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Examining faculty barriers with simulation and successful student learning outcomes

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ABSTRACT

EXAMINING FACULTY BARRIERS WITH SIMULATION AND SUCCESSFUL STUDENT LEARNING OUTCOMES

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This study aimed to identify the specific needs of faculty to create, execute, and trouble shoot the technology associated with clinical simulation. How faculty experiences and the use of simulation in the clinical environment is a critical topic to explore because there seems to be a lack of training and resources to properly execute simulation. More importantly during this study, the researcher identified barriers to simulation, inconstancies in the theory to practice, and lack of motivation to attended faculty development opportunities.

The central research question for this study was: What barriers do faculty encounter regarding the use of simulation and technology in a nursing classroom?

This project employed qualitative case study because it afforded the researcher tools to explore how faculty use and understand technology to educate their students. Data collection consisted of interviewing and observing seven undergraduate nursing faculty members who actively participate in simulation. Interviews were audio recorded and transcribed while field notes were taken during the observation. During data analysis, three emerging themes were identified. Three themes emerged from the data collection including faculty barriers, lack of knowledge of theory to practice, and lack of quality faculty development. Recommendations to

address these themes include more formal education, better use of time in the simulation center, and the need for leadership to become more involved in simulation.

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DEDICATION

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CHAPTER 1

INTRODUCTION

Currently, the United States is experiencing a crisis with the nursing shortage. The estimated need for nurses is slated to continue through 2025, and by 2022; 3.44 million nurses will be needed in the United States (Sheffield, 2016). There are several reasons tied to the overall nursing shortage including a large population of nurses set to retire, nurses who are dissatisfied with the job itself, and a nursing faculty shortage. Working long hours, an increased need for more education, on the job injuries, and higher patient acuity are challenging the roles of nurses in the profession (Cox, Willis, & Coustasse, 2014).

The registered nurse shortage has affected hospitals, patients, communities, as well as colleges and universities. The nursing shortage has created long stressful days of which often results in nurse fatigue, injury, hospital cutting costs, and decreased job satisfaction (Carayon & Gurses, 2008). While nurses continue to work hard to cover the shortage, nurses are caring for more patients during a shift who continue to be sicker. This leads to a decrease in time the nurse is actually spending with the patient leading to miscommunication and increased safety issues (Baggs et al., 1999; Davis, Kristjanson, & Blight, 2003; Griffith, Wilson, Desai, & Rich, 1999). Nursing working in unfavorable environments can affect patient safety putting the patient at risk for medication errors, falls, and other preventable bedside errors.

The nursing shortage has had the most significant impact on colleges and universities across the country due to a nursing faculty shortage as well as a change in how many students should be enrolled each semester in programs. The shortage of nursing faculty has then put demands back on colleges and universities to graduate more nurses even with the faculty shortage. While more perspective students are applying to nursing schools, qualified students are being turned away at alarming rates. Even though nursing school enrollment is on the rise, schools are unable to meet the demands and thousands of students are being turned away from nursing schools each semester, which in turn continues to add to the nursing shortage (Allen, 2008). Schools are only able to graduate a certain number of students each semester, and this is not enough to meet the demands of the nursing shortage. According to the American Association of Colleges of Nursing (AACN) (2017), qualified baccalaureate students were turned down due to not enough faculty, lack of clinical sites and classroom space, with the lack of qualified faculty the number one reason for turning students away. This trend has not only affected undergraduate nursing students but also registered nurses who have applied and are qualified but are turned away for post-graduate studies.

Moreover, colleges and universities are increasingly affected by the changes in health care. As such, nursing education has had to transform to be a more hand-on, adapting to how students are learning in today's society. To better meet the needs of the changing landscape of healthcare, nursing faculty members have transformed how they engage nursing students. No longer are faculty members just teaching in a traditional classroom, lecture manner, but hands on learning such as simulation continues to trend in a forward, more positive direction in the classroom. In particular, the pedagogical technique of simulation continues to have more positive impact in the classroom. Yet, while simulation continues to show a positive impact on

student learning, there are barriers to the nursing faculty community that continues to affect student learning (Nehring, Wexler, Hughes, & Greenwell, 2013).

With a lack of qualified faculty members to educate perspective students, colleges and universities have had to become creative on how to educate more students with the resources the schools of nursing already have. Technology has been the leading example on how schools of nursing have become more creative in the resources that have become available. Technology, in the way of simulation has allowed faculty members to recreate the hospital setting allowing students to take care of patients in a controlled, safe environment. The advances in technology have created simulation centers with manikins that can talk, breath, and accept medication administration, all while allowing students to practice skills, critical think, and work on team building.

Incorporating different learning styles in a nursing curriculum can be very difficult for an educator to do, however, very beneficial for the student. Hands on learning is an essential component of the nursing curriculum giving students the opportunity to take care for patients in a multitude of different settings including the hospital, community, and the learning laboratory (Aebersold & Tschannen, 2013). Simulation has become a learning tool embraced by nursing educators as well as nursing students who benefit from hands on learning rather than a lecture style (Galloway, 2009). Understanding students' learning needs is extremely important in higher education, and simulation allows students to learn in a safe and controlled environment while learning how to care for a sick patient. Success of simulation in nursing programs is dependent on nursing faculty understanding how to use simulation to its fullest capacities and promote simulation as a positive learning environment for students.

Even though there continues to be pressure to use simulation in nursing education, faculty remain untrained and simulation is still underused (Hallmark, 2015). Nursing faculty at minimal have a master degree in a nursing related field, which will focus on theory and possibly clinical education of students, but higher learning does not include simulation training. Most faculty experiences with simulation are related back to watching others in a simulation environment, which does not entail any formal education. While faculty development in simulation continues to be a concern for educators, limited resources have been identified for those faculty who want to continue to learn and improve student outcomes. While nursing faculty have identified barriers to successfully implementing simulation, there has been very little identified to fixing the needs of educators.

One major obstacle facing both faculty and nursing schools is the lack of simulation standards to guide faculty's continuing education (Ng, 2013). Currently, the International Nursing Association has set minimal standards forth for Clinical Simulation and Learning (INACSL) for transforming nursing clinical practice to improve student experiences and to improve patient safety. While the standards have help provide guidance for simulation coordinators and educators, those who use simulation still claim to have limited support in the overall education of simulation (Hallmark, 2015). The standards clearly define that educators who use simulation have "specific simulation education provided by formal coursework, continuing educational offerings, and targeted work with an experience mentor", but the research regarding how this is to be accomplished is limited (Boese et al., 2013). Even though there is not currently a best practice standards to help educate nursing faculty in simulation, the standards set forth by the INACSL can provided a basic framework for educators to model (Directors, 2013).

With increasing numbers of students applying for nursing programs coupled with limited clinical sites, nursing simulation has become increasingly important in nursing curriculums to meet the needs of hands on experiences. Undergraduate nursing schools are turning to simulation as an environment where students can practice skills and take care of patients in a safe environment (American Sentinel University, 2012). Students have the opportunity to practice skills, develop self-confidence, and critical thinking skills while learning the essential components of nursing. Simulation centers continue to allow students to take care of patients in a controlled, safe environment with students practice skills that are appropriate for his or her academic level. Students can care for patients who are sick, and if a mistake is made, it would be in a learning environment. Nor harm or serious repercussions would be occur to an actual person.

While the nursing faculty shortage continues to be a problem because of lack of doctoral prepared faculty, nursing schools are looking for new ideas to continue to educate students in nontraditional learning environments in order to accommodate more students. Nursing faculty members are now turning to more simulation in the curriculum, which has allowed additional students to be enrolled each semester into nursing programs across the country. Current research studies found that by replacing hospital-based clinicals with simulation based clinicals, nursing programs can increase student enrollment by a quarter more students each semester (Drenkard, 2008). With the faculty shortage continuing to exist as well as limited clinical placement sites in the hospital setting, simulation is a tool that nursing schools can turn to in order to help increase the number of students who are enrolled. This in turn will decrease the overall nursing shortage that continues to plague hospitals and clinics all across the country.

Nursing simulation has many benefits for students who have been given the opportunity to participate. Students are able to care for patients in a safe, controlled environment knowing that whatever the student does, there will be no ill effect on a real patient. Because of this, student's critical thinking skills improve during the simulation process and students are more ready for an acute care setting upon graduation (Goodstone. Goodstone, Cino, Glaser, Kupferman, &Dember-Neal, 2013). While students are in the simulation lab, they are encouraged to be independent thinkers and work with confidence, improving critical thinking skills while executing the simulation safely while practice at to the students' fullest educational capacity. Simulation allows students to apply critical thinking skills, which are essential upon graduation and when working independently as a nurse. While limited studies have been done on post graduation critical thinking skills and the use of simulation during undergraduate education, the National Council State Board of Nursing (NCSBN) landmark study (Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014) did show evidence that simulation does foster critical thinking skills.

Nursing is a complex profession that requires students to engage in theoretical and technical skills while in the classroom environments (Riley, 2008). Nursing faculty have used the traditional classroom environment for educating students about theories, allowing students to practice technical skills such inserting nasogastric tubes or intravenous fluids on the manikin before actually having to care for patients while always building self-confidence. After the NCSBN (2014) released a ground breaking report that nursing simulation can take the place of half of clinical hours at the bedside, individual state boards of nursing added this change to individual nurse practices acts to allowing schools to start using simulation as an effective teaching tool and strategy. This landmark study changed the way schools of nursing were able to

educator students in a simulated environment at a time when the hospital clinical experiences were no longer as prevalent as they has been in years past.

Adding simulation to student experiences along with theory and some hospital based clinicals; simulation has standardized student clinical experiences and increased student's experiences with hands on techniques. Simulation labs have been used to promote students success by providing clinical opportunities in a safe environment, allow students to fail and learn from the experiences, includes having students reflect e on their time in the simulation with debriefing exercises, and most importantly, improve student and patient safety without the risk of harm (Cover, 2011).

Simulation is a proven and effective learning strategy in nursing education as well as many of postgraduate nursing professions. Nursing simulation such as Collaborative Classroom Simulation (CCS) is an effective pedagogy that involves gathering information; determine course of action, and finally implementation of that knowledge. Berndt et al. (2015) found that using CCS in a undergraduate nursing program increased student learning, critical reasoning, and increased clinical judgment. There are also benefits for students who use simulation in undergraduate curriculum with increased critical thinking skills and self-confidence (Facione, Facione, and Sanchez, 1994; Goodstone et al., 2013).

Faculty members encounter barriers associated with the high demands of the technology associated with simulation. There is a continued need for learning and understanding the technology components of simulation to ensure that faculty members have the skills and expertise needed to be successful (Dowie & Phillips, 2011). Currently, it is up to the faculty member to seek out opportunities to learn simulation either from peers or the simulator manufactures. While this barrier is one that faculty member can control, there are more barriers

that faculty members cannot control. Multiple studies reported that time, training, attitude, lack of space, funding, and student engagement were just a few of the concepts that faculty identified as barriers to using simulation effectively (Alinear, Hunt, Gordon, & Harwood, 2006; Jansen, Johnson, Larson, Berry, & Brenner, 2009). While faculty members continue to face an abundance of barriers, possibly learning more about the technology associated with simulation will be a barrier that can be overcome and promote positive learning.

While simulation is a popular trend and most likely will be continued to be used in nursing schools, it is important to understand the struggles that faculty members encounter when trying to implement simulation into the clinical environment. Technology associated with simulation has become a complex; integral component to make sure the simulation is successful. Continuing to understand the barriers that nursing faculty encounter in the classroom especially with simulation can only lead to improved student successes.

Statement of Problem

While simulation usage has increased over the last decade, there are still barriers for successful use with faculty while promoting student learning. Simulation has been proven to increase student confidence in nursing abilities and clinical judgment, while increasing inter-disciplinary collaboration and teamwork (Brady, 2011; Norman, 2012). While there is continued research showing students benefit from simulation, there is also research that highlights faculty barriers to using simulation in nursing curriculum.

The literature has demonstrated that faculty members encounter several barriers associated with simulation including faculty workload hours, financial support, and resources to develop scenarios (Dowie& Phillips, 2011; Hayden et al., 2014; Jansen et al., 2009). Nursing

simulation is a key component of undergraduate instruction and faculty members just are not comfortable with all the different technology associated with it. Given this, continued training needs to be mandated to engage faculty in simulation training, exploring new options to help continued learning of simulation in undergraduate nursing programs. There is an overwhelming faculty shortage, as well as acute care facilities continuing to deny schools access to patients in the facilities for clinical practice (AACN, 2017). Faculty members are currently using simulation in their own clinical courses; however, many take a less active role when it comes to using the technology to implement the scenarios. While students continue to embrace technology as a great learning tool, simulation is becoming a critical component of their nursing education. If faculty members can became more comfortable with the technology associated with simulation, it would be assumed faculty would utilize and implement more simulation into course curriculum.

Purpose

The purpose of this qualitative case study is to explore and understand the barriers that full time nursing faculty members at small private college in Illinois encounter with the technology associated with simulation in the clinical environment. The study aims to identify barriers with simulation as well as the specific needs of faculty to create, execute, and troubleshoot the technology associated with clinical simulation. It is essential that faculty are well knowledge in the technology that is associated with simulation, as that will improve student-learning outcomes.

Findings from the qualitative case study will shed light on perceived obstacles that faculty encounter during the simulation processes as well as perceived successes to an

individual's specific concerns. Information obtained in the interviews, will be the participating faculty's lived experiences that will include educational background, teaching styles, and overall simulation viewpoints. Most importantly, faculty will identify barriers to the technology they have which may include the computer, the manikins, troubleshooting, and simulation repairs that keep student learning from progress in a forward motion. The data collection came in two extensive interviews in an effort to obtain detailed and specific examples as well as an observation of the faculty member usage of technology in an actual simulation with students.

Research Questions

The central research question for this study is: What barriers do faculty encounter regarding the use of simulation and technology in a nursing classroom?

The following questions will help guide this study:

1. How do nursing faculty utilize simulation technology to support student learning?
2. What support do faculty need to better utilize technology in their classroom to promote student learning?
3. What faculty development has been used and is needed to further guide simulation growth.

Significance of the Study

With the nursing shortage is at an all time high, there is a need for more nursing educators. It is important to understand how nursing faculty are educating students both in the classroom and the clinical setting. Simulation has become a key component of nursing curriculum and the educators are the people who need to understand the technology associated

with simulation. Barriers to nursing simulation are well documented, but more specific reasons for barriers associated with the technology must be explored. While nurses continue to dominate the majority of health care professionals, it is essential for educators to keep educating and graduating quality bedside nurses.

Because simulation has been deemed an effective learning tool for nursing students in undergraduate courses, it is essential to understand barriers faculty encounter and what support faculty need to ensure students continue to learn from the clinical environment. Studies have demonstrated that students learn in different methods and how important it is as an educator to also bring different learning styles into the classroom setting to help students succeed (Fountain & Alfred, 2009; Rakoczy& Money, 1995). Bringing simulation into the classroom as a hands-on approach to learning helps student nurses connect the theory to practice. If research can identify the struggles that faculty member's encounter with simulation as well as the technology associated with it, student-learning outcomes will only improve.

Definitions

To understand what simulation can do for nursing student's education, it is important to understand the definition of basic simulation terminology define by Jennifer Hayden and the NCSBN (2014).

High-fidelity simulation – "Patient-care scenario that uses a standardized patient or a full-body patient simulator that can be programed to respond to affective and psychomotor changes, such as breathing and chest action. Examples of high-fidelity manikins include Sim-Man®, METIman, and Noelle®" (Hayden, 2010, p. 52).

Medium-fidelity simulation – "Patient-care scenario that uses a full-body simulator with installed human qualities such as breath sounds without chest rise. An example of a medium fidelity manikin is VitalSim™" (Hayden, 2010, p. 52).

Task trainers – "Part of a manikin designed for specific psychomotor skill, for example, and arm for intravenous insertion practice" (Hayden, 2010, p. 53).

As such, there are varying degrees of patient simulator from the basic task training, starting an intravenous insertions, to a high fidelity manikin that can breath, birth a baby and perform cardio-pulmonary resuscitation (CPR). The varying degrees of simulators allow students of different educational levels to use them as a learning tool in a simulated environment.

Dissertation Overview

Simulation plays an integral part in the nursing curriculum allowing students to care for patients in a controlled, safe environment. This dissertation was a qualitative case study following the principles of Stake (1995), using interviews and observations, to understand the barriers nursing faculty encounter when using simulation as a teaching tool. Chapter 1 of this dissertation was an overview of information regarding the background of simulation within nursing curriculum. The problem statement was discussed along with the research questions guiding this study, significance of this study, and theoretical frameworks. Chapter 2 of this dissertation will look at the literature that has been documented regarding barriers to simulation within nursing curriculum including definitions associated with simulation, uses of simulation and benefits to simulation within in nursing curriculums. The methodology associated with this dissertation will be highlighted in chapter 3 including the epistemology, methods of data collection, data collection site, participants, research positionality, and limitations. Chapter 4

will discuss the findings of the interviews and observations and finally, Chapter 5 will focus on the future that these research findings will have on simulation as well as recommendations for future research with simulation and technology.

CHAPTER 2

LITERATURE REVIEW

Introduction

Simulation has become a widespread teaching tool and strategy in undergraduate nursing curriculum all across the United States. Used in both associate degree programs and bachelor degree programs, simulation serves to provide students with valuable opportunities to learn how to care for patients in a safe and controlled environment (Fowler Durham & Alden, 2008). Additionally, simulation allows students to learn tasks and skills, make mistakes, but more importantly, learn from those mistakes (Zieber & Williams, 2015). Simulation allows for students to practice technical skills including intravenous insertion, medication administration, and physical assessment skills. While in the simulation center, students also can build self confidence, work on time management, and it also gives students the opportunity to build on their critical thinking skills (LaMartina & Ward-Smith, 2014).

The NCSBN defines important terms related to simulation in which schools would be able to validate their own definitions and use technology as needed. Simulation is "an activity or event replicating clinical practice using scenarios, high-fidelity manikins, medium-fidelity manikins, standardized patients, role playing, skills stations, and computer-based critical thinking simulations" (Hayden et al., 2014, p. S42). Within the definition of simulation, other terms need to be defined in order to understand the complexity of nursing simulation and what importance it

brings to nursing curriculum. Simulation can have different meanings and complexities based on the actual simulator used. High-fidelity simulation are

> experiences using full scale computerized patient simulators . . . that are extremely realistic and provide high level of interactivity [while medium fidelity manikins are] technologically sophisticated self-directed learning simulators which use . . . the use of a mannequin in a more realistic than low fidelity and task trainers. (Meakimet al., 2013, p. S4)

High fidelity simulation has allowed student to take care of "patients" in a controlled, well-defined environment. Students can take care of any type of patient while faculty members assess student's ability as well as determine how well students are learning material from the classroom environment.

Yet, while simulation is a valid and useful learning tool in nursing curriculum, the technology associated with simulation can be overwhelming for both students and nursing faculty. Technology is ever changing and high fidelity simulators also continue to change to meet the demands of the technology world. One example of these challenges is that each simulator company has its own software and operating system. One company may use a laptop to control the manikin breaths and heart sounds while the competing company uses a tablet to execute the same operations on the manikin. Nursing instructors are also expected to be able to troubleshoot the manikins when technical issues occur. That may be as simple as changing out a "vein" but it may also mean looking inside the manikin to see if there is an issue with the electronics. However, because the simulators are not real, students have a hard time taking care of a patient who may not respond verbally as a patient in an acute care setting would.

Because simulation is critical to students' learning skills, understanding students needs regarding simulation within a nursing curriculum must be address by both administration and faculty who have direct and indirect contact with the technology (National League of Nursing,

2015). As such, this review of literature serves to outline affordances that simulation offers nursing students as well as students' experiences with nursing simulation. This review also offers literature detailing barriers nursing faculty often face when implementing simulation into the nursing curriculum.

Overview of Simulation

Simulation is not a new concept and has been used in aviation, military science, and computer science for more than a century. In hopes of improving experiences for everyone, simulation and education through technology has made an impact on both medicine and nursing for more than 20 years ago (Aebersold&Tschannen, 2013). While technology has been associated with nursing education for almost half a century with anatomical models and task trainers, it was not until the mid 1980s those high fidelity manikins started being used in nursing curriculum on a consistent basis (Harder, 2009). Today, nursing schools have multi-million dollar facilities, have employed simulation technologists, and students are spending more time in simulation lab then ever before.

Safe nursing practice is a key component of nursing education and a must for practicing registered nurses. While hospital based clinicals are limited, simulation labs provide safe learning environment that improves knowledge, skills and practice for nursing students (Medley & Horne, 2005). Simulation laboratory are extremely expensive and equipment can vary from task trainers to real life manikins using technology to run patient based scenarios (Rothgeb, 2008).More recently, simulation has been an effective tool in nursing education and a staple in nursing curriculums across the country (National League of Nursing, 2015). While historically nursing education has largely consisted of lectures and other didactical forms of teaching,

simulation serves to transform how students are taught by providing hands-on experiences outside of the hospital setting (Hayden et al., 2014). In fact, Galloway (2009) described simulation techniques that are used in nursing education and encourage nursing educator to strengthen their own learning tools and styles. Simulation can serve to improve critical thinking skills and self-confidence in nursing students, meets the clinical needs of students, and provides a more student-centered form of instruction that allows nursing student's opportunities to engage in hands-on approaches to health care (Flood & Thompson, 2011).

Uses of Simulation

Nursing schools provide students with traditional course work in the classroom setting and also provide opportunities to take care of patients in both the hospital setting and outpatient environments. In recent years, nursing schools have been faced with increasing difficulties securing clinical placement sites due to competition from other schools, increased patient safety concerns, and an ever-growing nursing shortage (Hayden et al., 2014).

Simulation is defined as "a technique, not a technology, to replace or amplify real experiences which are often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion" (Gaba, 2004, p.2). Nursing simulation usually consists of students taking care of a "fake" patient which actually is a manikin that can be anywhere from a task trainer to a high fidelity manikin. Students have the opportunity to work together, problem solve, and use critical thinking skills to take care of a patient with a predetermined medical condition set forth by the simulation curriculum. Faculty members facilitate the simulation as well as educate students on proper medical care but also on ways to

improve the patient's outcome. In the past 10 years, nursing schools have built multi-million dollar simulation centers to help students learn in a fun, interactive environment.

Nursing schools are able to use simulation in the curriculum in different capacities. While there are several different types of simulation that can be integrated into the curriculums, the most common include task trainers, low, medium, and high fidelity patient simulators, and standardized patients (Li, 2007). While schools may vary with the equipment they have and where they may fit it into the curriculum, it is not uncommon for schools to use task trainers as a method for students to learn "task" based skills such as intravenous insertion (IV) (Aebersold&Tschannen, 2013). Task-related skills are usually learned early on in the first nursing class so students can continue to build on these skills during other courses. According to Galloway (2009), standardized patients are live actors in which students perform physical assessments including a health history, allowing the student to learn communication skills while also learning about their own strengths and weaknesses.

Many schools have had the opportunity to purchase different levels of simulators and integrate them into the curriculum. The most common is the high fidelity simulator, which is a full body mannequin that is able to respond with life like actions as well as verbally communicate with students as different types of care are provided (Galloway, 2009). High fidelity mannequins are controlled by integrated computer technology that can respond to the student actions in both positive and negative ways. High fidelity manikins are realistic and put students in real life situations that students are not yet prepared for in the hospital environment (Fowler Durham & Alden, 2008).

The nursing shortage has been one of the most important reasons why nursing schools have turned to simulation in the curriculum. While the registered nurse work force is expected to

continue to grow, it is estimated that there will be a need for over a million registered nurses by the year 2022 (AACN, 2017). One major contributor to the nursing shortage is the lack of nursing faculty, especially those who are prepared with a doctoral education. With nursing schools unable to expand programs because of the shortage of faculty, schools turn to nursing simulation in upwards of 50% of clinical time to help increase student enrollment which in turns graduates more students (Richardson, Goldsamt, Simmons, Gilmarton, & Jeffries, 2014).

While registered nurses in the hospital setting continue to be understaffed and overworked, hospitals are turning away schools and students for clinical placement. Schools have continually found it hard to find high quality clinical experiences in which all students are getting similar experiences. Because clinical sites are essential for students to practice taking care of patients, schools have turned to nursing simulation as a tool for education. Simulation offers the opportunity to involve students from the same clinical course with actual experiences replicated in the simulation environment while standardizing the clinical experiences for all students (National League of Nursing, 2015).

Schools all across the county have had to increase their use of simulation instead of tradition clinical sites because hospitals are no long able to accommodate students. In 2010, the NCSBN started conducting a landmark survey regarding the roles and outcomes of pre-licensure nursing students and clinical education. The purpose was in hopes of understanding the role that clinical simulation plays in curriculum, as well as to validate clinical hours associated with simulation. The NCSBN has identified many challenges that nursing schools were facing regarding the faculty shortage, increased patient acuity, competition for clinical placement sites, as well as higher emphasis on patient safety incentives set forth by the Joint Commission, the accrediting bodies of hospitals. The NCSNB felt the need to initiate a study after many schools

were asking the individual state boards of nursing (BONs) for permission to use simulation in place of hospital based clinicals (Hayden et al., 2014). At that time, limited research had been conducted on the effectiveness of simulation in place of traditional clinical and the NCSBN set out to provide the evidence that the nursing education community needed.

The multi-year, randomized study was conducted all across the United States, had significant results that essentially changed how schools would use simulation within the nursing curriculum. According to Hayden et al. (2014), the "study provides substantial evidence that substituting high-quality simulation experiences for up to half of traditional clinical hours produces comparable end-of-program educational outcomes and new graduates that are ready for clinical practice" (p. S3). Implications from the study showed that students who participated in high quality simulation program essentially were statistically equivalent to those students who had traditional clinicals in both the National Council Licensure Examination – Registered Nurse (NCLEX-RN) and post-graduation surveys from managers.

Hayden et al. (2014) also defined other aspects of nursing curriculum that coincides with simulation as an essential component to understand the impact of how simulation works. "Clinical faculty" is the individual in charge of the curriculum and the students either in a hospital, outpatient, or simulation setting. The nursing education program for learning outside the classroom designates "Academic time." "Activities customarily include observation, hands-on experiences with patients, and interaction of the interdisciplinary team" (Hayden et al., 2014, p. S42)is the definition of traditional clinical experience. Defining these terms fosters better understanding of the roles that faculty and students play in the simulation environment.

This study solidified the roles of simulation in nursing schools as well as the importance simulation plays is in nursing education. For years, it was understood that students need to be in

the hospital settings with real patient experiences to be successful on NCLEX-RN licensure exam as well as be successful in post graduation as new graduate nurses. This large-scale study was able to identify that up to 50% of traditional clinical hours can be replaced with clinical simulation. Because of the study, new guidelines were set forth for nursing schools to support the use of simulation in the clinical environment.

Benefits of Simulation in Nursing Education

Incorporating simulation into the nursing curriculum is vital for many different reasons, both for students as well as nursing faculty. Simulation has allowed students to increase self esteem, develop critical thinking skills, as well as allow students to care for patients in a safe, controlled environment (Goodstone et al., 2013). Faculty members are now using simulation as an innovate approach to traditional nursing education (National League of Nursing, 2005; NCSBN, 2014). Quilici et al. (2015) studied faculty members and a majority of those interviewed believed that student were more successful in the simulated environment because it was safe, allowed students to work through problems on their own, increased communication between the team, as well as promoted students to draw their own conclusions to the problems at hand.

Teaching critical thinking skills to nursing students can be extremely difficult, as most students do not have the background to understand the consequences behind their own actions. Critical thinking skills are even more essential upon graduation and once working independently as a nurse. Introducing simulation in nursing clinical education can be a valuable resource to help students become more consciously aware of the importance of critical thinking and begin to develop the abilities needed to succeed. While students are in the simulation lab, they are

encouraged to be independent and work with confidence in hopes of improving critical thinking skills while executing the simulation safely and to the student's fullest capacity (Goodstoneet al., 2013). Measuring students' critical thinking skills may be subjective data since other studies have been able to successfully measure critical thinking skills with the California Critical Thinking Skills Test (CCTST). Facione et al. (1994) and Goodstone et al. (2013) used the CCTST to evaluate student performance prior to simulation and then after a simulation and results demonstrated that simulation can have a positive impact on students' performance while increase critical thinking skills.

While limited studies have been done on post graduation critical thinking skills and the use of simulation during undergraduate education, the NCSBN (2014) study did show evidence that simulation does foster critical thinking skills. Hayden et al. (2014) reported that students who had up to 50% of clinical time in the simulation lab scored just as high on the Critical Thinking Diagnostic Test (CTDT) as students who had no simulation at all during undergraduate school. This means that critical thinking skills can be learned and fostered in a safe controlled environment of a simulation lab and that students do not need to solely be in an acute care setting to gain valuable insight and information. When the new nursing graduates, themselves reported their own evaluation of critical thinking skills, the group that had up to 50% simulation reported having more confidence with critical thinking then students who had both, no simulation and 25% simulation (Hayden et al., 2014). Students are finding the value in simulation as well as the correlation that it brings to self-awareness of the importance and putting into action the use of critical thinking in a new graduate nursing role.

Simulation has proven to be beneficial for students during undergraduate nursing school. Literature supports that faculty who have implemented simulation into curriculum have found it

to be a valuable learning tool for students especially those students who learn from a hands on approach in teaching styles (Quilici et al., 2015). Simulation is a valid learning tool because students can relate to the technological aspect of the learning environment. Students are more adapt to using technology and putting them in a simulated environment makes a nursing student feel comfortable and at ease. According to Montenery et al. (2013), students reported a positive impact when using technology during nursing school, including simulation, when incorporated in the classroom environment. Hands on applications also helped students to be able to connect the lecture components of courses work with actual patient care. Simulation is an opportunity to incorporate technology as well as critical thinking application for students.

Barriers of the Use of Simulations

Faculty members are being encouraged to not only incorporate simulation into nursing curriculum to help ease the burden placed on clinical placement sites, but also to help students learn how to care for patients in a controlled and safe environment (Zieber& Williams, 2015). In the last decade, simulation studies have been conducted to understand barriers associated with faculty members using simulation. Time, lack of financial support, negative faculty perceptions, incorporating simulation into curriculum, and fear of technology are several barriers that nursing faculty members encounter while trying to educator students (Al-Ghareeb & Cooper, 2016).

As simulation is becoming the standard of clinical teaching, it is also important to understand the confidence level that instructors need to have and how to then improve confidence levels of faculty members who are teaching with simulation. Dowie and Phillips (2011) examined faculty roles in simulation found that while simulation was a valuable and effective teaching strategy, only 40% of the faculty polled were confident in using the

technology associated with it. More importantly, they reported that even fewer faculty members felt they were sufficiently prepared to lecture using the technology (Dowie& Phillips, 2011). While it may be up to individuals to increase their own knowledge of simulation, it is not uncommon to find that faculty members are unprepared when using the equipment.

There is a continued need for learning and understanding the technology components of simulation to ensure that faculty members have the skills and expertise needed to be successful (Dowie& Phillips, 2011). Currently, it is up to the faculty member to seek out opportunities to learn simulation either from peers or the simulator manufacturers. Even though Dowie and Phillips (2001) study used a small sample size, it spoke about the impact simulation has on faculty members and that there is not enough education for faculty members to become experts in using simulation as a teaching strategy. There is a continued need to study the confidence level with technology as it is being incorporated more and more into the classroom and clinical environment. It is the recommendation of many, including the NCSBN, that post graduate work include simulation as well as an official orientation, and faculty members should use simulation in clinical practices on a regular basis to stay current on the ever changing technology associated with it (Aliner et al., 2006; Dowie& Phillips, 2011; Hayden et al., 2014).

While faculty members do agree that simulation should be incorporated into undergraduate nursing curriculum, the cost effectiveness for both faculty, training, and workload hours is still a major concern (Bray, Schwartz, Weeks, &Kardong-Edgren, 2009). Jansen et al. (2009) examined barriers associated with faculty members in simulation and overwhelmingly noted that time was the major factor that affected them from using more simulation within the curriculum. The faculty members cited that time included training, time to write sceneries, as well as the necessary time “to figure it all out” (Jansen et al., 2009, p. e12). While studies show

that faculty members are using simulation, those same respondents reported feeling inadequately compensated for workload load hours needed to prepare especially in high fidelity simulation developing new curriculum (Dowie& Phillips, 2011). Consequently, if faculty members were given extra time for preparation and development of simulation based scenarios, they would be more likely to continuing to develop and incorporate simulation into their own courses (Tuoriniemi& Schott-Baer, 2008; King, Moseley, Hindenlang, & Kuritz, 2008).

Nursing simulation is a complex field of technology and the technology associated with simulation has become extremely overwhelming to those who use it (Al-Ghareeb & Cooper, 2016). To maintain the standards that have been set forth and to incorporate simulation into nursing curriculum, schools are spending large sums of money to bring simulation into the clinical environment. According to Laerdal Medical (2018), a major manufacture of medical equipment and high fidelity manikins, task trainers can cost several hundred dollars while high fidelity manikins can easily cost an upward of $100,000. While this is the cost of only one manikin, schools are usually in need of several manikins because the manikins can different things and a single high fidelity manikin is not appropriate for the different nursing courses. During the Bray et al. (2009) study, 89% of the faculty members expressed feelings that money spent on the simulation center was not worth it or would not be a sound financial investment if faculty did not know how to use the equipment. At the same time, faculty members felt simulation was a valuable tool in education and enhanced student learning.

The cost of simulation centers and manikins are a barrier to implementing it into nursing curriculums. There are also other added costs that Jansen et al. (2009) reported that the College of Nursing and Health Sciences within the University of Wisconsin school system continues to face these barriers. Besides the money just to buy the simulation technology, staffing, training,

and lack of space where are all of financial concerns to those who were involved in the study. The faculty described several of the facilities have better equipment than other schools even those every school was suppose to be from one university system (Jansen et al., 2009).

Because simulation is technology based, Miller and Bull (2013) found that faculty members questioned their own abilities both with the electronic component as well as their own nursing skills. Learning simulation and the technology associated with it has become a critical component of clinical instructors in nursing education. Nurse educators are in need of faculty development in simulation to better student experiences. While limited education is actually provided to faculty regarding simulation, including the technology associated with it and how to correctly educate students using simulation, the faculty who has experience with simulation can be mentors. Krautscheid, Kaakinen, and Rains-Warner (2008) studied clinical faculty with no experiences and faculty who were mentored by master prepared educators and the results concluded that teaching strategies were greatly improved, verbal and nonverbal communication to students was better, and teaching behaviors were positive when instructors had mentoring prior to simulation. Just like all aspects of education, faculty members need an active mentor in simulation to be able to be successful.

Faculty struggle to realize that technology brings new ways of thinking into the classroom but at the same time has put added work on to the faculty with planning, writing and coordinating clinical simulation. Miller and Bull (2013) noted that faculty really became overwhelmed when trying to schedule 500 students in blocks of four and realized that time just did not allow it. Quilici et al. (2015) noted that faculty members found real benefits to simulation but also found that faculty members had an issue with the amount of time it took schedule an entire class of students in the lab as well as the time allotted for students to complete

each scenario. The overall logistics of setting up scenarios for every student, while changing the simulation environment each time a student comes in as well as deciding if simulation should be incorporated into class time were all issues faculty members struggled with.

Many faculty members may be interested in incorporating simulation, but they continue to face obstacles that prevent them from using it in the curriculum. Faculty members have multiple reasons why they do not to use simulation as a learning tool, and many of these issues can be addressed by the leadership team as well as being more assertive within oneself. Getting students more engaged in the clinical environment is a direct reflection of the preparation and interest level of the faculty member. Faculty members who portray confidence and excitement for simulation will be able to relay that back to students in a positive manner. At the same time, a nursing faculty member who is not passionate and speaks ill of simulation can only expect the students to feel the same. Jansen et al. (2009) reported that faculty members do not know how to incorporate simulation in to a theory course in which more than a couple of students could participate at one time. Getting large amounts students involved in simulation at one time can be difficult to overcome and that may be why simulation is better suited for the clinical environment.

Unfortunately, as simulation technology has become so complicated, faculty members are finding it overwhelming and have chosen to not move forward with it in the curriculum (Bray et al., 2009; Nehring & Lashley, 2004). The complexity of the technology and keeping educators trained are taking away from classroom time and has become a burden on colleges and universities. While faculty workloads are already high, adding time away from the classroom to learn how to operate the equipment, write evidence based scenarios and stay up to date on the advancing technology was a barrier in several studies (Jansen et al., 2009; Fowler Durham

&Alden, 2009). Nursing schools are not always able to hire simulation coordinators or technologist to run, maintain, and care for the equipment and it is becoming another added responsibility of faculty members.

Professional Development

In any aspect of higher education, faculty development is the key to keeping medical knowledge up with current trends. It is especially important in any type of medical education, including nursing schools. Medicine is continuing to evolve as evidence based practices has become the standard of practice, both in the classroom and at the bedside. Nurse educators, too need to continue to learn what those evidence based practices are and how to implement them into nursing curriculum.

Thirty-three of 52 states now require registered nurses to complete a minimal of 14 continuing education hours and upwards of 36 hours to renew nursing licensure every two years ("Nursing continuing education," 2008)This is relevant because a requirement to teach in higher education for nursing is an active registered nurse license. While individual states have specific requirements for continuing education, it essentially dependent on the nurse to take the courses that he or she may be interested in. Faculty development and continuing education is imperative to all nurses as well as all nursing faculty. Educators need to have faculty development that is systematic, planned, realistic, and measureable while meeting the needs of each individual educators needs while encouraging learning and reflection (Mclean, Cilliers, & Van Wyk, 2008).

Faculty development in nursing simulation is essential if an undergraduate faculty member is going to have a positive impact on student learning outcomes. The International Nursing Association for Clinical Simulation and Learning (INACSL, 2016) has been leading the

way in simulation faculty development setting guideline and standards to promote positive learning outcomes. The standards clearly define that faculty development and educator is essential for those who are going to use simulation in curriculum. Faculty who have participated in simulation continuing education has developed and improved "knowledge, skills, attitudes and behaviors of teamwork required to promote safe, quality patient care" (Decker et al., 2015). While research supports faculty development in simulation, it is important to make sure faculty are including good quality educator each year as a way to gain new knowledge.

Conceptual Framework

For this research study of faculty members and barriers associated with simulation technology, one conceptual framework guided the research and implementation process. This conceptual framework was an important aspect in guiding faculty members in their own learning styles, level of competence and overall goals as an educator. This study used Benner's (1982) Theory of Novice to Expert to guide the analysis of the data.

Benner's (1982) model is a general model that takes into account the skill and experience a nurse has while advancing through stages of expertise. As knowledge, skill, and experiences are gained, an individual moves through the five stages: novice, advanced beginner, competent, proficient, and expert. There is no set time for each individual stage, but individuals move through them over time and advancing through them as concepts become clear, critical thinking becomes more advanced, and knowledge becomes clear and mastered. Faculty members can take their own knowledge of simulation as an instructor starting in the novice stage and as comfort levels increase, faculty members will progress though the stages.

Simulation has been a valued learning tool since World War II (WWII), but very few people associate it with nursing education and curriculum. Nursing education has been taking advantage of the concept of simulation by using high fidelity manikins instead of taking students into the typical hospital environment. Writing simulation curriculum as well as working with the technology takes Benner's (1982) Theory of Novice to Expert as faculty members learn new concepts as progress through the stages with time and experiences.

Having a solid background in nursing fundamentals is essential for all nurses in the clinical setting but more importantly in the academic environment. Having competency in nursing simulation is situated between novice and expert and it is the role of the educator to create the learning environment for clinical expertise in the clinical areas (Galloway, 2009). Faculty members take this same approach as they learn more about the advantages nursing simulation curriculum has for student.

Nursing schools across the county have adapted Benner's (1982) theory as a model for nursing educators to adopt as their own conceptual framework. Besides educators, nursing schools have also adapted the Novice to Expert theory because it describes the role faculty member's advance through as they gain experience and expertise. Faculty members who adopt this conceptual framework can see how his or her own roles change in the educational environment while advancing through Novice to Expert (Bambini, Washburn & Perkins, 2009). Benner's theory starts first time faculty educators in the novice stage, knowing very little about higher education, to expert, having developed the tools, ideas, and concepts needed to succeed and mentor others.

As a novice in nursing simulation, it would be expected that a nursing faculty member would know very little about how to write curriculum, set up the learning environment, or know

how to use the technology associated with the manikins. It can be time consuming and overwhelming the first year of being an educator, as confidence increases, understanding simulation curriculum, and being more confident with the technology itself, a faculty member will move onto the next stage, advance beginner. As time goes on, approximately 2-3 years, developing the tools needed in the simulation-learning environment, the educator will continue to redefine roles and advance through the stages (Benner, 1982).

An important piece of Benner's (1982) conceptual framework that is unlike any other frameworks, is that as one moves through the stages, an individuals ideas and thought processes change. The educator in the novice stage is task oriented, only able to look at the individual simulation concept, needs to follow the algorithm, and cannot critically think independently about what the prescribed scenario that has been written. As an educator moves out of the novice and advanced beginner stage and into the competent stage, the educator is able to move past single tasks and no longer use the rules and formulas to guide the simulation (Benner, 1982). On the same level, an expert nursing educator working with students in the simulation environment is no longer taking formal steps, but can give a descriptive narrative interpretation for the student and instructor goals as well as a detailed evaluation of each individual student progress.

Conclusion

Overall, nursing simulation is a complex world of patient based scenarios using high-fidelity manikin and highly sophisticated technology. Nursing educators are the key component to student success while try to navigate the different manufactures and the changes that technology has brought to the nursing classroom. The literature reviewed here has shown that

cost, workload hours, lack of administrative support, and trying to incorporate all students into classroom simulation are barriers to success with simulation. With three highly competitive nursing simulators manufacturers, Laerdal, Guamard, and CAE Healthcare all using different operating systems, there is little to no research that nursing faculty members encounter while trying to run patient based scenarios with nursing students. It is the goal of this research to better understand barriers that faculty member encounter when using the technology during nursing simulation in the clinical setting.

Summary

Chapter 2 served to review literature regarding faculty barriers with simulation as well as identifies the positive effects that simulation has on student outcomes. It has been well documented that faculty members struggle with incorporating simulation into curriculum, while students continue to have success. In addition, the chapter introduces the conceptual framework of Benner's Novice to Expert, which serves to frame and organize the data to achieve this projects purpose.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to identify the needs of nursing faculty who use simulation and to better understand the barriers of the technology and improve student learning. Using qualitative case study, the aim of this project was to explore how faculty use and understand technology to educate their students. Importantly, the qualitative case study was the best approach for this dissertation for several reason. First and foremost, case study gathered data rich information from nursing faculty's perspectives related to barriers that one might face while using the technology associated with simulation. It also allowed the researcher to interview and observe faculty in a natural environment and was able to take the context into consideration and give meaning to specific struggles faculty members encounter.

Epistemology

This study will be based on the principles of constructivism. Constructivism is the viewpoint that knowledge is constructed through perspectives and experiences with other people. Individuals come to learn about knowledge though the world and are socially constructed. Any type of meaning is not discovered but is constructed by individuals as they engage in life experiences (Crotty, 1998). Individual's meanings are constructed through interpreting other

people's ideas and thoughts and sharing views with other participants. As one learns, he makes sense of the findings through his own perspectives while nothing new is being discovered (Crotty, 1998). While constructivism is the process of learning through observations, it was the observations that put validity to this case study. It connect what faculty members shared during the interview process as well as identified areas that needed further explanation during the second interview. While much was gained through the interviews, it was the observational aspect of the research that put validity into the shared experiences of the faculty.

Theoretical Perspective

The theoretical perspective that this research will be framed by is Interpretivism. Interpretivism is based on real life world experiences in both theory and practice and that the understanding of idealism is based on the interactions between people, while focusing on the interactions and differences between individuals in relationship to a common idea or concept (Willis & Jost, 2007). This theoretical theory also allows the researcher to understand the perspectives of the individuals associated with the research study, and at the same time, drawing conclusions and solutions to any underlying issues.

Understanding individuals' ideas and perspectives while, at the same time, understanding the social change of human and social realties while looking for "culturally derived and historically situated interpretations of the social life-world" (Crotty, 1998, p. 67) is an important aspect of Interpretivism. Human social actions and understanding the meaning behind those interactions allows for a researcher to interpret the thoughts and beliefs of those individuals who participate in the research studies (Crotty, 1998). It is key to understands basic interactions that shape and define those who work together. In qualitative research, interpretations will take

meaning from what individuals have to say or do while arising from one's own accounts and actions with others (Crotty, 1998).

Case Study

Leading case study experts have help guided researchers to organize ideas and thoughts to allow for lived experiences to further be explored as a style of methodology (Merriam, 1988; Stake, 1995; Yin, 2003). A qualitative, single case study research design was used to describe and interpret how nursing faculty are affected by barriers associated with simulation and the technology associated with it. Defining the case study as a single unit, exploring the ideas related to one specific entity is an important aspect of this type of qualitative research methodology (Yin, 2003). Gathering individual nursing faculty's perspectives related to barriers that one might face while using the technology associated with simulation provided personal experiences and help guide decisions about the future of nursing education.

Qualitative research using the case study approach has been instrumentally explored by two key figures, Robert Stake (1995) and Robert Yin (2003). One important aspect of the case study methodology and research is that is allows the researcher to seek out different individuals who have a personal perspective of the topic that is being researched. The information, both positive and negative, is then used to compare and contrast with other individuals who are in the same organization specific to the case study (Stake, 1995). Another critical aspect of the case study is that the researcher, individuals, and stakeholders can learn something from the research. The data gathered from this case study will be taken back to the simulation coordinator and leadership team, as well as faculty members. The hopes are that the entire simulation process can be improved for better faculty experiences but more importantly for student experiences.

The goal of a case study is to "seek to ensure that the topic of interest is explored, and that the essence of the phenomenon is revealed" (Baxter & Jack, 2008, p. 545). A case study should be a multi-faceted unit that functions, be naturally occurring in the elements of the research, and be modern and beneficial to those entities involved (Gillham, 2001; Merriam 1988; Stake, 1995; Yin, 2003). Case study methodology examines the complexity of a single case, not only in the social sciences, but as well as in practice-orientated fields such as nursing education (Johansson, 2003). Qualitative research allows a researcher to evaluate programs and then develop specific interventions to better concepts, theories, and data related to the research.

Stake's (1995) qualitative case study research methodology will guide this dissertation's methodology. Most importantly, this case study should be intrinsic, something the researcher, stakeholders, community members, and readers can learn from. The information gained should be able to be applied to others in their own research as well as being able to be used by the subjects who are directly involved in the study. According to Stake (1995) "emphasize on uniqueness, and that implies knowledge of others that the case is different from, but the first emphasis is on understanding the case itself" (p. 9). Tellis (1997) and Stake (1995) have similar ideas in that the case study has multiple layers to explore most important listening and understanding the ideas of individuals and then bringing their voice to the forefront of research.

This case study explored ideas and the thoughts processes to all who are involved. While uniqueness and application are not the only criteria for a qualitative case study, the interpretation of the results is quintessential in application of drawing the conclusions. Providing real source information helped understand the phenomena that are being researched and provided reflections to those who find the case study of importance. As such, the case study was most beneficial

because it brought understanding to a select group of nursing faculty on how they can better understand technology in simulation to better improve student learning.

Research Participants

While there are various recommendations for the number of participants, case study research projects tend to suggest any where between 10-15 interviews (Hill et al., 2005; Hill, Williams, & Thompson, 1997). The target population for this study was a minimum of six nursing faculty who participate in nursing simulation and which was obtained when seven participants completed the entire study and data saturation was met. Research participants in this study participated in two, hour-long interviews, were observed in a clinical stimulation, as well as are able to meet the time restraints associated with the data collection process. The observation were done during undergraduate instruction time and the observation were at minimally one hour in length. Inclusion criteria for participants include being an undergraduate full or part time faculty member at a bachelor nursing school, participated in simulation in a clinical course, and were willing to participate in all aspects of the research process voluntarily. Being a graduate faculty member was an exclusion criterion as the research is solely based on undergraduate faculty. Table 1 depicts the demographics of the research participants.

Site

Participants from the study were chosen from one small private college located in Illinois. The student body is representative of 186 active, full time students and 24 part time undergraduate students who either have junior or senior level status with college credits. The college employs 16 full time undergraduate faculty members and 7 adjunct faculty members in

various roles. The college is located in a large community with approximant 500,000 people in the surrounding communities. Simulation has been incorporated into all six of the clinical courses: fundamentals, maternal newborn nursing, nursing care of the child, adult health, community, and psychiatric nursing. Prior to any contact with the school or perspective participants, institutional review board (IRB) was obtained from both the researcher school as well as the school of nursing were the interviews took place. Perspective participants were sent an email with information regarding the study, looking for voluntary participants (see Appendix A).

Table 1

Demographic of Research Participants

Participant Pseudonym	No. of Years as a Nurse	No. of Years as an Educator	No. of Years with Access to Simulation	Gender
Sarah	31	21	12	Woman
Greg	11	8	8	Man
Ann	17	5	1	Woman
Jenny	34	18	12	Woman
Harley	32	12	12	Woman
Dusty	26	14	14	Woman
Colby	35	25	12	Woman

All participants signed a consent form to participate in the study(see Appendix B).Confidentiality was maintained throughout the study and specific names and entities were not used as well as all school identifiers were not used. Participants were numbered randomly and given a pseudonyms and only identified with by that pseudonym. All data, including audio recordings and transcripts, field notes, and consent forms were stored on a password-protected computer as an encrypted file. Transcription were hand delivered to participants for review.

Data Collection Methods

Qualitative research can be conducted using different strategies and techniques. It is essential as a researcher to choose the best possible data collection method for the researcher and participants. Data collection techniques for qualitative research can be derived into four categories: (a) participation, (b) observation, (c) interviews, and (d) document analysis (Marshall & Rossman, 1989). For this specific study, both observation of the participants and in-depth semi-structured interviews were used to collect the data.

Interviews and non-participant observations were the primary methods of data collection. These methods provide direct in-depth perspectives of individuals who were currently dealing with barriers to simulation. Semi-structured interviews allowed for the researcher to have some flexibility when asking questions to participants based on the answers to previous questions (Merriam, 2009). The interview process allowed both the researcher and participants to learn about themselves as well as others. Research questions allowed individuals to tell their own personal stories, reflecting on how they felt about the simulation, technology, and the struggles he or she encounter. Participants had the opportunity to discuss areas of strengths as well as areas of weaknesses. It was important for this research study to understand each participant's personal views of simulation.

After one semi-structured interview, the participants were observed during a simulation. Passive observations were a fundamental aspect that helped the research solve a problem or establish facts while developing individual theories (Marshall &Rossman, 1989). Passive observations allowed the researcher to observe the faculty member during the simulation and gathering data that was used to guide the questions in the second semi-structure interview. The observation allowed for specific and intimate data to be collected that detailed each participant in

his or her own role as a simulation facilitator. During the observation, note taking took place to gather information that will be observed by the researcher as used to guide the second interview questions. The goal was to understand how different faculty members used simulation and overcome the barriers associated with the simulation while working with students.

The second interview, after the simulation observation were also conversational in nature in which there was discussion of the simulation observation as well as reviewing the first interview. Topics for discussion included how the participant felt about the simulation, what went well, and what could have gone well with barriers associated with the simulation technology (see Appendix C).

The interview process was broken up into three different sections: introduction section, working section, and ending section. According to Merriam (1988), during the introduction, the reason the interview occurred, how the interview process took place, including the audio recording of the interview was explained, the purpose of the interview, as well as confidentially and consent to participate took place. A majority of the interview will took place during the working phase, in which the semi-structure questions regarding phases of Benner's Novice to Expert Theory, simulation curriculum, and the barriers faculty members encountered with technology while implementing simulation based scenarios. Finally, in the ending stage, a brief overview of the information gained during the interview was discussed and a date for observation and final interview were established.

Interviews were conducted at two different times with the simulation observation in between. On average, the interviews lasted 58 minutes and the clinical observation on average was 3.5 hours. Of that 3.5, the average simulation lasted 28 minutes. A total of 18 hours of interviews were conducted, 28 hours of clinical observation and a little over 3 hours of actual

simulation was observed. Interviews took place in a private location, audio recorded, and then transcribed. There was a minimal of one week up to four weeks between the initial interview and the simulation observation and all follow up interviews were conducted within two weeks of the simulation observation. With the original goal was a minimal of eight faculty participants; data saturation was met at seven with repetitive answers and no new information obtained.

Data Analysis

Qualitative research is a widely used approach to identify and learn more about individuals on a personal level. The case study was an excellent approach to research as it provided in depth information about attitudes, beliefs, and motives for those who are educating with simulation and will promote new knowledge for faculty and student learners (Wong, 2008). The information gained from the research was specific to one small nursing college, and the faculty members who work there and participate in clinical simulation. After obtaining two sets of interviews as well as watching faculty members during a simulation, the data was analyzed.

All interview data was audio recorded and then transcribed verbatim. To maintain participant confidentiality, random pseudonyms were given and participants were only identified by that name. Pseudonyms had no true value and participants were not notified of their name at any time. During the observation of the participant, the pseudonyms was used and students were not specifically identified, as the goal was to observe how the participants interacted with the technology associated with the simulation and not necessarily the students.

The information obtained from the structured interviews was systematically analyzed to find common barriers associated with technology and simulation as well as other common themes that may benefit those who are affected by nursing simulation including faculty, students,

and administration. Transcription of audio video was sent to a transcription company to ensure accuracy and time efficiency.

Merriam (2009) describes the process of looking through qualitative data for common themes and differences as constant comparative data. This was the method of data analysis in this qualitative research study. The goal of the data analysis was to look for emerging themes and was done through open and selective coding (Glaser & Straus, 1967). Transcriptions were read a minimal of three times for clarity as well as were sent to the participants for review of accuracy. The first time listening to the transcription included listening for common themes while the second time, identifying important concepts related to the themes as well as ideas that participants may or may not have in common.

After the initial interview process, the participants were observed in a simulation with student involvement. The purpose of the observations were directed towards the theoretical framework, the research questions, and purpose of the study (Merriam & Tisdell, 2015). While students were present during the observation, the goal was to observe how the research participant used the technology with in the simulated clinical environment. The observation in the simulation environment allowed for the researcher to observe direct activities associated with simulation while being in a natural environment for the educator (DeWalt & DeWalt, 2002). During the observation, note taking occurred starting with time, place, and purpose of the observation. The number of people who are involved in the simulation were noted. Field notes were highly descriptive, giving the reader a feeling of actually being in the observation. The field notes allowed the researcher to show the relationship between what was said in the interviews and related it back to clinical practice. Merriam and Tisdell (2015) also suggest a

reflective component of field notes, which will include feelings, reactions, and speculations. The observations also guided the second semi-structured interview for each participant.

Information obtained from the direct faculty observations was analyzed using coding just like both sets of interviews. Coding allowed the researcher to take common themes including single words or sentences that can summarize or condense the data (Saldana, 2015). Coded patterns from the initial interview were specifically looked for during the simulation, which helped identity barriers as well as strengths associated with the technology. The patterns that were seen throughout the observations were then directly incorporated into the second set of interviews essentially bringing back the first set of codes from the initial interview.

The goal of the data analysis was to find common themes, ideas, interactions, as well as the struggles that the participant may have with the technology. The common concepts were then used to further promote discussion among faculty members who use simulation.

Research Steps

A single protocol was used to ensure that consistency was used with each participant (see Appendix C). The first step of the protocol invited participants to participate in the survey. An initial email was sent out December 1, 201, to all full and part time undergraduate faculty as well as those who identified themselves as adjunct instructors. Names were gathered from the school of nursing website. Two potential participants who responded to the initial email were not selected for the study because of lack of using simulation in their clinical course. Over a two-week period, six potential participants responded to the survey and a seventh potential participant reached out in the second week of January after a second email requesting participation was sent. Once an agreed upon time and neutral location were decided, the first semi structured interview

took place with an average interview time of 52 minutes. Interviews were recorded and saved on a password-protected computer and sent for transcript within 24 hours. At the time of the initial interview, an agreed upon time for the simulation was established. During the observation, the initial semi-structured interview transcription was brought for participants to review. After the observation was complete, the follow up interview was scheduled with a minimal of two-week period in between. The last step of the protocol ensured that the transcripts were read over by researcher and coding began immediately identifying emerging themes.

Trustworthiness

With any type of research, it is essential for a researcher to have trustworthiness while conducting interviews, observations, and analyzing the data. Merriam (1995) concluded that qualitative case studies have both internal validity and reliability. Internal validity is described as research data that is reflective of reality while reliability is to what extent the findings can be replicated in another study (Merriam, 1995).

Internal validity was broken down into multiple steps to enhance the qualitative study: triangulation and member check. After conducting the interviews, observations occurred which allowed the researcher to watch for different barriers faculty members encounter in simulation, called triangulation, which essentially strengthened the internal validity. After the initial interview and following the observation, participants of the study were re-interviewed to validate and correlate what was stated in the initial interview with relationship to the observations. Seven undergraduate-nursing faculty were interviewed and observed to help facilitate a deeper meaning of the information gained at which data saturation occurred.

Merriam (1995) describes member checks as "taking data collected from the study participant and the tentative interpretations of these data, back to the people from whom they were derived asking if the interpretations are plausible" (p. 54). Once both sets of interviews were conducted and transcribed, the research participants had the opportunity to review for accuracy. This helped improve the accuracy, credibility, and validity of the study. Member check allowed for feedback as well as making sure the researcher understood the faculty member's point of view accurately.

Research Positionality

As a nursing faculty member, I have seen the effects that simulation has on student outcomes, both positive and negative. From my own personal beliefs, students' ability to be successful, both academically and mentally in simulation depends on the environment that the faculty member has created. When faculty members are educated, informed, organized, and knowledgeable, students have better simulation experiences, which in turn promote a positive experience during the actual simulation. Giving students the best experience possible is only going to make the learning outcomes more effective for both the student and the nursing school.

When students are actively participating in the simulation, they are getting hands on experiences that can be replicated in a controlled environment. This environment is a "safe zone" in which students can make mistakes without actually causing harm to a real person. After simulation, students take away learning points, learn teamwork, work on communication skills, as well as improve confidence. The simulated environment also allows for faculty to work with students in smaller numbers giving students the one on one interaction and feedback that they need.

Having been an instructor for five years and seen a simulation program grow because of a simulation coordinator who has the time, dedication and passion is extremely gratifying. At the same time, while this educator is working really hard to prepare for simulations each week, other faculty members have chosen not to put the time and effort into preparing. It is important to understand what other faculty members find as barriers to simulation and what they need to be successful in the simulation environment. Simulation in the nursing curriculum is not for one person to create and execute, it is the responsibility of the entire team. Each faculty member needs to understand the benefits associated with simulation but also need to know how to use all of the equipment.

Limitations

All research has limitations, including this study. The mere fact that the case study was conducted at one small undergraduate nursing college is a limitation as the research cannot be associated with or expected to be found at another college of nursing. This research focused on faculty and the barriers that undergraduate nursing faculty encounter during simulation and will not reflect students' roles, perceptions, or barriers. The faculty who volunteered for the study may have more interest in simulation than those faculty members who choose not to participate. This may be more reflective in the perceived barriers as well as non-barriers associated with simulation.

Since the study is limited to faculty members who do participate in simulation, there was a group of faculty member who are not eligible to participate because of the lack of use of simulation. This study may also be non-reflective of the entire faculty values and beliefs associated with simulation. While a more in-depth case study including students could be a

possibility in the future, this study only looked at simulation from a faculty viewpoint. Although student views are important, this study did not look at the correlation of faculty barriers as seen by the nursing student.

A final limitation of the study was the student performance during the simulation. While students were active participants during the observation of the simulation, their performance was not measured nor was the student abilities assessed during the simulation. The observation was expected to show validation of what the faculty members address in the first interview as well as brought about topics to discuss in the second interview. The study only included undergraduate faculty who participate in simulation because of the perceived lack of use and barriers associated with it. While graduate faculty may use simulation at times in minimal content, graduate programs mainly use "actors" and objective structured clinical examination (OSCE) (Kurz, Mahoney, Martin-Plank & Lidicker, 2009).

Summary

Chapter 3 served to outline the epistemology and methodology for this dissertation. The constructivism framework guided the research using the approach that learning is an active process while learning through observation will help guide future experiences. The case study was chosen because it allowed for the researcher to gather data regarding lived experiences about the future of nursing education. Using a standardized protocol, data was gathered through two, one-hour interviews as well as observations while the coding of the information expelled common themes. Trustworthiness, and limitation concluded this chapter, which depicts the author's positionality on the subject matter.

CHAPTER 4

FINDINGS

The purpose of this qualitative research study was to examine undergraduate nursing faculty's uses of simulation and their perception of barriers associated with the technology. The following research questions guided the study: (a) What barriers do faculty encounter regarding the use of simulation and technology in a nursing classroom? (b) How do nursing faculty utilize simulation technology to support student learning? (c) What support do faculty need to better utilize technology in their classrooms to promote student learning? (d) What faculty development has been used and is needed to further guide simulation growth?

In-depth interviews and observations with undergraduate faculty provided real-life experiences while providing insight in the barriers they encounter with simulation, more specifically, the technology. Participants also discussed faculty development, or lack there of, as well as creating, executing, and troubleshooting all aspects of clinical simulation. This chapter discusses the research findings from the semi-structured interviews and observations with undergraduate nursing faculty over a period of several months.

Background

The participants of this student were all undergraduate nursing faculty who used simulation in their clinical course in a bachelor of science nursing program. The faculty ranged

in ages from 42 – 66 years old, all participates except one identified as women. All faculty members had been using simulation for a minimum of one year, had an average of 14 years of teaching experience, and had access to simulation for 10 years. A majority of the participants started with an associate's degree in nursing and then went back to school for advanced degrees while working in an acute care setting. All participants integrated simulation into a minimum of one undergraduate-nursing course more specifically a clinical course. One educator has been using simulation for a year while another has been involved with simulation for eight and a half years. One faculty member identified herself, as the simulation coordinator, however, is still considered faculty. Each participant has a minimal of a master's degree, one had a doctorate degree, and one is currently enrolled in a doctorate of nursing program.

All but one participant had a direct role in the students' supervision, evaluation, and determination of when the students would participate and be scheduled in the simulation. These six participants chose student groups or roles within the simulation, the topic and length of the simulation, as well as assigned grades to the students. While the simulation coordinator did not have a direct role in the student participation, she did have a direct role in the development and execution of each simulation.

Data was sorted by code, first looking for key words such as barriers, faculty development, and continuing education. Barriers, in general, was then broken down even further looking for concepts regarding student and faculty attitude, financial, space/location, and knowledge. The observations were coded using these same keep concepts while identifying what the faculty said during the interviews and what was actually seen during the observations. Three emerging themes were identified through selective coding and will be discussed in this section. While individual faculty may have identified other important aspects, faculty barriers,

inability to engage theory to practice, and lack of professional development were key concepts identified in the interview and observation processes.

Barriers

Research studies have shown there are barriers to all aspects of simulation and the research participants continue to identify those same barriers (Al-Ghareeb& Cooper, 2016; Bray et al., 2009; Hayden et al., 2014, Jansen et al., 2009). During initial interviews, all participants were asked the same two questions: (1) What barriers does the college of nursing encounter with simulation? (2) What barriers do you personally encounter with simulation? While each participant had varying answers, emerging themes of lack knowledge, space/location/equipment, and student and faculty attitudes.

Faculty Knowledge Barrier

Simulation is a complete system of technology, student involvement and clinical expertise and it is important to understand perceptions of faculty knowledge with simulation. When asked about the barriers she faced, Sarah stated, "The lack of time and knowledge on how to develop a scenario those are probably the two biggest barriers I encounter." When asked for more details about developing a scenario, she went on to say,

> Well, I can't say I've ever written a scenario, to be honest with you. I would not have an idea about how to develop a scenario. I could make one up; I'm not sure how good it'd be. But I certainly have a lot of clinical examples. I think having an idea, 'cause you know about all the different things, I certainly know my content well.

Similarly, Greg shared concerns about knowledge about simulation during the initial interview,

> All the money in the world for simulation would be awesome but it is only good as the person-as the people that you hire to utilize it. You could throw all kinds of money at any

> problem, whether it's simulation or what have you, but unless you have the dedicated people, who are trained, want to incorporate simulation and have the knowledge to help that out, to enact it, there would be little value. I think it definitely could have it. To throw money and build a new simulation lab, but then not to hire qualified people to run it, that wouldn't help anybody.

Like Sarah, Greg discussed more than just money being a barrier but having faculty who are well knowledge in simulation. Having the tools and resources to effectively teach students was deemed as just as important. Just like Sarah and Greg, Ann discussed her experiences with her own learning simulation as well as those she had worked with. She said,

> I have had to learn everything on my own, there hasn't been much in the way of courses to take or continuing education for simulation. I know there are a couple of people with lots of knowledge so I may ask them, everything else I have had to look up in the research. I still am not comfortable writing a scenario, skills type situation yes, but not an actual patient scenario. I just don't have the actual simulation knowledge to pull that one off.

Ann took it upon herself to learn about simulation because she had the personal interest as well as saw the benefits to student learning. Harley too seemed to have a passion for simulation and sought out to learn more about simulation on her own. Like Ann, Harley was very knowledgeable about simulation during both interviews but shared thoughts about those she worked closely with:

> I think all faculty both undergraduate and graduate need to understand what simulations are about and how they're helpful in the curriculum. As a way to teach the students, like a hands on approach and really understand it. I think there are several people who are not really interested in doing simulation because they aren't knowledgeable. You have limited faculty so if one faculty doesn't do it, they never learn more then and it falls to the other faculty. Should it be an expectation when faculty members are hired, yes, you know part of the hiring process is to feel them out in their interest and knowledge with simulation

While Ann and Harley demonstrated knowledge with the high fidelity mannequin, Jenny was open about not using the mannequin because she was unsure how to incorporate it into her course as this time. While the school of nursing does not require faculty to use a high fidelity

mannequin in simulation, Jenny did incorporate other areas of technology with the classroom to promote student learning during the simulation observation. During the second interview, it was discussed that she did not use the mannequin but did use the projection screen and DVD's. She shared her reasons, stating:

> Usually the equipment in the room is all part of the technology. And, they've set it up so it's really pretty easy but I took the time to learn it on my own. Other faculty members, no so much, they didn't want to come in or choose not to learn it. You still have to know how to use the technology in the simulation lab. You know when I first walked in there I had no idea. I didn't want to learn it at first, I had the same thoughts as everyone else, but it does benefit the students. I know others just don't care to learn it, which is really just a shame.

It was also important to understand faculty knowledge with the simulation standards set forth by the INACSL (2016). Established to help advance the role of simulation, best practice standards were set to help provided evidence-based standards for implementation and training. The NACSL can help guide schools of nursing and faculty in simulation design, outcomes and objections, facilitation, and debriefing and overall best standards of practice. Only one participant interviewed, Dusty, had knowledge regarding the standards. Dusty shared,

> I definitely think that all undergraduate educators who bring students to the lab have some time to go over basic simulation standards set forth by the INACSL. It gives faculty the whole picture of student role, facilitator role, evaluation, you know making up of the, the simulation scenarios, all that stuff. That can just be a quick read, over the simulation standards and sitting down with me to kind of talk about those things. I don't feel like faculty have to have a huge working knowledge of the simulator itself but it's nice to have some back-up for that, but knowing the standards is essential. Faculty members also have a lack of knowledge with the debriefing process. What's becoming much more apparent as more faculty are involved is that we really need to spend more time learning the debriefing process to successfully implement the process. There really needs to be formalized education and training and practice with the debriefing part with the understanding that if we review those INACSL standards, they would understand how important that piece is and the learning process of simulation.

As evidence by these narratives, participants shared that overall faculty's lack of knowledge regarding simulation was a barrier for themselves and those they work with. Ann, Greg, and

Sarah all shared that faculty members need to be knowledgeable in simulation, however were unable to demonstration proficiency of simulation nursing the observation. More specifically, Ann shared she did not have time and Greg shared he would rather spend his time on other aspects of teaching. While Dusty did seem to be informed of best practices with simulation, she also shared that those she worked with seemed to lack overall a proficiency of knowledge.

Space Barrier

In addition to barriers of faculty knowledge, participants also discussed barriers associated with things like simulation space, location, and equipment. It is not uncommon for simulation centers to be small and possibly staffed with only one person. While the cost of simulation is non-direct to the nursing faculty in general, it was identified as an underlying barrier by several undergraduate-nursing faculty who participated in the study. Sarah went into detail regarding the lack of space in the college for simulation when she shared,

> Some of the clinical units can be slow and students aren't having opportunities with patient care, it would be nice to return to the simulation lab and practice, but we can't. There just isn't enough space, the simulation coordinator would need notice and we just can't stop in the lab because nothing is ready to use.

Sarah discussed struggles with how to bring students to the simulation center on non-designated simulation days due to the lack of overall simulation space. Ann shared thoughts that seemed to correlate with Sarah's struggles when Ann stated,

> There are times when my unit at the hospital is very slow and I would love to bring my group back to the lab, but it is just not going to happen. Usually there is another class in the lab doing a scenario so that does not leave space for my group. I would also like it to be a place where students can just drop in and come practice skills, but we don't have the manpower to do that. We just don't have the physical capacity for that.

Ann echoed Sarah's issues with lack of physical space and the inabilities to just "drop" into the lab when clinical was lacking in good quality experiences.

Interestingly, all participants agreed that space this was a general issue in their use of simulation. Many noted that it was an unreal expectation to use the lab outside of scheduled times due to a lack of space and lab personal being readily available.

Financial Barrier

While the lack of space seemed to have a direct impact of faculty being able to bring students into the lab, the underlying lack of financial recourses may be the underlying cause. Several of the research participants shared their concerns regarding the high cost of the simulation center. Harley was also asked the same questions regarding barriers during the initial interview and identified financial as the biggest barrier followed by lack of faculty interest. She shared,

> Financial is a big one; we had to get a grant to get a high fidelity mannequin more than10 years ago. We had lot of the static manikins when I came and they were very old and needed to be replaced and they didn't have money to do it. Now it's finding the money to keep up their maintenance and replace them in a timely fashion or have a replacement plan.

She went on to say,

> Our OB mannequin needs to be updated and there are no capital funds and no one has time to write a grant nor is it in our faculty workload. I think some of it is faculty interest. Some faculty want to do simulation and others don't. So I think faculty desire has a lot to do with it. I would also love to bring in my clinical course when it is slow, but there isn't the space nor do I know how to set things up. That would just put more work onto the simulation coordinator.

Jenny started a simulation for her course from the very beginning as she was told her course needed to incorporate simulation in the clinical component. Her first barrier she identified during the interview was financial when she offered

> So I would say the biggest barriers when asked to start simulation was, how do you get money to finance a simulated apartment? Well, the college was willing to build the apartment but not furnish the apartment. So I had to furnish the apartment, I sent a letter out to everybody at the college and I was saying, 'Okay, this summer, you're probably going to have garage sales. Think of us. This is a list of what we need.' I'm telling you, I got almost everything. It was amazing that it came from donations and not the college.

Greg shared that while there was a lack of extra space and location, a second designated lab person would really be beneficial to the college. Greg shared,

> A second lab coordinator or standardized patient coordinator or somebody is a role that needs to be filled. I think right now everything falls on one person and it is too much. The college doesn't seem to want to higher another person. Along with another person, we could use a standardized patient in our course, but they cost money. It would make it more realistic but standardized patients need to be compensated, and even though it's not very much, it's still something. We frequently hear in staff meetings and things like that, that budgets are tightening and anything we can do to manage our budgets better is important. While budgets are always going to be a concern, it is important that our students are getting the most out of their education.

It was important to Greg that those who work in the lab be knowledgeable but the overall issue right now it the lack of financial resources to hire an assistant lab coordinator or to hire standardized patients. His thought echoed the important of a budget, but stressed that without either one of these resources, simulation at the college was going to stall and not progress forward.

As the person in charge of the simulation center, Dusty also suggested that a barrier to simulation has a financial aspect that she cannot control. She shared,

> I have never seen a budget for the simulation center; I know that it is limited. I have no idea how it gets allocated, what goes to equipment, maintenance, or supplies. I was asked to put together a spreadsheet last year regarding equipment we have and I also looked for warranty information. I have tried for capital budget items and I have been

> denied and I think it is because there is a lack of total understanding of the simulation culture where technology becomes outdated.

Dusty, Harley, Jenny, and Greg all shared concerns that the cost and financial aspects of a simulation center is a barrier to simulation. The overwhelming cost to expand and purchase new equipment is a barrier, but they do not feel it is something faculty can control. In all, research participants shared that the lack of extra simulation space as well as the cost to replace outdated equipment and new equipment was a continued barrier to simulation.

Student and Faculty Attitudes as Barriers

Several faculty also shared that students themselves were barriers to the simulation in which student learning outcomes could be affected. While faculty did reaffirm that students received a proper orientation, which included aspects such as professionalism, several faculty discussed that students attitudes at times purposeful to "sabotage" the simulation. Faculty attitude was also discussed as among participants, it was expressed that attitudes may not be purposeful in nature but more lack of knowing it was even a problem.

Several faculty reported that students attitudes themselves were barriers to simulation and in several instances purposeful and harmful to the simulation and student learning. When Greg shared his experiences with negative student attitude, he referred back to a specific simulation that students had been "assigned" to role played mental health patients in a group therapy session. Students took their roles to the extreme and over played and used more stereotype personalities than reality. Greg shared,

> So, the first few times that we did the simulations, students seem to have this attitude as, let's make it as hard the possibly can on the facilitators, it was a fun time game by the students that were the participants. And it perhaps, was not as realistic as you would expect a real simulation to be, or a real group to be. They wanted to make sure that we

> knew that they were schizophrenic, so they were talking to things that weren't there very loudly, where sometimes that may not be as obvious as it is, or someone who might've had bipolar disorder was in constant motion, which again, isn't always the case.

Greg was also asked about students' overall perceptions of simulation and furthered offered,

> I still think that students feel that simulation is not as realistic; it still is a controlled environment. Students don't enjoy talking to a mannequin and then get the attitude that the simulation is not real life. By the time I get students in simulation they are fearful of saying or doing something wrong. There is a sense of peer pressure and students don't like that.

Colby was already aware of Greg's struggles in a previous simulation and shared the same instances with students during a role-play simulation. She went on to offer,

> Students over played right from the beginning, and it was more acting than it was simulating a patient. It actually seemed like they were doing it on purpose for Greg. And there a couple times students were very kind of loud and boisterous, and weren't quite sure how to focus which affected the outcome of the simulation. This happens quite often and no matter what I tell them, I cannot seem to make it occur less. We spend prior to the simulation talking about professionalism and many times I see students laughing about it. It is almost as if they know the expectations but don't care to follow them. I have been doing this for quite some time and it happens with every semester and it never surprises me with the students who choose to not participate correctly.

While both Greg and Colby spoke about the same instances, Dusty was also able to share her experiences student's negative attitudes becoming barriers to successful simulation she also reported about student anxiety with simulation. Dusty shared,

> Yes, I think there are a couple reasons why students are a barrier, one is anxiety. It's pretty normal that students will state that they have anxiety coming into simulation, and that definitely decreases with the more experience they have with it. But initially that anxiety can get in the way of them having a good learning experience. And depending on who they are randomly paired with for their simulation, it can affect the other person as well, as far as picking up on that anxiety or having to take over the simulation because their partner is fearful of participating. So, that can sometimes be a barrier. Another time that there can be is their attitude. Some students are very willing to commit to the simulation and that it's a learning experience, and they're going to do everything like they would do to take care of a patient. Other students are not serious at all about the fact that it's a learning experience and do not treat it as a clinical experience, and can distract from other students learning because of that flippant kind of attitude.

Dusty was able to also give corroborate the same student attitudes as Greg and Colby, she was also able to speak about student whose attitudes affect simulation outcomes but are not purposeful in nature. Nursing educators can set expectations about over role-play or "flippant attitudes", there is not as much an educator can do to control students attitude related to anxiety.

While three faculty shared that students' negative attitudes were a barrier, Jenny indicated that students were barriers because they did not do enough to portray their assigned roles. Jenny shared,

> I think students don't take if far enough. Now I do go in there when I chat with them without the nurses in there and I say okay, um, do you want to be really snarly here? Do you want to be fairly agreeable with the nurses? You have to decide that. Well, a lot of times they'll decide well, you know, it could be us next time so we're going to be pretty nice to them, but sometimes they get people who really act out and the way they're supposed to. And, uh, I think it adds, so I wish they would do that a little more.

Jenny's shared her viewpoint with students' attitude as a barrier because their role playing portrayal was lacking evidence of confidence and knowledge to practice independently as a nurse. Knowing that students will be graduating at the end of Jenny's course, students should be understanding the entire role of a nurse.

Four participants shared in-depth responses to student's attitudes in general being a barrier to simulation, being both controllable and uncontrollable in natures. Setting exceptional of professionalism prior to the start of simulation may decrease the number of students with poor attitudes, it does not address those students who might have underlying self-esteem or anxiety related issues with simulation.

While it was not uncommon for the participants to share their perceptions of student barriers, it was also shared that faculty attitudes was also a barrier to simulation. Dusty discussed in her interview faculty attitudes as being a barrier to simulation. Because of her work

with the faculty, she offered insights about how she sees faculty's attitudes towards simulation as a barrier. Given her role overseeing student simulation, I asked Dusty about faculty personally being barriers to simulation to which she offered,

> I think there are two things that pop right into my mind right away. I could probably give you more with some time to reflect, but one thing that I'm dealing right now with a particular faculty member is that the realism of the simulation. So, we know there are limitations to simulation. And that is something that I learned in some of my facilitator training that you disclose. You talk about it before the simulation. You just basically say 'You know, I understand there's going be some things that aren't real, but it's as realistic as it can be, and I really want you to act like it is, so anything you do to the patient, you're going to do. You're not going talk about it. You're just going to do it.' And, that'll make it the best experience possible. I also have one faculty member that very frequently interjects things like, 'Well, I know that's not real. Well, I know that you can't really do that. Well, you know, it would be different if it was a real person' and I feel like it interrupts their thought process and their flow and I think it diminishes the value of that experience for them.

While Dusty shared specific instances of what she deals with and faculty attitude both Ann and Harley shared about faculty not interested in simulation as a learning tool. Ann stated,

> There are some faculty who just do not care about simulation, they think it is a waste of time. I tell them all of the great benefits for simulation and they tell me to do it myself. If we want students to always be successful, then we should be using tools that are proven successful. Faculty need to realize that simulation will not be going away and the simulation coordinator is not getting a helper so we as faculty just have to learn because students success is our end goal.

Harley's experiences were quite similar to both what Ann and Dusty shared with faculty not overall not putting in any extra effort to improve student experiences with simulation.

> When we first started 10 years ago, on person brought everyone to simulation in our class, others just didn't want to learn. Then as the classes grew and simulation coordinators left, faculty was asked to step up and a couple did, but not every one. Now almost every course is coming to simulation but some faculty choose not to and no one makes them. Some faculty talk so negatively about learning the technology and working with student in a non-acute care setting. Maybe if leadership made everyone lack on a more positive attitude, it would be more powerful.

While faculty stressed the importance of simulation, participants including Harley, Ann, and Dusty all shared the lack of effort that a majority actually put into simulation on any given day. While opportunities have become available for simulation training, leadership is not requiring faculty to attend.

Thus, several faculty reported both student and faculty attitude as a barrier to simulation. It would seem that a perceived negative attitude would affect student learning outcomes as well as job performance and satisfaction. Many of the barriers discussed with the participant were overall leadership issues, but it does seem that with the right leadership, faculty is willing to take on a more proactive role and with problem solving solutions to these barriers.

Lack of Knowledge of Theory to Practice

In addition to participants' discussions around the barriers they experienced when utilizing simulation in the clinical setting, another theme emerged around their overall lack of knowledge. When interviewing these participants, there appeared to be a disconnect from what faculty said during the initial interview and what faculty actually did in simulation observation. While all seven participants stressed the important of using high fidelity mannequins during student clinical simulation, only four of the seven actually integrated them into the clinical observation. During initial interviews, all participants were asked the following questions: (1) What are your personal thoughts about simulation as a learning tool? (2) What barriers do you personally encounter with simulation? During the follow up interview, multiple questions were than asked about the original statement and what was visualized during the simulation

While every participant stressed the importance of simulation as a valuable learning tool, only one participant really demonstrated the knowledge to write curriculum and execute the

simulation during the observation. For instance, during the observation of the different simulations, only two participates were actually able to troubleshoot some of the technology and none of the participants were able to trouble shoot all aspects of failed technology. Dusty was able to demonstrate competence with the technology software as she actually executed many of the simulations that were observed. Harley was able to troubleshoot issues with the electronic medical health record when students had difficulty but when Sarah's students had the same struggles, Sarah was not able to assist the students in navigating through the program. Below are the words of the research participant as well as the direct observation from the researcher in relationship to theory and practice.

During the initial interview with Ann, she stressed the importance of learning more about the technology aspect of simulation. She stated she had "not used simulation until this last semester for herself, when it was decided that it needed to be integrated" into her course. While she stressed the value and importance of simulation and shared she had even researched simulation and wrote a literature review, there was an observed lack of knowledge on how to use the equipment in her simulation. Ann also verbalized understanding of how important it is to have actual simulation with high fidelity mannequins for student learning, but during the observation the technology was actually not used. During my observation, the overall objective of the simulation for the students was to provide adequate intravenous therapy for the patient. The simulation was set up with all the right materials, however the intravenous infusion was not set up to full capacity. The intravenous infusion arms were missing the "blood" that would allow a student to determine if successful venipuncture had been obtained. Students were also instructed not to flush the equipment with saline, as one would normally do to check for patency of the vein.

When asked about the non-use of full capacity of the mannequin, Ann responded,

> This was a new IV arm and I don't know how to use it or have time to figure out how to fill the arm with manufactured blood." During the second interview when this topic was discussed further, Ann was asked if not using the mannequin to the fullest capacity had an impact on student learning. "Absolutely. Yes. Because they need ... You know what? It's just like a regular thing. They need that return. That's what you're looking ... And that's what we teach them. You look for the blood return. If we don't have a-a functioning arm that you can get a blood return on, it makes it hard to really get that feel.

Ann recognized that simulation and using the mannequin is critical for student learning, however she also shared that she simply did not have the time to learn how to use the technology to the fullest capacity possible. She also expressed interest in taking the time over the summer to really spend as much time that was needed to continue to learn how to use the technology appropriately.

During my observation with Sarah, I saw a clear disconnect with the use of technology and being able to troubleshoot any of the technology associated with the simulation. Right away in the simulation, students struggled with the computer and the program necessary for the simulation. Unfortunately, Sarah also struggled with the computer program and was unable to assist the student in any way. Approximately 15 minutes into the simulation, students were to give medications to the mannequin, which the students did not know how to administer into the high fidelity mannequin. The students sought out help from the research participant and she again did not know how to successfully demonstrate how to use the technology with the medication port.

During the follow up interview approximately three weeks after the observation with Sarah, the discussion of using the computer program was discussed. When asked about the troubles Sarah had, she stated "I am getting better with it." When asked for clarity, she stated that the "program was overwhelming, didn't work well, and had used it in another course and the

technology itself never worked." While programs may be hard to navigate, it is important and an expectation that faculty takes the time to work through theses aspects of simulation to provide the best experiences for student learning.

Sarah clearly identified the technology itself was a huge barrier to student success and that her lack of knowledge really was not of importance. Self-identified as the "content expert," she shared, "as a scenario is playing out, the mannequin is not reacting as if a normal person would." When asked for more clarity, the example was a patient with placenta previa would have lots of fluctuation on the fetal monitor but during the student scenarios it never happens. She continued to say, it just isn't "realistic" and there is a disconnect on what the high fidelity mannequins can actually accomplish. Then I asked, "How often does a student in the hospital clinical setting see a placenta previa?" to which "Sarah's" responded, "never." To further expand, I asked, "Isn't the simulated environment with some unreal aspects, better then students not having the experience at all?" Her response was "Yes, simulation is extremely valuable and I do think our student get a really good experience." While speaking with Sarah, it seemed as if she was trying to avoid the subject about her own abilities and knowledge and project it back onto it being an equipment problem. Sarah has had simulation in her course for over ten years and to still not be able to demonstrate minimal competency may indicate that she has not sought out further learning opportunities to implement theory to practice.

When the discussion looped back around to her lack of knowledge and abilities to work with the technology, she avoided the actual question and continued to discuss being the "content expert." To engage in conversation regarding content exports, it was suggested that maybe the "content expert" should be executing the technology rather than being in the simulation with the students. At that point, Sarah shared,

> Oh the simulation coordinator is excellent and by no means do I think she has any troubles using the equipment, but I think it is the equipment itself that causes barriers to student learning. The equipment is easily 10 years old and just like all other technology is most likely outdated.

Further discussion brought in the role of the students and if students had enough knowledge at this point in their education to know that the technology may have inconsistencies with real life situations. Sarah identified the students as advanced beginners and most likely did not even realize that the fetal monitor was not correct and that it probably would not have changed the outcome of the scenario. Sarah shared,

> My students only have had one semester of simulation and they really are still advance beginners in nursing school, clinical, and simulation. Right now they continue to work on health assessments, identifying the problem, and critical thinking skills. I doubt they really grasp the full picture so when the fetal monitoring strip isn't correct, the student probably hasn't realized it. I realize it because I have worked in this area for more than 20 years and I have a trained out to detect changes on the monitor.

When originally speaking with Sarah, she also stressed the importance of making sure the mannequins were fully functional and integrating them into the clinical setting. When asked about her own abilities to use the technology with simulation she shared,

> I haven't honestly learned as much as I should have. But, it's not that I couldn't, I just haven't taken enough time to do that, because I've had other responsibilities." Multiple times she stressed the importance of students having simulation with high fidelity mannequins but also was upfront about not knowing as much as needed.

Thus, Sarah did acknowledge that she relied heavily on the simulation coordinator and other faculty in her course more than she should have especially when simulation was first introduced at the college. She acknowledged that theory to practice was something she needed more assistance with.

During the initial interview with Sarah, I asked her about her specific barriers with simulation and *Evolve*, the computerized program used to simulate the patient scenario as well as

documentation and nursing orders was mentioned. She had used the *Evolve* program in two different courses, maternal fetal nursing as well as health assessment, and she stated she would "get through" the program if necessary. During the observation this came to light, when the students were having troubles with the program and when Sarah tried to assist. Unfortunately, she did not know any more about the program or the technology to trouble shoot the problem for the students. When I followed up about this in the second interview she stated, "I thought I did ok with it, but I probably could navigate through it better. It probably affects how smoothly the simulation actually runs." While Sarah does say she has used the computerized program in multiple courses over several years, there seems to be an overall lack of true knowledge.

There were three participants of the study who opted out of using the high fidelity mannequin during the observation even though they all stress the important of the "real" life aspect the technology brings to the simulation scenarios. Jenny, Greg, and Colby all stated multiple times that the real life aspect the technology brings to the students is amazing and helps with student learning, makes it "real," but can only be integrated into medical surgical type courses. All of these three individuals emphasized that they do not teach in a medical surgical course and the high fidelity mannequins cannot simulate the mental health or community environment.

Greg and Colby, who teach the same course, spoke about the value of simulation but also were unsure how fidelity mannequins have value in the course they teach. Greg shared,

> Honestly, because our students spend so much time in the clinical setting, in the psychiatric setting, I am hesitant of the value high fidelity has in psych, if we were told to use mannequins we would but don't see the value that was be added.

Colby shared similar thoughts regarding the high fidelity mannequins when she shared,

> Psychiatric medicine in the simulation environment is more of a tool of communication. It makes it hard to use the high fidelity mannequins in that situation. Group therapy works best for us, and high fidelity works better for others. There are very little skills like starting an IV in our clinical and I can get all students involved when not using the mannequins.

Greg and Colby stressed the important of simulation in their own course, however were not sure how to best incorporate the high fidelity mannequin at this time. While both were up for suggestions, neither one had done further investigation into adding high fidelity mannequin into the clinical course in the future.

In addition to understanding the technology component to simulation, participants also expressed concerns on how to incorporate technology into their own clinical courses. While Colby shared she was not sure how to incorporate the high fidelity mannequin into her course, Jenny shared the same feelings. During the second interview with Jenny, there was much discussion about incorporating the actual mannequin into the simulation. She shared,

> It probably can be done, but right now, I just do not have the time plus I won't be teaching it next year. I can see how the high fidelity mannequins are of value, I also just do not have the resources." She went on to share "I do feel looked down upon because it's not high fidelity and, you know, and they have all this money that they spend on all this and ooh we got this new magnet and well you know, that's good but you know don't forget about me over here and I need help to incorporate it.

The *Evolve* pre-constructed scenarios were also discussed in depth and while she stated she looked at the topics she does not know much about them. Jenny also stated

> I've looked at that and there's some, okay, there's COPD and pneumonia you know or heart failure maybe, but that's not community. I just don't know how to relate this medical diagnosis, into the community course, with high fidelity mannequins and simulation.

Faculty who are working in clinical course that are not true representative of an acute care setting are struggling to understand how high fidelity mannequins can be integrated into their course.

Harley actually demonstrated some knowledge of the *Evolve* website when students were struggling with the program. She was able to navigate right through the system and she was also able to troubleshoot a problem with the intravenous access the high fidelity mannequin had. During the observation, Harley did not actually have to execute the technology with the simulation, as another person had that role. When asked about being able to run the technology Harley shared

> I have had to run a simulation by myself and I can use the technology but it is hard. Because you're trying to run the simulator, you're trying to watch what they're doing, answer their questions for things the simulator can't do and speak for the patient all at the same time. So, capturing everything just can't be done.

During the observation with Harley, there was a microphone issue with the mannequin, it was overbearingly loud, was chopping, and could not be projected onto the television. When asked about her abilities to fix the microphone or troubleshoot, Harley stated,

> If this is an IT problem, we reported it and now we wait. If it was something minor, her leg fell off; yeah we could put her leg back on. If I needed to change her bellies out to show a more pregnant woman we could have done that. If it's an electronic between the laptop that runs her ... Her compressor, minor stuff yes, big stuff, no.

It was later reported that it was not an information technology issue but was an issue with the high fidelity mannequin and a connection that came lose.

Dusty was also questioned about the lack of faculty knowledge with simulation knowledge with the technology, *Evolve*, and all aspects. The participant shared,

> That's a really active part of the simulation; so I can tell you from my perspective and what I've asked of the faculty is that they do know how to navigate through it, use the built-in types of tutorials. Right now only new people spend a little bit of time with me with it, otherwise it really was expected that faculty would dive into it. There has been mixed results with that but no one is being held accountable. It is a clinical expectation that the faculty can use the equipment, and we're lucky enough to have the same type of equipment that we see in the clinical areas. I can only do so much as I can give faculty suggestions but they don't have to take my advice.

While the literature shows that simulation is a valuable learning tool in nursing education, faculty have to also need to be able to show competency in their own abilities to execute all aspects of a successful simulation which in turn promote positive student learning.

Professional Development

A final finding that emerged from the participants' interviews and observations was faculty development. Specifically, participants discussed the lack of faculty development. While they discussed some very recent professional development that occurred during the 2017 academic school year, overall participants discussed that the professional development was of poor quality. Faculty also shared their views regarding faculty development with simulation during graduate school.

In his first interview, Greg actually reported that faculty development opportunities with simulation had started to become more available during the fall 2017 semester. He shared that a "Lunch and Learn" had been established on a monthly basis to get faculty members more engaged. The "Lunch and Learn" were established to be a non-formal approach for faculty to learn more about simulation. This program was an idea of the simulation coordinator and was aimed at providing faculty opportunities to engage and learn more about simulation. Faculty were encouraged to attend over the lunch hour, however it was not mandatory that they attend. At these meetings, different topics regarding nursing simulation were discussed, including an overview of simulation and faculty personal perspectives of how simulation had been introduced to individual courses.

When asked about how many of these professional development "lunch and "learn" he had gone to, Greg reported "I am very interested and intrigued by simulation and I find that its

value is very significant, but the hour "Lunch and Learn" would not be the best utilization of my time." He went on to say that "the "Lunch and Learns are better for those who use high fidelity like the junior one instructors." For further explanation, Greg went on to say, "Yes, we've had many of those opportunities I don't often pursue that. Many times they are occurring on days I am not on campus and I would rather not come in for an hour that I am not passionate about." Thus, while the school of nursing did attempt to provide professional development, Greg chose not to attend because he was not on campus those days and prefers other topics for professional development.

When Sarah was also discussing the "Lunch and Learn" opportunities as well as the two-day faculty development that had been offered over the winter holiday to better educate instructors on a high fidelity mannequin the college of nursing recently purchased, she verbalized that she went to two different "Lunch and Learns, the first was conducted by the simulation coordinator and was a general overview. She stated, "It was nicely done, most of the information I had either heard or read before." Sarah did attend the second "Lunch and Learn" but had a different feeling about the effectiveness: "It was not presented in the same manner nor was the content good. I just felt that the learning opportunity that initially was there, was not during this "Lunch and Learn"." When asked to explain more, Sarah stated, "The "Lunch and Learn" facilitator just tried to present what she has done, rather than what the research has demonstrated." According to Sarah, the overall concept of the "Lunch and Learn" was a great idea but the structure of the courses were lacking content and overall new knowledge.

Jenny was also asked if she had attended any faculty development and her response was "No." When asked further if she would be willing to participate in professional developing regarding simulation, she stated, "Yes, I would. I would like to know what other classes at other

colleges are doing in their simulation and I'd like to go visit. I wanted to know what other courses, schools and even our sister school is doing." She continued to say, "It is hard since I will be retiring. I have put a lot of time and effort into the simulation and at this point, it is someone else's turn." This same research participant was asked about the "Lunch and Learns opportunities as well as the two-day faculty development workshop and she expressed that she has not gone due to lack of personal interest but did believe that all current faculty members who use simulation should be present. When asked how to hold faculty accountable she stated, "That its an administration issue, while it can be encouraged, until it is mandatory only those truly invested will go." While Jenny is retiring from educator this year, she did feel the professional development is of value to current educators but knows faculty will not attend unless leadership holds faculty accountable.

While interviewing Dusty, who is undergraduate faculty as well as is in charge of the simulation at the institution, she was able to speak more in detail about the most recent ""Lunch and Learns" that were held for all faculty members in the fall of 2017. She shared,

> So, we had four sessions in the fall semester, and we're having four sessions in the spring semester where faculty can come and discuss simulation. Now it's not mandatory but faculty who are regularly involved in simulation are highly encouraged to come, and then anybody else who is interested. Topics have included what simulation resources do we even have here at the college and the actual definition of simulation that we use here at the college. We talked about what we are already doing as well as evaluation of simulation. The next one is about inter-professional education.

While Dusty is very passionate and enthusiastic about simulation, she was unable to give an exact number of participants but felt there was on an average of six people per session and it was always different people.

Dusty also reported a high motivation on her own part and passion for simulation but still needs to continue learning. Dusty offered,

> I feel like my own motivation for continuing education on that has kept me pretty current and I need to fulfill and to move things forward for the school. The things a simulation coordinator and myself need are faculty development on the equipment. So, what is the warranty on this equipment? What is the maintenance expectations? At what point do we need to think about an upgrade? Who's keeping track of this stuff? When do I need to request something if I need a new piece of equipment? Who do I talk to when a piece of equipment goes array? Is it the dean? Is it the IT person? Do I just call the company? You know, how, what do I do with it in my current role?

Dusty's own personal motivation for successful simulation has kept her current in and up to date on best practices with INACSL, but still encounters barriers in her own job role as the simulation coordinator. Having some increased professional development with maintenance and equipment would be a priority.

During the initial interview with Colby, she also initiated the conversation regarding the "Lunch and Learns." Having interviewed several people prior, I was intrigued and wanted to know Colby's personal viewpoints on the faculty development "Lunch and Learns." Colby shared,

> Well, I know there's been some "Lunch and Learns" offered but I wasn't able to attend. That's not to say I didn't want to. I literally was not able to. But I think I could just go to the simulation coordinator, as she's one of the most open and cooperative and helpful people if I had any questions or problems. It is surprising that no one else has brought up the "Lunch and Learns. The topics seem to be about integrating it into the graduate program and that doesn't really pertain to me.

While she really did not give more detail about the "Lunch and Learn," it was surprising that three individuals who were interviewed prior did not mention that faculty development opportunities had been occurring on campus.

Summary

In this chapter, the findings of the study were presented. Most of the study findings came from interviews with faculty, while observations helped support and confirm the findings. Three

themes emerged from the data collection; (1) faculty barriers, (2) lack of knowledge with theory to practice, and (3) professional development. Faculty shared that uncontrollable barriers to simulation included the simulation space as well as cost to update equipment. Several faculty also shared they personally have a lack of knowledge to truly develop and execute simulation without the help of the simulation coordinator. The observations had a significant impact on the data analysis because what faculty members were saying in the initial interview did not translate into the actions that the research participants actually did in the simulation. Finally, while faculty development is a standard set forth by the INACSL (2016), the research participants are not taking advantage of simulation learning opportunities set forth by the leadership team.

CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

Introduction

The purpose of this study was to explore and understand the barriers that full time nursing faculty experience at a small private college in Illinois encounter. Specifically, this case study explored barriers with technology associated with simulation in the clinical environment in order to identify the specific needs of faculty to create, execute, and troubleshoot barriers associated with clinical simulation. Two semi-structured interviews and an observation of clinical in the simulation lab were conducted with seven undergraduate nursing faculty who have incorporated simulation into their clinical courses. This chapter will discuss findings from the qualitative data that was collected as well as provide several recommendations from the three themes that emerged from the data collection. Overall, this study asked, (a) What barriers do faculty encounter regarding the use of simulation and technology in a nursing classroom? (b) How do nursing faculty utilize simulation technology to support student learning? (c) What support do faculty need to better utilize technology in their classrooms to promote student learning? (d) What faculty development has been used and is needed to further guide simulation growth? The following section discusses, analyzes, and explores the research questions.

Discussion

This study was guided by Benner's (1982) Novice to Expert model which focuses upon academic course work, clinical courses, as well as simulation's model and identifies five stages of progression of learning: novice, advance beginner, competent, proficient, and expert. Congruent with constructivism, this model holds that students advance through these stages as they gain nursing knowledge; as they take care of patients, they gain experience and as they progress through the nursing program. Just as students do, undergraduate-nursing faculty also advance through Benner's stages as first as nurses then as educators. All new nurses and nursing faculty begin in the novice stage, as there is a lack of experiences and time in this new role. Over months and years of advanced knowledge and more experiences, nurses and educators will progress through Benner's stages. Interestingly, when asked all participants in this study identified themselves as a minimum of an "advance beginner "as a simulation educator. Several identified themselves as "competent" and two as "proficient" in the classroom setting and in the acute care setting. According to Benner (1982), very few nurses or educators actually make it to expert, so it was not surprising none of the participants actually identified themselves as an expert in simulation or the classroom. Yet, while few may ever become "experts," within Benner's model, it is critical to explore where nursing faculty identify and, perhaps more importantly, work to identify barriers and strategies to provide education for these educators. Importantly, Benner's model frames the interpretation of this study as it serves to illustrate how participants experience and understood their roles with and uses of simulation.

While during the research, faculty stated that "simulation is really good, it is a great learning tool," most only identified themselves as advanced beginners on Benner's model; continuum; at the same time, simulation has been available to five of the seven faculty members

for almost a decade. With the right education and self-motivation, an educator should easily be "competent" through what Benner has identified by the educator who has been in similar situations for a minimal of two or three years. According to Benner (1982), an advanced beginner is on who is able to demonstrate efficiency, is coordinated and has confidence in his/her actions. In a two-year nursing program, some of the more successful students in simulation might be able to identify themselves as "competent." What is concerning is if faculty are identifying themselves as "advanced beginners" whereas students may be identifying themselves as more knowledgeable than their educators.

The following sections further discuss and explore barriers these nursing faculty face, how they use (or do not use) simulation in their classrooms, as well as what faculty need to help promote their uses of simulation in the classroom. It is important to understand the barriers that these faculty encounter with simulation in order to improve the processes and experiences for all who use and participate in nursing simulation.

Barriers

While simulation continues to be a well-documented effective learning strategy with undergraduate nursing students, barriers to simulation continue to be identified (Al-Ghareeb& Cooper, 2016; Jansen et al., 2009; King et al., 2008). Participants in this study also cited similar barriers. Six of seven research participants all clearly stated that they had to learn on their own how to develop, implement, and incorporate simulation into their classes. While leadership was the driving force to suggest that simulation be added to course work, there was a lack of professional development to guide the thought processes and procedures to successfully implement simulation into these courses. Faculty learned by watching others, reading evidence

based practice articles, and using pre-purchased programs as well as trial and error for the last several semesters. A total of 18 hours of interviews were conducted, 28 hours of clinical observation while only a little over 3 hours of actual simulation were observed. The average of all actual patient simulation time was 28 minutes.

Faculty Knowledge Barrier

Several participants discussed how they felt unprepared and not knowledgeable enough to create and execute simulation by themselves. For instance, Sarah shared, "I would not have any idea about how to develop a scenario. I could make one up; I'm not sure how good it'd be." Moreover, Greg shared "All the money in the world for simulation would be awesome but it is only as good as the person or people who you hire to utilize it." Ann also shared that when she was asked to incorporate simulation into her own course, she had to learn everything on her own and still does not have the knowledge to incorporate the high fidelity mannequins into the scenarios. Thus, while simulation is a best practice tool in nursing education, it provides real life scenarios for learners to practice in a safe environment, these participants shared that simulation is only as valuable if the faculty are knowledgeable enough to use it. Every participant shared his or her personal lack of knowledge as a barrier to simulation.

Most current educators do obtain some initial training through the simulator manufactures; formal education, however, is still limited (Waznonis, 2015; Kardong-Edgren,Willhaus, Bennett, & Hayden, 2012). After the large scale simulation study from the NCSBN was conducted, it was suggested that schools develop education manuals as well as interactive faculty development opportunities to better understand nursing simulation which then promotes the best learning opportunities for students (Jeffries, Dreifuerst, Kardong-Edgren, &

Hayden, 2015). While it is unclear if these types of manuals are available to faculty who participated in the case study, it is apparent that faculty either do not know they exist or are not using them to learn from.

Technology associated with simulation is a hands-on learning tool for faculty members. With technology ever changing, it is essential for faculty members to understand that they, too, need to continue to learn the new strategies associated with the technology. While limited studies exist regarding how faculty members best learn how to use high fidelity manikins, the NCSBN study (Hayden et al., 2014) does suggest that a facilitator who has specific simulation education would provide formal coursework, continuing education, and be a mentor to those faculty members who want to learn how to use the technology as well as other aspects of simulation in the classroom. One aspect that has clearly be defined for faculty and increasing knowledge, is using best practices set worth by the INACSL.

It becomes concerning when many of these faculty have had access to simulation for a decade and have chosen not to become educated and knowledgeable in a tool that has proven to be valuable as a positive learning tool for students. The faculty's lack of knowledge in a standardized tool is no long acceptable and needs to be addressed by the leadership team. For instance, Dusty shared her knowledge of the INACSL standards as well of the lack of faculty either knowing or understanding the standards. She shared "Understanding the standards is personal to me and a large barrier to the faculty. They don't know the standards mostly because I don't' make them nor does leadership." Being unable to create and execute simulation, as many of the participants self reported, plays a direct impact on the education that students are provided. Nursing clinical sites will continue to decline as more schools are fighting to gain access to hospital locations, and simulation continues to be the solution to the lack of clinical

sites. It is important that faculty are the content experts both in the didactical content of their courses but also consider themselves as the content expert with simulation.

Another example where faculty were inconsistent and showed a lack of overall simulation knowledge were the components and the times allotted for the simulation. The students in all seven observations spent more time having a lecture style discussion prior to the simulation than actual hands on patient care in the simulation. On average, the student simulation was 28 minutes while the remaining four-hours was discussion. Students would be better served if a second hands-on simulation scenario was available instead of the lecture style material that many of the faculty reported that students had already received in the didactical portion of the course.

At the same time, in several of these courses, one set of students watched another set of students execute the simulation and then had the very same simulation to execute on their own. One would think that the second set of students had an advantage, as they really did know the outcome and objective to the simulation. At the same time, another clinical course chose to have students be "observers" instead of having an active role in the simulation because there were too many students to participant. When asked both groups about having a new simulation or even adding a second simulation so all students had the same experiences, the remarks were, "while it is a good idea and will benefit the students, it is a lot of work for faculty and the simulation coordinator." Through the observation it seemed as if the second set of students and those who did not have an active role did not get the same learning opportunities.

Space Barrier

Participants identified space, and more specifically the need for a larger location and a location that was more functional, as a barrier. In addition, participants identified a barrier regarding the lack of ability to have simulation lab available on a drop-in basis when clinical sites cannot support students. Sarah shared, "Some of the clinical units can be slow and students aren't having opportunities with patient care, it would be nice to return to the simulation lab and practice, but we can't." Ann echoed those same feelings when she shared "There are times when my unit at the hospital is very slow and I would love to bring my group back to the lab, but it is just not going to happen. Usually there is another class in the lab." It was important to faculty to have an alternative to the acute care clinical experience especially when the units do not have enough patients for students to care for. Thus, participants shared that the current simulation space does not seem large enough to support the volume of students and faculty who come to simulation and faculty reported they would use the simulation center even more if there were space to accommodate them.

Certainly, these finding were echoed in my own observations of simulation several different times. During one observation, it was noted that each of the 4 simulation rooms had students in them as well as had students waiting in a common area to use the simulation area. When asked about the students in the common area, it was explained that these students were waiting for their turn in the lab to complete a clinical competency. Another observation that showed the lack of functional workspace was during observation number one. During this specific observation, the simulation room was too small for all students to participate and students watched from the doorway. Finally, during the second interview with Dusty, the lab was completely empty as she explained that all of the students currently were in a theory course.

While over crowding was an issue on several occasions, there was a least one day that the lab was not being utilized to it's fullest capacity.

Unfortunately, faculty do not have a direct impact on the location and space of the lab but it is important for faculty to work in conjunction with both the simulation coordinator and leadership team regarding a new schedule or a larger simulation space. It seems that there are times when hospital base clinical units are slow and faculty want to bring students back to the lab and are not able to because of other classes being present or faculty's own lack of knowledge to execute simulation without the coordinator. Knowing that students will receive a better experience in the simulated environment rather than sitting around a nursing unit doing nothing should be enough of a motivating factor to look into providing more simulation space. While a financial aspect is most likely the driving factor regarding expanding the simulation center, it may be possible that there are times when the lab is not in use and faculty does not bring students because they also do not have the knowledge to make the simulation successful. Simulation space needs to be size appropriate for the number of students who may use the simulation lab, but also be able to experience growth (Rothgeb, 2008).Yes, faculty did report there was a lack of space, it is unclear if they have reported this issue back to either the simulation coordinator or the leadership team. It is concerning as the space is overused on certain days of the week and under utilized on other days of the week. So space is certainly an issue, and they cannot impact space. The could, however, discuss this with other uses, learn more and maximize what they have.

Financial Barrier

A financial barrier may be the biggest concern to the faculty interviewed and it is probably the barrier that faculty has little to no impact over changing. All seven participants

acknowledged and recognized the lack of up-to-date high fidelity mannequins especially in obstetrics, as well as the need for more supplies, and financial compensation for more faculty in the simulation lab as a barrier to continued success in simulation. Harley and Ann both shared responses regarding the high fidelity mannequin specific to their course and it being outdated. According to Harley, "Our OB mannequin needs to be updated and there are no capital funds and no one has time to write a grant nor is it in our faculty workload." Harley was also concerned about upkeep and maintenance on a ten-year-old high fidelity mannequin when she shared, "Now it's finding the money to keep up their maintenance and replace them in a timely fashion or have a replacement plan." Faculty is able to acknowledge the lack of up-to-date equipment, however because of the demands of teaching, course preparation, hospital clinical, and curriculum development, they simply do not have time to write grants. As such, there appears to be a cycle; they struggle with out dated equipment but do not have the knowledge or time to apply for grants that could purchase new mannequins and educational resources.

While the cost of high fidelity mannequins, maintenance plans, and simulation centers are all very expensive, it is also costly to hire more faculty to run the simulation center. Greg shared his concerns, "A second lab coordinator or standardized patient coordinator or somebody is a role that needs to be filled. I think right now everything falls on one person and it is too much. The college doesn't seem to want to higher another person." While many of the participants highly praised the simulation coordinator, everyone spoke about the need for the coordinator to have an assistant or another nurse educator to help offset what is currently happening in the lab.

Other financial themes emerged when speaking to the participants during the interviews. While reporting overall finances as being a barrier to the faculty in the study, they also all reported that they, as individuals, do not have a big impact on changing the overall budget. The

simulation coordinator currently does not have control of the simulation budget, as it is part of the leadership team's responsibilities. Dusty, the simulation coordinator, report that, "I have never seen a budget for the simulation center; I know that it is limited. I have no idea how it gets allocated, what goes to equipment, maintenance, or supplies." As the full time simulation coordinator, Dusty had the most knowledge and understanding of the day to day operations of the lab, what supplies are needed, and what equipment needs to be replaced. It is unfortunate that as the person who works the most in the lab, Dusty does not have input on the simulation budget.

While there is little research regarding who should control simulation budgets or how much impact a simulation coordinators should have on the budget, but it is critical simulation have enough money to sustain the program. Again, because simulation is such a critical component of nursing education, and a way for nursing students to learn in a hands-on, practical manner, it is critical simulation occur for these learners. Sustainability of simulation centers need to include every day supplies, equipment upkeep, warranties, new simulators, and training for faculty (Rothgeb, 2008). Simulation centers costs need to be placed in to the strategic plan, not only at the school of nursing level but also at the university or health care system level. Keeping the strategic plan updated as well as reanalyzing the plan, while keep management engaged in the process would foresee any future challenges the school may be encountering (Gantt, 2010). It is unknown from the research participants if simulation is apart of the strategic plan but one could assume that faculty is unaware how simulation plays an overall role in the long-term plan at the college. While simulation is a valued teaching strategy, the college does not seem to view it as a priority and does not prioritize the needs of the faculty who use simulation.

Student and Faculty Attitudes as Barriers

Several research participants identified student attitudes as being a barrier to simulation. For instance, Greg and Colby described students over role-playing and not taking the simulation seriously, even through professional expectations had been described and discussed prior to the start. According to Colby, "It was a fun time game by the students that were the participants and it perhaps, was not as realistic as you would expect a real simulation to be." More specifically Greg stated,

> They (students) wanted to make sure that we knew that they were schizophrenic, so they were talking to things that weren't there very loudly, where sometimes that may not be as obvious as it is, or someone who might've had bipolar disorder was in constant motion, which again, isn't always the case.

This attitude changed the overall quality of the simulation and students did not facilitate a good learning experience. Negative student attitudes can impact the learning process for all students involved. While two faculty members felt students over-played the role in simulation, Ann shared that many times students do not role play to the extent that needs to be done to have an accurate portrayal of the simulation. She believes that students need to be firm and confident in their roles just like when students are taking care of patients in the acute care setting or in the home environment.

Students seem to take the simulation as a game rather than a learning experience, or more importantly a clinical day. While it was a mental health simulation that students "over acted," it is concerning that the students did not take the seriousness of the matter at hand. I am concerned at the ways in which students seemed to disrespect the concept of mental illness. Actions that occur in the simulation environment are usually representative of the same actions that are occurring in the patient care environment. I can then assume that the disrespectful actions of

students in the simulation are also playing out in the patient care settings. The school is currently working on a simulation evaluation tool of the students, disrespect of a mental illness would not be tolerated in a patient care environment and should have been a clinical failure for the day when students "over acted."

As the simulation coordinator, Dusty worked with students every day in the simulation lab and shared that while a majority of students have the right attitude for simulation and is reflective in the students' progress through the program, students who come to simulation with "I don't care" attitude can greatly impact the success of simulation. Other participants of the study agreed with Dusty's perceptions of student attitudes having a negative impact and becoming a barrier to simulation.

More specifically, Dusty shared that a barrier to simulation with student attitude would be a student with anxiety or self imposed stress within the simulation environment. While simulation is meant to be a low stress environment, students do have personal anxiety related to having faculty or other students watching during the simulation. As the simulation coordinator, Dusty sees students every day in the simulation environment. She shared,

> Anxiety can get in the way of them having a good learning experience. And depending on who they are randomly paired with for their simulation, it can affect the other person as well, as far as picking up on that anxiety or having to take over the simulation.

Students' anxiety as a barrier to simulation is not something faculty can ultimately control, however letting students know that anxiety is normal can help students become more relaxed which should play out in a positive manner with the simulation. Unfortunately, it still is a very common barrier that faculty encounters with simulation and it can affect individual as well as the entire group's learning outcomes.

Several research participants identified other faculty they work with as having a negative attitude towards simulation as a barrier. Dusty, Ann, Harley, and Jenny all talked about other faculty members not wanting to incorporate simulation in course work or having a negative attitude when having to bring students to simulation. Ann shared, "There are some faculty who just do not care about simulation, they think it is a waste of time." Harley echoed the same negative feelings certain faculty has with simulation when she stated, "Some faculty talk so negatively about learning the technology and working with students in a non-acute care setting." Overall, negative faculty attitude reflects onto the simulation as well as student learning outcomes.

While the simulated environment may not always be the idea setting for students to learn, it is a great alternative. It is common for both students and faculty to feel that simulation may not be "real" and Dusty shared that faculty attitude with simulation not being "real" was a huge barrier to a good quality simulation. She shared during her interview,

> I'm dealing right now with a particular faculty member is that the fact of realism of the simulation and frequently interjects things like, "Well, I know that's not real and I know that you can't really do that" to students during the simulation.

While simulation might not technically be real, it is something that can be addressed prior to the start of the simulation as Dusty suggested. When faculty interjects during simulation it does not follow the best practice standards set forth by INACSL and devalues the importance of simulation. This resistance on the part of faculty provides obstacles for student learning. There are aspects of simulation that are not real, but mostly these aspects to do not play a substantial role in the simulation objectives or outcomes. When faculty make a point to acknowledge the unreal aspects, student then tend to focus on the one final detail that plays no importance in the

objectives. By over acknowledging an aspect of the simulation with no real purpose, faculty create unnecessary barriers.

Throughout the interviews, all participants reported barriers to simulation that could possible limit student learning outcomes. While this particular study did not look specifically at student learning outcomes, it is likely that these barriers directly impact students' learning. All participants identified either financial or a lack of simulation space, but shared concerns about the lack of control to change these barriers. Again, more than half of the participants shared a lack in their own, as well as co-workers' lack of overall knowledge with creating and developing scenarios was another barrier. Finally, student and faculty attitudes, while both controllable and uncontrollable, were identified as barriers to simulation.

Faculty perceived attitude playing a direct role in how successful simulation was actually going to be. It is important that faculty have a positive attitude, as it will then reflect how students perceive simulation. While is was reported that some faculty have poor attitudes towards simulation, it is less likely that those same faculty actually participate in simulation. According to Wade (2012), faculty with poor attitudes are less likely to actually participate in simulation, which support's what Dusty shared in the interview. Those faculty who have positive, infectious attitudes are more likely incorporate simulation into their course work as well as learn the technology associated with simulation (Rothgeb, 2008). Faculty who enjoy simulation and see the value of simulation are actually asking to bring their students more often to simulation as well are learning the technology aspect of simulation.

Faculty and student attitudes and the realism of simulation were identified as a current barrier. It is important to identify that while all aspects of simulation may not be real, there are many more aspects of the simulated environment that is real. Multiple studies have been

conducted regarding the realism of simulation and overall positive experience with simulation as a learning tool (Jeffries & Rizzolo, 2006; Schoening, Sittner, & Todd, 2006). It is the role of the faculty to create scenarios as real as possible to promote and to bring meaning back to the entire learning experience.

There are benefits to having students participate in nursing simulation as an alternative to clinical in an acute care setting including increases self confidence, clinical reasoning skills, motivation, and overall prepared to care of patients (Blum, Borglund, & Parcells, 2010; Lapkin, Levett-Jones, Bellchambers, & Fernandez, 2010). As faculty are working with students who may not believe in the purpose, it is important to acknowledge the students struggles, but also educator on the importance and value of simulation.

Lack of Knowledge of Theory to Practice

During both interviews, all seven participants continued to express interest in simulation as well as expressed support for the continued use of simulation within their course work. Through the observations, however, it was clear to see that the only participant who clearly demonstrated the knowledge to execute the technology with simulation was Dusty. While one other participant reported knowing how to use equipment, there was a lack of "hands on" use of the technology to run the simulation during the observation of that participant. Harley was able to troubleshoot both the infusion pump and *Evolve* computer program during the observation. Three participants purposely chose *not* to use high fidelity mannequins for their simulation due to their own reported lack of knowledge. Finally, two participants demonstrated the lack of knowledge to troubleshoot and execute the technology during the observation of the simulation. One participant was forthright about her lack of knowledge and asked for suggestions at the

conclusion of the simulation. One participant did not know how to trouble shoot the IV pump or the *Evolve* computer system.

It is expected that students work through Benner's stages; at the same time, faculty should also be working through the stages in all aspects of the job roles including simulation. If faculty has had simulation for a minimal of 10 years, it is unrealistic to not have the knowledge and abilities to develop and execute a simulation. While an educator may not be an expert, it should be easy for an educator who is working with students to be at the minimal competency in their job role as a simulation facilitator. It cannot be expected for students to succeed in a simulation if the faculty is not at minimal competency and demonstrate efficiency as well as confidence.

Interestingly, there was a clear juxtaposition of what faculty participants shared in their interviews regarding simulation and what I observed within their actual simulations. While the research participants all stated, "Simulation is valuable and understand the importance to use with students," they do not seem to illustrate those notions in their classrooms. While faculty shared how important simulation was to their students, how much it was able to teach their students, there was very little time spent on the actual simulation. Throughout all of the observations, most of the time was spent pre-briefing, or reviewing the simulation concept. While this information is important, it had already been discussed in the theory portion of the class as well as the night before when students worked on their pre-simulation assignment.

Moreover, there appeared to be little, if any, accountability and guidance for these faculty members from the department. During the 30-plus hours of observation, there was not a person in a leadership position who ever came to evaluate the faculty on their use of simulation. Several participants even reported that leadership does not come and evaluate faculty during simulation.

If leadership truly valued the simulation process, all of these faculty members would be held accountable for their actions, may then lead to some professional development, mentoring program, and informational settings for the faculty members so that they might begin to demonstrate the abilities to develop and execute simulation properly. It is concerning that a faculty member, a participant in the study, with almost 20 years of teaching and 10 years of using simulation cannot in her own words, "develop a scenario." This same faculty member stated multiple times throughout the interview she did not know as much as she needed and that there is a lack of accountability on her part. She also shared that she believed leadership may be to blame.

While there are limited guidelines for simulation for colleges of nursing, faculty are executing the simulation as to what they deem is the appropriate length. Having the opportunity to interview and observe two participants from the same course, I would have assumed that the observations would have been similar. While observing two different simulations for the obstetrics course, one simulation day was three hours and the other simulation day was four hours long. Moreover, each simulation had a total of four students, groups of two students in each simulation, covering very similar topics. The actual simulation time for the four groups also varied from 22 minutes to 41 minutes. Each instructor had a varying time for pre-simulation content, from one hour to one hour and 30 minutes and well as the debriefing time ranged from 10 minutes to 33 minutes. The literature has well documented the need for simulation debriefing to be a minimal of double the time spent in simulation, the debriefing at this site was on average between these two courses only two-thirds of the time spent in simulation (Decker et al., 2013). This inconsistency just continues to show that there is a lack of consistency in the same clinical course between two different instructors and the need for further faculty education.

Professional Development

Professional development is essential to all nurses as well as nursing educators. With simulation, it is important to continue to learn, as the technology is ever changing. In the past academic school year, the college for this research project has increased the professional development rate to simulation, however it seemed as if the participants at first did not want to acknowledge it. At first, it was unclear if the participants simply did not know about the professional development opportunities, or if they simply did not mention them. For instance, during the initial interview only three participants identified that faculty development had been occurring on campus during the fall semester. During the second interview, however, I specifically brought up the topic of faculty development in the way of a "Lunch and Learn" and all seven participants then recognized that they had been occurring on a monthly basis. Thus, while all participants reported knowing of the opportunities, two of the participants attended the professional development opportunities. What is more, of the two that attended, they attended only one or two sessions.

It was important to understand why faculty chose not to attend the professional development starting with the series, "Lunch and Learn"." Greg shared,

> Yes, we have had many of those opportunities I don't often pursue that. Many times they are occurring on days I am not on campus and I would rather not come in for an hour on a topic that I am not passionate about.

While Sarah did attend two of the ""Lunch and Learns," she echoed Greg's response that the professional development series did not have valuable content specific to individual educators. She stated "It was not presented in a good manner nor was the content good. The "Lunch and Learn" facilitator just tried to present what she has done, rather than what the research has demonstrated." Simulation learning opportunities were being offered, but because faculty did not

feel they were relevant, they chose not to attend. By not attending, faculty not only missed out on opportunities to learn more, they also send the larger message to the leadership team that professional development is not necessary for them

While Jenny seemed intrigued by the "Lunch and Learns," she did not attend any using retirement as a reason for not going and not using simulation during the 2018 academic school year. Once again, there was an entire academic school year where Jenny did use simulation and could have learned some new techniques or concepts to simulation. By not attending, it seems as though Jenny knows enough about simulation for the current year and did not need to learn anything else. Colby shared she could not go to many of the ""Lunch and Learns" for various reasons, but she did express interest in being able to go directly to the simulation coordinator for help. She shared, "I think I could just go to the simulation coordinator…topics seem to be about integrating it into the graduate program and that doesn't really pertain to me." Overall, faculty reports the topics of the ""Lunch and Learns" were of little to no interest, were overall unhelpful, and/or were held at times that were not possible to attend. While all participants were intrigued and seem to find some value to the idea and concept of the "Lunch and Learn" opportunities for professional development, simply, faculty chose not to attend during the Fall 2017 academic year.

When discussing professional development opportunities research participants did attend, two of the seven indicated they were at an initial training of the high fidelity mannequins roughly ten years ago. Only one participant was at a recent faculty development opportunity for training with the technology for a new high fidelity mannequin. In January of 2018, a two-day faculty development opportunity to learn about a new high fidelity mannequin that the college purchased was held in which all undergraduate faculty were invited to attend. According to each research

participant, only one reported attending both days, one person attended the first day, and the five other participants did not attend any days. Dusty, who attended both days, stated that there were a total of seven faculty members present from both undergraduate and graduate programs: she, who attended both days along with the undergraduate dean, three undergraduate faculty who attended the first day of training (all three use high fidelity mannequins in clinical course on a regular bases but did not participate in the study), and two graduate faculty members who did attend both days of the faculty development. While the undergraduate faculty did not seem to value the professional development opportunities several shared that while leadership encourages faculty to go, few attended these opportunities.

All seven-research participants noted the need for quality professional development for all faculty within the program who participate in simulation and stressed the important of that need for continued knowledge. Again, while faculty report the need for professional development in simulation, participants chose not to attend educational opportunities being provided and none of the participants shared that they had attended a simulation conference in the last year. It is unclear if faculty truly are interested in learning more about simulation because their actions of not attending would prove otherwise. Individuals who are passionate about a teaching tool would attended what over education is available especially when it is at the school. Research participants reported that they would not attend unless is was a mandatory training and that all courses would not need the same "training" so it would need to be individualized by courses. Current literature supports faculty development in areas of interest as well as areas of teaching, the current faculty development at the college of nursing seems to hold no value (Hallmark, 2015; INACSL, 2016; Nehring & Lashley, 2004). Current faculty development needs to be relevant to each individual's course and possibly offering release hours

given to participate to attend (Continue Education Hours), but most importantly, leadership needs to put an emphasis on the importance of professional development in simulation.

It seems as if the undergraduate school of nursing realizes there was a lack of faculty development for faculty with simulation. But, faculty is not taking advantage of the opportunities that have been provided. To hear faculty state "I just didn't go" or "It doesn't interest me" is disappointing. Faculty members have proven that they are not going to learn the process of simulation alone and even with faculty development they are not taking advantage of the opportunities. One would have to assume this comes back to leadership and not holding faculty accountable for their actions and student learning. It seems as the "Lunch and Learns as well as the two-day faculty training need to be mandatory with consequences in order to make faculty members attend.

Recommendations

From these findings, several recommendations have emerged to help support faculty's uses of simulation as well as students' learning. The primary concern is the lack of overall education and faculty development that is good quality, which will entice faculty to attended. Faculty identified that space was a barrier to increased simulation use and several recommendations have been addressed. Finally, recommendations for the lack of leadership as well as faculty and student attitudes have been made.

Further Support and Educational Opportunities

Regarding barriers faculty face with simulation, it is extremely important that faculty have opportunities to learn more about simulation, technology, and methods to teach simulation

to their students. This should begin with a mandatory professional development opportunity where the simulation manufactures come to the college and educate everyone on how to use the equipment. While the technology will most likely change over the years, faculty can continue to update their own knowledge through computer-based assessments that the simulation coordinator develops. These too, would be considered mandatory education and must be completed on a yearly bases and would be maintained and updated by the simulation coordinator.

Education

Part of the initial faculty development day would be a debriefing course. With debriefing such an important aspect of simulation, it is important the all faculty attended an accredited debriefing course. After this course has been complete, debriefing procedures of the simulation will also occur in the same way, no matter which faculty member is working with the students. Both faculty and students will understand the process and it should allow for continuity as well as be of value.

The school of nursing seems to be on the right track with incorporating faculty development throughout the school year, but at this time it is not effective. The first recommendation would be to require that each faculty who brings students to simulation have a minimal of five continuing education hours each academic year specifically in simulation. This would ensure that faculty are receiving the most up to date information and best practices with both the technology and development of scenarios.

While the “Lunch and Learns” in theory are a good idea, they need to be more structured and value to the faculty. First, it would be a good idea to send out a survey to faculty asking what topics they would like to learn about, days and times that are best, and then the simulation

coordinator can develop or find simulation experts to present the topics to the faculty. It may be a better idea to have the education on days of mandatory faculty governance meetings, as faculty would already be on campus. Unfortunately, because there are no requirements to actually attend the educational opportunities, it has be to set forth as an expectation to attend a minimal of 75% each year and also be apart of the yearly self evaluation process.

INACSL Standards

While there are nursing simulation standards, it is not known exactly what the faculty actually understands regarding the standards. Thus, another recommendation would be to do a small questionnaire asking faculty about their awareness and knowledge about the nursing simulation standards set forth by INACSL. Particular attention should include the standards of facilitation, debriefing, and professional integrity. Either the simulation coordinator or the leadership team needs to identify the educational needs that could then be used as a faculty development workshop. It is mostly likely that very little of the faculty actually know any thing about the INACSL standards which do provided a detailed process for evaluating and implementing clinical simulation within schools.

Once all faculty are aware of the INACSL guidelines, thee standards should be put into motion and an expectation that all faculty actively follow and use while educating students. All faculty should be expected to know how to use the equipment at a minimum of a competent level with the next two academic school years. The simulator coordinator should work together with the content expert faculty to develop scenarios in which over time, the faculty would create independently. This would also allow the simulation coordinator to develop other aspects of the lab in her time.

Increased Expectations

While there are a handful of colleges and universities that now have master degrees in nursing simulation, there are still very few schools that have even one course in creating and implementing simulation curriculum as a graduate level course. A simulation course would allow soon to be faculty to learn how to teach in a simulated environment, develop curriculum, and help other succeed while using simulation. While this role would greatly benefit educational systems, health care system could also benefit from educators with advanced knowledge. After graduation, novice nurses need continued education and the simulated environment is the place to allow safe learning to occur.

It may seem that the current faculty have a lack of knowledge or interest in simulation and one recommendation for the school would be to considering hiring those with a simulation degree, background, and have previously taught using simulation. With the trends of health care and the continued lack of clinical sites, simulation may make up more clinical days in the coming years. It is imperative that all faculty are willing to work with students in simulation who are knowledgeable, positive, and want to continue to learn.

While it may be hard to control student and faculty attitudes towards simulation, it does need to be an expectation that poor attitudes or attitudes that sabotage will not be accepted. The simulation coordinator needs to continue to set expectations at the beginning of each simulation for students as well as faculty. Those students who do not comply will receive an unsatisfactory for the clinical experience and need to repeat the simulation on a clinical make up day. For faculty who continue to not teach simulation with best practices, their attitudes will need to be "reported" back to the leadership team for consequences. Currently the simulation coordinator is "faculty" and has no abilities to hold faculty accountable. It would be a recommendation to make

the current simulation position a “Dean of Simulation”. This would put the coordinator in a position of authority in which could hold faculty accountable for his or her actions.

Curriculum Changes

It would also be beneficial to develop a simulation curriculum that faculty follow while they are in the simulation with students. It would detail out how every minutes of the time allotted to simulation will be used. Once again, it would allow for continuity and making sure all students are receiving as close to as possible the same experiences while in the lab. Allowing some time prior to the simulation for concept connections and professionalism would be necessary, it would allow more time for actual simulations for students. Pre-briefing of the scenario would not be longer than the actual scenario and scenarios would not be repeated for the next group. Simulation should be a minimal of 30 minutes or until objectives and goals have been met. When multiple groups of students will be participating in simulation from the same course, each simulation will be a different allowing student to learn while watching their peer’s participant.

Another recommendation regarding faculty attitude is understanding the importance of the simulation as an effective teaching strategy and having the appropriate skills to lead a class in the simulation environment. Faculty should be introduced to teaching methods and strategies so that they can address and better prepare students. This introduction should start in postgraduate education courses but also at in-service trainings.

A final recommendation is to institute a mentoring relationships between new and expert faculty. In this way, faculty could learn from one another as well as have a mentor to gain knowledge from. In that, we could encourage other faculty to observe each other, give feedback,

and cultivate a community of learning amongst them. The mentorship program would need clear objectives and standards as well as best practice use of simulation to be a mentor. It would be a recommendation that the simulation coordinator development this program and a faculty simulation mentorship handbook.

Increasing Space and Availability

One recommendation would be to space out clinical experiences throughout the entire week and more through out the day including hours in the early evening. Most clinicals were on Tuesday and Wednesday from 7:00 am-3:00 pm, which leaves the lab essentially empty on other days. Unfortunately, when the lab is currently empty, faculty are teaching in a didactical course and cannot bring their clinical students to the simulation lab. Making sure that all students are having clinical experiences throughout all days of the week would allow more availability in the lab and faculty may then be able to use the lab on a drop in bases as many suggested during the interviews. Overall, it seems like coordination of times would benefit students the most and may also help alleviate some of the space issues brought forth through the interview discussions.

Several participants of the study reported the need for more dedicated faculty to the lab and that is another recommendation for the college. Bringing in another simulation-trained expert could possibly allow faculty to use the lab on more of a drop in bases because one faculty may then be available to assist the simulation. The second simulation coordinator could also be hired for extended times of the day, keeping the lab open longer during the week and possibly on the weekends. It is highly recommended that if a new position is created that this individuals comes in with simulation experience.

While nursing faculty have little to no impact on both simulation space and the financial aspect of simulation, there are still recommendations that the simulation coordinator and leadership may be able to consider these in the future. While there seems to be some discussion regarding leadership and the simulation coordinator regarding the budget, another recommendation is for the coordinator over the next year to slowly have more input and eventually have majority input of the simulation budget. It may be necessary to further educator the simulation coordinator regarding budgets and those classes should be financially supported from the college.

Dusty reported within her interviews that she did not know what the simulation budget was or how the money was allocated. While this was rather concerning, it is important to recommend back to the department and college that the simulation coordinator has a direct role in allocation of the simulation funds. This person, who knows the lab the best, also knows what equipment needs to be bought and replaced so it is imperative that this person is apart of the budget process. Part of the budget should also be thinking long term knowing that high fidelity mannequins and the technology associated with them will eventually be outdated. It is expected that these be replaced, knowing they are extremely expensive and several need to be purchased.

Leadership Involvement and Accountability

During the interviews, several people brought up the lack of leadership holding faculty accountable for their actions. It does seem as if the leadership team is trying to bring changes to professional development with simulation, but at the same time, no one is making faculty provide high quality opportunities for learning nor is anyone making faculty who use simulation attend. It is an expectation for faculty to attend professional development that will aid in student

learning and the school is attempting to bring this option forward. While leadership has started to bring these opportunities to campus, it may be helpful to ask faculty which days are best for educational opportunities. Making faculty attend may be the only option to hold educators responsible for actually attending these events.

A recommendation specifically to the leadership team may be to offer an incentive for faculty to attend professional development related to simulation. Offering reimbursement for attending local conferences, providing an incentive on early evaluations may be enough to motivate some faculty to attend more professional development opportunities. While none of the participants actually acknowledged how the days were chosen for the "Lunch and Learn" or the two-day faculty training, asking the faculty which days are best may also be a motivating factor. It was not discussed which days the training was on, but making sure the faculty development was on a nonclinical day or not during the interim between semesters may also increase the attendance. A final recommendation for the school regarding faculty development and simulation is providing the financial resources for off site simulation conferences. Being able to learn from other simulation experts would bring new ideas and concepts for faculty to use while educating students.

Further Recommendations

This study could be repeated at another school of nursing that uses simulation in the clinical courses. While the results are specific to one undergraduate nursing faculty and school, a larger scale study would gather more information regarding the knowledge that faculty in undergraduate nursing schools have as well as how it is incorporated into clinical courses. This current research study only demonstrates the perceptions of these specific faculty who

participated in the study at one small nursing school rather than the perceptions of all undergraduate-nursing faculty at the school and across the country.

Observations were conducted during the first half of one semester and did not include all clinical courses. It would be recommended to have a research participant from each clinical course to evaluate the needs of the whole program rather than just the two semesters represented in the study. Another recommendation would be to observe each participant in more than one day of simulation. This would allow the research to compare the two observation days and make a reliable predictor of the faculty's knowledge. Interviewing students and understanding their perspective and expectations of faculty would also provide more validity to the study.

To further understand more about faculty and their roles in simulation, several aspects of the study could be broken down into individual studies to learn more about what faculty expectations are for simulation and what each person needs to be successful in simulation. Questions could be tailored towards what specific faculty development is needed, what one needs to be able to be independent in simulation, and what motivating factors need to be in place to attend faculty development that is provided by the College. Students can only receive the best education if faculty devote time and want to learn about simulation.

Conclusion

There is enough literature to support the use of simulation as an alternative learning method to undergraduate nursing school clinical. Students have the opportunity to care for patients in a safe controlled environment, which can reflect topics, which are currently being studied in the didactical component of the course. Faculty is responsible for facilitating student

learning in the simulations and it is essential that faculty members are at minimum, competent to develop, execute and troubleshoot a simulation.

While the research supports nursing simulation in undergraduate programs, there are still barriers that were identified in the literature 10 years ago; simulation space and money. New barriers such as student and faculty attitude continue to emerge; it is important that those who have negative attitudes should not be apart of the simulation learning opportunities. There are faculty who are passionate about simulation and will provide the right, positive learning outcome needed for students to be successful in simulation and nursing education. Finally, it is important to make sure that while faculty support nursing in words, faculty can support student-learning outcomes in practice.

While simulation continues to evolve, it is important for faculty to be well educated and well prepared to successfully implement simulation within a nursing course. While faculty development is important, it is also necessary for individuals to continue to learn on their own to make sure that students are receiving the best education possible.

REFERENCES

Aebersold, M., & Tschannen, D. (2013). Simulation in nursing practice: The impact on patient care. *Online Journal of Issue in Nursing*, *18*(2), Manuscript 6. doi: 10.3912/OJIN.Vol19No02Man06

Al-Ghareeb, A. Z., & Cooper, S. J. (2016). Barriers and enablers to the use of high-fidelity patient simulation manikins in nurse education: An integrative review. *Nurse Education Today, 36*, 281-286.

Alinier, G., Hunt, B., Gordon, R., & Harwood, C. (2006). Effectiveness of intermediate-fidelity simulation training in the undergraduate nursing education. *Journal of Advanced Nursing,* 54(3), 359-369.

Allen, L. (2008). The nursing shortage continues as faculty shortage grows. *Nursing Economics, 26*(1), 34-40.

American Association of Colleges of Nursing [AACN]. (2017). *Nursing shortage*. Retrieved July 27, 2017, from http://www.aacn.nche.edu/publications/white-papers/faculty-shortages

American Sentinel University. (2012). Simulation labs: The answer to nursing education problems. Retrieved December 1, 2017, from http://www.americansentinel.edu/blog/2012/12/12/simulation-labs-the-answer-to-nursing-educations-problem/

Baggs, J. D. Schmitt, M. H., Mushlin, A. I., Mitchell, P. H., Eldredge, D. H., Oakes, D., & Hutson, A. D. (1999). Association between nurse-physician collaboration and patient care outcomes in three intensive care units. *Critical Care Medicine*, *27*(9), 1991-1998.

Bambini, D., Washburn, J., & Perkins, R. (2009). Outcomes of clinical simulation for novice nursing students: Communication, confidence, and clinical judgment. *Nursing Education Perspectives*, *30*(20), 79-82.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *Qualitative Report*, *13*(4), 544-559.

Benner, P. (1982). From novice to expert. *American Journal of Nursing*, *82*(3), 402-407.

Berndt, J., Dinndorf-Hogenson, G., Herheim, R., Hoover, C., Land, N., Neuwirth, J., & Tollefson, B. (2015). Collaborative classroom simulation (CCS): An innovative pedagogy using simulation in nursing education. *Nursing Education Perspectives, 36*(6), 401-403.

Blum, C. A., Borglund, S., & Parcells, D. (2010). High-fidelity nursing simulation: Impact on student self-confidence and clinical competence. *International Journal of Nursing Education Scholarship*, *7*(1), 1-14. doi: https://doi.org/10.2202/1548-923X.2035

Boese, R., Cato, M., Gonzalez, L., Jones, A., Kennedy, K., Reese, C., Decker, S., Franklin, A. E., Gloe, D., Lioce, L., Meakim, C., Sando, C. R., & Borum, J. C. (2013). Standards of best practice: Stimulation standard V: Facilitator. *Clinical Simulation in Nursing*, *9*(6), s22-s25.

Brady, D. S. (2011). Using quality and safety education for nurses as a pedagogical structure for course redesign and content. *Journal of Nursing Education Scholarship*, *8*(1), 1-18.

Bray, B., Schwartz, C. R., Weeks, D. L., & Kardong-Edgren, S. (2009). Human patient simulation technology: Perceptions from a multidisciplinary sample of heath care educators. *Clinical Simulation in Nursing, 5*, e145-e150.

Bruner, J. (1996). *The culture of education.* Cambridge, MA: Harvard University Press.

Carayon, P., & Gurses, A. P. (2008). *Nursing workload and patient safety – a human-factors engineering perspective*. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses* (pp. 1-18). Rockville, MD: NCBI.

Cox, P., Willis, W.K., & Coustasse, A. (2014). The American epidemic: The U.S. nursing shortage and turnover problem. *Management, Marketing and MIS, 3*, 1-12.

Cover, J. M. (2011). Simulation in nursing education. *Advance Nursing, 11*, 20-22.

Crotty, M. (1998). *The foundations of social research,* London: Sage.

Davis, S., Kristjanson, L. J., & Blight, J. (2003). Communication with families of patients in an acute hospital with advanced cancers: Problems and strategies identified by nurses. *Cancer Nursing, 26*, 337-345.

Decker, S. I., Anderson, M., Boese, T., Epps, C., McCarthy, J., & Motola, I., Palaganas, J., Perry, C., Purga, F., & Scolaro, K. (2015). Standards of best practice: Simulation standard VIII: Simulation enhanced interprofessional education (Sim-IPE). *Clinical Simulation in Nursing, 11*, 293-297.

Decker, S., Fey, M., Sideras, S., Caballero, S., Rockstraw, L., & Boese, T. (2013). Standards of best practice: Simulation standard VI: The debriefing process. *Clinical Simulation in Nursing, 9*(6), s26-s29. Retrieved on June 6, 2018, from https://www.nursingsimulation.org/article/S1876-1399(13)00079-0/pdf?code=ecsn-site

DeWalt, K. M., & DeWalt, B. R. (2002). *Participant observation: A guide for fieldworkers*. Walnut Creek, CA: AltaMira Press.

Director. (2013). Standards of best practice: Simulation. *Clinical Simulation in Nursing*, *9*(6), np.

Dowie, I., & Phillips, C. (2011). Supporting the lecturer to deliver high-fidelity simulation. *Nursing Standard, 25*(40), 35-40.

Drenkard, K. (2008). *Discussion*. From the 118th meeting of the national advisory council on nurse education and practice, Bethesda, MD.

Facione, N. C., Facione, P. A., & Sanchez, C. A. (1994). Critical thinking disposition as a measure of competent clinical judgment: The development of the California critical thinking disposition inventory. *Journal of Nursing Education, 33*, 345-350.

Flood, J. L., & Thompson, J. N. (2011). High-fidelity patient simulations: A classroom-learning tool. *American Nurse Today, 6*(5), 37-40. Retrieved June 6, 2018, from https://www.americannursetoday.com/high-fidelity-patient-simulations-a-classroom-learning-tool/

Fountain, R. A., & Alfred, D. (2009). Student satisfaction with high fidelity simulation: Does it correlate with learning styles? *Nursing Education Perspectives, 30*(2), 96-98.

Fowler Durham, C., & Alden, K. R. (2008). Enhancing patient safety in nursing education through patient simulation. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses* (pp. 1-47). Rockville, MD: Hughes.

Gaba, D. M. (2004). The future vision of simulation in health care. *Quality & Safety in Health Care*, *13*(10), 2-10. doi: 10.1136/qhc.13.suppl1.i2

Galloway, S. J. (2009, May 31). Simulation techniques to bridge the gap between novice and competent healthcare professionals. *OJIN: The Online Journal of Issues in Nursing*, *14*(2), Manuscript 3. doi: 10.3912/OJIN.Vol14No02Man03

Gantt, L. T. (2010). Strategic planning for skills and simulation labs in colleges of nursing. *Nursing Economics*, *28*(5), 308-313.

Gillham, B. (2001). *Case study research methods*. New York: Continuum.

Glaser, B. G., & Straus, A. L. (1967). *The discovery of ground theory: Strategies for qualitative research.* New Brunswick, NJ: AldineTransaction.

Goodstone, L., Goodstone, M. S., Cino, K., Glaser, C. A., Kupferman, K., & Dember-Neal, T. (2013). Effect of simulation on the development of critical thinking in associate degree nursing students. *Nursing Education Perspectives*, *34*(3), 159-163.

Griffith, C. H., Wilson, J. F., Desair, N. S., & Rich, E. C. (1999). Housestaff workload and procedure frequency in the neonatal intensive care unit. *Critical Care Medicine*, *27*(4), 815-820.

Hallmark, B. F. (2015). Faculty development in simulation education. *Nursing Clinics in North America*, *50*(2), 389-397.

Harder, B. N. (2009). Evolution of simulation use in health care education. *Clinical Simulation in Nursing*, *5*, 169-172.

Hayden, J. (2010). Use of simulation in nursing education: National survey results. *Journal of Nursing Regulation*, 1(3), 52-57.

Hayden, J. K., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. R. (2014). The NCSBN national simulation study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in pre-licensure nursing education. *Journal of Nursing Regulation*, *5*(2), S3-S64.

Hein, G. E. (1991). Constructivist learning theory. *Institute for Inquiry*. Retrieved February 3, 2017, from https://www.exploratorium.edu/education/ifi/constructivist-learning

Hill, C. E., Knox, S., Thompson, B. J., Williams, E. N., Hess, S. A., & Ladany, N. (2005). Consensual qualitative research: An update. *Journal of Counseling Psychology*, *52*(2), 196-205.

Hill, C. E., Williams, E. N., & Thompson, B. G. (1997). A guide to conducting consensual qualitative research. *Counseling Psychologist*, *25*, 517-572.

International Nursing Association for Clinical Simulation and Learning [INACSL]. (2016). INACSL standards of best practice: Simulation facilitation. *Clinical Simulation in Nursing*, *12*(S), s16-s20.

Jansen, D. A., Johnson, N., Larson, G., Berry, C., & Brenner, G. (2009). Nursing faculty perceptions of obstacles to utilizing manikin-based simulations and proposed solutions. *Clinical Simulation in Nursing*, *5*(1), e9-e16.

Jeffries, P. R., Dreifuerst, K. T., Kardong-Edgren, S., & Hayden, J. (2015). Faculty development when initiating simulation programs: Lessons learned from the national simulation study. *Journal of Nursing Regulation*, *5*(4), 17-23.

Jeffries, P. R., & Rizzolo, M. A. (2006). *Designing and implementing models for the innovative use of simulation to teach nursing care of ill adults and children: A national, multi-site, multi-method study*. New York: National League for Nursing.

Johansson, R. (2003). Case study methodology. *Royal Institute of Technology*, *13*, 1-14.

Kardong-Edgren, S., Willhaus, J., Bennett, D., & Hayden, J. (2012). Results of the national council state boards of nursing nation simulation survey: Part II. *Clinical Simulation in Nursing*, *8*, e117-e123.

King, C. J., Moseley, S., Hindenlang, B., & Kuritz, P. (2008). Limited use of the human patient simulator by nurse faculty: An intervention program designed to increase use. *Journal of Nursing Education Scholarship*, *5*(1), 1-17.

Krautscheid, L., Kaakinen, L., & Rains-Warner, J. (2008). Clinical faculty development: Using simulation to demonstrate and practice clinical teaching. *Educational Innovations*, *47*(9), 431-434.

Kurz, J. M., Mahoney, K., Martin-Plank, L., & Lidicker, J. (2009). Objective structured clinical examination and advance practice nursing student. *Journal of Professional Nursing*, *25*(3), 186-191.

Laerdal Medical. (2018). *Improving patient care*. Retrieved June 6, 2018, from https://www.laerdal.com/us/learn/improving-patient-care/

LaMartina, K., & Ward-Smith, P. (2014). Developing critical-thinking skills in undergraduate nursing students: The potential for strategic management simulations. *Journal of Nursing Education and Practice*, *4*(9), 155-162.

Lapkin, S., Levett-Jones, T., Bellchambers, H., & Fernandez, R. (2010). Effectiveness of patient simulation manikins in teaching clinical reasoning skills to undergraduate nursing students: A systematic review. *Clinical Simulation in Nursing*, *6*(6), e207-e222.

Li, S. (2007). The role of simulation in nursing education: A regulatory perspective. *American Association of Colleges of Nursing*. Retrieved October 29, 2016, from https://ncsbn.org/Suling2.pdf

Marshall, C., & Rossman, G. B. (1989). *Designing qualitative research*. New York: Sage.

Mclean, M., Cilliers, F., & Van Wyk, J. M. (2008). Faculty development: Yesterday, today, and tomorrow. *Medical Teacher, 30*, 555-584.

Meakim, C., Boese, T., Decker, S., Franklin, A. E., Gloe, D., Lioce, L., Sando, C. R., & Borum, J. C. (2013). Standards of best practice: Simulation standard I: Terminology. *Clinical Simulation in Nursing*, *9*(6S), S3–S11. Retrieved April 5, 2018, from http://dx.doi.org/10.1016/j. ecns.2013.04.001

Medley, C. F., & Horne, C. (2005). Using simulation technology for undergraduate nursing education. *Journal of Nursing Education*, *44*, 31-34.

Merriam, B. (1995). What can you tell from an n of 1?: Issues of validity and reliability in qualitative research. *PAACE Journal of Lifelong Learning*, *4*, 51-60.

Merriam, S. B. (1988). *Case study research in education.* San Francisco: Jossey-Bass.

Merriam, S. B. (2009). *Qualitative research: A guide to sign and implementation*. San Francisco: Jossey-Bass.

Merriam, S. B., &Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation* (4th ed.). San Francisco: Jossey-Bass.

Miller, A., & Bull, R. M. (2013). Do you want to play? Factors influencing nurse academic adoption of simulation in their teaching practices. *Nurse Education Today*, *33*(3), 241-246.

Montenery, S. M., Walker, M., Sorensen, E., Thompson, R., Kirklin, D., White, R., & Ross, C. (2013). Millennial generation student nurses' perceptions of the impact of multiple technologies on learning. *Nursing Education Perspectives*, *34*(6), 405-409. doi: 10.5480/10-451

National League of Nursing. (2015). *A vision for teaching with simulation*. Retrieved June 21, 2017, from http://www.nln.org/docs/default-source/about/nln-vision-series-(position-statements)/vision-statement-a-vision-for-teaching-with-simulation.pdf?sfvrsn=2

Nehring, W. M., & Lashley, F. R. (2004). Using the human patient simulator in nursing education. *Annual Review of Nursing Education*, *2*, 163-181.

Nehring, W. M., Wexler, T., Hughes, F., & Greenwell, A. (2013). Faculty development for the use of high-fidelity patient simulation: A systematic review. *International Journal of Health Sciences Education*, *1*(1), 1-34.

Ng, G. (2013). Championing faculty development: The nurse education imperative. *Nursing Economics*, *31*(1), 42.

Norman, J. (2012). Systematic review of the literature on simulation in nursing education. *Association of Black Nursing Faculty Journal*, *23*(2), 24-48

Nursing continuing education requirements by state. (2008, October), Retrieved May 15, 2018, from http://www.pearlsreview.com/requirements.html

Quilici, A. P., Bicudo, A. M., Gianotto-Oliveira, R., Timerman, S, Gutierrez, R., & Abrao, K. C. (2015). Faculty perceptions of simulation programs in healthcare education. *International Journal of Medical Education*, *6*, 166-171.

Rakoczy, M., & Money, S. (1995). Learning styles of nursing students: A three-year longitudinal study. *Journal of Professional Nursing*, *11*(3), 170-174.

Richardson, H., Goldsamt, L. A., Simmons, J., Gilmartin, M., & Jeffries, P. R. (2014). Increasing faculty capacity: Findings form an evaluation of simulation in clinical teaching. *Nursing Education Perspectives*, *35*(5), 308-314.

Riley, R. (2008). *A manual of simulation in healthcare.* New York: Oxford University Press.

Rothgeb, M. K. (2008). Creating a nursing simulation laboratory: A literature review. *Journal of Nursing Education*, *47*(11), 487-494.

Saldana, J. (2015). *The coding manual for qualitative research.* London: Sage.

Schoening, A. M., Sittner, B. J., & Todd, M. J. (2006). Simulated clinical experience: Nursing students' perceptions and the educator's role. *Nurse Educator*, *31*, 253-258.

Sheffield, L. (2016). Nursing shortage statistics. *Strategic programs*. Retrieved September 3, 2016, from http://strategicprogramsinc.com/nursing-shortage-statistics/

Stake, R. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.

Tellis, W. M. (1997). Application of a case study methodology. *Qualitative Report*, *3*(3), 1-19.

Tuoriniemi, P., & Schott-Baer, D. (2008). Implementing high-fidelity simulation program in a community college setting. *Nursing Education Perspectives*, *29*(2), 105-109.

Wade, S. (2012). *Faculty attitudes toward the utilization of high-fidelity human patient simulation in nursing education* (unpublished doctoral dissertation). Retrieved on May 1, 2018, from https://openprairie.sdstate.edu/etd/953/

Waznonis, A. R. (2015). Simulation debriefing practices in traditional baccalaureate nursing programs: National survey results. *Clinical Simulation in Nursing, 11*(2), 110-119.

Willis, J. W., & Jost, M. (2007). *Foundations of qualitative research: Interpretive and critical approaches*. Thousand Oaks, CA: Sage.

Wong, L. (2008). Data analysis in qualitative research: A brief guide to using Nvivo. *Malays Family Physician*, *3*(1), 14-20.

Yin, R. K. (2003).*Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Zieber, M. P., & Williams, B. (2015). The experience of nursing students who make mistakes in clinical. *Intern International Journal of Nursing Educatio*n, *12*(1), 1-9.

APPENDICES

APPENDIX A

INTRODUCTORY EMAIL

My name is Alissa Althoff and I am a doctoral student at Northern Illinois University in DeKalb Illinois. As part of my degree requirements, I will be investigating technology associated with simulation and perceived faculty barriers. The purpose of this qualitative case study is to explore and understand the barriers that full time nursing faculty encounter with the technology associated with simulation in the clinical environment. The study also identifies the needs for further education for faculty to develop, run, and troubleshoot the technology associated with clinical simulation. I invite you, and would greatly appreciate your participation in this study.

The following qualitative research study consists of three parts, two, 1-hour interviews and an observation during a clinical simulation in which the faculty member is observed using simulation as a teaching tool.

To ensure the information you provide during the study remains confidential, your name nor your school will not be used or referenced throughout the study. IRB for this study has been approved by Northern Illinois University.

If you are interested in learning more about this study, or willing to serve as a participant for the study, please email aalthoff@niu.edu for more information. Please reference “research study” in the subject line of the email. All initial communication will be sent via email and at no time will you be forced to participate. There is no compensation for the study and all participation is completely voluntary and you may choose to withdraw at any time.

APPENDIX B

PARTICIPANT CONSENT FORM

INFORMED CONSENT DOCUMENT

Title of Study: Nursing Faculty Barriers with Simulation and Study Learning Outcomes

Investigators: Alissa Althoff MSN, RN

This form describes a research project. It has information to help you decide whether or not you wish to participate. Research studies include only people who choose to take part—your participation is completely voluntary. Please discuss any questions you have about the study or about this form with the project staff before deciding to participate.

Introduction

The purpose of this qualitative case study is to explore and understand the barriers that full time nursing faculty members at small private college in Northwest Illinois encounter with the technology associated with simulation in the clinical environment. The study aims to identify the specific needs of faculty to develop, execute, and troubleshoot the technology associated with clinical simulation.

You are being invited to participate in if you are a undergraduate-nursing faculty who is actively participating in simulation with students.

Description of Procedures

If you agree to participate, you will be asked to participate in two, one hour long interviews regarding your experiences with stimulation more specifically the technology. Prior to the second interview, a simulation in which you are instructing will be observed. These interviews, which will take place in a neutral location, at a mutually agreed upon time, will be recorded. The simulation will take place at a mutually agreed upon time and will not be recorded.

Risks or Discomforts

Importantly, you may feel uncomfortable at times discussing your experiences. As such, you can stop participation at any time and there will be no penalty.

Benefits

If you decide to participate in this study, there may be no direct benefit to you, however, findings from this project will benefit how nursing faculty, departments, and colleges and universities are trained using simulation to improve student-learning outcomes.

Costs and Compensation

There are no costs or compensations for this study.

Participant Rights

Participating in this study is completely voluntary. You may choose not to take part in the study or to stop participating at any time, for any reason, without penalty or negative consequences. You can skip any questions that you do not wish to answer. There will be no negative consequences academically if you choose not to participate. Your choice of whether or not to participate will have no impact on you.

If you have any questions *about the rights of research subjects or research-related injury*, please contact the Research Compliance Coordinator, Jeanette Gommel, (815) 753-8588 or jgommel@niu.edu, Office of Research Compliance and Integrity, Northern Illinois University.

Confidentiality

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available.

To ensure confidentiality to the extent permitted by law, the following measures will be taken: all information collected will be stored on a password-protected computer. The computer will be kept in a locked desk.

Questions

You are encouraged to ask questions at any time during this study. For further information ***about the study,*** contact Alissa Althoff at aalthoff@niu.edu or (815)703-0114 or dissertation chair Dr. Katy Jaekel at kjaekel@niu.edu

Consent and Authorization Provisions

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document, that you are undergraduate nursing faculty, and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

1. Your signature below indicates agreement to participate in this study.

Participant's Name (printed) _____

_____ _____

Participant's Signature Date

2. Your signature below indicates agreement that your interviews will be audio recorded.

_____ _____

Participant's Signature Date

APPENDIX C

INDIVIDUAL INTERVIEW PROTOCOL

Interview 1

Part 1: Review Informed Consent Document

1. Provide faculty the informed consent document
2. During meeting, discuss and review document
3. Collect signed informed consent document

Part 2: Open-Ended Discussion Questions Themes and Representative Questions

A) Get to know you and learn about your experiences at a nurse, faculty member, and curriculum
    1. What is your nursing background?
    2. What nursing teaching background?
    3. What has been your experience with nursing curriculum with examples?

B) Experience with nursing simulation
    1. What is your overall view of simulation?
    2. How were you introduced to simulation?
    3. What is your background with simulation i.e. orientation, structure courses?
    4. When was a time you were successful in promotion student learning outcomes in the simulation environment?
    5. What barriers have you encounter with simulation? Can you give an example of a barrier while you had students participating with simulation? Does that reflect on student success in the course?
    6. Can you describe how you feel about the technology and what are your experiences with the different technology?
    7. How does you experience with the technology promote student success
    8. On Benner's model, how you see yourself with simulation technology and with an example how does that inhibit student success?

B) Ask participants if they have any questions and thank participants.

Observation

Part 1: Set up a mutually agreed upon time

Part 2: Student Consent

1. Inform students that faculty is emphasis of study
2. During meeting, discuss and review document
3. Collect signed informed consent document

Part 3: Observation

1. Observe faculty member with note taking

Interview 2

Part I: Open-Ended Questions Themes and Representative Questions and Simulation Observation

A) Experience revising, finishing e-portfolio

1. Discussion from the following prompts: Since we chatted last time, have you had any further education regarding simulation?
2. What faculty development have you had with simulation, which aspects of it were you able to bring back to simulation and promote student success?
3. As you think about the learning outcomes for students, do you think that further education in simulation would be beneficial, explain?
4. Finally, as you think the future of simulation, what do you wish would be included for further education or faculty development?

B) Ask participants if they have any questions and thank participants.