctoral nursing students investigating the use of the DML in the United States (Personal communication Dreifuerst, Nov.

2014). The current study will add to the body of literature investigating debriefing methods and the effect on knowledge retention in undergraduate nursing students.

Investigating the influence of structured debriefing after clinical simulation is the focus of the current study. The comparison of debriefing methods may provide insight into how best to achieve learning objectives using simulation. Moreover, the information from the research may influence the methods of debriefing implemented by undergraduate nursing faculty. The current research will add to the body of knowledge comparing debriefing methods and examining the effect of postsimulation debriefing methods on student learning.

Definition of Terms

Simulation-based education is a strategy utilized for educating undergraduate nursing students. The strategy uses specialized terms that were defined in this section. Although there may be other definitions associated with the following terms, the definitions provided describe how the terms are used in the proposed study.

Active-phase participants are the participants who have been assigned roles in the patient-care scenario. Examples of the assigned roles are primary nurse, secondary nurse, and family member.

Clinical decision-making refers to the processes by which nurses and other clinicians make their judgments and includes the deliberate process of generating alternatives, weighing them against the evidence, and choosing the most appropriate response to patterns (Tanner, 2006).

Clinical-judgment is an used to describe the interpretation that a nurse makes about patient data such as laboratory findings, physical assessment information or patient

concerns and the decision intervene in a way that is meant to improve patient outcomes and nursing (Tanner, 2006).

Debriefing for Meaningful Learning DML is one level of the independent variable that consists of a systematic written process of note taking used by students immediately after the simulation activity to record reactions and facilitate a critical analysis of the patient encounter. The process includes written exercises designed to promote self-reflection and foster new understanding of nursing concepts (Dreifuerst, 2009).

High-fidelity simulation (HFS) is simulation that incorporates a computerized full-body mannequin that can be programmed to provide realistic physiological response to student actions (Cant & Cooper, 2010).

Observers [Student observers] are participants who are not assigned to a role in the active phase of the simulation activity. Standards of best practice for simulation recommend student observers during each active phase of the simulation scenario. Observational learning is a valuable learning experience and enables the students to participate in the postsimulation debriefing (Decker et al., 2013)

Perceptions of instruction is one of the two dependent variables in the proposed research. Perceptions of instruction were measured using the DASH-SV scores.

Postsimulation debriefing is an educator-facilitated process of interaction that involves active participation of the learners and occurs immediately after the simulation activity (Cant & Cooper, 2010).

Retention of Knowledge is one of the two dependent variables in the proposed research. Retention of knowledge is a learning outcome that is operationalized by analyzing

examination scores on questions related to the concepts addressed in the simulation scenarios.

Traditional method of postsimulation debriefing is one level of the independent variable (method of debriefing) in the proposed research. The traditional method of postsimulation debriefing is a model of debriefing that uses verbal and nonverbal communication to lead a group conversation; the traditional format is led by a faculty facilitator. The debriefing is focused on the critique of performance; participants describe and discuss their emotional reactions, behaviors that were performed, and behaviors that would be done differently in the future (Decker, 2007; Flannagan, 2008).

Summary

Simulation-based education is one strategy that nursing educators utilize to prepare nursing students for clinical practice. Simulated clinical experiences give students the opportunity to rehearse nursing skills and practice clinical decision making in a safe environment. Postsimulation debriefing is considered to be the most important component of simulation-based education because it engages students in reflective practice that has the potential to enhance student learning. During the debriefing session, students learn through reflection, discussion, and feedback from instructors and nursing student peers. Moreover, nursing students as well as nursing educators provide a community of practice with which students engage in dialogue related to their experience and their thought processes during the simulated patient experience.

The current research compared two methods of debriefing and their effect on knowledge retention and perceptions of instruction. This examination of two methods of debriefing is based on the social-learning theories of Mezirow (1991) and Vygotsky

(1978) as a conceptual framework: individual reflection leads to transformational learning through student's experience with social discourse, discussion, and dialogue. The literature review provides evidence to support the current research, additionally, the methodology, results, and conclusions are presented in the following chapters.

CHAPTER II
REVIEW OF THE LITERATURE

This chapter contains a review of literature supporting simulation-based education and postsimulation debriefing in nursing education in relation to concepts of Mezirow's transformative learning and Vygotsky's (1978) social-development theory. Clinical-simulation pedagogy is presented through the lens of Mezirow's (1991) three central themes regarding transformative learning: the role of experience, rational discourse, and critical reflection. Additionally, the influence of social interaction and learning in community relative to Vygotsky's (1978) social-development theory were addressed. The chapter is divided into several main sections: (a) simulation-based education: the role of experience, (b) debriefing: the role of critical reflection and rational discourse, and (c) chapter summary.

The purpose of the current research was to investigate whether there are differences in retention of knowledge, as evidenced by scores on unit examinations, when undergraduate nursing students participate in debriefing using the traditional National League for Nursing (NLN) method compared with students who participate in the Debriefing for Meaningful Learning (DML) method developed by Dreifuerst (2009). Additionally, nursing student's evaluation and perceptions of the quality of instruction were investigated for differences based on the type of debriefing they received. Finally, student perceptions evaluating the quality of instruction were analyzed for correlation with midterm examination scores on questions related to concepts in simulation activities.

Simulation-Based Education: The Role of Experience

This section presents literature related to the effect of simulation-based educational practices in nursing education. Research investigating the value of using

simulation in nursing, outcomes of the simulation experience on student perceptions of learning, confidence, self-efficacy, clinical judgment, and safe nursing practice are presented.

Researchers Bambini, Washburn, and Perkins (2009) investigated the effect of simulation in nursing education on the self-confidence of novice nursing students. The purpose of their study was to evaluate the influence of simulation as a teaching and learning method on the self-efficacy of nursing students during their initial reproductive-health clinical rotation. Bambini et al. (2009) suggested that simulation experiences may promote novice nursing students' confidence at clinical sites because of their increased sense of self-efficacy.

A total of 112 students completed the pretest, posttest, and follow-up survey in addition to participating in a 3-hour postpartum simulation experience that included eight stations with a variety of learning activities including postpartum assessment, newborn care, newborn assessment, prebriefing, high-fidelity postpartum hemorrhage simulation, and debriefing. Students rotated throughout the stations in groups of four then participated in a debriefing session with faculty who reinforced concepts of patient safety and corrected misconceptions of nursing care offered during the simulation.

The summative scores for the pretests and posttests were calculated to ascertain postpartum examination self-efficacy scores. Additionally, the researchers evaluated the student's answers to the open-ended questions and identified common themes. A pairwise comparison analysis of the postpartum examination self-efficacy scores revealed a statistically significant increase in student confidence for performing the postpartum examination following the simulation session. The students also experienced a

statistically significant increase in confidence levels for performing vital signs, breast examination, assessment of fundus, assessment of lochia, and patient education (Bambini et al., 2009).

Qualitative data indicated that students viewed the simulation experience as a valuable learning experience that increased their confidence and their readiness for performing in an actual clinical setting. Three themes were identified based on the comments of the participants: communication, confidence in psychomotor skills, and clinical judgment. The students indicated that they learned the importance of verbal and nonverbal communication with family members as well as with the patient as a result of the simulation experience. Students commented that the simulation experience gave them confidence because they worked through assessments and problem solving in the simulation experience. Moreover, the students reported that they experienced improved clinical judgment because they learned how to prioritize assessment skills, to better identify abnormal assessment findings, and to intervene when necessary.

The results of this investigation suggest that clinical simulation can be effective in increasing students' self-efficacy in their ability to perform psychomotor skills in the postpartum setting. After experiencing a variety of patient situations, students demonstrated an increase self-efficacy in providing patient care. According to Bandura (2004), "Efficacy beliefs influence goals and aspirations, the stronger the perceived self-efficacy, the higher the goals people set for themselves and their commitment to them" (p. 145). Feelings of self-efficacy should translate into practice by affecting nursing-care behaviors (Bandura, 2004). Bambini et al. (2009) provided support for the use of clinical simulation experiences in preparation for experiences in actual, real-world clinical

settings. How best to provide meaningful simulation experiences in undergraduate nursing schools were investigated in the current research.

McCaughey and Traynor (2010) conducted a longitudinal study to analyze the role of simulation in the preparation for clinical practice from the perspective of 3rd-year undergraduate nursing students (*n*=153). The researchers employed a quantitative design by developing a 32-item questionnaire; the United Kingdom's Nurse Midwife Council proficiency standards provided a framework for the establishment of relevant themes for the questionnaire. The researchers also collected qualitative responses from participants about their readiness to work with actual patients after participating in a simulation experience.

McCaughey and Traynor (2010) revealed that the use of high-fidelity simulators is perceived to be a valuable method of learning clinical judgment and enhancing the safety of clinical practice. Eighty-seven percent of the participants in this study believed that simulation was beneficial in helping them link theory to practice. The study provided evidence that nursing students perceive that simulation experiences assist in application of theory to clinical practice. Although the realism of simulated clinical experience is limited, the majority of students (*n*=153) in this study considered simulation an authentic learning experience. This study provides insight into the learner-centered clinical simulation environment and the benefits it may provide. The results of this study are in agreement with many others (Bearnson & Wiker, 2005; Cant & Cooper, 2010; Robertson, 2006) who have found that simulation is almost universally regarded as a useful learning experience.

In another study, Shinnick, Woo, Horwich, and Steadman (2011) examined undergraduate nursing students' (*n*=162), clinical knowledge related to heart-failure utilizing the Clinical Knowledge Questionnaire (CKQ). The aim of the study was to determine which simulation component promoted greater knowledge gains: the simulation hands-on experience or the debriefing session. The participants included prelicensure nursing students from three nursing schools. The researchers reported that heart-failure knowledge decreased after the simulation scenario, but knowledge increased after the 30-minute debriefing sessions. The results of this study suggest that the debriefing experience improved student knowledge and understanding of heart-failure.

Research indicates that simulation is a valuable learning experience for undergraduate nursing students (Bambini et al., 2009; Bearnson & Wiker, 2005; Cant & Cooper, 2010; McCaughey & Traynor, 2010; Robertson, 2006). Bambini et al. (2009) revealed student's improved self-confidence to perform nursing assessment skills in the postpartum setting. The students also indicated increased self-confidence in their clinical judgment abilities and their ability to identify and manage abnormal assessment findings. McCaughey and Traynor (2010) identified simulation as a valuable method for improving clinical judgment and safe nursing practice. Shinnick et al. (2011) suggested that the simulation experience contributed to improved learning outcomes in nursing student's clinical knowledge. The current research examined knowledge retention in undergraduate nursing students, related to clinical simulation with a focus on postsimulation debriefing methods.

Postsimulation Debriefing

Postsimulation debriefing is a group discussion that allows the nurse educator and the learners to critically analyze and reflect upon the simulation experience. The simulation experience is based on a clinical case study and frequently produces an emotional response by the student learners (Dreifuerst, 2012). Although experts agree that debriefing is the key component to student's deeper understanding and transformational learning, questions remain about the best methods of debriefing in nursing education that lead to improved learning outcomes. The following section presents several research studies that compare several different methods of debriefing.

Lavoie, Pepin, and Boyer (2013) combined a simulated critical-care experience and reflective debriefing to conduct a study focused on participants' and educators' perceptions of a simulation-based teaching intervention. The intervention consisted of an open-ended questionnaire about the simulation experience, it was implemented in the last phase of a critical-care orientation program for 5 registered nurses at a teaching hospital in Canada. Immediately after a 45-minute simulation intervention, participants were given an open-ended questionnaire to complete; sample questions included (a) What did you learn today?, (b) What did you like most about the activity?, and (c) How did this activity contribute to the development of your clinical judgment? After completing the questionnaire, the participants engaged in a 90-minute discussion and debriefing session.

The participants reported that the reflective debriefing process contributed to their nursing assessment, clinical judgment, organization of care, and decision-making abilities. The novice nurses indicated that debriefing was perceived to be a useful exercise for connecting theory and practice, as well as identifying creative solutions to

improve communication skills. Additionally, the participants commented that the time allowed for the simulation activity and the debriefing was found to be sufficient.

The faculty observers identified that negative feelings appeared to be experienced by all participants; each participant expressed a sense of failure immediately after the simulation. The facilitator allowed 15 minutes for participants to explore their perception of their performance and express their emotional responses. The facilitator believed that the affective debriefing helped to develop a trusting environment and allowed the participants to continue examination of their own thought processes and psychomotor performance (Lavoie et al., 2013). Similarly, in the current research, both the traditional and the DML debriefing methods include an affective component that encourages participants to verbalize their emotional response to the simulation activity or to verbalize and record their response on the DML worksheet. Addressing affective concerns is believed to promote a safe and trusting environment for the subsequent verbal discussion and debriefing session (Decker et al., 2013; Lavoie et al., 2013)

In a related study, medical researchers Van Heukelom, Begaz, and Treat (2010) investigated two methods of debriefing that differed in their implementation time. *Postsimulation* debriefing is a formal session that takes place after the simulation session. In contrast, during the *insimulation* debriefing method, the educator suspends the simulation session to instruct and allow reflection throughout the simulation experience.

The goal of the study was to compare the influence of postsimulation and insimulation methods of debriefing on student confidence and perception of the simulation experience. One hundred sixty-one medical students were assigned to either the postsimulation or the insimulation debriefing groups. A retrospective pretest-posttest

survey design was utilized to investigate whether there were any differences in the perception of the simulation experience. The survey gathered information on the students' self-reported confidence in their abilities to perform medical-resuscitation skills. Additionally, the survey included questions related to the teaching quality of the facilitator, the effect of the debriefing strategy used, and the realism of the simulation activity. The students were asked to rate statements on a 7-point Likert scale, the results indicated that there were differences in the self-reported results regarding the effect of the debriefing method on students' ability to perform medical-resuscitation skills. The group that received postsimulation debriefing rated all measures higher than the insimulation debriefing group.

The results of this study support the postsimulation debriefing method over the in-simulation debriefing method. There are some concerns that the repeated interruptions during the insimulation debriefing may decrease the realism of the simulations and prevent students from experiencing consequences of their actions. Moreover, completing a simulation without interruption produces a higher level of emotional realism for the participants (Van Heukelom et al., 2010). To enhance the realism of the simulation experiences used in the current research, both debriefing methods were postsimulation methods; participants completed the simulation activities without interruption.

Chronister and Brown (2012) compared two different debriefing methods on quality of student assessment and psychomotor skills, response time, and knowledge retention. A comparative and crossover design was used to evaluate quality and efficiency of skills. A convenience sample of undergraduate nursing students (n=37) was recruited from a senior-level critical-care course at a Midwestern university. All students

engaged in a cardiopulmonary arrest simulation. Students were assigned to one of two groups following a cardiopulmonary arrest simulation, either verbal-only debriefing or video-assisted verbal debriefing.

Results indicated higher knowledge retention in the verbal debriefing group. The quality of skill improvement was higher and response times were faster with students who received video-assisted verbal debriefing. Similarly, the current research measured knowledge retention of undergraduate nursing students. The current study compared the traditional NLN method with the DML method that utilized a verbal debriefing method combined with a written component.

In a related study, Reed, Andrews, and Ravert (2013) addressed the question of how to debrief; the aim of this comparison study was to assess the differences in the undergraduate nursing simulation experience using verbal debriefing alone versus verbal debriefing with video, as rated by the Debriefing Experience Scale (Reed, 2012). The quality of student's psychomotor skills was measured with the Emergency Response Performance Tool, a checklist of 19 skills. The verbal group had higher knowledge retention than the group with verbal and video assist, whereas the quality of skill-improvement response time were faster for the verbal and video-assist group. Participants (n=64) reported that their overall experience were minimally different between verbal debriefing and debriefing with video. Results from this study suggested that student skills may be influenced by video-assist and verbal debriefing. In comparison, verbal debriefing was more important in improving knowledge retention. The current study is similar to that of Reed, Andrews, and Ravert et al. (2013) because it investigates two

types of verbal postsimulation debriefing methods for their effect on knowledge retention of undergraduate nursing students.

Summary

This literature review described evidence related to simulation-based education and postsimulation debriefing in nursing and healthcare education. Research representing a variety of debriefing methods and exploring value of the simulation experience in were presented. The researchers supported the use of simulation in nursing education; furthermore, researchers indicated that debriefing is a valuable component of simulation-based education. Shinnick et al. (2011) suggested that the debriefing experience should be emphasized in a simulation experience to achieve improved learning outcomes in nursing student's clinical knowledge.

The research results in this literature review indicate that simulation has been related to improvements in student outcomes and suggest that debriefing positively contributes to student learning. Lavoie et al. (2013) explored the use a critical-care simulation and the use of reflective debriefing on nursing assessment, organization of care, clinical judgment, and decision-making ability of newly licensed nurses. Outcomes supported the use of the reflective debriefing technique; however, the novice nurses reported a very negative emotional reaction to the simulation experience. The researchers found that participants responded favorably to an initial 15 minutes of debriefing time to review affective reactions to the simulation experience prior to beginning the reflective debriefing process. The research of Van Heukelom et al. (2010) supported the postsimulation debriefing method over the insimulation debriefing method. One disadvantage of the insimulation model included concerns that the repeated interruptions

during the insimulation debriefing may decrease the realism of the simulation. Chronister and Brown (2012) indicated that student skills may be affected by video-assist and verbal debriefing. In comparison, verbal debriefing was more effective in improving knowledge retention. Another study by Reed et al. (2013) reported improved learning with both debriefing and debriefing with video. Additionally, nursing students reported overall that their experiences were minimally different with debriefing and debriefing with video.

Through the literature review, specific characteristics of debriefing such as timing, insimulation, postsimulation, video assist, and reflective practice were examined and compared. Moreover, simulation experts support further research investigating debriefing techniques used in simulation-based nursing education. The current study acknowledged the importance of debriefing and compared two methods of debriefing on student outcomes: knowledge retention and quality of instruction.

The following chapter contains the methodology for the current research investigated whether there were differences in retention of knowledge when undergraduate nursing students participated in debriefing using the traditional NLN method compared with students who participated in the DML method. Additionally, nursing student's evaluation and perceptions of the quality of instruction were explored for differences based on the type of debriefing they received. Furthermore, student perceptions regarding the quality of instruction were analyzed for correlation with midterm examination scores on questions related to concepts in simulation activities.

CHAPTER III
METHODOLOGY

This chapter contains a description of the research methodology; several sections are presented: (a) research design, (b) research setting, (c) description of the sample population, (d) protection of human subjects, (e) interventions, (f) instrumentation development, (g) procedures for data collection, and (h) data analysis.

The purpose of the proposed research was to investigate whether there were differences in retention of knowledge, as evidenced by scores on unit examinations, when undergraduate nursing students participate in debriefing using the traditional National League for Nursing (NLN) method compared with students who participate in the Debriefing for Meaningful Learning (DML). Additionally, nursing student's perceptions of the quality of instruction were investigated for differences based on the type of debriefing method they received. Finally, student perceptions evaluating the quality of instruction were analyzed for correlation with unit-examination scores on questions related to concepts in simulation activities.

Research Design

Using a mixed-methods design, the researcher gathered data from one semester of undergraduate studies. The data collection was conducted during the Spring semester of 2015 and occurred over the course of 3 weeks. The pediatric nursing theory and practicum course consisted of one large group section of approximately 40 students. Students were divided into 5 clinical groups of 8 students per group; each group was assigned to a clinical instructor. Each clinical group was assigned to a hospital setting and participated in simulation activities on the university's main campus where the high-fidelity simulation center is located.

Undergraduate nursing students participated in simulation activities using two different debriefing methods, the independent variable: the traditional NLN method and the DML method. The researcher gathered data using the dependent variables: the DASH-SV scores and the unit-examination scores. Demographic information was gathered for reporting purposes only regarding participant's age, gender, number of hours of work for pay, and hours of study per week for nursing courses.

The DASH-SV is a validated survey that measures the student perceptions of the quality of debriefing; the survey was conducted after each 4-hour simulation session. The examination questions related to the concepts and objectives in the simulation activities were identified and scored separately from the overall examination scores. The research setting, sample population, protection of human subjects, interventions, instrumentation, and procedures for data collection are presented in the following sections.

The Research Setting

The proposed research was conducted in a school of nursing within a public urban university in the San Francisco Bay Area. The school prepares baccalaureate nursing students to practice in general healthcare settings such as hospitals, community agencies, and ambulatory health clinics. Students enrolled in pediatric nursing theory and practicum courses were invited to participate in the research. The researcher is the simulation director of the School of Nursing where the proposed study occurred.

Sample Population

A convenience sample of undergraduate nursing students enrolled in standard pediatric nursing theory and practicum course were invited to participate in the research.

A standard nursing course consists of didactic instruction for the theoretical concepts and actual clinical settings or clinical simulation for the practicum experiences.

Students in the undergraduate nursing program represent the diversity of the San Francisco Bay Area, in the baccalaureate nursing program, there are 192 students, 27 males and 165 females. The age range of the students is 21 to 50 with the median age of 25 years. The current ethnic diversity of the nursing student body is Native American/Alaskan Native 1%, African American 1.6%, Latino 9.4%, Asian, including Filipino 38.5%, White, Non-Latino 32.8%, Pacific Islander 1%, two or more races 4.7%, and unknown or no response 0.9%. The participants were enrolled in the pediatric nursing theory and practicum course. The DML group consisted of 16 participants, and the NLN group consisted of 9 participants. Both groups are similar in age and gender composition (Table 1).

Table 1

Demographic Characteristics of Participants

Group	*n*	Males	Females	Age Range	Average age
DML	16	2	14	18-35+ yrs.	25 yrs.
NLN	9	1	8	18-30+ yrs.	24 yrs.

Protection of Human Subjects

In accordance with the American Psychological Association (2010), ethical considerations working with human subjects were followed. Approval was obtained for the study through the Institutional Review Board for the Protection of Human Subjects at the University of San Francisco. Additionally, an approval was obtained from the institution where the research was conducted. A letter of permission for the study was obtained from the Chair and Director of the School of Nursing at the research site. The

researcher also received verbal approval to conduct the study from the nursing instructor of the course to be examined, and the participants signed a consent form.

Participants were instructed to self-assign a unique numeric identifier that was used on all materials submitted for course credit and for the research study. After the unit examinations were graded, a spreadsheet containing numeric identifiers and examination scores was created by the instructor of record. The report of participant's examination scores was hand carried to the researcher by the instructor of record. Confidentiality was maintained via normal procedures whereby professors kept student records in password protected files or in computers housed in locked offices.

Because students were engaged in the activities of the course whether they choose to participate in the study or not, there were no anticipated benefits, adverse effects, or costs for the participants in the study. Participation in the study was voluntary, and students received no negative consequences to their learning or to their grade whether or not they choose to participate.

Interventions

The following section presents the interventions for the research; the details of the simulation session procedure, traditional NLN and the DML models, and the DASH-SV are described. Simulation sessions and data collection occurred over a 3-week time period. Each clinical group received either the traditional NLN method or the DML method; all students completed the DASH-SV and the Simulation and Debriefing Questionnaire, and the DML group completed the DML worksheets.

Simulation Sessions

The simulation sessions were conducted at the university's main campus. As part

of the standard School of Nursing operations, students are assigned to a clinical group each semester; each clinical group attends all simulation activities and practicum assignments at hospitals and clinics together. There were five groups of students participating in simulation sessions on five different days. Each participant group was supervised by the clinical faculty of record; the five groups of participants were assigned to three clinical faculty members who would normally facilitate the debriefing sessions. Having three different people leading debriefings would introduce inconsistency to the sessions, therefore, the researcher facilitated the debriefing sessions included in the study and utilized the clinical faculty member as the content expert during the debriefing sessions.

The simulation coordinator assigned each clinical group of nursing students to participate in a simulation day. During the scheduled simulation day, student groups were assigned to either the traditional NLN group (comparison) or the DML group (treatment). The comparison group received the traditional verbal debriefing session, following the traditional NLN protocols. The treatment group had a written component, the Debriefing for Meaningful Learning (DML) worksheet (Dreifuerst, 2009), followed by a verbal debriefing session utilizing the traditional NLN protocols. The notable difference between the two debriefing methods was the DML worksheet, the written component that prompted student reactions, evaluation of the experience, and prompted individual reflection prior to the verbal debriefing session.

Each student was required to prepare the simulation experience by studying the online information available on the university's web-based learning system. The link contains standard orientation to simulation modules, reading assignments related to the

concepts addressed in the planned simulation scenarios, and a patient information packet containing demographic and clinical information related to the simulated patient activity.

In preparation for their clinical simulation days, clinical instructors reviewed simulation and debriefing training modules available via the university's learning system. Additionally, the researcher met with the clinical faculty on the day of the simulation activity, 30 minutes prior to the student's scheduled arrival time, to assist if necessary and to answer any questions about the simulation preparation information. Any other questions that clinical faculty had about the simulation process and experience were addressed prior to the student's arrival.

Each student group participated in a series of four 15-minute scenarios during their 4-hour simulation session; debriefing took place immediately after each patient-care scenario. Two or three students were assigned to participate in each scenario; each student was given a specific role: primary nurse, secondary nurse, family member, or recorder. The remaining students observed the simulation activity via closed circuit video in a separate classroom. Additionally, student observers were instructed to take notes during the observation as per routine simulation center protocols and standards of best practices in simulation (Decker et al., 2013).

On the day of the simulation session, the students received a 15-minute preliminary briefing session to orient students to the simulation space and patient simulator. The preliminary briefing session was conducted by the site-operations specialist, objectives of the simulation were reviewed, and ground rules and expectations for the simulation activity were discussed. The "*active phase*" of a simulation session is

the time when the students participate in patient-care activities within the simulated hospital environment. During the *active phase* of the simulation session, students interacted with the human patient simulator, demonstrated patient assessment, utilized clinical decision-making abilities, and performed nursing interventions.

The debriefing occurred immediately following the simulation scenario and was held in a separate room, away from the bedside. All *active-phase* participants and observers engaged in the debriefing session. The length of the debriefing sessions were approzimately30 minutes, twice as long as the *active phase*, which is in accordance to the International Association for Clinical Simulation Learning Standards of Best Practice (Decker et al., 2013). After the debriefing session ended, all participants were asked to complete the DASH-SV.

Typically, new clinical faculty members as well as experienced faculty members are assigned to facilitate student clinical groups. Because of the differences in faculty experience with simulation and debriefing, the researcher was the primary facilitator and debriefer. The researcher led the debriefing session using the traditional NLN protocols or the DML protocols, the clinical faculty of record facilitated as the content expert. The primary researcher as the main facilitator maintained consistency within the debriefing process without detracting from the student learning experience.

Traditional NLN Method of Debriefing

The traditional model of postsimulation debriefing is a model first developed by the military for aircraft pilots; this model utilizes a verbal-group-discussion format led by a facilitator. Guided by the facilitator, the debriefing is focused on the critique of performance; participants describe and discuss their reactions, behaviors that were performed, and behaviors that would be done differently in the future (Decker, 2007;

Flannagan, 2008; Sawyer & Deering, 2013). The competent facilitator structures the discussion in an organized way, facilitates discussion through verbal and nonverbal communication techniques, provides feedback, and explores rationale for nursing interventions performed.

The traditional model was employed in a large-scale multisite study sponsored by the NLN and the Laerdal Corporation in an effort to address the best teaching and learning practices for simulation teaching. For the purpose of this research, the traditional model of debriefing is referred to as the "traditional NLN method."

The traditional NLN method of debriefing is a curriculum standard at the study site; moreover, the faculty development seminars at the proposed study site have all been based on the traditional debriefing method. Simulation experts from the California Simulation Alliance (CSA) have presented a series of debriefing seminars at the study site. Approximately 25 faculty members have attended at least one debriefing workshop offered by the CSA; however, the exact numbers are unavailable. Additionally, simulation and debriefing training modules offered to faculty via the online learning platform were designed based on the traditional NLN method.

Debriefing for Meaningful Learning

Dreifuerst (2009) developed the DML model that involves a systematic written process combined with verbal debriefing designed to promote student reflection and understanding of nursing concepts presented in simulation. The DML model includes the "DML Student Worksheet," a 4-page document used to guide student thinking about the simulation session and provide a framework for the verbal debriefing that follows the written process. Only the first two pages of the worksheet were used for the current

research. The first two pages of the DML worksheet included prompts and written exercises for students to express their reactions to the simulation session and were completed by students immediately after participating in the patient-care portion of the simulation session. By using the worksheets, students were guided to take notes regarding the patient's problem, general goals of care, nursing interventions, and patient response to care.

Note-taking literature supports the written format for enhancing understanding and promoting meaningful experiences for learners (Lee, Lan, Hamman, & Hendricks, 2007). The DML was developed based on the belief that note-taking strategies contribute to learning, recall of information, and may be utilized to study for future assessments. For example, worksheets used in the proposed simulation sessions may be used by nursing students to prepare for quizzes and examinations.

The objective of the written portion of the DML was to support students in translating their thoughts into knowledge and clinical decision-making skills that can be applied in future simulation experiences or in actual clinical settings with patients (Dreifuerst, 2012). The DML method consists of six key components that support reflection and (a) engage the participants, (b) explore available options through "reflection-in-action" (Schön, 1983), (c) explain decisions, actions, and alternatives using deduction induction and analysis, (d) elaborate thinking like a nurse, expanding analysis and inferential thinking, (e) evaluate the experience by "reflecting-on-action" (Schön, 1983), and (f) extend inferential and analytic thinking by "reflecting beyond action" (Dreifuerst, 2012).

Procedures for Data Collection

The procedures for data collection are presented in this section; starting with a class visit, the researcher invited students in the nursing theory and practicum course to participate in the study. If the students agreed to participate in the research, they were asked to complete a consent form and a demographic survey. The students were asked for permission to use their midterm unit-examination scores and information collected from the DASH-SV survey, Simulation and Debriefing Questionnaire, and DML Worksheets.

The Class Visit

At the beginning of the Spring 2015 semester, the researcher visited the classroom to meet the students enrolled in the pediatric theory and practicum course. The researcher informed students about the proposed research study that focused on exploring features related to simulation-based education by measuring student perceptions of quality of instruction and student's performance on unit examinations. The researcher explained that all students would be participating in the same class events whether or not they choose to be part of the study. Rather than merely requesting permission to use student data after the examination scores have been posted, the researcher had chosen this class visit approach as a way to meet the students and relieve some of their anxiety prior to facilitating their simulation session. Meeting the students ahead of time and giving simulation preparation instructions are part of normal classroom procedures to orient the students to the simulation program. The students had the opportunity to ask questions of the researcher on the day of the class visit.

During the initial class visit, students were given a consent form (Appendix A), a letter of invitation to participate in the research (Appendix B), and information about the

research study (Appendix C). The letter also provided details of the research study. Finally, the students received a demographic survey (Appendix D), and an information packet with simulation preparation handouts explaining the standard preparation for simulation experiences (Appendix E). If students choose to participate, they were asked to complete the consent form and demographic survey. Students were instructed contact the researcher if they have any questions or concerns regarding study participation.

The students' demographic information were collected for reporting purposes only. In addition to demographic information, the survey required students to self-assign a participant code number that were used to identify their work to the researcher. This code number was the first letter of their mother's maiden name and last four digits of their student identification number. The researcher used the code number to record student data anonymously. The students were instructed to write the self-assigned number next to their name on the demographic survey form, the faculty of record created a spreadsheet with participant names and code numbers. The names and code numbers were known only to the course instructor. To maintain confidentiality, the documents were kept in a password protected computer in a locked office, in a secure building on the university campus. Additionally, students were instructed to write the code number on unit examinations, DASH student surveys, simulation assignments, and DML worksheets. Students were free to decline the invitation to participate in the study. The simulation sessions took place according to a prescribed curriculum schedule.

The only curricular difference between participating and nonparticipating students was that the participant's DASH-SV survey responses and examination scores were utilized in the study. All students completed the DASH-SV and the unit examinations

regardless of whether they chose to participate in the study, as they are part of the regular course requirements**.** For this reason, no alternate activities were designed for students not participating in the study. Choosing not to participate in the study had no consequence on student's grade or standing in the nursing program. There was no reward for participation; participants did not receive material compensation or extra credit toward their grades.

Students who completed the consent for participation in the study and the demographic survey were giving the researchers permission to use their survey responses, examination scores, and their demographic information. After the midterm grades had been posted, the researcher contacted the students by email to request consent to use their examination scores, demographic information, and DASH-SV scores in future publications. This additional consent was required by the Institutional Review Board (IRB) at the study site.

Unit Examination

Once the students completed the midterm unit examination, the faculty of record electronically scored the examination and printed out a copy of the results. The faculty of record replaced student names with identification numbers and hand carried the data to the researcher. To calculate the "simulation professional-" from the overall examination scores, the questions related to the concepts in the simulation activities were identified and scored separately from the overall examination scores. The percentage of correct answers in each subgroup were recorded by the researcher.

Instrumentation

The research utilized the assessment tool: Debriefing Assessment for Simulation in Healthcare-Student Version (DASH-SV). The students used the DASH-SV to rate specific faculty behaviors during the debriefing. Additionally, all participants completed the qualitative survey: the Simulation and Debriefing Questionnaire. The DML group of participants completed the DML worksheets. The following section describes the assessment tools.

Debriefing Assessment for Simulation in Healthcare

The DASH was developed at the Center for Simulation (Brett-Fleegler et al., 2012) to address the need for a debriefing instrument that may be utilized in a variety of settings in simulation-related health-care education. The DASH-SV is used for rating quality of instruction during debriefing, six elements or behaviors in the criterion-referenced rating scale were the focus of the DASH-SV. The six elements that define how the instructor performed were (a) establishes an engaging learning environment, (b) maintains an engaging learning environment, (c) structures debriefing in an organized way, (d) provokes engaging discussions, (e) identifies and explores performance gaps, and (f) helps students achieve or sustain good performance.

Individuals rated the elements using a 7-point scale, the scores ranged from 1 to 7. The anchors for the scale were 7-*Extremely effective/Outstanding*, 6-*Consistently effective/very good*, 5-*Most effective/good*, 4-*Somewhat effective/average*, 3-*Somewhat ineffective/poor*, 2-*Mostly ineffective/very poor*, and 1-*Extremely ineffective/abysmal*.

There are two versions of the DASH: faculty and student forms. The student version was used in this study. Faculty and students use the DASH to rate elements

related to specific debriefing behaviors of the facilitator such as “provokes engaging discussions,” “facilitates discussion through verbal and nonverbal techniques,” and “paraphrasing or verbally mirroring what students say” (Brett-Fleegler et al., 2012). The DASH faculty version is utilized for faculty evaluations and self-evaluations as tool for continuous faculty improvement. Learners use the student version of the DASH to rate the quality of debriefing that they experienced with the faculty facilitator.

The developers of the DASH used an iterative process known as theory elaboration. First, they identified a set of behavioral activities that are accepted as best practices for effective debriefing by searching the literature, relying on their own experiences, and through semistructured interviews with individuals who were well established as debriefing instructors in North America, Europe, and Australia. The elements were constructed so that they are independent of one another. Even though there may be some overlap in the elements, individuals who are rating a debriefing session are instructed to ignore the overlap and rate each item independently.

Validity

The DASH was reviewed for content and usability by eight simulation experts from five different pediatric tertiary-care academic medical centers in the US and Canada. These experts had at least 5 years of experience in simulation and debriefing. First, the experts reviewed the rater’s handbook, discussed each element, and suggested edits and asked questions that were used to make the language clearer. After that initial review, the experts reviewed and completed the DASH for two demonstration videos and two debriefing videos. Based on this review, additional modifications were made. Finally, using a teleconference format, final suggestions for changes were made to

the language of the elements and behaviors to reflect terminology familiar to clinician educators.

After refining the instrument, 151 international health-care educators participated in 4.5-hour interactive DASH rater training session to further provide validity evidence. Only 114 trainees' ratings were analyzed from the two training sessions involving three rounds of ratings. The participants included a broad range of health professionals and educators from community-based hospitals to academic medical centers. The means for each of the videos that were rated were compared using a one-way repeated–measures analysis of variance comparing three video types: poor, average, and superior. The differences for the ratings across the three standardized debriefing were statistically significant with overall means of 2.18, 4.77, and 5.35 for the poor, average, and superior videos, respectively. These ratings indicate that differentiation between the quality of debriefings is effective using the DASH.

Reliability

Interrater reliability was assessed using the same 114 rater trainees' ratings at the element level and the overall mean of the six elements and intraclass correlation coefficients. The intraclass correlation coefficient for the six elements ranged from .57 to .68 with the overall coefficient of .74. Cronbach's coefficient alpha was calculated using the average video data. This video was the most difficult to rate and hence was selected for estimating internal consistency. The resulting Cronbach coefficient alpha was reported as .89, which is a strong indicator of internal consistency.

The DASH-SV measures the student's perception of the quality of instruction related to the simulation debriefing experience. The DASH-SV scores were examined

with regard to research question number three, "Do student's perceptions of the quality of instruction correlate with midterm examination scores for questions related to concepts in simulation activities?" Because a student's change in cognition could be attributed to their participation in discussion, reflective thinking, and analysis an experience (Mezirow, 1991; Vygotsky, 1978), the researcher was interested in learning if the student's DASH-SV scores correlated with students examination scores.

In the current research, the DASH-SV was completed by all students at the end of their simulation day and values for the DASH-SV were computed by the researcher. There were 22 faculty behaviors identified in the DASH-SV, students were instructed to rate the faculty behaviors according to the 7-point scale. The instrument was modified slightly so that the 7-point scale was written after each item. The original version of the instrument listed the scale at the top of the first page only and students were to write in the score in a box next to each individual behavior. The researcher believed that it would be easier for students to answer each item if the scale was written in under each item. To obtain the value for the DASH-SV, an average of each student's total ratings was calculated and recorded. The values ranged from one to 7.

Simulation and Debriefing Experience Questionnaire

To gather qualitative data, the Simulation and Debriefing Experience Questionnaire (Appendix F) was developed by the researcher and consisted of three questions related to the simulation experience. All participants completed the questionnaire after completing the DASH-SV survey. The simulation and debriefing questionnaire was collected at the end of each simulation day, and each participant

response was recorded on a spreadsheet. The researcher analyzed the information and then identified the key theme of each response.

The survey questions are listed below:

1. What was the most valuable portion of today's simulation and debriefing experience? Why was it valuable?
2. What was the least valuable portion of your simulation and debriefing experience today? Why was it least valuable?
3. What recommendations would you make to improve the simulation and debriefing learning experience?

DML Worksheet

A major component of the DML method is the DML Worksheet that provided qualitative data related to each simulation scenario. The worksheet was designed to promote student thinking about the simulation session and to provide a framework for the verbal debriefing that follows. The first two pages of the worksheet includes prompts for students to express their reactions to the simulation session and is completed by students immediately after participating in the patient-care portion, the "*action phase*" of the simulation session. By using the worksheets, students are prompted to take notes regarding the patient's problem, general goals of care, nursing interventions, and patient response to care.

The participants who received the DML method of postsimulation debriefing completed the DML worksheets after each simulation session. The worksheets were collected by the researcher at the end of each simulation day; each participant response

was recorded on a spreadsheet. The information was analyzed by the researcher to identify the key theme of each response.

The DML Worksheet prompts are listed below:

1. What is the first thing that comes to mind about the simulation experience?

2. What do you think went well during the simulation experience and why?"

3. What would you do differently and why?

Unit Examination

The unit examination was administered midterm during the weekly large-group class meeting. The researcher and faculty of record constructed the midterm examination questions related to the simulation concepts. There were a total of 60 questions on the examination, 18 questions were related to the concepts of infant growth and development, as well as pediatric respiratory care; the two major concepts addressed within the simulation session. Examination questions were divided into three subgroups pertaining to knowledge about (a) infant growth and development, (b) pediatric respiratory system, and (c) combined infant growth and development plus pediatric respiratory system.

Questions included in the examination were peer-reviewed multiple-choice questions that all participants were required to take. The questions addressing the concepts of infant growth and development and pediatric respiratory care were written by the researcher who is an expert pediatric nurse and faculty member at the study site. The questions were reviewed by two assistant professors in pediatric nursing to validate content and structure. Once approved, the unit-examination questions were included in the midterm examination.

Qualifications of the Researcher

The researcher has been involved with clinical simulation in healthcare since 2009; she has attended numerous healthcare simulation conferences, simulation, and debriefing workshops. The researcher was instrumental in simulation curriculum development designed to integrate simulation across the curriculum at the proposed study site. Currently, the researcher is the Director of Simulation at the proposed study site.

Research Questions

1. To what extent do nursing students who participate in DML debriefing in simulation exercises perform better on unit exams than do students who participate in traditional debriefing?
2. To what extent do nursing students who experience the DML perceive the quality of instruction differently from those students experience the traditional debriefing protocols?
3. To what extent do perceptions of the quality of instruction correlate with unit-examination scores for questions related to concepts in simulation activities?

Data Analysis

The DASH-SV scores and the midterm examination professional- were analyzed for range and mean. Data were entered into SPSS for analysis to ascertain any difference in examination scores or DASH-SV scores between groups. To address research question 1, the participants' responses were analyzed using an independent-samples *t* test to calculate whether there was a difference in the midterm examination scores based on the debriefing method utilized. Question 2 was addressed by using an independent-samples *t* test to calculate whether there was a difference in the perceptions of the quality of student

learning experiences based on the debriefing method utilized. Finally, the responses were analyzed to calculate whether there was a correlation between the DASH-SV scores and the examination scores based on the debriefing method utilized.

Summary

This study compared the effect of two postsimulation debriefing methods implemented at a school of nursing in an urban university in the San Francisco Bay Area. One participant group received the traditional NLN method of debriefing, whereas the other participant group received the DML method. Both debriefing methods were chosen for the proposed study because they have been utilized by simulation experts in two large-scale multisite nursing-education studies in the United States. The main difference between methods is that the DML method adds a written component to the traditional verbal format of debriefing.

The researcher visited classes to inform students about details of the study, invited students to participate in the study, and explained the consent forms and demographic surveys. After the students consented to participate in the study, the participants were divided into comparison and treatment groups. Simulation activities occurred over a 3-week period during the Spring 2015 semester.

Simulation sessions included a prebriefing phase, an active phase, and a postsimulation debriefing session. All participants completed the DASH-SV after the debriefing session. The aim of the research was to better understand what participants are experiencing and learning from the simulation and debriefing experience by comparing two methods of debriefing. The researcher examined whether the structure of the debriefing method influenced the participants' retention of knowledge or their

perceptions of the quality of instruction. Additionally, the correlation between the student's retention of knowledge and their perceptions of the quality of instruction was computed.

The information gathered by the research study will inform nurse educators about the influence of the traditional NLN method of postsimulation debriefing compared with the Debriefing for Meaningful Learning (DML) method developed by Dreifuerst (2009). The researcher hoped to add to the body of knowledge related to the effect of debriefing techniques on nursing student's learning outcomes. The following chapter contains results from the research that examined two methods of postsimulation debriefing. The results related to the research questions as well as the participant responses to the Simulation and Debriefing Questionnaires and DML Worksheets are presented.

CHAPTER IV
RESULTS

The purpose of this research was to investigate whether there were differences in knowledge retention, when undergraduate nursing students participated in postsimulation debriefing using the traditional National League for Nursing (NLN) method compared with students who participated in the Debriefing for Meaningful Learning (DML) method. Additionally, nursing student's perceptions of the quality of instruction were examined for differences based on the type of debriefing they received. Finally, student perceptions evaluating the quality of instruction were analyzed for correlation with unit-examination scores on questions related to concepts in simulation activities.

This chapter contains results from the research examining two methods of post-simulation debriefing; the results are presented in four sections. The first section addresses research question 1 and presents the unit-examination scores of each student group. The second section of this chapter focuses on research question 2, presenting the results of the DASH-SV for the two participant groups. The third section addresses research question 3 giving the correlation between DASH-SV scores and the infant growth and development (GD) scores, the pediatric respiratory system (R) scores, and the combined infant growth and development plus the pediatric respiratory system (GDR) scores. The fourth section contains the participant responses to the Simulation and Debriefing Questionnaires and DML Worksheets.

Undergraduate nursing students participated in simulation and debriefing activities using two debriefing methods: the traditional NLN method and the DML method. The researcher gathered data from the demographic surveys, the unit

examination scores, the DASH-SV scores, the Simulation and Debriefing Questionnaire, and the DML worksheets.

Data collection was carried out during 3 weeks of the Spring 2015 semester at a public university in an urban setting. The sample consisted of undergraduate senior nursing students who each participated in clinical simulation activities. Each simulation day was 4-hours long and was comprised of four separate scenario sessions during which three to four students participated in the action phase of the simulation. Student groups were debriefed using one method of debriefing; at the end of the simulation day, students were asked to complete the DASH-SV and Simulation and Debriefing Questionnaire. The students who received the DML debriefing method completed DML worksheets and submitted them to the researcher. The data were analyzed through descriptive statistics and independent-samples *t* test. The assumption of normal distribution was questionable given the small sample size. Levene's test was used to address the assumption of homogeneity of population variances and found to be nonsignificant.

Unit-Examination Scores

The unit examination was administered at the midterm of the Spring 2015 semester. The examination evaluated student knowledge on pediatric respiratory, cardiac, and neurologic systems as well as infant growth and development. A total of 25 examination scores were collected, there were 16 examinations for the DML group and 9 examinations for the NLN group. Examination questions were divided into three groups pertaining to knowledge about (a) infant growth and development (GD), (b) pediatric respiratory system (R), and (c) combined infant growth and development plus pediatric respiratory system (GDR). The examination scores were percent corrected and analyzed

through descriptive statistics and independent-samples *t* test. The mean and standard deviation were computed for each subgroup of examination questions. The scores of the DML group were compared with the scores from the NLN group.

Both the NLN and DML groups scored, on average, the highest on the infant growth and development questions and the lowest on the respiratory questions. The DML group's examination scores ranged from 63 to 90 with a mean of 77; the GD scores ranged from 57 to 100 with a mean of 80; the R scores ranged from 55 to 91 with a mean of 70, and the combined scores for GD and R ranged from 61 to 89 with a mean of 74. The NLN group's examination scores ranged from 68 to 92 with a mean of 80; the GD scores ranged from 71 to 100 with a mean of 89; the R scores ranged from 64 to 91 with a mean of 79, and the combined scores ranged from 67 to 89 with a mean of 83.

The ranked order of examination scores was the same for both groups, the highest to the lowest means were GD, GDR, and R (Table 2). There were little or no differences between the means for the DML and NLN groups; however, the NLN group scored higher on average than the DML group in all three test categories. The differences between the groups were not statistically significant (Table 2).

Table 2

Means, Standard Deviations, Independent-samples *t* Test Results for Examination Subscores for DML and NLN Groups

	DML			NLN			
Test	*n*	*M*	*SD*	*n*	*M*	*SD*	*t* (*df*=23)
Growth and Development	16	.80	.12	9	.89	.12	-1.74
Respiratory	16	.70	.11	9	.79	.10	-2.20
Combined	16	.74	.09	9	.83	.08	-2.59

The DASH-SV Scores

The DASH-SV is an assessment instrument used to evaluate the perceptions of the quality of instruction during healthcare simulation debriefings. The instrument

consists of 22 items that are rated using a 7-point Likert scale. All participants who attended the simulation day completed the DASH-SV at the end of the day. Those students who agreed to participate in the study wrote their identification code on the document instead of their name. There were 36 DASH-SV scores included in this research. There were a greater number of DASH-SV scores than the number of examination scores because students who participated in simulation sessions after the unit-examination date completed the DASH-SV questionnaire and submitted them to the researcher. Participant responses were analyzed through descriptive statistics and independent-samples *t* test. There was no statistically significant difference in the means of the DML and the NLN groups. Table 3 presents the means and standard deviations of the DASH-SV scores based on the method of debriefing received.

Table 3

DASH-SV Scores for DML and NLN Groups

	DML			NLN			
Test	*n*	*M*	*SD*	*n*	*M*	*SD*	*t* (*df*=34)
DASH-SV	19	6.50	.51	17	6.60	.48	-1.74

Correlation Between DASH-SV and Examination Scores

Utilizing DASH-SV scores and examination scores from 25 participants, the Pearson product-moment correlation coefficients were calculated to examine possible relationships. Although the total number of scores was too small for a valid correlation, the coefficients were calculated for each group of examination scores: the GD scores, the R scores, and the GDR scores. Their relationships were moderate as noted by the correlation coefficients in Table 4.

Table 4

Pearson Product-Moment Correlation Coefficients for the DASH-SV and Examination Subscores (*n*=25)

	GD	R	GD and R
DASH-SV	.40	.40	.45

Responses to the Simulation and Debriefing Questionnaire

Each participant completed the questionnaire that consisted of three questions or prompts about the simulation experience. Several participants identified more than one theme within their answer to the question on the Simulation and Debriefing Questionnaire. Each theme included in the student's response was counted individually; therefore, the number of total responses was greater than the number of participants in each group. The researcher analyzed the information and identified the key themes of each response. The most common themes identified were related to the role of the nurse, nursing concepts, debriefing sessions, and communication.

Several participants identified the "nurse role" as valuable, whereas others identified the nursing role as the least valuable. For example, one student wrote, "It may have been more of a useful experience if everyone was able to be a nurse at least twice" when asked what was the least valuable component. Another student responded, "I felt actually having to think about things myself, without being led [by an instructor], was really helpful."

Similarly, the "nursing concept" theme was identified by keywords and phrases that related to nursing care or skills, patient symptoms, and patient assessment. One student reported that, "The most valuable portion of today's simulation is to make sure I know normal values, vital signs, and when to use oxygen or not." Another student wrote, "Sometimes you just have to wait even when feeling anxious…like waiting for the

Nitroglycerine to take effect before giving again [*sic*].” A final example of a response that was coded as *nursing concept* read, “We learned that there isn’t always a specific intervention we as nurses can do to alleviate symptoms.”

Keywords and phrases corresponding to a particular theme were identified, for example, one student responded that, “The debriefing [was valuable] because we were able to go over the simulation and discuss what we did well and what we missed.” Another student wrote, “This really helped in sharing what we did right and what we should have done if needed [*sic*].” Both of the above comments were coded with the “debriefing” theme. Although the second example mentioned “sharing” and not specifically *debriefing* and because the sharing of ideas occurred during the debriefing sessions, that comment was coded with the *debriefing* theme.

“Communication and Teamwork” was a common theme identified in the responses; participants reported communication with other nurses, calling doctors on the phone as well as communication with the patient and family as a valuable component of the simulation. One student wrote, “learning how to communicate to other professionals [was valuable].” Another student commented, “The most valuable portion was the emphasis on communication and when to contact the doctor.”

The “scenario design” theme evolved based on comments regarding the objectives of the patient in the scenario. For example, one student wrote, “Learning how to deal with an emergency was most valuable;” another student reported, “taking care of patients with many different scenes was valuable.” Another example that was coded with the *scenario design* theme was “The high stress scenarios helped show me how to stay calm and give nursing interventions time to take effect.”

The Most Valuable Component of the Simulation

There were 77 responses to the most valuable component of the simulation; there were 34 responses (44%) from the DML group and 43 responses (56%) from the NLN group. Responses from all participants indicated that the three highest-ranking themes were the nurse role, application of nursing concepts, and debriefing. Both the NLN and DML groups reported the nurse role, nursing concepts, and debriefing as the top three most valuable components; however, the ranking of components were slightly different.

The DML group considered the debriefing component the most important with 27.91% responding, which was 12% higher than the NLN group's percentage (Table 5). The NLN group considered the nurse role most valuable, there was only a 2% difference compared with the DML group who rated the nurse role second most valuable. The application of nursing concepts, ranked second by the NLN group, was a 4.5 % higher than the DML group.

Table 5

The Most Valuable Component of the Simulation and Debriefing Experience

		Total (*n*=77)	DML (*n*=34)	NLN (*n*=43)
Theme	*f*	*%*	*%*	*%*
Nurse role	19	24.68	23.53	25.58
Nursing concepts	18	23.38	17.65	22.22
Debriefing	15	19.48	27.91	15.56
Communication	8	10.39	8.82	11.63
Strengths/weaknesses	7	9.09	8.82	9.30
Observation	5	6.49	8.82	4.65
Scenario design	5	6.49	8.82	4.65

Communication and teamwork was ranked fourth by both groups, although the NLN group responded 3% higher than the DML group. Additional themes related to communication and teamwork, participant's strengths and weaknesses, observation, and scenario design were identified as valuable components by a small number of participants.

Participants indicated that playing the primary nurse role was more valuable than playing the secondary nurse role. One student wrote, “It was great being able to take the lead in different scenarios.” Additionally, participants stated that feedback related to the strengths and weaknesses in their performance during the simulation was valuable; for example, one student commented, “To evaluate my strengths and weaknesses and to be able to work on things I am lacking.” Only 6.49% indicated that observation was the most valuable component of the simulation experience (Table 5).

The Least Valuable Component of the Simulation

When participants were asked to report the least valuable component of the simulation experience, a total of 35 responses were gathered; 18 from the DML group and 17 from the NLN group. Fourteen of the respondents did not report anything as “least valuable.” For example, one student wrote, “Everything was valuable.” Another student commented, “I honestly thought everything was valuable from observing, doing the simulation and debriefing.” Finally, one student wrote, “I think everything was helpful and I learned from every aspect of it.” Consequently, 14 responses were subtracted from the total responses, leaving 21 responses for analysis.

Only three themes emerged from the NLN group compared with the six themes identified by the DML group. The three themes, in order of importance, identified by the NLN group were role assignment, technical nursing skills, and scenario content. The DML group identified six themes from highest to lowest importance: role assignment, equipment, information, simulation staff, worksheets, and being observed (Table 6).

Table 6

The Least Valuable Component of Simulation and Debriefing Experience

		Total (*n*= 21)	DML(*n*= 14)	NLN (*n*= 7)
Theme	*f*	%	%	%
Role Assignment	8	38.10	28.57	57.14
Equipment	3	14.29	21.43	0.00
Technical nursing skill	2	9.52	0.00	28.57
Information	2	9.52	14.29	0.00
Staff-Instructor	2	9.52	14.29	0.00
Worksheets	2	9.52	14.29	0.00
Scenario content	1	4.76	0.00	14.29
Being observed	1	4.76	7.14	0.00

Both the DML and the NLN group had role assignments, other than the nurse role, as the highest percentage for the *least valuable* component of the simulation experience. The *role assignments* component was the only theme that overlapped between the two groups. Moreover, 57.14% of NLN group compared with 28.57% of the DML group identified role assignment as the least valuable component. The roles of the recorder, the parent, the observer, and the runner also were named as the least valuable roles. Referring to the recorder role, one participant wrote, "The least valuable experience about the simulation was being the recorder in the room." Another student who was assigned to the parent role wrote, "I felt like I just stood there;" another "parent" participant commented, "Being the parent, did not feel like I learned much."

There was a 28.57% difference between the NLN group's most common theme and second most common theme, technical nursing skills. One NLN group participant reported that "taking vital signs [was least valuable] because we did this a lot in hospitals;" another student wrote, "I guess the least valuable portion is knowing how to perform technical perfectly, because that will get better as I practice more." One participant from the NLN group identified scenario content as least valuable, whereas none of the DML group participants commented about the scenario content.

Over 21% of the DML group identified the equipment as least valuable, two examples of comments are “the volume on the machine needed to be louder” and “the presence of medications in the room that we never use was odd.” In contrast, none of the participants in the NLN group reported that the equipment was the least valuable component.

Two participants in the DML group reported that the information provided was not valuable, “observers weren’t given any information before watching the simulations” and “it’s hard not to get any information beforehand.” Other themes that were identified by a small percentage (14.29%) of the DML participants were the operations staff or instructor, “the rudeness from [name of staff] regarding the equipment, put kind of a bad vibe before we even started.” The same number of participants (14.29%) identified the worksheets as least valuable, one student wrote that “worksheets and note taking distracts me from being able to focus on the scenario.”

One person in the NLN group mentioned the scenario content, “the intravenous catheter was not realistic,” and another participant commented, “having [the baby’s] thumb taped in an awkward position is important.” One DML group participant noted that being observed by others was the least valuable part, “I don’t particularly like that I’m being watched.”

Recommendations for Improvement

The final item on the questionnaire was about participant’s recommendations for improvement of the simulation and debriefing experience. There were 43 responses, 30 responses from the DML group, and 13 responses from the NLN group. Eight responses to the question were eliminated from the total number or responses because they stated

that the experience was positive and no recommendations were given. Therefore, there were a total of 35 relevant responses, 25 from the DML group and 10 from the NLN group.

The recommendations were related to each phase of the simulation experience, the prebriefing phase, the action phase, and the debriefing phase. Recommendations for improvement included several themes: (a) information, (b) debriefing, (c) scenario design, (d) written exercises, and (e) participant role assignments (Table 7).

Table 7

Participant Recommendations for Improvement of the Simulation Experience

		Total (*n*=35)	DML (*n*=25)	NLN (*n*=10)
Theme	*f*	%	%	%
Information	13	37.14	36.00	40.00
Debriefing	8	22.86	24.00	20.00
Scenario design	7	20.00	20.00	20.00
Written exercises	4	11.43	12.00	10.00
Role assignment	3	8.57	8.00	10.00

Both the DML and NLN groups had themes in the same ranked order; the top three areas recommended for improvement were information, debriefing, and scenario design. The most highly rated theme was information; furthermore, there was a 4% difference between the two groups, with the NLN group having a higher percentage than the DML group. Several students recommended that more information be given to them prior to the simulation experience. For example, one student wrote, “Include more teaching if students are not sure of a topic;” another student commented, “If the instructors made it clear that we would be starting an infusion, we would not be hesitant.”

The second highest-ranking theme for improvement was debriefing, there was a 4% difference between groups, with the DML group having the higher percentage than the NLN group. Students recommended improving the debriefing sessions by watching

the video during the session "so that they could learn more." One student wrote: "I would recommend using more time to discuss what each person thought of the simulation." Another student recommended discussion of alternative approaches to the situation: "I would recommend touching on other ways the scenario could have been approached."

Recommendations to improve scenario design was ranked third by both groups. One student thought that the patient problem should have been "more acute," another student recommended an "emergency situation." One student responded: "I expected to have a more realistic simulation the voice of the baby was too low."

There was a small difference between groups regarding recommendations for written exercises and role assignments; however, both groups had these themes ranked in fourth and fifth place. One DML participant suggested to "Have one form or reflection paper to focus on," and another NLN participant responded, "I would recommend writing a quick reflection after going through the simulation." One NLN participant commented about role assignments: "Everyone [should] act as nurse twice."

Responses to DML Worksheets

The following section contains additional findings that were gathered from students who received the Debriefing for Meaningful Learning method (DML). Students who participated in and who observed the simulated clinical experiences completed the DML worksheets. The worksheet was designed to capture student's reflective thinking related to the simulation experience. Because there were four separate scenarios, responses for each scenario were categorized according to the scenario they described. The students wrote the responses to the prompts immediately following the action phase of the simulation experience, that is, prior to the debriefing session. The students were given 5 to 8 minutes to write down initial thoughts and responses to the prompts given.

The DML Worksheet prompts are listed as follows:

1. What is the first thing that comes to mind about the simulation experience?
2. What do you think went well during the simulation experience and why?"
3. What would you do differently and why?

The findings were analyzed for themes to better understand students' individual reflections and thought processes. To investigate whether there was a difference between the responses provided by participants in the simulation compared with the responses provided by the observers of the simulation, the responses were further divided between two groups: the "Participant" group and the "Observer" group. The evolving themes were identified; the frequency and percentages of each group's responses were calculated and presented within each section.

The action phase of each simulation experience consisted of four 15-minute scenario sessions, which were presented over a 4-hour time period. There were seven or eight students in each clinical group. Three to four students participated in each scenario session, whereas the remainder of the group observed in a separate classroom via closed circuit video. All four scenario sessions took place in a simulated hospital room; the patient was a 6-month-old baby. During each scenario session, a variety of circumstances and patient symptoms were presented, and the students were expected to assess the situation, gather information regarding the patient's status, collaborate with other health-team members, administer nursing care as needed, and communicate with the parent of the baby. The parent role was played by a student who was given a script and verbal instructions prior to the start of the simulation session. Each student was assigned to a specific role: primary nurse, secondary nurse, family member, recorder, or runner.

Information and instructions regarding student expectations were presented to the students during a 15-minute prebriefing session that occurred in the observation room prior to the beginning of the first-scenario session.

The first scenario presented an infant in respiratory distress with a parent who was at the baby's bedside. The second scenario focused on the baby's irritability and the parent's anxiety regarding the baby's comfort. In the third scenario, the baby displayed signs and symptoms of dehydration, and in the fourth scenario, the baby experienced complications of a neurological procedure. All scenarios have specific learning objectives and expected student behaviors; the detailed scenario information is the Simulation Scenario Overview (Appendix G).

Responses to Scenario One

The setting for the first scenario was a hospital room with a 6-month-old baby who was admitted to the hospital for respiratory distress. The learning objectives were (a) perform an assessment of a pediatric patient, including vital-sign measurement, (b) demonstrate management of a patient with respiratory distress, and (c) recognize abnormal breath sounds that may require medical intervention based upon the existing orders. Students were expected to assess the patient, respond to the patient's respiratory symptoms, communicate with the parent, and address the parental concerns about the baby's illness. Furthermore, students were required to contact the respiratory therapist or physician to schedule a nebulizer treatment with albuterol.

There were a total of 16 responses to the first prompt that revealed themes related to the emotional state of participant, the patient's symptoms and needs, confidence level, and patient safety factors. When asked to identify the first thing that comes to mind about

the simulation experience, almost half of the students wrote about their emotional reactions. The “emotional state” refers to the student comments that reported they were nervous, anxious, calm, felt like a "deer in the headlights," or "my mind went blank" during the simulation scenario (Table 8).

Table 8

Scenario One-First Reactions to Simulation Experience

	Total (*n*=16)		Participant (*n*=10)		Observers (*n*=6)	
Theme	*f*	%	*f*	%	*f*	%
Emotional state	7	43.75	4	40.00	3	50.00
Patient symptoms/needs	6	37.50	4	40.00	2	33.33
Confidence level	2	12.50	2	20.00	0	0.00
Patient Safety	1	6.25	0	0.00	1	16.67

Participant’s emotional state as well as patient symptoms and needs were the two most identified reactions by both groups. The observer group response, however, was 10% higher than the participant group. Fifty percent of the observers identified emotional state as the first thought that came to mind.

Although both groups rated “patient symptoms and needs” as the second most common reaction, there was a 7% difference between participants and observers; one student wrote, “the baby was crying and her oxygen saturation was going down,” and another student reported, “I knew the baby needed help with breathing.”

Two participants in the simulation wrote about their own lack of confidence and “not knowing what to do [for the baby].” One student wrote, “I couldn’t decide if I should use wall suction or bulb suction when baby was coughing.” Another student reported, “I couldn't think of what other intervention could help.” The observers did not report about nurse’s confidence level. One student observer of the simulation commented

on safety factors, "safety measures needed to be looked at, [such as the] crib and side rails," whereas participants in the simulation did not comment on patient safety factors.

The question, "What went right and why?" prompted students to reflect upon the simulation and focus on aspects of the simulation that went well. A large percentage of participants in the scenario reported that teamwork and communication were demonstrated well during the scenario sessions (41.67%). One participant in the simulation wrote, "we delegated tasks in the beginning;" another student commented that "we worked well as a team because we have had clinicals in the hospital setting together." One student observer of the simulation reported, "Communication is key which made completing tasks more efficient." The participant group rated teamwork and communication first, whereas the observer group rated nursing skills first. For the teamwork and communication theme, there was a difference in themes between the two groups; the observers were 8% lower than the participant group as presented in Table 9. The frequency of responses and percentage of each theme that evolved when students were asked to identify "what went well" in the simulation scenario are found in Table 9.

Table 9

Scenario One-What Went Well?

	Total (*n*=27)		Participant (*n*=12)		Observers (*n*=15)	
Theme	*f*	%	*f*	%	*f*	%
Teamwork communication	10	37.03	5	41.67	5	33.33
Nursing skills	10	37.03	4	33.33	6	40.00
Nurse Role	7	25.93	3	25.00	4	26.67

More than one third of the total responses identified nursing skills as "what went right?" Observers had nursing skills as the highest percentage of responses; there was a 7% difference in responses between the two groups. The theme "nursing skills" referred to the technical skills that were demonstrated by students during the simulation session,

for example, vital sign measurement, suctioning the airway, oxygen administration, and patient positioning. One participant stated, "being able to give oxygen was good;" one observer commented about nursing skills, "the nurse elevated the head of the bed and used the bulb syringe to suction."

Both groups identified the nurse role, and it was ranked third compared with communication and nursing skills. Approximately one quarter of the total responses related to the role; one participant wrote, "assessed right system, analyzed it, collaborate care call [*sic*]," and "called for respiratory therapist for additional help regarding her respiratory rate and oxygen." In total, there were 27 responses to the second prompt that revealed themes related to teamwork and communication, nursing skills and the role of the nurse.

The third prompt, "What would you do differently and why?" yielded 20 responses related to the nurse role, nursing skills, the parent role, patient symptoms and needs, teamwork, and communication. "Nurse role" and "nursing skills" were ranked first and second by both groups. The participants had the parent role ranked third, and the observers had the patient symptoms and needs ranked third. In contrast, the participants did not comment about patient symptoms and the observers did not identify the parent role as something that they would do differently. Only one observer identified teamwork and communication as something that they would do differently (Table 10).

Table 10

Scenario One-What would you do differently?

	Total (*n*=20)		Participant (*n*=12)		Observers (*n*=8)	
Theme	*f*	%	*f*	%	*f*	%
Nurse Role	7	35.00	4	33.33	3	37.50
Nursing Skills	6	30.00	4	33.33	2	25.00
Parent Role	4	20.00	4	33.33	0	0.00
Patient Symptoms/Needs	2	10.00	0	0.00	2	25.00
Communication	1	5.00	0	0.00	1	12.50

More than one third of the total participants identified the role of the nurse as one factor that they would do differently if given the opportunity. One participant wrote, "[I should have] assessed the fontanel sooner." One observer wrote that she would "prioritize care differently." Similarly, one third of total participants identified that nursing skills would be done differently, "I would have suctioned the baby more aggressively, I did not know how to assess for the cough because the monitor was too loud." Another student commented, "I would check the medication administration record and give medication before calling the respiratory therapist."

Participants responded regarding the role of the parent, "as the parent I could have been involved and gave more information;" another student wrote that she would "participate [and] involve parent in patient care." Patient symptoms and needs were identified by a small percentage of participants. A small percentage of observers responded that communication would be done differently in the future.

Responses to Scenario Two

Scenario two takes place with the same baby in the same hospital setting on the morning after her admission. The learning objectives are (a) perform an assessment on the infant, (b) obtain a patient history, and (c) identify problems and perform interventions. There were a total of 21 responses to the first prompt that revealed themes related to the emotional state of participant, the patient's symptoms and needs, scenario design, the role of the parent, the role of the nurse, teamwork and communication. The majority of the total participants identified emotional state, patient symptoms and needs, as well as scenario design as the first thing that comes to mind (Table 11).

Table 11

Scenario Two-First Reactions to Simulation Experience

	Total (*n*=21)		Participant (*n*=11)		Observers (*n*=10)	
Theme	*f*	%	*f*	%	*f*	%
Emotional State	7	33.33	5	45.50	2	20.00
Patient Symptoms/Needs	5	28.81	1	9.09	4	40.00
Scenario Design	3	14.28	2	18.20	1	10.00
Parent Role	2	9.52	1	9.09	1	10.00
Teamwork/Communication	2	9.52	0	0.00	2	20.00
Nurse Role	2	9.52	2	18.20	0	0.00

There was a 25.50% difference between the participant group and observer group in comments for the emotional state of the students. Almost half of the participant group (45.50%) commented on their emotional state as a first reaction compared with only 20% of observers who mentioned the emotions of the student participant. One student wrote, "I was nervous and anxious;" another student wrote "I felt very nervous knowing that I was going to be the nurse in charge." Although many students reported being nervous and anxious, one observer commented on the calm behavior of the participants in the scenario, "Both nurses were very calm and collected."

Forty percent of the observer group ranked the patient's symptoms and needs first when asked about their reactions, whereas only 9% of the participant group commented on patient's symptoms and needs. One student wrote, "It looked like the baby was simply fussy;" another student reported "how to sooth the crying baby." Additionally one participant wrote, "I wanted to focus on baby first."

There was an 8% difference between the participants (18.20%) and the observers (10%) in the theme of scenario design. One participant wrote that "The scenario was a bit obscure," another participant commented, "[I was] expecting something would go wrong," whereas another student had the opposite response, "The problem was easier than I thought."

Twenty percent of observers commented about teamwork and communication, whereas none of the participants commented about teamwork and communication. One observer reported, "Great teamwork on their part." Similarly, 18.20% of participants commented about the nurse role, and none of the observers commented about the nurse role. One student reported, "they [the nurses] separated the tasks well and intervened properly." One student from each group wrote about the parent role: one observer wrote about, "how to involve parent in patient care" and one participant shared that the "mom was too impatient."

There were 33 responses to the second prompt that revealed several themes: patient symptoms and needs, teamwork and communication, role of the parent, patient safety, and emotional state of the participant. When prompted to identify what went well and why, over one third of participants wrote about patient symptoms and needs. Both groups reported patient symptoms and needs highly; however, the participant group was 8% lower than the observer group in their comments (Table 12). One participant wrote, "we were able to get the vital signs taken," and another student observer responded, "what is making the baby discomfort [*sic*]."

Table 12

Scenario Two-What Went Well?

	Total(*n*=33)		Participant(*n*=17)		Observers(*n*=16)	
Theme	*f*	%	*f*	%	*f*	%
Patient Symptoms/Needs	13	39.39	6	35.50	7	43.80
Teamwork/Communication	8	24.24	6	35.50	2	12.50
Parent Role	6	18.18	3	17.70	3	18.80
Patient Safety	5	15.15	2	11.80	3	18.80
Emotional State	1	3.03	0	0.00	1	6.25

According to the participant's responses, teamwork and communication was equally important as patient symptoms and needs; both were 35.30%. One participant

commented, “they received report fine and gave SBAR;” another participant wrote, “the communication between the nurse and the doctor went well,” whereas another student reported that the “team worked together effectively.” In contrast, only 12.5% of observers commented about the teamwork and communication in response to the prompt.

Both participants and observers commented on the parent role, “they listened to the mother advise about the baby’s tendency to suck hand.” A student who was playing the role of the parent commented, “They were asking me a lot of questions.” Another student commented, “[they were] picking up on my cues as a parent.” Similarly, there were responses from both groups regarding patient safety; however, the observer group had 7% more comments than the participants. One student wrote, “the side rails are up or the baby is attended.” One observer wrote about the student’s emotional state, “remaining calm [during the scenario.]” None of the participants commented about emotional state in scenario two.

In total, there were 23 responses to the third prompt that revealed themes related to the patient’s symptoms and needs, role of the nurse, role of the parent, teamwork, communication, and patient safety (Table 13). Approximately 40% of total responses identified patient symptoms and needs as “what they would do differently.” More than 62% of observers of the simulation wrote about patient symptoms and needs, “make sure to sooth baby before doing any assessments,” and “carry the baby.” In contrast, only 26.70% of participants indicated that they would act differently in regard to the patient’s symptoms and needs. This finding is consistent with the data noted in the previous section that show more than one third of the participants reported that they handled the patient’s symptoms and needs well.

Table 13

Scenario Two-What would you do differently?

	Total(*n*=23)		Participant(*n*=15)		Observers (*n*=8)	
Theme	*f*	%	*f*	%	*f*	%
Patient Symptoms/Needs	9	39.13	4	26.70	5	62.50
Nurse Role	4	17.39	3	20.00	1	12.50
Parent Role	4	17.39	3	20.00	1	12.50
Teamwork/Communication	4	17.39	4	26.70	0	0.00
Patient Safety	2	8.70	1	6.70	1	12.50

More than one fourth of the participants in the scenario (26.70%), identified teamwork and communication as "what they would do differently," in contrast, none of the observers commented on teamwork and communication. Several participants wrote that they would "call doctor a few minutes earlier;" another student reported she would "call and ask about information I don't know sooner."

Several participants (20%), commented about the role of the parent; one student wrote, "involving the mom more so she felt more reassured," and another commented, " I would use information from parent more." A lower percentage of observers (12.50%), commented about the role of the parent, there was a 7.5% different in comments.

Participants commented on the role of the nurse; for example, one student wrote that she would, "assess bowel sounds and movement more," and another student reported that she would "try to be more proactive" and "[not] doing unnecessary interventions [*sic*]." Twenty percent of the participant group commented on performing the nurse role differently compared with 12.50% of observers commenting on the nurse role in response to the prompt.

Participants and observers reported similar comments about patient safety, one student wrote, "putting up the side rails before lifting the head of the bed up;" and another commented, I would not leave the side rails down."

Responses to Scenario Three

The third scenario takes place on hospital day three for the baby who was admitted in scenario one. The baby shows signs of dehydration as well as neurological changes in symptoms. The learning objectives are (a) demonstrate differential diagnosis between acute gastroenteritis and ventro-peritoneal (VP) shunt failure, (b) describe signs and symptoms of dehydration, and (c) demonstrate medical management of dehydration in an infant.

There were 10 responses to the first prompt that revealed themes related to the role of the nurse, patient symptoms and needs, role of the parent, and emotional state of the student (Table 14). The majority of the total responses revealed themes related to the nurse role and the patient's symptoms and needs. Although the nurse role was ranked highly by both groups, the observers' responses were 20% higher than the participants' responses.

Table 14

Scenario Three-First Reactions to Simulation Experience

	Total (*n*=10)		Participant(*n*=5)		Observers(*n*=5)	
Theme	*f*	%	*f*	%	*f*	%
Nurse Role	5	50.00	2	40.00	3	60.00
Patient Symptoms/Needs	3	30.00	2	40.00	1	20.00
Parent Role	1	10.00	1	20.00	0	0.00
Emotional State	1	10.00	0	0.00	1	20.00

One participant in the simulation reported, "As the nurse I didn't know if I was really meant to give bolus," whereas an observer wrote, "they addressed baby's main concerns." Additionally, there was a 20% difference in the group comments related to the patient symptoms and needs theme. Participants had more responses in this category; one participant commented, "[we] assessed for signs and symptoms of dehydration," and one observer wrote, "baby was coughing and her vitals were changing quickly."

Twenty percent of the participants commented on the parent role, and no observers commented on the parent role. One student playing the role of the parent commented, “she learned a lot” because the nurses “were very calm.” One observer reported on the student’s emotional response, “they were calm because the baby wasn’t crying,” in contrast, none of the participants commented on student’s emotional response.

In response to the second prompt, themes related to the nurse role, communication and teamwork, patient symptoms and needs, and patient safety (Table 15). One new theme evolved with this scenario, “parental involvement” was identified by on observer as a factor that “went well.” The observer reported, “mother was involved which made tasks more efficient.”

Table 15

Scenario Three-What Went Well?

	Total(*n*=28)		Participant(*n*=15)		Observers(*n*=13)	
Theme	*f*	%	*f*	%	*f*	%
Teamwork/Communication	10	35.71	5	33.33	5	38.46
Patient Symptoms/Needs	9	32.14	6	40.00	3	23.08
Nurse Role	5	17.85	2	13.33	3	23.08
Patient Safety	3	10.71	2	13.33	1	7.69
Parental Involvement	1	3.57	0	0.00	1	7.69

The participants in the scenario identified the patient symptoms and needs as the highest ranked theme (40%) followed by teamwork and communication theme (33.33%). Conversely, the observers ranked teamwork and communication first (38.46%), and patient symptoms and needs second (23.08%). There was a 17% difference in comments between groups for patient symptoms and needs as noted in Table 15. Participants commented about “turning baby on side” and about “vital signs properly assessed.” The difference in the group comments related to teamwork and communication was 5%, observers whose comments were the highest in teamwork and communication wrote that

"tasks were delegated," "MD (medical doctor) call was good," and "communication of nurses with each other [was good]."

The nurse role "went well" based on 23.08% of the observers responses, however, only 13.33% of the participants reported that the nurse role went well nearly a 10% difference. Observers noted that "they did everything they were suppose to do" and "interventions were proper."

Patient safety was identified by a small number of participants and observers; one student wrote that "[they] noticed right away that the identification band was missing," and another commented about the "safety checks" being performed during the scenario.

Responses to the third prompt that revealed several of the same themes noted in scenarios one and two. The largest number of students identified teamwork and communication as well as patient symptoms and needs as the top categories that "they would do differently." There was a very small difference (2.5%) between the two groups in both categories (Table 16).

Table 16

Scenario Three-What would you do differently?

	Total(*n*=18)		Participant(*n*=10)		Observers(*n*=8)	
Theme	*f*	%	*f*	%	*f*	%
Teamwork/Communication	7	38.89	4	40.00	3	37.50
Patient Symptoms/Needs	7	38.89	4	40.00	3	37.50
Nurse Role	2	11.11	1	10.00	1	12.50
Patient Safety	2	11.11	1	10.00	1	12.50

In reference to the teamwork and communication theme, one student identified the "repeat order-back protocol," a safety procedure that requires the nurse to confirm the doctor's verbal order during a phone call by repeating the verbal order back to the physician prior to ending the phone call. Another student reported that he would "add

more to Situation, Background, Assessment, and Recommendation (SBAR) when communicating with the physician." SBAR is an acronym for a type of communicating and charting system used in patient-care situations.

Responses related to patient symptoms and needs were identified by students; one observer commented, "I would check doctor's order for meds, Tylenol for high temperature," and another student reported that "I was preoccupied with her vitals and weighing the diaper."

The nurse role and patient safety themes were reported by a small percentage of participants (10%) and observers (12.50%). One student wrote about the nurse role, "check skin turgor for confirmation of dehydration," and another student commented, "maybe address the increased heart rate a bit sooner." Another student commented about patient safety, "I would ask mom about the identification band."

Responses to Scenario Four

Scenario four is the final scene in the infant hospitalization unfolding case study. In this scene, the baby shows signs of intracranial pressure. The learning objectives are (a) demonstrate differential diagnosis process, (b) describe the signs and symptoms of ventroperitoneal shunt, and (c) demonstrate the medical management of mild increased intracranial pressure.

There were 18 responses to the first prompt that revealed identical themes to those noted in the previous three scenarios (Table 17). Responses related to patient symptoms and needs were commented on most frequently by both participants and observers; however, there was a 22.8% difference between participant (65.64%) and observer

comments (42.86%).. One student wrote about “finding the bulging fontanel,” other students commented about “respiratory distress” and baby’s “change in behavior.”

Table 17

Scenario Four-First Reactions to simulation experience?

	Total (*n*=18)		Participant (*n*=7)		Observers (*n*=11)	
Theme	*f*	%	*f*	%	*f*	%
Patient Symptoms/Needs	10	55.56	3	42.86	7	65.64
Emotional State	6	33.33	3	42.86	3	27.27
Parent Role	2	11.11	1	14.29	1	9.09

The second ranked theme was the student emotional state; one participant reported that she “felt a little more comfortable this scenario,” and one observer wrote that she “felt worried.” Participants reported “emotional state” more frequently than the observers; there was a 15.5% difference in responses between groups. The parent role was reported by two students, on from each of the two groups.

In response to the second prompt, themes were identical to those revealed in the previous scenarios. Similarly, the top three themes were patient symptoms and needs, the nurse role, and teamwork and communication. The largest group of total participants identified patient symptoms and needs as their first reaction to the simulation experience. There was little difference between the percentage of participants’ comments compared with observers’ comments in the category of patient symptoms and needs (Table 18).

A small number of observers reported the emotional state of the participant as well as patient safety factors. In contrast, participants did not comment about the emotional state of the participants or about patient safety.

Table 18

Scenario Four-What went well?

	Total (*n*=28)		Participant (*n*=9)		Observers (*n*=19)	
Theme	*f*	%	*f*	%	*f*	%
Patient Symptoms/Needs	12	42.86	4	44.44	8	42.11
Nurse Role	8	28.57	2	22.22	6	31.58
Teamwork/Communication	6	21.43	3	33.33	3	15.79
Patient Safety	1	3.57	0	0.00	1	5.26
Emotional State	1	3.57	0	0.00	1	5.26

Participants were asked "What would you do differently?" The patient's symptoms and needs were identified by the largest percentage of participants (Table 19). Patient safety was reported by a small percentage of students in each group. One participant reported on the parent role, and one observer reported on teamwork and communication.

Table 19

Scenario Four-What Would You Do Differently?

	Total (*n*=18)		Participant (*n*=7)		Observers (*n*=11)	
Theme	*f*	%	*f*	%	*f*	%
Patient Symptoms/Needs	9	50.00	4	57.14	5	45.45
Nurse Role	5	27.78	1	14.28	4	36.36
Patient Safety	2	11.10	1	14.28	1	9.09
Parent Role	1	5.55	1	14.28	0	0.00
Teamwork/Communication	1	5.55	0	0.00	1	9.09

The DML worksheet responses gathered the student's written reflections regarding the simulation experience immediately after the action phase of the scenario. The prompts are designed to help students identify their initial thoughts and enhance individual reflection about the scenario session prior to the verbal debriefing session. The students were encouraged to utilize their own notes on the DML worksheet to guide their discussion during the debriefing. Additionally, students were encouraged to add notes during the debriefing session.

Table 20 presents the number of responses per prompt for each scenario. Overall, scenario two gathered the greatest number of responses, whereas scenario one gathered the least number of responses. Additionally the second prompt (P2) yielded the greatest number of responses compared with P1 and P3.

Table 20

Number of Responses to DML Worksheet Prompts

Scenario	P1	P2	P3
1	16	27	20
2	21	33	23
3	10	28	18
4	18	28	18

The DML worksheets prompted additional reflective responses regarding the simulation experience by asking about students "thinking on action," "thinking in action," and "thinking beyond action." These prompts attempted to collect information regarding the metacognition of the students relative to the simulation experience. Upon review of student responses to this section of the DML worksheets, the researcher noted that the responses were very similar to the responses written for the first three prompts already discussed. Therefore, the responses for the student's reflective responses were not coded or analyzed.

Summary

This chapter presented the results of the research data collected from undergraduate nursing students during the Spring 2015 semester. Quantitative and qualitative data were gathered from unit-examination scores, DASH-SV scores, Simulation and Debriefing Questionnaire, and DML worksheets.

There were no statistically significant differences between participants' examination scores based on the method of postsimulation debriefing that they received.

There were no statistically significant differences between participant's perceptions of instruction ratings (DASH-SV scores) based on the method of postsimulation debriefing received. Additionally, there were no statistically significant correlations noted when DASH-SV scores and unit-examination scores were examined and compared with method of postsimulation debriefing.

The information gathered from the Simulation and Debriefing Questionnaire as well as the DML Worksheets provided a rich variety of qualitative data related to the simulation experience. The Simulation and Debriefing Questionnaire provided participant's opinions of the value of the simulation experience and also gathered recommendations regarding improvement of the process. The DML Worksheets provided student reflections, reactions and thoughts related to the simulation experience. The final chapter of this dissertation presents a discussion of findings, limitations, implications for research, implications for practice, and conclusions.

CHAPTER V
SUMMARY, LIMITATIONS, DISCUSSION, AND IMPLICATIONS

The purpose of the research was to investigate whether there were differences in retention of knowledge, as evidenced by scores on unit examinations, when undergraduate nursing students participated in debriefing using the traditional National League for Nursing (NLN) method compared with students who participated in the Debriefing for Meaningful Learning (DML) method developed by Dreifuerst (2009). Additionally, nursing student's evaluation and perceptions of the quality of instruction were investigated for differences based on the type of debriefing they received. Finally, student perceptions evaluating the quality of instruction were analyzed for correlation with unit-examination scores on questions related to concepts in the simulation activities. In addition to the unit-examination scores and the DASH-SV scores, the researcher collected qualitative data using a Simulation and Debriefing Questionnaire as well as information collected from the participants' DML Worksheets.

This chapter contains the following sections (a) summary of the study, (b) summary of findings, (c) limitations of the study, (d) discussion of findings, (e) implications for research, (f) implications for practice, and (g) conclusions.

Summary of the Study

The nursing-educational reform movement as well as advances in technological innovation has moved simulation-based education into the forefront of nursing education. Simulation-based education is a teaching strategy that creates a virtual reality where nursing students can rehearse patient-care and nursing interventions without the risk of harm to actual patients. Simulation-based education in nursing education provides

students with experience practicing nursing care and interventions within the context of a simulated clinic or hospital environment (Jeffries & Rizzolo, 2006).

Clinically-accurate, simulation-based patient-care scenarios are designed to create an authentic environment where nursing students experience a patient encounter, make clinical judgments and decisions, and practice the nursing role. After students have participated in the simulation activity, an instructor-led debriefing session occurs. Experts agree that the most important component of the simulation experience is the reflection that occurs during the postsimulation debriefing (Cato & Murray, 2010; Decker et al., 2013; Katz, Peifer, & Armstrong, 2010; Neill & Wotton, 2011; Shinnick, Woo, Horwich, & Steadman, 2011).

Although debriefing is thought to be the primary component of the simulation pedagogy that produces change in student thinking and learning, the best methods of simulation debriefing are not well defined in the literature (Arafeh, Hansen, Snyder, & Nichols, 2010; Cant & Cooper, 2010; Fanning & Gaba, 2007; Jeffries & Rogers, 2007; Nehring & Lashley, 2009; Neill & Wotton, 2011). Additionally, debriefing techniques have been developed with little objective evidence of their quality or clinical-judgment outcomes (Arafeh et al., 2010; Cant & Cooper, 2010; Levett-Jones &Lapkin, 2014; Mariani, Cantrell, Meakim, Preito, & Dreifuerst, 2013). This research study addressed the gap in the literature regarding postsimulation debriefing and focused on exploring the debriefing component of simulation-based teaching strategies.

Both debriefing methods compared in this research include a traditional verbal debriefing component, whereas, the DML method consists of a written component in addition to the verbal discussion format. The written DML exercises promote self-

reflection and are meant to assist the participant in the development a deeper understanding of nursing concepts (Dreifuerst, 2012).

The paucity of studies related to how best to facilitate postsimulation debriefing that enhances learning outcomes, clinical judgment, and decision-making abilities of nursing students underpins the need for the proposed study (Arafeh et al., 2010; Raemer et al., 2011). The focus of this study is to compare the traditional debriefing method and the DML method to gain insight related to students' knowledge retention and perceptions of instruction related to simulation-based education.

Summary of Findings

This research investigated whether there were differences in retention of knowledge when undergraduate nursing students participated in debriefing using the traditional NLN method compared with students who participated in the DML method. The research analyzed student examination scores, quality of instruction ratings, data gathered from a survey, and responses to the DML worksheets.

There was little or no difference between mean examination scores for the DML and NLN groups; however, the NLN group had higher scores, on average, than the DML group in all three test categories. The differences between the groups were not statistically significant. Additionally, there was no statistically significant difference in the mean of the DASH-SV scores based on the method of debriefing received. Utilizing DASH-SV scores and examination scores from 25 participants, the Pearson product-moment correlation coefficients were calculated to examine possible relationships. Although the total number of scores was too small for a valid correlation, the coefficients

were calculated for each group of examination scores and revealed moderate relationships.

The qualitative data gathered through the Simulation and Debriefing Questionnaires and the DML Worksheets provided a robust account of subjective information related to the student experience. Additionally, the students expressed their reactions and thoughts about the value of simulation and provided recommendations for future improvement. These student recommendations may be valuable for nurse educators as they work to design effective simulation-based learning experiences for undergraduate nursing students.

Limitations of the Study

Limitations related to participant behavior, clinical faculty, course scheduling and small sample size are acknowledged in this section. Moreover, findings cannot be generalized to other university settings because the study was conducted in a single site using a convenience sample.

Although the content of each simulation session was consistent throughout the five sessions facilitated for the research, the participants' communication with the mannequin and responses to the situation were inconsistent. Because individual participant responses and interventions were variable even when simulations were designed with identical objectives and learning outcomes, each debriefing session was adapted to address the knowledge, skills, and attitudes of each unique participant group. Variation in participant behaviors may be a limitation to the study because it may lead to a very different debriefing experience compared with the other participant groups. Although individual responses may change the dynamics of the debriefing session, the

qualitative measurements utilized in the current study should have captured the students' reactions including advantages and disadvantages of the simulation experience.

Due to the high numbers of students in core nursing courses in the Spring 2015 semester, the standard simulation and theory course schedules were in place prior to the commencement of the study and could not be modified by the researcher. Several students were scheduled for simulation activities after the midterm examinations; therefore, their data were excluded from the study, which decreased the expected sample size. Although many students were expected to consent to participate in the study, their unit-examination data were excluded because of the timing of their simulation experience. Those students who participated in the simulation sessions after the midterm examination completed the DASH-SV questionnaire; their responses were included in the research.

Acknowledgement of the limitations of this research provides insight that could inform future research protocols. The most significant limitation of this research is the small sample size; future researchers should recruit larger groups of students from multiple sites as well as extend the data-collection time period.

Discussion of Findings

The following section describes the main findings of the study based upon the three research questions, the discussion focuses on unit-examination scores, DASH-SV scores, and the correlation between the two measures. Additional qualitative information gathered from the Simulation and Debriefing Questionnaire as well as the DML Worksheets are presented.

Unit-Examination Scores

This section addresses the first research question: To what extent do nursing students who participate in DML debriefing in simulation exercises perform better on unit examinations than do students who participate in traditional debriefing? Data were gathered by collecting unit-examination scores and investigating whether the postsimulation debriefing method utilized influenced student's knowledge retention. As presented in Chapter III, unit-examination scores were divided into three categories related to (a) infant growth and development (GD), (b) pediatric respiratory system (R), and (c) [combined scores of] infant growth and development plus pediatric respiratory system (GDR).

Proponents of clinical simulation in nursing education suggest that simulation improves learning outcomes and that the most valuable component of the simulated clinical experience is the debriefing session (Cato & Murray, 2010; Decker et al., 2013; Dreifuerst, 2009; Jeffries & Rogers, 2007; Katz, Peifer, & Armstrong, 2010; Lavoie, Pepin, & Boyer, 2013; Shinnick et al., 2011). In this study, two groups of students participated in simulated clinical experiences and then were given unit-examination questions related to the concepts in the simulation scenarios. One group of students received the traditional NLN debriefing method, and the other group of students received the DML method, which included verbal and written components. There were no statistically significant differences in student academic performance based on the type of debriefing methods utilized.

The findings from the comparison of the DML and traditional NLN method of debriefing indicated that both methods produced very similar results in student academic

performance. In fact, the traditional NLN group had higher scores, on average, than the DML group in all unit-examination categories. It is possible that the simulation activities had no influence on knowledge retention or academic performance and that learning activities such as classroom lectures, independent study, and reading assignments had more influence on student knowledge. Examination scores are only one measurement of student learning, and ultimately, the application of knowledge in a clinical situation would be the best indicator of transformative learning. Further research that includes monitoring student's clinical performance in similar circumstances as the simulation scenarios would be valuable in examining the influence of simulation experiences on clinical performance.

There are many variables that influence examination scores, knowledge retention, and student learning. It is possible that the experience of simulation and debriefing enhances learning and improves academic performance; however, it is difficult to sort out the confounding variables and know how much influence any one variable holds.

Although the current research suggested no differences in knowledge retention between the two groups compared, previous research comparing debriefing methods on measures of student knowledge retention has shown improvement of knowledge retention (Chronister & Brown, 2012; Reed, Andrews, & Ravert, 2013). Continued research on postsimulation debriefing is recommended because it is believed to produce a higher level of realism for participants when compared with insimulation debriefing (Van Heukelom, Begaz, & Treat, 2010). Moreover, Levoie et al. (2013) suggested improved clinical judgment and nursing assessment skills after postsimulation debriefing.

DASH-SV Scores

The findings related to the second research question are presented in the next two paragraphs. The second question was: To what extent do nursing students who experience the DML perceive the quality of instruction differently from those students experience the traditional debriefing protocols? The DASH-SV consists of 22 items related to participants' perceptions of the quality of instruction. Participants rated each item based on a 7-point Likert scale. The participant's responses to the 22-item survey were analyzed through descriptive statistics and independent-samples *t* test. There were no statistically significant differences in the means between the DML and the NLN groups. The means for the DML and NLN groups were 6.5 and 6.6, respectively, which was an overall high average for both groups as 7 was the highest value in the rating scale. Anecdotal evidence indicated that other researchers have found the same response with the DASH-SV; students consistently rate the quality of instruction very highly when using this tool (J. Rudolph, personal communication, January 28, 2015). The DASH-SV was given at the end of a 4-hour simulation session, and it is possible that students were motivated to complete the survey quickly so that they could be dismissed on time.

This researcher was interested in knowing if students would rate the quality of one type of debriefing method higher than the other; however, based on the student's responses, there was no difference in rating of the quality of instruction for either the DML or NLN method of debriefing. The DASH-SV scores indicated that students perceived instruction as "very good" to "outstanding."

The DASH-SV scores demonstrated no difference in the quality of instruction between the two participant groups. The DASH-SV scores may have indicated no

difference because the researcher provided consistent debriefing after each scenario. The scores are likely due to the fact that the researcher facilitated each simulation session. Perhaps scores would have been more different if the study had utilized different faculty for each debriefing session. Furthermore, it may be possible that the quality of instruction has nothing to do with the method of debriefing, it may be more important to have a highly-trained debriefing facilitator.

Correlation Between DASH-SV and Examination Scores

To what extent does perceptions of the quality of instruction correlate with unit-examination scores for questions related to concepts in simulation activities? The Pearson product-moment correlation coefficient of the participants' DASH-SV scores and examination scores were calculated to examine possible relationship between variables. When students perceived that they received *very good* to *outstanding* instruction techniques, was there a difference in learning compared with when the students perceived a *poor* or *very poor* quality of instruction? This researcher investigated whether student's examination scores showed any correlation with their perceptions of the quality of instruction. The coefficients were calculated for each group of examination scores, the GD scores, the R scores, and the GDR scores, no statistically significant correlations were found.

Simulation and Debriefing Questionnaire

The Simulation and Debriefing Experience Questionnaire was developed by the researcher and consisted of three questions related to the simulation experience. All participants completed the questionnaire. Responses to the Simulation and Debriefing Questionnaire revealed several themes related to the simulation experience.

Both the traditional NLN and DML groups identified role assignments, nursing concepts, debriefing, and communication as the most valuable components of the simulation experience. All participants responded that the roles of the recorder, the parent, the runner, and the observer were the least valuable component of the simulation experience. Additionally, the DML group believed that the equipment was least valuable component, whereas none of the participants from the NLN group commented about the equipment. Participant responses indicated that every phase and component of the simulation experience provides the opportunity for improvement. The participant recommendations were related the following themes: information, debriefing, scenario design, written exercises, and role assignments. The following sections address the participant responses to each question presented in the Simulation and Debriefing Questionnaire.

Most Valuable Component of the Simulation Experience

Both the traditional and DML groups reported that the three highest-ranking themes were the nurse role, nursing concepts, and debriefing; however, the ranking of components were slightly different.

The NLN group valued the ability to "take the lead" when assigned to the registered nurse (RN) role. This comment is important because the standard clinical rotation model of learning is invaluable for nursing education; however, because students are not allowed to act independently that greatly limits their experience. In a hospital or clinic setting, nursing students must be supervised by a clinical faculty member or a registered nurse employed by the agency. Working with actual patients provides students hands on experience and exposure to the health-care environment; however, it does not

provide the opportunity to take on the RN responsibilities of clinical decision making, priority setting, or independently participating in health-team communications such as phone calls or giving report to RNs.

There are many situations where the student nurse must defer to the registered nurse or clinical faculty due to the risks to patient safety and due to ethical as well as legal constraints. It is no wonder that the participants in the study valued the role of the nurse; it gave them the experience of taking the lead and applying nursing concepts that they have learned without risking harm to patients.

In an actual clinical setting, the role of the RN is very different than the role of "student nurse." Nursing students are assigned to work in clinical agencies to fulfill their mandatory clinical practicum hours. Much of the work done by nursing students in hospitals and clinics involves direct observation and coaching by supervisors about the nursing process prior to making decisions about patient care or providing patient care.

In contrast, clinical-simulation experiences challenge nursing students to take on the role of the RN, make their own assessments, analyze laboratory results, and communicate directly with the health-care providers and patients about their plan of care. In the simulation setting, nursing students are empowered to participate fully in patient care without the risk of patient harm or ethical conflicts. Moreover, simulation provides the student with immediate feedback from faculty and peers during the debriefing session.

The NLN group of participants reported that the critical patient situation in scenario four was excellent practice especially because in the hospital setting nursing students are not allowed to intervene in response to an emergency situation. In the

simulation setting, actual patient safety is not an issue, that is, mistakes may be made without harming real human beings. Moreover, students reported that feedback regarding mistakes was a valuable component of the simulation experience; this feedback helped students realize their strengths and weaknesses as well as identify what they should improve in future clinical settings.

Comments from several NLN group participants regarding feedback from faculty and peers were identified as valuable components of the simulation experience. Because feedback from faculty and peers was identified as valuable by the NLN group and because feedback occurs during the debriefing, then debriefing may be the most valuable component of the simulation experience. Although the numbers in Table 5 indicated that debriefing was important to only 15.56% of the NLN group compared with 27.91% of the DML group, it may be that the students valued debriefing *about* the nursing role as well as experiencing the nursing role. A combination of experiencing the nursing role and then debriefing *about* the experience may influence student learning more than merely experiencing the role.

It is possible that 27.91% of the DML group may have perceived the debriefing component the most valuable component of the experience. Perhaps their involvement with worksheets and written exercises gave extra time to gather thoughts and reflect individually prior to the group debriefing. The DML group described debriefing as an important component because the nursing care and concepts were critiqued and further evaluated; additionally, suggestions for improvement were offered during debriefing.

The Least Valuable Component of the Simulation Experience

Both the DML group and the NLN group responded with “role assignment” as the

least valuable component of the simulation experience. The specific role assignments identified as least valuable were the recorder, the parent, the runner, and the observer. As noted in the previous section, the only role that was rated highly valuable was the nurse role.

Over 21% of the DML group identified the equipment as least valuable, whereas no participants from the NLN group commented about the equipment. Using patient simulators can be challenging because of the technical aspect, one student commented that the volume on the cardiac monitor associated with the mannequin was too low. Although students are instructed how to use the monitor's volume control before the simulation experience, they often forget how to operate the equipment because of the unfamiliar circumstances. Even low-technology medical equipment such as the dressing and tape securing the baby's intravenous (IV) catheter were mentioned as problematic. Moreover, the problem with the baby's hand position was not readily apparent to the nursing students.

Although students commented about equipment problems as mentioned above, the experience gave them the opportunity to practice using the unfamiliar equipment and also to practice making a thorough patient assessment. The students were uncomfortable with the situation; however, they were able to discuss the problems and solutions during the debriefing session. The debriefing allowed students to discuss the difficulty that they experienced using the monitor and to review the correct way to set the controls. More importantly, the students were able to discuss their patient assessment skills and how they discovered that the dressing and tape were causing the patient to be very uncomfortable.

Feedback during the debriefing prepared the students for working with the equipment in subsequent scenarios.

The traditional NLN group "identified technical nursing skills" as being least valuable, 28.57% of the group responses referred to technical nursing skills such as taking vital signs. One student reasoned that technical skills are not as important because with practice, the skills will improve. Another student stated that taking vital signs is a skill that they perform in the hospital on a regular basis and that demonstrating the skill in the simulation session was not valuable. It is understandable that the students may respond in this way regarding nursing skills because basic nursing skills can be taught and perfected in a skills lab or in the hospital setting without much difficulty. Students communicated that they appreciate challenging experiences in simulation, if basic skills are eliminated from simulation scenarios and students are pushed beyond their comfort level, there may be more student growth and better outcomes overall.

Recommendations for Improving the Simulation Experience

Participant responses indicated that every phase and component of the simulation experience provides the opportunity for improvement. The participant recommendations were related the following themes: information, debriefing, scenario design, written exercises, and role assignments. The top three areas for improvement were information (37.14%), debriefing (22.86%), and scenario design (20%). The percentages of participant responses in the remaining areas were written exercises (11.43%) and role assignments (8.57%). The following five sections address the recommended areas for improvement.

Information. Participants suggested that more information about specific skills required during the simulation scenario be discussed during the prebriefing session; skills such as starting an infusion or administering medication were mentioned. Furthermore, there were suggestions to provide more instruction about the scenario topic prior to starting the action phase of the simulation. Participants assumed that providing more information prior to the simulation experience would influence their success in the simulation experience.

Students may not understand the rationale behind providing background information before the simulation without giving all of the details away prior to the activity. One goal of simulation is to give students the opportunity to utilize the nursing process: to assess the situation based on the information provided, to critically analyze the data, to establish an individualized plan of care for the patient, and then to evaluate the effect of the patient care. If educators gave the students a list of skills to review and practice or if they provided detailed information about the patient during prebriefing, the entire exercise would be more similar to a skills lab than a simulation experience. The point of simulation is for the students to experience the environment, by making assessments and decisions on their own instead of merely following directions from a lab instructor.

Perhaps students were asking for more information because they want to perform perfectly and get "everything right." That may be a natural response; however, the learning that occurs in simulation is most valuable when participants discuss the details of the simulation activity during the debriefing, taking into consideration all assumptions that were made, data collected, and decision processes that occurred during the

simulation activity. Did the student correctly assess the situation, were they confident about the medication they administered, and did they communicate well with the patient? All these questions would be appropriate debriefing points to consider.

Debriefing. Both the NLN group and the DML group recommended improving the debriefing sessions. Requests included watching the video of the simulation scenario during the debriefing, using more time to discuss what each person thought of the simulation, and discussing alternative approaches to the simulation. These responses provided excellent information because they suggest that the participants were interested in experiencing more during the debriefing sessions. Certainly video-assisted debriefings have been used successfully (Chronister & Brown, 2012; Reed et al., 2013). Additional debriefing time would be required to include more discussion and video, it would be valuable to pilot different debriefing times at the study site especially because there is little evidence recommending the optimal length of debriefing time (Jeffries &Rogers, 2007; Raemer et al., 2011).

Scenario design. Both participant groups ranked scenario design third for "recommendations;" however, the NLN group had approximately 10% higher responses than the DML group. Comments about scenario design were related to realism and acuity of the simulation. One response regarding the mannequin was "I expected to have a more realistic simulation, the voice of the baby was too low." Technical factors are inevitable when utilizing computerized equipment, and mannequins are no exception. The voice volume on mannequins can be adjusted, and simulation operators are able to address similar problems quickly and efficiently. Unfortunately, when something as simple as a volume level is suboptimal, it interrupts the realism of the scenario for the participants.

Written assignments. Participants recommended changing the written assignments; one suggested "one reflection paper" instead of the worksheets, another suggested, "less worksheets and more observation." Both participants and observers in the DML group completed written exercises immediately after the action phase of each simulation scenario. Although only 5 to 8 minutes were used to record their responses, the tool seemed to be a distraction for some participants especially for those who wrote extensive notes. The tool provides a small area for notes in response to each prompt; in several cases, participants used 2 or 3 sheets of paper during the simulation day to record their responses. Understandably, those students would think that the paperwork was overwhelming and distracting.

Note-taking literature supports the written format for enhancing understanding and promoting meaningful experiences for learners (Lee, Lan, Hamman, & Hendricks, 2007). The DML was developed based on the belief that note-taking strategies contribute to learning, contribute in recall of information, and may be utilized to study for future assessments. For example, worksheets used in the proposed simulation sessions may be used by nursing students to prepare for midterm examinations. Although the literature supports the written format for promoting learning and the majority of the participants were engaged in the writing activities, however, a number of students responded that the writing was a distraction rather than a helpful tool.

Role assignment. The final recommendation related to role assignment; the participants requested "that each person act at the nurse twice." The value of the nurse role has been addressed previously in the discussion about the most valuable part of the simulation activity. The nurse role was the most sought after role in the simulation;

however, each institution would have to address how best to deliver this experience to their students.

DML Worksheets

In the first scenario, responses revealed that almost half the respondents (43.7%) identified their "emotional state" as the first thought that comes to mind, the patient's symptoms and needs were identified by more than a third of students (37.5%), and the remainder of responses were split between the lack of clinical judgment (12.5%) and patient safety factors (6.25%). Both active participants and observers identified the emotional state of the participant and the patient's symptoms and needs as the two most frequent first thoughts.

The data suggest that participants had an emotional reaction to the simulation experience, some of the comments contained words such as "anxious," "nervous," and "overwhelmed." Ten percent more of the observers of the first simulation scenario responded with comments about their emotional state compared with the participant group. This information suggests that the observers of the first scenario experienced an emotional response to the scenario, which indicates that observers were engaged emotionally while watching the scenario.

Although the observers were affected emotionally by the simulation activity, they did not report about their confidence level being affected. Not surprisingly, 20% of the participants commented about their confidence level during the simulation activity. As the simulation day progressed, lower percentages of participants and observers commented about their emotional state as the "first reaction" to the simulation

experience, indicating that students became more comfortable with the simulation activities as time passed. Samples of student responses are listed in Table 21.

Table 21

Representative Sample of Verbatim Student Responses to First Prompt

"Nervousness, lack of confidence and not knowing what to do."
"Being nervous"
"Nervous/anxious"
Baby was crying and her oxygen saturation level was decreasing."
"The baby was coughing and we couldn't make the decision whether to use the bulb or wall suction."
"I knew the baby needed help with breathing, but I couldn't think of what other intervention to help."

Additionally, students identified the second most common first thought as "the patient's symptoms and needs*."* Students quickly identified the patient's symptoms and needs; however, they were not confident about patient care. Moreover, students identified a lack of clinical judgment that suggests that students were not confident about their ability to make clinical decisions in the simulation setting.

In all four scenarios, responses to second prompt: "What do you think went well during the simulation experience and why?" revealed three common themes. Participants and observers identified teamwork and communication, patient symptoms and needs, and the role of the nurse role as the positive aspects of the simulation experience. These data suggest that students believed that they worked well together during the simulation scenario and the communication demonstrated during the simulation activity was positive. Communication between nurses and parents were mentioned as well as communication between nurses and other healthcare members such as physicians and therapists.

All of the interactions between participants are valuable experiences especially because students typically do not initiate telephone communications between physicians and other health professionals during their clinical assignments. The experience of communicating important patient information to physicians and other key members of the healthcare team during simulation provides students experience in effective verbal communication in the hospital setting. Furthermore, discussing the effectiveness of the communication activity during the debriefing helps students understand the importance of systematic communication with team members using the "SBAR" communication model.

In scenarios 2, 3, and 4, participants rated "patient symptoms and needs" highly. The range of participant responses was from 32.14% to 42.86%, indicating that a large percentage of participants responded that their assessment and response to the patient's symptoms and needs were well done. Participants in scenario 1 did not comment on patient symptoms and needs; however, they did comment that the nursing skills that they performed were well done.

Participants in scenario 1, 3, and 4 commented about the nurse role in response to the prompt, "What do you think went well…and why?" The responses ranged from 17.85% to 28.57%, suggesting that approximately only one-fourth of the participants perceived their role as a nurse was well done. This relatively low number indicates that students may believe that they could improve their performance in the nurse role. The same sentiment was expressed previously in the Simulation and Debriefing Questionnaire; students rated the nurse role very valuable and recommended that each student experience the nurse role twice in the simulation day. A representative sample of responses is listed in Table 22.

Table 22

Representative Sample of Verbatim Responses to Second Prompt

"I think we worked well as a team because we have had clinicals in the hospital together."
"Delegation was great, knowing each other made the experience more comfortable."
"Assessment for dehydration was done and confirmed."
"I think they recognized the symptoms of increased intracranial pressure."
"Being able to give oxygen was good because respiratory rate was increasing."
"Safety checks and vital signs were done first."
"Elevating the head of the bed when the patient was coughing."

In response to the third prompt, "What would you do differently and why? Themes related to the role of the nurse (35%), nursing skills (30%), the parent role (20%), infant care and assessment (10%), and communication (5%). These data suggest that students believed that improvements could be made in all four areas and that some students were more satisfied with their performance than others. In completing the DML worksheets, students were able to identify their own strengths and weaknesses.

During the debriefing sessions, students discussed specific behaviors and explored how different approaches may be implemented if faced with a similar situation in future simulations or actual clinical experiences. The reflection upon their experiences in simulation along with discussion about their performance with other students and the facilitator is a critical factor in debriefing for meaningful learning. Student responses indicate their desire to improve performance that shows positive student engagement and a desire improving nursing skills.

The researcher examined the numbers of responses per prompt for each scenario. Overall, scenario 2 gathered the greatest number of responses, whereas scenario 3 gathered the least number of responses. Additionally the second prompt, P2-least

valuable experience, yielded the greatest number of responses compared with P1-most valuable experience and P3-recommendations for improvements (Table 23).

Table 23

Number of Responses to DML Worksheet Prompts

Scenario	P1	P2	P3	Total
1	16	27	20	63
2	21	33	23	77
3	10	28	18	56
4	18	28	18	64

Implications for Research

The findings from the comparison of the DML and traditional NLN method of debriefing indicated that both methods produced very similar results in student academic performance based on examination scores. Perhaps future research could include academic performance measures using alternative assessment tools as well as examination scores. It is possible that the simulation activities had no influence on knowledge retention or academic performance. Future research should include examination of other factors that may influence student performance.

Because the ultimate goal of nursing education is to teach safe patient care in the clinical setting, it would be valuable to know how simulation experiences influence clinical performance. Further research that includes monitoring student's clinical performance in similar circumstances as the simulation scenarios would be valuable in examining the influence of simulation experiences on clinical performance. Additionally, investigating if students believed that they were prepared for the clinical setting after the simulation would provide important information for nursing educators.

The DASH-SV scores may have indicated no difference because the researcher provided consistent debriefing after each scenario. Perhaps scores would

have been more different if the study had utilized different faculty for each debriefing session. It may be more important to have a highly trained debriefing facilitator. Implications for future research on debriefing quality utilizing the DASH-SV may reveal differences between facilitators that could provide a basis for focused faculty development in debriefing.

Participants offered qualitative feedback that could be used to design research protocols related to simulation and debriefing. Based on the participant responses, several implications for research are identified: (a) the use of a prebriefing quiz, (b) the use of interviews and focus groups, (c) the use of simulation for communication exercises, (d) the implementation of critical-care scenarios, and (e) the analysis of specific components of debriefing.

Participants recommended that instructors provide more information about the simulation prior to the actual experience. Future research related to student preparation for simulation activities using a prebriefing quiz would be useful in evaluating the student's utilization of necessary equipment in the simulation setting. Data gathered about competence in operating equipment may support more rigorous presimulation teaching strategies in simulation-based nursing education. Additionally, presimulation learning modules may promote student engagement and decrease anxiety associated with operating the required equipment during the simulation session.

Responses to the Simulation and Debriefing Questionnaire revealed several themes related to the simulation experience. Participants identified role assignments, nursing concepts, debriefing, and communication as the most valuable components of the simulation experience. Further research examining these themes utilizing methods such

as focus groups, interviews, or surveys may provide researchers with more comprehensive data related to the student experience.

Many participants believed that the communication between health-team members was a valuable experience. Students do not initiate telephone communications with physicians and other health professionals during their clinical assignments. During simulation activities, the experience of communicating important patient information to physicians and other key members of the healthcare team provides students with the experience of effective verbal communication within the hospital setting. Furthermore, discussing the effectiveness of the communication during the debriefing enhances student understanding of the importance of organized and systematic communication with healthcare team members.

Participants in the current research provided positive remarks about the simulation scenario that focused on a critically-ill child and recommended more scenarios designed around critical situations such as neurological, respiratory, or cardiac emergencies. Educators must continue to create simulations that are challenging yet realistic so that the students' learning experiences are enhanced. Additionally, further research investigating more complex and demanding scenarios may provide educators with useful information for scenario development.

Finally, future research measuring the influence of specific aspects of debriefing on student outcomes would add to the body of knowledge related to simulation-based education and debriefing. Raemer et al. (2011) recommended the development of research protocols organized around the analysis of specific aspects or characteristics of

debriefing such as who is debriefing, what methods are being utilized, timing of debriefing, environment of debriefing, and theoretical framework supporting debriefing. Future research in simulation and debriefing in nursing education may provide valuable information for nursing researchers who are involved with program and curriculum design. Implications for practice are presented in the following section.

Implications for Practice

The participants identified the nurse role as the most valuable role assignment of the simulation experience and suggested that it would be more effective for nursing students to play nurse roles exclusively. Because each of the scenarios required other characters such as the parent, physician, and other healthcare professionals, other options for character roles may be explored by nursing faculty. For example, schools may integrate actors or standardized patients to act as family members or other healthcare professionals, leaving the nurse roles to the nursing students. Many universities have multiple programs to educate health professions such as Medical Doctors, Physical Therapists, or Respiratory Therapists; perhaps students from other programs may be recruited to participate in intraprofessional simulations where they will have the opportunity to practice their future roles. Given that the students wanted more experience as the nurse, the program may want to consider more days in simulation. Currently, the study site is considering increasing simulation time by 25% to address the scarcity of hospital clinical sites for nursing students.

Allowing nursing students to participate exclusively in the nurse role may seem like a reasonable request; however, participants may not appreciate the other roles such as the parent role, because they have not discussed the value that this experience holds.

When a nursing student plays a parent role, they have a unique opportunity to gain empathy for parents of ill children. Perhaps better prebriefing highlighting the value of "stepping into the parent's shoes" and feeling their concern or anxiety about their hospitalized child would enhance the student experience.

Nurse educators need to explore other scheduling options so that the student experience could be more positive. It may be possible for educators at the study site to design simulation curriculum to better meet the needs of the students. For example, instead of having two teams of 3 to 4 students participate in two scenarios each, it would be possible for four teams of 2 nurses to participate in each of the four-part scenarios. The disadvantage of this structure would be that students would be participating in one scenario, rather than two scenarios per day, and observing three other scenarios. Clearly, there are advantages and disadvantages to the proposition of smaller participant groups, and each institution must analyze their own needs and ability to deliver the education within the time constraints and budgetary limitations of their school.

Participants indicated that they valued the nurse role; however, they also found the role very stressful. Perhaps more preparation or prebriefing, allowing students to discuss concerns and fears prior to the scenario would help to alleviate the anxiety that the role provoked. Additionally, the prebriefing may include the introduction of stress-reduction techniques and other strategies to manage stressful situations. By using an open and thoughtful approach to teaching and learning, students may develop long-term strategies for coping with stress in the workplace.

Because both methods of debriefing utilized in this research produced similar results, clinical faculties may use either debriefing method without adversely influencing

the student examination scores or knowledge retention. Clinical instructors who have not been trained to use the DML method could implement the traditional NLN method that requires less training than the DML method. The freedom to practice the method or technique that one is most familiar may ensure that the faculty will be competent and confident in their role as a debriefing facilitator. The ability to practice using the method of choice is a viable one at the study site; however, continuous faculty development is strongly recommended for promoting the quality of simulation-based activities in nursing education.

The simulation and debriefing questionnaire provided valuable data related to the students' rating of specific simulation components. The information gathered from the simulation and debriefing questionnaire also collected participant recommendations for improvement of the simulation process. Participants suggested that faculty provide more information before the beginning of the simulation experience, another suggestion was to change the written requirements of the simulation experience. The following paragraphs present the implications for practice related to information and written assignments.

Participants from the DML and NLN groups suggested that they would have performed more successfully if they had received more information about the simulation activity prior to the simulation day. One way of providing more information to students prior to the simulation activity would be to emphasize the importance of completing and studying the assigned learning modules prior to the simulation day; at the study site, the learning modules are located in the university's online learning platform. Although students are instructed to prepare for the simulation day by completing the learning modules, several students have admitted that they have not prepared for simulation prior

to the day of simulation. Is it any surprise that students are overwhelmed and anxious about the simulation when they have done very little to prepare themselves ahead of time?

One suggestion for practice and for improving participation in the learning modules is to implement a graded quiz related to the preparation materials during the prebriefing session; a quiz that counts toward their grade may motivate students to prepare more thoroughly for the simulation day. If students do not complete the learning modules assigned, one suggestion is that they should not be allowed to participate in the simulation activity and should have points deducted from their overall course grade.

Once students report to the simulation classroom, detailed information during the prebriefing session may be helpful in answering their questions and addressing their fears about the process. Although students are introduced to the mannequin and encouraged to test out the equipment in the patient room prior to the simulation session, they may need more specific instructions on how to practice with the equipment. For example, a patient's temperature measurement is simulated by displaying the number representing the temperature on a computer monitor in the patient room, after the student nurse places the thermometer in the patient's mouth. This process is very different from what the student nurse experiences with actual patients. Perhaps more detailed demonstration and return demonstration strategies during the prebriefing sessions may improve student utilization of equipment during the simulation activities. Developing an alternate procedure for temperature measurement is another option for improving student preparation for simulation.

When asked to suggest recommendations for improvement, one participant commented: “if the instructor made it clear that we would be staring an infusion, we would not be hesitant.” This response indicated that students would like a detailed step-by-step description of what they are expected to do in the simulation scenario. Although students may wish to have more information and detailed instructions about the technical skills they will be performing, they do not appreciate the rationale for giving general information instead of specific technical information. If they were given detailed information about technical skills expected, then the simulation experience would be more similar to a skills lab rather than a simulated experience.

Several recommendations related to the debriefing worksheets and written assignments were offered. One student suggested that one reflection paper be written after the simulation activity, another student stated that the worksheets were distracting; yet another student requested more writing space on the worksheet. There are several ways to address the concerns that were identified regarding the worksheets. Strategies to address the challenges are redesigning the worksheet to provide more space for responses, encouraging students to write short notes to allow for more observation time, or assigning a reflection paper after the simulation activity. Another option would be to limit the DML worksheet component to the participants in the scenario, instead of giving worksheets to both the participants and the observers in each scenario. Moreover, another aspect of the DML worksheet should be emphasized to students in the future, the notes that they make on the worksheets could be a helpful study guide for future examinations or quizzes.

Participants recommended improving debriefing sessions by "using more time to discuss what each person thought of the simulation" and "touching on other ways the scenario could have been approached." One practical implication to address the recommendation for using more time is for the facilitator to prompt each participant during the debriefing session with the purpose of encouraging them to share their feelings about the simulation experience. Additionally, offering alternative approaches to the clinical situation may help students understand the rationale for nursing care and the process of evaluation of nursing care once administered.

Thoughtful consideration of simulation components that were rated "most valuable" and "least valuable" by participants may provide critical information for educators who design simulation learning objectives and simulation scenarios. Implementing changes in practice based on student recommendations provides an environment for future research in simulation-based education.

Conclusions

This research examined the effectiveness of the traditional NLN method and the DML method of debriefing. The debriefing methods may have contributed to the unit-examination scores; however, there are many other variables that could have influenced the participant's acquisition and retention of knowledge and they should be included in future research protocols. Results of the current research revealed no statistically significant differences between unit-examination scores based on the method of debriefing received. Additionally, the current research revealed no statistically significant difference in DASH-SV scores relative to the debriefing method used and revealed a moderate correlation between student perceptions of instruction and examination scores.

The research revealed no difference in examination scores or DASH-SV scores based on debriefing method used. Because the design of the current research included an expert facilitator for each simulation and debriefing session, perhaps the expert facilitator may be more important than the technique of debriefing that is employed. It is possible that the differences in debriefing methods are less important than the experience and expertise of the facilitator. Structured debriefing methods may be more useful for the inexperienced debriefer, therefore, further research related to facilitator expertise may be warranted.

Upon reflection about the research process, this researcher has learned the importance of developing research questions and choosing appropriate instrumentation for measurement. My assumptions were obvious in the research questions; I assumed that the DML would improve the knowledge retention of the participants, I assumed that debriefing methods would make a difference in the examination scores, additionally, I assumed that the student's perceptions of quality of instruction would relate to the examination scores. The DASH-SV was utilized to investigate the perceptions of the quality of instruction during the simulation experience. Further research using the DASH student version as well as the DASH faculty version may provide valuable information for nursing researchers. The DML worksheets and the Simulation and Debriefing Questionnaires gathered qualitative data from participants and provided a robust overview of the participant's experience. The small sample size was a limitation to this study and to correct this limitation in the future, this researcher would plan a longer data-collection period and possibly the use of more than one study site.

It is my belief that the most valuable data collected for this research were the qualitative statements and the recommendations made by the participants. The participants offered feedback that could be used to design new research protocols related to simulation and debriefing. Moreover, consideration of student feedback may be valuable for faculty in nursing schools who are developing programs based on the Standards of Best Practice according to the International Nursing Association for Clinical Simulation Learning (INACSL).

After conducting a systematic review of the debriefing in health professional education literature, Levett-Jones and Lapkin (2014) suggested that debriefing is considered by many to be a critical part of the simulation process; however, different debriefing approaches have developed with little objective evidence of their effectiveness. Furthermore, simulation experts have recommended more robust debriefing research comparing debriefing methods and key characteristics such as duration, educator presence, structure and methodology (Cheung et al., 2014). Similarly, Raemer et al. (2011) advocated the analysis of specific aspects of debriefing such as who is debriefing, what methods are being utilized, timing of debriefing, environment of debriefing, and theoretical framework supporting debriefing.

The current research investigated whether there were differences in the retention of knowledge when undergraduate nurses participated in two methods of debriefing and revealed no statistically significant differences between the two. Although the quantitative results of this research were not significant, the qualitative data collected and analyzed was rich and informative. It is my belief that further research in debriefing utilizing high-quality methodology and investigating recommended key characteristics of

debriefing will add to the body of knowledge related to debriefing and inform educators about most effective methods. Evidence from future research on debriefing should address the charge for nursing educational reform and ultimately should improve patient outcomes by improving the delivery of nursing care.

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APPENDIX A

Consent to Participate

Code Number_____
(first initial of mother's maiden name and last 3 letters of elementary school attended)

Implied Consent to Participate in Research

Data collected from this confidential survey were used for completion of a Doctoral Degree in Education at the University of San Francisco. The information gathered were used for research on Simulation-based educational strategies. The survey questions were about your age, hours that you work, and hours that you study per week.

You have been invited to participate because you are undergraduate nursing students enrolled in Pediatric Theory and Practicum Courses. You must be 18 years of age or older to participate. There are no risks or benefits to you in participating in this survey. You may choose to participate or not. You may answer only the questions you feel comfortable answering, and you may stop at any time. If you do not wish to participate, you may simply return the blank survey, with no penalty to yourself. If you do participate, **completion and return of the survey indicates your consent to the above conditions. Your decision whether or not to participate in this research will have no influence on your present or future status as a student.**

Please do not put your name on this form. The survey should take approximately 5 minutes to complete. Any questions or concerns should be directed to the principal investigator.

APPENDIX B

Letter of Invitation to Students

February 2015

Dear Students,

As part of the university's commitment to creating excellent nursing instruction, my colleagues and I are looking at simulation experiences, student perceptions of learning and instruction, and student's performance on unit tests. The purpose of our study is to identify which learning experiences in simulation are the most helpful to students.

I would like to invite you to participate in the study. If you choose to participate, you will be asked to complete a demographic survey during class time. It will take less than 5 minutes to complete. By completing the demographic survey form, you are giving the researchers permission to use the data generated from your course midterm exam, survey and debriefing materials.

There is no compensation for participating in the study, nor is there any cost to you. You are free to decline the invitation to participate in the study. I, the researcher, have no access to your grades and no power over your standing in the Nursing program. As such, choosing not to participate in the study will have no consequences on your grade or standing in the Nursing program.

Thank you for considering this project.

APPENDIX C

Information about Research Study

Information about Research Study

Purpose and Background:

Over the past 15 years, simulation in nursing education has become a curriculum standard, many nursing schools are implementing simulation based educational strategies. The researcher is investigating simulation experiences, student perceptions of learning and instruction, and student's performance on unit tests. The purpose of the study is to identify which learning experiences in simulation are the most helpful to students.

You are being asked to participate in the proposed study because you are currently enrolled in Pediatric nursing theory and practicum courses.

Procedures:

If you agree to participate in the study, this is what you should expect to happen:

- You were asked to complete the Implied Consent and Demographic Survey
- You were asked to assign yourself a number that will be used to identify your work to researchers. This number should be the first letter of your mother's maiden name and the last 3 letters of the elementary school you attended. The code will be placed on unit tests, student surveys, and simulation worksheet.
- Your name and number will be written on your exams, however, only your number will be written on your student survey and simulation worksheet. Your data will remain anonymous.
- Once you complete the Implied Consent and Demographic Survey, you are giving researchers permission to use data generated from your unit exams the surveys and the debriefing materials you will complete as part of the nursing simulation assignments. ***All students will complete exams, DASH surveys and debriefing worksheets regardless of whether they chose to participate in the study as they are part of the regular course requirement. Only participants will complete the demographic survey***

Confidentiality: No individual identities will be used in any reports or publications resulting from the study. Study information is identified by numerical codes and kept in locked files or password protected computers at all times. Only study personnel will have access to the files.

Risks: There is a minimal risk of loss of privacy. There are no physical risks in this research. Your decision whether or not to participate in this study will have no influence on your present or future status as a student.

Costs or Compensation: There is no cost or payment for participation in this research.

Researcher information: The researcher is a doctoral student at the University of San Francisco, Learning and Instruction Program within the Education Department.

APPENDIX D

Student Demographic Survey

Student Demographic Survey

Code Number_____

Please circle the appropriate responses.

1. I received my high school diploma in the United States

    a. yes
    b. no

2. I am:

    a. Female
    b. Male

3. I work:

    a. Zero hours per week for pay
    b. 1-15 hours a week for pay
    c. 15-30 hours per week for pay
    d. 30 or more hours a week for pay

4. To successfully complete my Nursing classes, I read and study:

    a. Less than 1 hour a week for each class
    b. 1-2 hours a week for each class
    c. 3-4 hours a week for each class
    d. 5-6 hours a week for each class
    e. More than 6 hours a week for each class

5. My age is:

    a. 18-21
    b. 22-25
    c. 26-30
    d. 30-35
    e. Over 35

6. Please self assign a code number by writing the first letter of your mother's maiden name and the last letters of the elementary school you attended.

APPENDIX E

Simulation Preparation Handouts

Information for Participants

To prepare yourself for your day in the simulation facility, please review the information made available to you on your course's I-Learn page. Come to the designated observation and debriefing room on time-or preferably a few minutes early-prepared for a clinical day. This means appropriate nursing attire and all the equipment you would normally bring with you to a clinical site

The simulation day will be divided into 5 parts, and informational session and four simulation sessions. The informational session will be a short gathering to answer questions and to become familiar with the equipment. Next, you will be divided into two groups of four. Each group will participate in two simulations while the other group watches the activities via the campus network. Each session will include two students in the role of nurses, one person being the recorder of events and actions and one person in the position of the family member-usually the mother or the father. The family member will be given instructions on their role prior to the session. After each simulation session, the entire group will gather together to discuss the events. Observers as well as participants are expected to give their perceptions and insights.

Pre-Lab Activities

1. Review the documents and videos listed above in Table 1.
2. Review your textbooks for information on ventriculoperitoneal shunting in infants and the appropriate nursing interventions associated with detecting a possible shunt failure as well the standard of treatment for repairing a shunt malfunction.
3. Review your textbooks for information on Respiratory Syncytial Virus (RSV) in infants and theappropriate nursing interventions associated with improving a child's ability to breathe effectively.
4. Review your textbooks for information on acute gastroenteritis (AGE) in infants and the standard of treatment for this condition.
5. Review information on calming an upset infant.

Pediatric Simulation
Admission Data

Presenting Complaint

Annabelle Chan is a 6 month-old infant who is brought to the ED by the mother at 1800 hours with a 2-day history of irritability, teething, mildly loose stools, hacking cough, increased respiratory rate and poor feeding. Hacking cough has been primarily at night with symptoms decreasing during the day. Annabelle had an acute onset of vomiting x3 in the past 24 hours.

On primary physician recommendation, Annabelle is drinking Pedialyte instead of breast milk. Mom is pumping and saving breast milk. Some urine output per mom. Mom gave Annabelle Tylenol at 1630 for temperature of 101.2F.

History

Annabelle was born full-term. Mother smoked cigarettes prior to and during pregnancy, but has since quit. Father has history of "childhood" asthma and currently has seasonal allergies.

Annabelle has history of idiopathic hydrocephalus at 2 weeks of age with placement of ventriculoperitoneal shunt at 5 weeks of age. No history of seizures. History of Reactive Airway Disease at 4 months.

Learning Outcomes

1) Establish rapport with the parent and infant.
- Introduce yourself to the parent
- Interact with infant prior to and during care
- Recognize the parent as the expert with their child
- Identify their desired level of involvement caring for the infant

2) Perform an assessment of a pediatric patient, including vital signs
- Respiratory assessment
- Neuro assessment
- Abdominal assessment
- IV site assessment
- Pain assessment
- Assess hydration status
- Collect vital signs: Temp, BP, HR, RR, O2 sat

3) Recognize abnormal findings and implement interventions demonstrating appropriate management of findings.
- Management of respiratory difficulty
- Management of abnormal vital signs

APPENDIX F

Simulation and Debriefing Experience Questionnaire

Simulation and Debriefing Experience Questionnaire

Please write a short answer to the following questions. Code Number: _____

What was the most valuable portion of today's simulation/debriefing experience? Why was it valuable?

What was the least valuable portion of your simulation/debriefing experience today? Why was it least valuable?

What recommendations would you make to improve the simulation/debriefing learning experience?

APPENDIX G

Simulation Scenario Overview

Simulation Scenario Overview

Pediatric Simulation Session Flow

Pediatric Patient: – Six-month old female

Patient admitted to emergency department with high respiratory rate. The simulation session is divided into four parts: 1) respiratory distress, 2) inconsolable crying, 3) high heart rate, dehydration, 4) bulging fontanel and shunt malfunction.

Part 1-Topics:

1. Respiratory assessment in infants and children

2. Breathing management in infants and children

Prerequisite Cognitive Competencies:

1. Breath sound recognition

2. Inhalant medication dosage

Prerequisite Psychomotor Competencies:

1. Health assessment of an infant

Learning Objectives:

1. Perform an assessment of a pediatric patient, including vital signs.

2. Demonstrate management of patient with Respiratory Distress.

3. Recognize abnormal breath sounds that may require medical intervention

Terminal objectives:

The students will assess respiratory distress and the simulation will end when they call for a nebulizer treatment with albuterol (which were ordered) or they contact the MD.

Part 2-Topics:

1. Infant Assessment for Pain and/or Discomfort

2. IV assessment and management

Prerequisite Cognitive Competencies:

1. Pain scoring

2. Infant developmental needs

3. IV site evaluation

Prerequisite Psychomotor Competencies:

1. Infant calming

2. IV flush to evaluate patency

3. Obtaining VS

Learning Objectives:

1. Perform an assessment of a pediatric patient, including vitals.

2. Obtain a history on a pediatric patient.

3. Perform appropriate interventions for a pediatric infant patient.

Terminal Objectives

The students will have a crying baby and the simulation will end when they find the cause of the pain

Part 3-Topics:

1. Management of nausea and vomiting in infants and children

2. Evaluation and differential between acute gastroenteritis and ventroperitoneal shunt failure.

Prerequisite Cognitive Competencies:

1. Infant assessment

2. Input and Output computation

Prerequisite Psychomotor Competencies:

1. IV administration of fluid bolus

Learning Objectives:

1. Demonstrate the differential diagnosis process for AGE and VP shunt failure.

2. Describe the signs and symptoms of dehydration secondary to AGE.

3. Demonstrate the medical management of dehydration in an infant.

Terminal Objectives

The students will assess the hydration status of Annabelle after the parents report vomiting all feeds. Simulation ends with call MD for bolus because I/O negative and tachycardia while not crying.

Part 4- Topics:

Infant showing signs of increased intracranial pressure and possible shunt failure. Students will manage the changes, communicate with MD, prepare infant and parent for possible surgical intervention.

Prerequisite Cognitive Competencies:

1. Infant health assessment

2. Input and Output computation

3. Pediatric medication dosage calculation

Prerequisite Psychomotor Competencies:

1. Neurological assessment of somnolent child

Learning Objectives:

1. Demonstrate the differential diagnosis process for AGE and VP shunt failure.

2. Describe the signs and symptoms of possible VP shunt failure in infants.

3. Demonstrate the medical management of mild increased ICP.

Terminal Objectives

The students will assess child neuro status (child is quiet, bulging fontanel, not waking for feeds). Simulation ends with call to MD