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Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project

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Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project

By

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Approval Page

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Abstract

Human patient simulation is an innovative teaching strategy that can facilitate practice development and preparation for entry into today's healthcare environment for nursing students. Unfortunately, the use of human patient simulation has been limited due to the perceptions of nursing faculty members. This project sought to explore those perceptions using the Theory of Planned Behavior attributes of attitude, subjective norm, and perceived behavioral controls. A two phase project explored the use of an educational workshop intervention to change faculty perceptions and potentially improve intent to use human patient simulation by the nursing faculty. While the educational workshop intervention demonstrated statistically significant improvement in the area of attitudes, there were no significant improvements of subjective norm or perceived behavioral controls. However, it is important to note there were improvements in all three attributes between the pre-intervention and post-intervention surveys. This project also was unable to find a single statistically significant attribute that contributed to the intent to use human patient simulation by the participants, indicating a combination of all the attributes may be the predicting source. The use of an educational workshop does improve components of each attribute, which may improve intent to use human patient simulation according to the Theory of Planned Behavior.

Keywords: simulation, faculty perception, use of simulation

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CHAPTER I

Introduction

Increased patient acuity in the hospital setting, advanced technology, shortened hospital stays, and the increase in community-based care has changed nursing practice significantly (Benner, Tanner, & Chesla, 2009). Nursing education has been challenged to re-think clinical education to incorporate innovative teaching strategies that facilitate practice development and preparation for entry into today's healthcare environment (National League for Nursing, 2003; National Council of State Boards of Nursing, 2005). Human patient simulation (HPS) is an innovative teaching modality which can be implemented in a curriculum to meet these new challenges. However, perceived barriers to the use of HPS in nursing education have been identified, including a lack of faculty time and a shortage of technical expertise in the use of simulation (Nehring & Lashley, 2010). These perceived barriers have influenced faculty perception leading to the underutilization of HPS as a teaching tool.

This capstone project was completed to determine if the use of an interventional educational program would impact faculty perceptions and intent to use human patient simulation (HPS) in an undergraduate prelicensure nursing program. The capstone project was modeled after the King, Moseley, Hindenlang, and Kuritz (2008) study of faculty perceptions and their intent to use HPS. With increased demands being placed on nursing graduates upon graduation, HPS is an appropriate method to meet these challenges and better prepare the new graduate nurse. Nursing education has changed greatly over the last decade, and the introduction of HPS and the changes in the healthcare setting have had major impact on this change. However, there is still limited

integration of HPS into the nursing curriculum and faculty perceptions have an impact on their intent to use HPS.

Problem Statement

Faculty perceptions are important when considering their intent to use HPS as an educational methodology. As noted in previous studies, there are many faculty perceptions that interfere with the use of HPS as a teaching method in nursing education (Lean, Moizer, Towler, & Abbey, 2006; Kardong-Edgren, Starkweather, & Ward, 2008; Feingold, Calaluce, & Kallen, 2004; King et al., 2008). There is little research available to address the perspectives of faculty related to HPS, which leads to a gap in knowledge in the profession (King et al., 2008). There are also gaps noted in the literature on how best to prepare faculty and address any faculty perceptions to maximize the use of HPS as a teaching tool in nursing education. This capstone project was designed to determine the effectiveness of an interventional educational program on faculty perceptions and their intent to use HPS as an educational modality. An interventional educational program was designed based on participant input and offered as a full day workshop for the participants. The program included both didactic information and hands-on experiences with HPS. The goal of the interventional program was to positively impact faculty perceptions and intent to use HPS.

Justification of Project

Some nurse educators have been reluctant to explore simulation as a teaching strategy based on a lack of education about simulation, time limitations with developing a new teaching modality, and increased time required for preparation and set-up of simulation (Lean et al., 2006; Kardong-Edgren et al., 2008; Feingold et al., 2004 ; King,

et al., 2008). With the significant changes in healthcare and calls for changes in nursing education, it is critical that nurse educators become familiar with HPS as it is an important teaching tool to meet the needs of nursing students today and in the future.

Reports from The Institute of Medicine (IOM) (Greiner & Knebel, 2003) and the National League of Nursing (NLN) (2003) called for a radical change in nursing education from a traditional content driven curriculum to a more innovative curriculum, which would serve to prepare nurses for contemporary practice. Nehring and Lashley (2010) identified six influences prompting the revision of nursing education. The six influences are consumer demands for safety and quality, improved nursing education, a focus on healthcare ethics, technology advances in education and healthcare, shortages of nurses, and the ever changing needs of patient care and the delivery system used in modern nursing. Tanner (2006) found that most curricula focus on the content students need to learn, not how students learn to think. Benner et al. (2009) maintains it is naive to assume that nurses are ready for practice upon completion of their formal nursing education. The reluctance of academia to acknowledge that nurses do not graduate as fully skilled practitioners, but instead as advanced beginners has perpetuated the myth in healthcare agencies that any skill or educational level is comparable to fulfill the staffing needs of an agency (Benner et al, 2009). Benner, Sutphen, Leonard, and Day (2010) determined that a primary role for nurse educators is the facilitation of learning and evaluating skills and competencies needed by nursing students upon entry into practice, such as psychomotor skills and the development of clinical judgment, which is the combination of knowledge and practical experience. Throughout the history of nursing education, educators have sought new teaching strategies to assist students in developing

the skills and knowledge necessary to become nurses, these challenges often require nurse educators to look outside of the traditional classroom and clinical setting for innovative educational methods which will meet these new challenges. The Essentials of Baccalaureate Education for Professional Nursing Practice indicated that simulation is a valuable element of clinical preparation that augments the clinical learning experience (American Association of Colleges of Nursing, 2008).

Nursing education has used simulation in various forms for many years (Nehring & Lashley, 2010). The progression from anatomically correct models, called task-trainers, to the latest high-fidelity simulation models has drastically improved the ability to replicate clinical practice in the laboratory setting. High-fidelity simulation in nursing education today provides realistic patient situations using computerized, life-sized, interactive mannequins to develop skills, knowledge, and clinical judgment. HPS can supplement experiences allowing the educator to meet curriculum objectives even when patient experiences in the traditional clinical setting might not readily exist in the frequency needed to provide for the entire student group (Founds, Zewe, & Scheuer, 2011). Simulation also allows students the opportunity to practice high-risk patient care without the liability of risk of injury to a real-life patient (Parker & Myrick, 2009; Founds et al., 2011). HPS is an important teaching tool for the future of nursing education and faculty use is imperative to the changes called for in nursing education.

Purpose

The purpose of this capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, was to identify faculty perceptions of the use of HPS and the effect of an educational intervention on these perceptions. Specifically,

this capstone project focused on identifying attitudes, subjective norms, perceived behavioral controls, and intent to use HPS by faculty in a prelicensure baccalaureate nursing program and developed an intervention program to address these concepts through education. As noted in previous studies, there are many faculty perceptions that interfere with use of HPS as a teaching method in nursing education (Lean et al., 2007; Kardong-Edgren et al., 2008; Feingold et al., 2004; King et al., 2008). However, King et al. (2008) determined in their study incorporating a specifically designed educational intervention improved faculty perceptions and probability of using simulation in their courses. This capstone project modeled the King et al. (2008) study with the goal of improving faculty perceptions and their intent to use HPS. King et al. (2008) used a pre-intervention survey to determine current faculty perception and intent to use HPS, used this information to develop an intervention program, and provided a post-intervention survey to determine any changes in perception and intent to use HPS. Replication of this study will provide additional information about the impact of an education workshop on HPS on faculty perceptions and intent to use HPS.

Project Questions

This capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, was conducted in two-phases. Phase I determined faculty member's attitudes, subjective norms, perceived behavioral controls, and intent to use HPS by use of the online tool, "The Faculty Attitudes and Intent to Use Related to the Human Patient Simulator Survey" developed by King et al., (2008). Phase II included an educational intervention and repeat administration of the online tool "The Faculty Attitudes and Intent to Use Related to the Human Patient Simulator Survey"(King et al.,

2008) to determine the effect of the intervention on faculty member's attitudes, subjective norms, perceived behavioral controls, and intent to use HPS. The following research question was related to Phase I:

- What are the faculty member's attitudes, subjective norms, perceived behavioral controls, and intent to use HPS?

The data collected in Phase I was used to design an educational intervention. Phase II included the educational intervention and post-intervention survey to address the following research questions:

- What is the effect of the educational intervention on attitudes, subjective norms, perceived behavioral controls, and intent to use HPS?
- Which factors are the most important in explaining intent to use HPS: Attitudes? Subjective norms? Perceived behavioral controls?

Definition of Terms

Human patient simulation (HPS) has been defined in several ways in the literature. Jeffries (2005) defined simulation as activities that are designed to mimic a real clinical environment for demonstrating procedures, decision-making, and critical thinking. HPS is further defined as the use of the latest state-of-the-art simulation technology with a sophisticated computer interface allowing students to experience scenarios involving numerous pathologies and responses to a variety of treatments in a realistic clinical setting to improve skills, knowledge, and critical thinking (Bremner, Aduddell, Bennett, & VanGeest, 2006). However, Founds et al. (2011) noted that high-fidelity simulation is "a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate

substantial aspects of the real world in a fully interactive fashion" (p. 5). For this capstone project, HPS was defined as the use of high-fidelity simulation technology as a technique to allow students the opportunity to improve their skills, knowledge, and clinical judgment with the use of scenarios involving various pathologies and responses to treatments in a realistic clinical setting.

The independent variables for this capstone project were attitudes, subjective norms, and perceived behavioral controls related to HPS use. The dependent variable was intent to use HPS. The operational definition of faculty perception was the average of the scores on the independent and dependent variables of attitudes, subjective norms, perceived behavioral controls and intent to use HPS. A pre-intervention survey tool developed by King et al. (2008), was utilized to capture the capstone project variables before participants attended an educational intervention. The educational intervention was developed based on the phase I survey results of the independent and dependent variables. This educational intervention included a classroom learning session on developing a scenario based on course objectives, facilitating a debriefing of students, and preparing the simulation facility for realism, along with hands-on practice in the simulation lab to familiarize the subjects with the use of the HPS equipment. A post-intervention survey tool developed by King et al., (2008), similar to the pre-intervention survey tool used in phase I, was used to gather data on the variables to gauge intended use of HPS in their courses in the future.

The independent variable of attitudes related to HPS use assessed in this capstone project should determine whether the use of HPS is deemed favorable or unfavorable (King et al., 2008). The attitudes that were measured in this capstone project included,

application of HPS, comfort of the faculty using HPS, competence of the faculty using HPS, effectiveness of HPS in nursing education, and does HPS provide a realistic clinical experience. The independent variable subjective norm (SN) is described as the influence a person experiences from their perception of the desire of others to display or use the behavior in question. For this capstone project, SN was the perceived influence from School of Nursing administration, peers, or students on whether to use HPS or not. The independent variable perceived behavioral control (PBC) was defined as the educator's perception of the amount of difficulty or ease in performing HPS in nursing education (King et al., 2008). The PBC explored in this capstone project included experience with HPS, preparation time for HPS, ease of using HPS as a teaching tool, and has the participant received training or education (or not) of the use of HPS.

Summary

This capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, assesses faculty perceptions related to the use of HPS in a prelicensure nursing program. An educational intervention was used with the goal of improving these faculty perceptions and their intent to use HPS to meet the challenges facing nursing education today. Academia has been challenged to transform nursing education to meet the needs of today's nursing student. This challenge requires nurse educators to think "out-of-the-box" to implement new technology and teaching styles which enhance skill acquisition, knowledge, and clinical judgment. HPS is an innovative teaching tool to meet these needs. However, nurse educators have been slow to incorporate this new technology in their teaching arsenal. Identified perceptions of increased preparation time, insufficient knowledge, and a lack of experience are reasons

given for this delay. An educational intervention was demonstrated by King et al. (2008) as a positive method to address these concerns. The attitudes, SN, and PBC that impact the intent of nurse educators to use HPS and use of the Nursing Education Simulation Framework (Jeffries & Rogers, 2007) will provide the basis for education, competence, and familiarization with HPS that should improve the intent to use HPS. The use of an educational workshop, as provided in this capstone project, may be one method of increasing the integration of simulation in a nursing curriculum and increasing HPS use in nursing education. Exploring the use of an educational workshop will assist in providing additional knowledge of HPS use and fill the knowledge gap and assist in filling

CHAPTER II

Research Based Evidence

Nursing education has been challenged to re-think clinical education to incorporate innovative teaching strategies that facilitate practice development and preparation for entry into today's healthcare environment (National League for Nursing, 2003; National Council of State Boards of Nursing, 2005). While nursing educators have frequently sought new teaching strategies to assist students in developing the skills and knowledge necessary to become competent nurses, these influences require nurse educators to think "outside the box" for innovative educational methods which will meet the needs of today's nursing student. Human patient simulation (HPS) is an innovative method to meet these new challenges. HPS consists of life-sized mannequins that contain a sophisticated computer interface to facilitate patient scenarios with numerous physiological changes and treatment responses in a realistic and interactive scenario to assist with the development of skills, knowledge, and clinical judgment (Bremner et al., 2006). Many nursing faculty are unprepared to integrate HPS in the curriculum, thus creating the need for an effective method for preparing nurse educators for this technology intensive, teaching strategy (Jeffries, 2008). The purpose of this capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, was to identify faculty perceptions of the use of HPS and the effect of an educational intervention on these perceptions. The literature review demonstrated a significant gap with a limited number of published studies related to faculty perceptions of HPS use and their view of the importance of HPS in nursing education. To widen the understanding of the importance of HPS use in nursing education, the literature review

for this capstone project explored the use of HPS in nursing education, and both the student and faculty perceptions of HPS, going from a broad overview, then focusing down on the central theme for this capstone project.

Review of Literature

An integrated search was completed using the 14 medical, health, and nursing computer databases, including CINAHL, Consumer Health Complete, Healthsource, PubMed, Medline and other sources, available from the Dover Library at Gardner-Webb University. The Academic Premier Search computer database was also utilized from the Western Carolina University library. The search terms "simulation in nursing education," "faculty perceptions," "faculty development," and "student benefits" were used in various combinations to retrieve appropriate articles. One article related to general use of gaming and simulation by faculty in education was noted. Five articles on nurse educator perceptions of HPS and implementation of this teaching strategy were retrieved. Due to the limited number of published studies discovered related to faculty perception, the search was expanded to include articles related to the importance of HPS and student perceptions to provide support for the use of HPS in nursing education. Nine non-research articles assist in emphasizing the importance of HPS in nursing education. A multitude of research studies describe the benefits of HPS for nursing students and their perspectives of HPS, however since the use of studies for this literature review is to provide support for HPS as a basis for exploring faculty perceptions, only six studies are presented which represent the overall concepts found in the studies available. Support for the use of HPS in nursing education will be addressed first in this literature review, with a review of the literature noting the importance of HPS and student perceptions of HPS.

The studies related to faculty perception will be presented last as they are directly related to the purpose of this capstone project and the identified knowledge gap in the literature.

Use of Human Patient Simulation in Nursing Education

Nursing education has used simulation in various forms for many years (Nehring & Lashley, 2010). Originally, anatomically correct models called task-trainers, provided for skill development, such as urinary catheter insertion. Then, life-sized articulated mannequins provided students the opportunity for more skill development with injection sites in the arm for medication administration, and an internal device for procedures involving the rectum and urethra. Low-fidelity simulators were the next teaching strategies introduced. These models allowed students to auscultate breath and heart sounds, but were still less realistic than the currently used high-fidelity human patient simulators. High-fidelity simulation in nursing education today provides realistic patient situations using computerized, life-sized, interactive mannequins to develop skills, knowledge, and clinical judgment. HPS can supplement experiences allowing the educator to meet curriculum objectives even when patient experiences in the traditional clinical setting might not readily exist in the frequency needed to provide for the entire student group (Founds et al., 2011). Simulation also allows students the opportunity to practice high-risk patient care without the liability of risk of injury to a real-life patient (Parker & Myrick, 2009; Founds et al., 2011).

The use of HPS to teach psychomotor skills and critical thinking to nursing students has increased due to cost-containment concerns, faculty shortages, diminishing clinical site availability, increased patient acuity, nursing interventions which require better prepared nursing graduates, and employer demands for new graduates who can

transition quickly into the nurse role (Jeffries, 2005; Feingold et al., 2004). Even with these challenges, nursing students need the opportunity to confront situations similar to those they will undoubtedly encounter in their future nursing practice (Bambini, Washburn, & Perkins, 2009; Jeffries, 2005). Simulation has become an important educational modality in nursing education requiring nurse educators to familiarize themselves with this pedagogy to meet the needs of nursing students today and in the future.

Student Benefits and Perceptions

Carlson (2005) discusses the "net generation" as college students who have grown up on technology. He described these students as multitasking individuals who are technologically advanced, easily bored, and prefer their learning experiences to be interactive, hands-on, in a collaborative group setting (Carlson, 2005). These students are smart, but impatient expecting results immediately. Students from the net generation have a desire to learn, but they often prefer to learn by doing. Simulation provides a realistic, interactive teaching strategy to meet the learning needs of this group as outlined in the following studies. The six studies related to student perception provided substantial support for the use of HPS in nursing education. The studies demonstrated that students benefit from simulation with improved self-confidence, competence, clinical judgment, and the ability to integrate knowledge and skills into clinical practice (Bambini et al., 2009; Blum, Borglund, & Parcells, 2010; Dillard et al., 2009; Feingold et al., 2004; Lasater, 2007b; Smith & Roehrs, 2009).

In a quasi-experimental study, 65 junior Bachelor of Nursing (BSN) students over two consecutive semesters in an adult health course completed post-simulation

surveys revealing that 92% of students agreed that simulation was a valuable learning tool, and 85% believed it was a realistic experience (Feingold et al., 2004). However, only 50% of the students believed education from the experience could be transferred to an actual clinical setting. A limitation noted by the researchers was the absence of a comparison between the simulation grade and the student's clinical grade, which may have assisted in determining the transferability of skills and knowledge from simulation to the clinical setting (Feingold et al., 2004).

Self-confidence, clinical judgment, and satisfaction are additional benefits and perspectives identified in several research studies. Bambini et al. (2009) examined communication, self-confidence, and clinical judgment in their quasi-experimental research study with 112 first semester BSN students. This study demonstrated a statistically significant improvement of confidence in skills as measured by a mixed quantitative and qualitative pre-test and post-test (Bambini et al., 2009). The qualitative data determined three themes identified by students as positive aspects of the simulation: communication, confidence, and clinical judgment. Limitations described by the researchers, included potential for social-response bias with the self-reported data, self-selection for participation by subjects, and limited simulation experience of the nurse educators. The researchers concluded from this study that simulation can be effective in improving student self-confidence, communication, and clinical judgment in the clinical setting (Bambini et al., 2009).

Smith and Roehrs (2009) explored self-confidence and satisfaction in their descriptive, correlational designed study with 68 BSN students in their first medical-surgical course during their junior year. Data were collected using a researcher-designed

demographic instrument and two Likert-style instruments from the National League for Nursing (NLN), the Student Satisfaction, and Self-Confidence in Learning Scale and the Simulation Design Scale. Both NLN instruments demonstrated good reliability as measured by Cronbach's alphas in previous studies. The nursing students indicated on a scale with five ratings they were satisfied with simulation as a learning modality (M= 4.5) and confident in their ability to care for a patient (M=4.2). The researchers also examined the design of the simulation and determined there were no strong correlations between design characteristics and the student self-assessed levels of satisfaction and self-confidence. The need for further study with a larger, more diversified population assessed over multiple learning simulations was identified. Smith and Roehers (2009) also recognized that self-assessment data were not an objective measure.

In a quasi-experimental, quantitative study by Blum et al. (2010) self-confidence and competence were examined with 53 BSN students in their junior year using Lasater's Clinical Judgment Rubric (2007a). A control group (N=16) demonstrated clinical skills with traditional task-trainers, while the experimental group (N= 37) demonstrated the same clinical skills in a high-fidelity HPS setting (Blum et al., 2010). This study compared traditional task-trainers and HPS in developing nursing student self-confidence and competence. No statistically significant differences in the improvement of self-confidence or competence were identified between the two groups. One positive hypothesis from the researchers is that self-confidence and competence may be increased when a HPS environment, which is moderately stressful, serves to decrease their fears of failure that could be present in a live patient situation (Blum et al., 2010). One limitation identified by the researchers was that each group was expected to demonstrate the skills

safely regardless of the teaching strategy, which may have biased results. Additionally, the groups were small, homogeneous, with a mean age of 30 years indicating a high maturity level. Based on this study, the researchers suggested simulation may be better integrated into the nursing curriculum in later semesters, as advanced students are better equipped to integrate complex factors and processes in the simulation situations.

Dillard et al. (2009) explored student clinical judgment in their study with 68 BSN students in an adult health course during their junior year. This study also contained a faculty development aspect that will be presented in the following section. Faculty participated in a workshop to learn Tanner's Model of Clinical Judgment (2006) and Lasater's Clinical Judgment Rubric (2007a) which was used for data collection with this study. The rubric uses dimensions of noticing, interpreting, responding, and reflecting; with advancing levels of competence in each dimension. Student self-assessment demonstrated a comprehension of the skills and the development of clinical judgment as a positive outcome of the simulation experience (Dillard et al., 2009). The researchers noted that most students indicated they "got the concepts" (p.103) during the simulation, and that the written reflections of the simulation scenarios by the students allowed the researchers also to identify clinical judgment ability, which was another positive outcome of the study (Dillard et al., 2009). Although no limitations were identified by the researchers, this author notes the study had a small population.

The final study on student perspectives was a qualitative study with 15 non-traditional BSN students in an acute care adult nursing course during their junior year (Lasater, 2007b). Using a focus group approach with several predetermined questions as prompts for data collection immediately following the simulation, Lasater (2007b)

discovered three strengths of simulation from the student's perspective. The first strength was that simulation served as an integrator of learning by bringing together the theoretical knowledge from class settings, the psychomotor skills from lab settings, and lessons learned from clinical settings in one place, the simulation experience. The second strength was the opportunity to experience patient situations that are not readily available in their clinical setting. The final strength students identified was that scenarios forced them to anticipate what could happen with the patient situation, which assisted with developing clinical judgment. Lasater (2007b) also noted that students identified several points that are considered limitations to simulation, which included the human patient simulator always having a female voice as the faculty were all female; the simulator had no visual, nonverbal communication, such as facial grimaces to pain; and some aspects of assessment were not possible, such as eliciting reflexes. Student perspectives on their feelings during the simulation experience were also identified. The focus group members described aspects of simulation that increased their awareness during patient care, such as anxiety (Lasater, 2007b). The students acknowledged that "although it seemed real and 'you could really mess up' in the simulation laboratory, 'you know Sim Man® wasn't going to die' affirming the low-risk nature of simulation" (p. 273) as an important factor which assisted with learning. Students also identified feelings of self-insufficiency, noted by the comment "felt like an idiot" (p. 273), which was expressed by several students. Despite these points, students did note the benefit of simulation to promote clinical judgment as described by one participant who stated "the experiences where I messed up, I learned the most" (p. 273). One unexpected theme expressed by students was the desire for more definitive and straightforward feedback from the simulation faculty rather than

only supportive, positive feedback. For example, they wanted to know the severity of a patient outcome if the mistakes in judgment they made in simulation happened in reality. One student verbalized this as "I would have benefited from knowing the shortcomings of my choices" (p. 274). These strengths and limitations of simulation, along with the students' perspectives assist in faculty development of simulation and highlight the importance of debriefing following a simulation experience. Limitations identified by the researcher were the lack of cultural and ethnic diversity of the participants, and the lack of connecting the clinical performance of the students in simulation with their performance in real clinical settings.

Each of these research studies demonstrates the importance of simulation for nursing students. The perception of improved self-confidence, transference to clinical practice, and satisfaction, all indicate a positive aspect of simulation. The improvement in competence with clinical skills and clinical judgment are important outcomes that benefit the nursing student as they transition into the role of professional nurse.

Faculty Perceptions Regarding Simulation

The degree to which faculty embraces this teaching strategy or cling to their age old strategies may be impacted by their perceptions regarding simulation. While many research studies have been conducted on the student perspective, few studies explore the faculty perceptions, which are a very important component of whether or not HPS is utilized (Akhtar-Danesh, Baxter, Valaitis, Stanyon, & Sproul, 2009). A review of the literature on faculty perceptions yielded a mixture of six qualitative and quantitative studies. One study explored faculty use of games and simulation, but not specifically HPS. One qualitative study explored faculty viewpoints of HPS. Two studies addressed

faculty perceptions as an adjunct to their study of student perceptions. Two studies incorporated an educational component related to HPS, with one study determining effect on the faculty participants' ability to evaluate student outcomes with HPS and the other study determining effect on faculty perceptions. Overall, only two studies solely focused on faculty perceptions of HPS use in nursing education, which is an identified knowledge gap in the literature.

Lean et al. (2007) explored the use and perceived barriers of simulation and games in higher education. A researcher-developed questionnaire was distributed to six facilities of higher education across all areas of health care education, which resulted in 158 participants. The survey revealed that a large number of educators (58.3%) either currently or have previously used role-playing as a teaching strategy, however very few currently use or have used training simulations (6.5% and 4.5%, respectively). Two important barriers to using simulation and games were identified, namely the limited time for development of these tools (32.6% strongly agree and 48.6% agree this is a barrier) and the limited support available, either technical or administrative, for new teaching methods (22.1% strongly agree and 42.1% agree this is a barrier). While 963 surveys were distributed, the 16.4% response rate and the possibility of response bias are considered limitations of the study by the researchers.

Akhtar-Danesh et al. (2009) focused their study on nurse faculty perceptions of simulation in nursing education. Using the Q-methodology technique, a qualitative method of identifying unique viewpoints, as well as commonly shared views, common viewpoints were determined in a sample of 28 faculty members from 17 schools of nursing in Ontario, Canada. Four major viewpoints were revealed and labeled Positive

Enthusiasts, Supporters, Traditionalists, and Help Seekers. Nine faculty members were positive enthusiasts, which reflect that simulation has great potential to support nursing education and increase the value of learning in the clinical setting, while disagreeing that limitations on space and equipment in the simulation lab make it difficult to schedule and simulate the clinical experience. Five faculty members were supporters who believe that simulation is valuable, especially for the first year student who is unacquainted with the clinical setting, as it assists in adaptation when students go to the real clinical site with some prior experience in simulation. Seven faculty members were placed in the traditionalist viewpoint of believing simulation can enhance learning, but can never replace the clinical setting, and that simulation does not assist in preparing students to communicate with patients nor prepare them for community health practice. The final viewpoint was that of the three help seekers who noted they need more education on simulation and additional resources to fully integrate simulation into their curriculum. They also believe simulation is time-intensive for faculty, which is not allotted into their workload. Overall, the researchers believe the results demonstrate a supportive view of simulation as a valuable teaching strategy to support learning, but schools of nursing will likely have a mixture of faculty viewpoints which can be seen as positive or as a barrier to simulation use by nursing faculty (Akhtar-Danesh et al., 2009). Limitations noted by the researchers include small sample size and homogeneity of location, and that all schools in the sample had received their simulation equipment only two to three years before the study, which limited faculty experience with simulation.

One study incorporated an exploration of faculty perspectives during a study of student perspectives. In a non-experimental pilot project by Kardong-Edgren et al.

(2008), faculty perceptions of the simulation implementation process were investigated. Seven female and one male faculty members involved in the first clinical course in a BSN program agreed to participate. They used the Jeffries Framework (2005) to develop three progressive scenarios for use in this study over the course of the semester (Kardong-Edgren et al., 2008). Faculty used a feedback form after each simulation experience from which three general themes were generated, specifically that simulation provided a creative, interactive environment for education, repetition is available in simulation to facilitate retention of skills, as well as cognitive reasoning and critical-thinking, but that additional time and coordination is required for simulation. An additional concern, identified as extremely difficult by the faculty, was the ability to be the voice of the patient, manage the mannequin, and appropriately track student actions for debriefing simultaneously. Although there were mixed responses from the faculty, overall they were highly satisfied with simulation and felt their skills with simulation improved throughout the semester. Limitations to this study were the small number of faculty participants and several novice simulation faculty members running their own scenarios (Kardong-Edgren et al., 2008).

Feingold et al. (2004) included faculty perspectives as part of their study described previously. Four faculty members participated in the simulation experiences as part of the study and provided feedback based on a researcher-developed survey of their perspectives on simulation. The faculty members noted they believed simulation provided a realistic, transferable, and valuable learning opportunity for student, but that it also required more preparation time than traditional clinical experiences, including developing appropriate scenarios, and setting up the simulation area for realistic effect.

They believed the assistance of a full-time simulation support nurse would increase the use of high-fidelity simulation.

Two studies focused exclusively on the faculty role in simulation. One study by Dillard et al. (2009) provided a faculty workshop during their study, with a goal of evaluating whether this developmental activity was effective in teaching faculty how to assess a student's clinical judgment during simulation. The workshop included an explanation of Tanner's Clinical Judgment Model (2006) and Lasater's Clinical Judgment Rubric (2007a), along with practice using the rubric in simulation evaluations (Dillard et al., 2009). Sixteen faculty members participated in the workshop and a post-workshop survey from which the researchers concluded the workshop was a positive experience for developing understanding and skill acquisition of the model and rubric by the faculty.

The second study on faculty development is the model for this proposed project. In this study, King et al. (2008) addressed limited use of simulation by nurse educators. This study consisted of two phases. In the first phase of the study, conducted pre-intervention, 34 Associate Degree in Nursing faculty members in a large southeastern community college volunteered to complete a researcher-developed Likert-type survey adapted from Feingold et al.'s survey (2004). The study was based on the Theory of Planned Behavior framework consisting of three variables, which are attitudes, subjective norms, and perceived behavioral control. The researchers were interested in items with mean scores less than 4.0, which correspond to less than "agrees with." The results from phase one indicated that attitude related to simulation use by the participants was not positive with a mean score of 3.9. Specific attitude items determined below the 4.0 level

were “fits well into courses taught,” “comfort using,” and “competent using” (p.7). The subjective norms were identified as three groups that are potentially influential on a faculty member’s decision to use or not use simulation as determined by ranking the influence on a 1-5 point scale. These groups were the College of Nursing (CON) administrators, other faculty members, and students. The faculty acknowledged an influence from the CON administrators (82%, M=4.2), other faculty (45%, M=3.7), and students (42%, M=3.6) on their desire to use simulation. Of these three groups, faculty expressed that student opinions were most important to them (100%, M=4.6). In the perceived behavioral control variable, faculty’s intent to use HPS as a teaching tool was positive (M=4.3), but specific items noted below the 4.0 level were “using the HPS requires a lot of extra prep time,” “the amount of time to be proficient in using HPS exceeds its educational effectiveness,” and “HPS is easy to use” (p.7). Of note is that 62% had no prior experience with HPS and 73% had never received education on the use of HPS, which the researchers believed contributed to the study results.

The researchers used the items with a low mean score from phase one to develop an educational program as an intervention. The educational program consisted of the history of simulation in nursing education, examples of implementing HPS in theory or clinical course work, strategies for structuring a six hour clinical experience, and a discussion on reflective debriefing. Faculty assumed the “student role” for a hands-on HPS scenario experience including preparation time for this role and demonstrated reflective debriefing of an HPS scenario. The educational program was limited to the first 16 faculty to register for the program, who then became the participants for phase two. This group of participants completed the same survey both pre- and post-

intervention. In the pre-intervention survey, responses were similar to the phase one survey, however all the responses showed statistically significant improvement on all three variables in the post-intervention survey. The researchers believe the positive effects of phase two are directly related to the intervention based on the phase one assessment. Limitations identified by the researchers include small sample size, use of a researcher-developed instrument, and an assumption by the researchers that all participants had a familiarity with HPS since the participants' schools had HPS for over a decade (King et al., 2008).

Faculty perspectives play an important role in the use or non-use of HPS in nursing education. One key point noted in many of the studies is the additional time required to develop and provide simulation experiences as compared to traditional clinical experiences. This can be an extreme barrier for many faculty members in light of today's nurse educator shortages and increased workloads. As evidenced by King et al. (2008), education can improve faculty perspectives and reduce the barriers which limit the use of simulation in nursing education.

Conclusion

This capstone project focused on faculty perceptions of HPS. The study by King et al., (2008) served as the model for this capstone project to evaluate the effects of an education intervention on faculty perceptions of HPS. A review of the literature about the general use of HPS in nursing education, student perceptions of HPS, and exploration of faculty perceptions provided support for this capstone project.

Nursing education is changing in response to the influences of our changing healthcare system (National League for Nursing, 2003; National Council of State Boards

of Nursing, 2005). New graduates are expected to be prepared to provide safe, high quality patient care for more acutely ill patients in a shorter amount of time after graduation (Nehring & Lashley, 2010). They are expected to "hit the ground running" immediately after graduation with minimal transition time. Despite the nurse educator shortage, decreasing clinical sites, and growing profession, students still need the opportunity to learn the skills needed to confront the challenges that face the nurse of tomorrow (Bambini et al., 2009; Jeffries, 2005). Simulation provides the teaching strategy needed to meet those needs and to supplement clinical experiences that often can't be obtained in the traditional clinical setting (Founds et al., 2011). The importance of simulation has been noted by Jeffries (2005), Feingold et al. (2004), Parker and Myrick (2009), and Founds et al. (2011) to facilitate skill acquisition, clinical competence, and clinical judgment in a low-risk clinical setting. The students' benefits from simulation were noted as improved self-confidence, competence, clinical judgment, and the ability to integrate knowledge and skills into clinical practice (Bambini et al., 2009; Blum et al., 2010; Dillard et al., 2009; Feingold et al., 2004; Lasater, 2007b; Smith & Roehrs, 2009). But, some nurse educators have been reluctant to explore simulation as a teaching strategy based on a lack of education about simulation, time limitations with developing a new teaching modality, and increased time required for preparation and set-up of simulation (Lean et al., 2007; Kardong-Edgren et al., 2008; Feingold et al., 2004; King et al., 2008). However, the use of an educational workshop can overcome some of the perceived barriers associated with simulation use (King et al., 2008; Dillard et al., 2009).

This review of the literature supported HPS as an appropriate and beneficial educational tool in nursing education. One study supported the use of an educational intervention to improve faculty perceptions and intent to use HPS as an educational tool. This study by King et al. (2008) served as a model for this capstone project.

Gaps in Literature

Literature is available which supports the student benefits, and identifies the student perspectives related to HPS. This review identified a knowledge gap related to faculty perspectives, perceived limitations, and methods to overcome these perceptions. There were only two studies found which are focused solely on faculty perceptions. Faculty must have a positive perception of HPS to incorporate this educational modality in their teaching methodology. The capstone project, modeled after the study by King et al. (2008), using an educational workshop for nurse educators on the best practices of simulation, to increase integration of simulation in a nursing curriculum is a step toward filling this knowledge gap.

Strengths and Limitations of Literature

While many research studies have been conducted on the student perspective, few studies explore the faculty perceptions, which are a very important component of whether or not HPS is utilized (Akhtar-Danesh et al., 2009). A review of the literature on faculty perceptions yielded a mixture of six qualitative and quantitative studies. One study explored faculty use of games and simulation. One qualitative study explored faculty viewpoints of HPS. Two studies addressed faculty perceptions as an adjunct to their study of student perceptions. Two studies incorporated an educational component related to HPS, with one study determining effect on the faculty participants' ability to evaluate

student outcomes with HPS and the other study determining effect on faculty perceptions. Overall, only two studies solely focused on faculty perceptions of HPS use in nursing education, which is an identified knowledge gap in the literature.

The determination of faculty perceptions related to HPS was a cursory focus in two studies, which were focusing on some student aspect, such as perception or benefits. Both had a small sample size of faculty participants and large number of student participants. Kardong-Edgren et al. (2008) surveyed only eight faculty members for their study, and Feingold et al. (2004) included four faculty members. In the study by Dillard et al. (2009) 16 faculty members were surveyed, however the focus of the study was the evaluation of the impact of the educational workshop on the effectiveness of teaching faculty how to assess a student's clinical judgment during simulation. Akhtar-Danesh et al. (2009) used a larger sample size with 28 faculty members from 17 schools of nursing, and King et al. (2008) included 34 faculty members for the pre-intervention survey, but only 16 faculty members in the post-intervention survey. However, these were the only two studies focused solely on faculty perceptions.

The literature contains only two studies focused uniquely on faculty perceptions, and only one study addressed the use of an educational intervention to improve these perceptions. With only one study in the literature, a replication of this study was a prudent choice to provide further evidence, and see if the same results occur with a different faculty group.

Theoretical Framework

Human patient simulation is increasingly being used in nursing education as a teaching tool (Feingold et al., 2004). As the use of HPS increases, so does the number of

nurse educators that utilize this technology. Unfortunately, some nurse educators are not embracing this new teaching modality. The Theory of Planned Behavior (TPB) provided the theoretical framework for this project (Ajzen, 1991). The TPB consists of three variables, which are suggested to predict an individual's intent to perform a specific behavior. The three variables identified by Ajzen (1991) are attitudes, subjective norms (SN), and perceived behavioral control (PBC). Ajzen (1991) described attitude as a person's evaluation or appraisal of the behavior, which could be favorable or unfavorable. Subjective norms are described as the influence a person experiences from their perception of the desire of others to display or use the behavior in question. Perceived behavioral control refers to the ease or difficulty of performing the specific behavior that is perceived by the individual. Ajzen (1991) noted that usually the person with a favorable attitude, SN, and PBC, has a stronger intention to perform the specific behavior. For this proposed project, the behavior in question is the intention to use HPS.

Jeffries and Rogers' (2007) Nursing Education Simulation Framework (NESF) provided a model for simulation design and planning. The educational intervention followed this framework for addressing faculty and student characteristics, student outcomes, and simulation design characteristics. The faculty members learned to evaluate the outcomes of the simulation experience based on this framework. Learning and using the NESF provided the education and experience needed to improve faculty participant perceptions of simulation and the ease of providing HPS. While not the theoretical framework for this capstone project, it provided an important model for the educational intervention. Figure 1 diagrams the Conceptual-Theoretical-Empirical

Structure for this proposed project. Figure 2 demonstrates the proposed project's conceptual model.

Figure 1. CTE

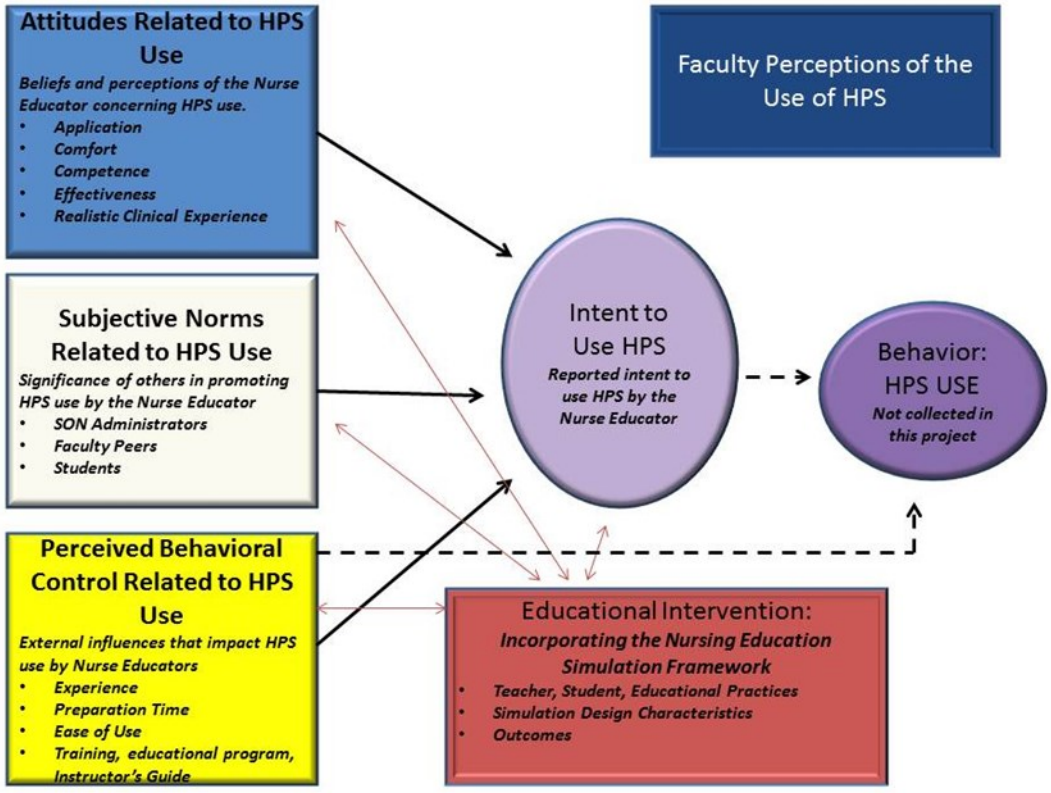

Figure 2. Conceptual Model based on the Theory of Planned Behavior

Summary

This capstone project focused on faculty perspectives of human patient simulation, and the use of an educational intervention to impact these perspectives. A review of the literature included a general use of HPS in nursing education, student perceptions of HPS, and an exploration of faculty perspectives. The limited studies related to faculty perspectives provided support for this capstone project to expand the information in this identified knowledge gap. This capstone project, modeled after the study by King et al. (2008), used an educational workshop for nurse educators on the best practices of simulation to increase intent to use simulation as a teaching modality is a step toward filling this knowledge gap.

CHAPTER III

Project Description

Nurse educators have been challenged to re-think clinical education to incorporate innovative teaching strategies that facilitate development and preparation for entry into today's healthcare environment (National Council of State Boards of Nursing, 2005; National League for Nursing, 2003). Nursing education has used simulation in various forms for many years (Nehring & Lashley, 2010) and human patient simulation (HPS) is the most recent form of simulation that nursing has embraced to meet this challenge. However, many nurse educators have been hesitant to incorporate this innovative strategy into their teaching activities. Faculty perceptions include a lack of faculty time and a shortage of technical expertise in the use of HPS in nursing education as identified by Nehring and Lashley (2010). These perceptions have led to an underutilization of HPS as a teaching tool in nursing education. This capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, focused on faculty perspectives of HPS, intent to use HPS, and the use of an educational intervention to impact these perspectives and intent to use.

Project Implementation

A quasi-experimental design with a one group pre and post-test structure was utilized in this capstone project. The purpose of this capstone project design was to evaluate the impact of an educational intervention on the attitudes, subjective norms, perceived behavioral control, and intent to use HPS by faculty. Faculty members received an online pre-intervention survey prior to an educational intervention, which assessed their attitudes, subjective norms, perceived behavioral controls, and intent to use

HPS. It also explored the components of an educational intervention that the participants felt would be beneficial. Using the results of this survey, an educational intervention was developed to include evidence-based practice and theory. The educational intervention was approved for continuing educational units to be provided to the participants. After the educational intervention, the faculty participants received an online post-intervention survey to assess their attitudes, subjective norms, perceived behavioral controls, and intent to use HPS. This data was analyzed with a comparison between the pre-intervention and post-intervention results.

Setting

This capstone project was conducted at a state university in the southeast. The university is located in a small town in a rural area. The university had just completed construction on a new health education building, which houses the School of Nursing and other health sciences departments. The new building includes a new simulation lab designed with a four bed critical care simulation room with control room, a 10 bed skills laboratory, and appropriate storage facilities and nursing stations. The educational intervention was provided in the new simulation lab utilizing the simulation equipment that was already present or newly purchased. All traditional prelicensure Bachelor of Science in Nursing (BSN) courses will be held in this new facility on the major campus of the university. Accelerated prelicensure BSN courses will be conducted at a newly renovated satellite campus, and will include a four bed simulation room with one high-fidelity simulator and three medium-fidelity simulators. Both campuses have had simulation laboratories since 2005.

The nursing prelicensure BSN program consists of two program tracks, a traditional and an accelerated program with a total enrollment of 220 students and 16 full-time faculty members. Student to faculty ratio in both the traditional and accelerated undergraduate prelicensure BSN is approximately 10:1 for clinical activities. The traditional prelicensure program is designed with students completing the first two years of their baccalaureate degree with the required university courses and pre-requisite courses for the School of Nursing. The last two years incorporate a progressive curriculum of courses leading to the BSN degree. The accelerated prelicensure program is specifically designed for students who already have a bachelor degree in another field and have completed the pre-requisite courses for the School of Nursing. This program follows the same curriculum as the traditional program, but the time-frame is greatly reduced to allow the program to be completed in 12 months.

Sample

A self-selected convenience sample was used and included undergraduate faculty in the traditional and accelerated prelicensure BSN program employed in the spring and fall semesters of 2012. All faculty members have a minimal educational level of a master's degree in nursing as required by the university. Inclusion criteria included all current faculty members of the School of Nursing who were assigned teaching duties in the prelicensure BSN program, which includes both the traditional BSN program and the accelerated BSN program. Since the project data collection time occurred during two separate academic years, there were faculty members that participated in the pre-intervention survey who were no longer employed by the university when the educational intervention and post-intervention survey were completed. The data from these

participants are included with the pre-intervention report and was used to develop the educational intervention. New faculty members who joined prior to the educational intervention were given the opportunity to participate by completing the pre-intervention survey prior to the educational intervention and complete the remaining data collection with the other participants. There were seven participants who completed both the pre-intervention survey and post-intervention survey that were matched through unique identifier. There were five participants that completed the pre-intervention survey, but were unable to be matched with a corresponding post-intervention survey. There were also five participants that completed the post-intervention survey that were unable to be matched with a corresponding pre-intervention survey. Power analysis using the power and sample size java applet (Lenth, 2009) determined a power of .20 with seven paired samples, and a total power of .35 with a total of 12 participants.

Project Design

This capstone project was a quasi-experimental design with a one group pre and post-test. The purpose of this capstone project design was to evaluate the impact of an educational intervention on the attitudes, subjective norms, perceived behavioral control, and intent to use HPS by faculty. This design allowed comparison of the participants' perceptions before the educational intervention and their perceptions after the educational intervention, which determines the effect of an educational intervention on the faculty perceptions of simulation.

Approval from the Institutional Review Boards and permission from the director of the School of Nursing were obtained for the capstone project near the completion of the spring semester. All written documents used for the capstone project were provided

during the approval process. Once approvals were obtained, the capstone project was presented to undergraduate faculty members of the School of Nursing during a monthly faculty meeting. The presentation included distribution of the informed consent, anticipated risks and benefits, an overview of the educational intervention program, and the opportunity for faculty to ask questions and explore the possibility of participating. Email addresses for faculty were verified during the meeting. The Faculty Attitudes and Intent to Use Related to the Human Patient Simulator survey (King et al., 2008) was used with permission of the developer and prepared in a web-based version using Qualtrics for administration. Following the faculty meeting, all undergraduate prelicensure faculty members were sent a link to the web-based version of the pre-intervention instrument via email to elicit participation. The email included informed consent and completion of the instrument using the online Qualtrics program verified intent to participate. The pre-intervention survey was available for five weeks, which occurred over the final month of the semester and one week into the summer session. Reminder emails were sent which included the web-based survey link and the informed consent form at weeks three and five. After the allotted collection time, the data from the pre-intervention surveys was reviewed and analyzed to determine attitudes, subjective norms, perceived behavioral controls, and intent to use HPS as a teaching modality. The pre-intervention survey also contained six open-ended items related to the salient beliefs of HPS held by the participants and one additional item for any comments. An eight-hour educational intervention program was developed using the information obtained from the survey data over a two month period between the spring and fall semesters. This educational intervention was based on the Nursing Education Simulation Framework (Jeffries, 2005)

and in coordination with an expert in simulation, this project administrator's clinical preceptor. As some faculty members had no experience with HPS, an introductory section on HPS was planned to begin the educational intervention program. Additionally, the educational intervention program contained an introduction to Jeffries and Rogers' (2007) Nursing Education Simulation Framework. This framework provided a model for simulation design and planning. Further components in the educational intervention program included time for the participants to develop a HPS for use in the upcoming semester, demonstrations and interactive participation in setting up the HPS mannequin, and a realistic practice setting. Reflective debriefing methods were discussed by the project administrator.

The educational intervention program was provided to the participants during the week prior to the beginning of classes for the fall semester. This educational intervention program was provided in the participants' new simulation laboratory using their equipment to facilitate familiarization. After the educational intervention program was completed the post-intervention instrument was sent as a link to the web-based Qualtrics site via email to the participants. The participants were given six weeks to complete the post-intervention survey. The extended time was provided since this occurred over the beginning of the semester when faculty members are typically busy. After all post-intervention data were obtained; statistical analysis, including inferential and descriptive methods, was completed using the Statiscal Package for the Social Sciences (SPSS) statistical program. Composite scores for the TPB constructs (attitude, SN, PBC, and intent) were calculated. This analysis occurred over two months with the written report being completed over the next two months.

Protection of Human Subjects

To promote compliance with legal and ethical regulations when conducting research projects, this project administrator completed Collaborative Institutional Training Initiative (CITI) training. An informed consent form; found in Appendix A, was provided to participants both during the recruitment and each time a reminder email was sent containing the link for the online surveys. The informed consent form contained the purpose of the project, an estimated time of 15 minutes for survey completion, an example of the types of questions contained on the survey, an assurance that questions may be skipped in the survey if desired, information about the educational intervention and the post-intervention survey. Additional information provided on the informed consent form included benefits of the project, an explanation of the lack of risk or discomforts, an assurance of confidentiality, and that the participant could withdraw from the capstone project at any point. Contact information for the program administrator, faculty chair, and the Institutional Review Board chair were provided to the potential participant. Consent to participate was conveyed by clicking on the link to the online survey and completing the survey. Faculty responded anonymously with a self-selected identification number known only to the participant on the online survey to facilitate survey analytical comparison. Participant responses were stored on the Qualtic's server for the duration of the proposed capstone project. Since these responses are anonymous, no identifying information is available. At completion of this capstone project, the survey and database will be erased from the server. No participants received compensation for participation. No evaluative information was provided to

administration concerning performance or responses. Dissemination of results will provide only aggregate data, with no individual unique identifies provided.

Instruments

The Faculty Attitudes and Intent to Use Related to the Human Patient Simulator is a survey developed by King et al. (2008) that was utilized for this capstone project. Permission for use of this instrument was obtained via email communication from the developer and is included as Appendix B. This instrument was utilized in the study this capstone project is replicating. The developer noted that content validity for the instrument was provided by two expert reviewers. Reliability was determined with Cronbach's alpha for this instrument with scores of .56 to .82 with pre-intervention and post-intervention appropriately. The researchers determined these results acceptable considering the small sample size and explorative nature of their study (King et al., 2008). The instrument contained 23 items on the pre-intervention survey, found in Appendix C, related to attitude, subjective norms, perceived behavioral control, and intent to use HPS and 24 items on the post-intervention survey found in Appendix D. The extra question on the post-intervention survey explored any change in attitude based on the educational intervention. Demographic information was also included with the pre-intervention instrument which determined participant familiarization with HPS including years of experience as nursing faculty, primary area of clinical expertise, full-time or part-time employment as faculty, simulation training both hands-on and educational programs, if simulation has been used by the faculty member, and if so, how many times in the last academic year.

Twenty-two of the items are measured using a Likert-type scale from 1 (*strongly disagree*) through 5 (*strongly agree*). The twenty-third item rates the participant's intent to use HPS as a teaching tool on a scale of 0 (*definitely not use*) to 10 (*definitely use*). Each item in the instrument was calculated with a mean score based on the responses from the participants. This mean was used for descriptive and inferential statistical analysis. Six open-ended questions were included to gather data on salient beliefs about HPS and any additional comments.

Data Collection

The instrument, The Faculty Attitudes and Intent to Use Related to the Human Patient Simulator, contained 24 items on the pre-survey related to attitude, subjective norms, perceived behavioral control, and intent to use HPS and25 items on the post-intervention survey. Each participant received the pre-intervention and post-intervention surveys via an email which included a link to the web-based version of the surveys. The participant used the supplied link to access the web-based version of the survey and completed the survey at their leisure. The project administrator sent the emails to all prospective participants, but the participant had to actively follow the link contained in the email to participate in the capstone project. By completing the survey, the participant verified consent to participate. Once the five week open period for data collection was completed, the project administrator accessed the web-based program, Qualtrics, to download the data in an SPSS database format from the pre-intervention survey. No identifiable data was retrieved, including Internet Protocol address.

After the educational intervention was provided, participants again received an email with a new link to the post-intervention survey, again web-based using the

Qualtrics program. Participants were given six weeks to participate in the post-intervention survey. Email reminders were sent at weeks two, four, and six by the project administrator. Again, the project administrator accessed the Qualtrics program after the data collection time was completed to download the data in an SPSS database format from the post-intervention survey. Data from the pre-intervention and post-intervention surveys were combined using a unique, self-provided identifier that was placed on each survey. The identifier was known only to the participant and could only be used by the project administrator to match pre-intervention with post-intervention surveys.

Data Analysis

The capstone project employed a descriptive design research method to explore faculty attitudes, subjective norms, perceived behavioral controls, and intent to use HPS. Data received from the pre-intervention and post-intervention instruments were entered into the SPSS statistical analysis program. The data were retrieved from the online survey program, Qualtrics, in a format to use in SPSS. The project administrator was responsible for entry of the data in the analysis program using the formatted data file. Coding for applicable questions was in a Likert-type scale. Demographic questions that required a selection between two answers, such as the yes or no questions, were coded with the number "0" for one response and "1" for the remaining response. Missing data from the instruments were entered in the SPSS program by leaving the data block vacant and statistical tests were programmed with instructions to address missing data for each analysis.

Qualitative analysis of data received from the pre-intervention survey was conducted using the methods described by Miles and Huberman (1994). The answers

provided to open-ended questions were compiled to determine salient beliefs. These beliefs were then classified based on the Theory of Planned Behavior component. These were used to determine content applicable for each component to be included in the educational intervention.

Initial analysis of survey data was completed using descriptive statistics (mean, standard deviation, and frequency) for demographic items on the instrument. Descriptive statistics were employed for item analysis to enable inferential statistical analysis. Attitudes, subjective norms, perceived behavioral controls, and intent to use HPS were determined based on those items receiving a mean score of four, with mean scores above four being seen as more agreeable than scores below three. This provided the answer to the first research question by identifying the attitudes, subjective norms, perceived behavioral controls, and the intent to use HPS for the participants prior to the educational intervention. Paired-sample t-tests were completed to determine if there was a significant difference in attitudes, subjective norms, perceived behavioral controls, and intent to use between the pre-intervention survey and the post-intervention survey. Significant differences at the $p < .05$ level were considered evidence of the effect of the educational intervention program. This provided the answer to the second research question determining effect of the educational intervention on the variables. For paired-sample t-tests, Cohen's d was calculated to determine effect size using the means and standard deviations. Effect size was determined as small, medium, or large based on the historical determinations of .20, .50, or .80 respectively. Since this was a small sample, the effect size desired is a minimum of .20. Multiple regression statistical analysis were utilized to

determine the answer for the third research question, which explored which factors were most important in determining intent to use HPS.

Bias was assumed in this capstone project based on the self-selection of participants, the small sample size, and the use of a convenience sample of faculty at one university. Since the focus of this capstone project was improving faculty perception of HPS use in nursing education, these biases were considered in the results reporting. Also, generalization of the results of this project will be difficult as the sample is nurse educators in a small, state university, which would have variability from a large, state university or private university.

Missing data were excluded from the analysis using the SPSS program options. Attrition of participants was addressed in the results reporting. Faculty members that joined the university during the summer break between the spring and fall semester were offered participation and received the pre-intervention instrument prior to participating in the educational intervention program. The attrition of participants during the project proposed timeframe was noted in the results reporting. This may have created a bias, but maintaining anonymity of the instruments did not allow for the removal of a participant's instrument after submission of the completed instrument.

Timeline

The timeline for this capstone project was March 2012 through January 2013. After the capstone project was presented at a faculty meeting in April 2012, faculty participants were emailed an electronic version of the survey tool via Qualtrics with five weeks allotted for completion. Analysis of the completed survey tool occurred during the months of June 2012. Based on the results of the pre-intervention survey, an educational

intervention was developed during the month of July 2012. The educational intervention occurred one week prior to the start of the fall semester in August 2012. The educational intervention was an eight-hour workshop comprised of both didactic and interactive components. An electronic post-intervention survey was distributed after the educational intervention to determine the effects of the educational intervention portion of the capstone project on the participants via Qualtrics with six weeks to complete. Results from the pre-intervention and the post-intervention surveys will be analyzed to determine any significant changes during October and November 2012. Further analysis and completion of the written results occurred in December 2012 and will be presented in January 2013.

Budget

Costs associated with this capstone project were minimal. The online survey program Qualtrics was used for survey data collection and had no associated costs. The project administrator used a personal, licensed copy of version 16 of the SPSS for analysis. The project administrator provided morning snacks for the participants with an expense of $86.00. Each participant received a USB flash drive with templates for designing simulations, debriefing instructions, and a copy of the presentation. Total expense for the flash drives was $120.00. Participants were responsible for their own lunch with directions to local establishments provided. Continuing education credits were provided for the participants free of charge through the educational facility. Total cost of this project was $206.00, which was paid by the project administrator.

Limitations

The capstone project followed the original proposal with minimal deviation. The amount of time allowed for completion of the pre-intervention and post-intervention surveys was expanded to promote increased participation. Email reminders were distributed to the participants with the link for the pre-intervention and post-intervention surveys, as appropriate, to facilitate participation by as many faculty members as possible. The email reminders were not addressed in the original proposal, but were beneficial in facilitating participation from the faculty members.

Summary

Simulation as an innovative teaching method has become increasing popular in nursing education. Faculty member perceptions of the use of HPS have led to underutilization of this teaching modality (Feingold et al., 2004; King et al., 2008; Nehring & Lashley, 2010). The capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project was a quasi-experimental project using a descriptive designed based on the study by King et al. (2008) with the purpose of improving faculty perception of and intent to use HPS in nursing education by use of an educational intervention program. Approval from the Institutional Review Boards of the appropriate institutions was received prior to initiation of this capstone project. The targeted population for this project was approximately 16 undergraduate prelicensure nurse educators in a state university. Faculty perceptions were evaluated prior to and upon completion of an educational intervention program. Statistical analysis was utilized to determine the effect of the educational intervention program on the faculty perceptions and intent to use HPS. Information obtained from the analysis of this capstone project

will be presented as recommendations in a written document form and submitted to the project administrator's educational facility for degree completion and to scholarly nursing journals for publication.

CHAPTER IV

Results

This capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, was conducted to identify attitudes, subjective norms, perceived behavioral controls, and intent to use human patient simulation by faculty in a prelicensure baccalaureate nursing program and developing an intervention program to address these concepts through education. This capstone project was a replication of the King et al. (2008) study with the goal of improving faculty perceptions and their intent to use HPS. This project was completed in two phases and will be reported with a combined sample, and the results of each phase.

Sample Characteristics

Phase 1 consisted of 12 faculty members with a range of years of experience in nursing education from one year to forty years (mean = 11.2, SD = 13) with the majority (n=8, 66%) above five years of experience. Most of the faculty members were full-time faculty (n=11, 91.7%), with one part-time faculty member participating. The participants come from a variety of backgrounds, including medical-surgical adult nursing, community health, mental health, pediatrics, and leadership, with the majority in medical-surgical adult nursing (n=8, 66.6%). Experience with HPS was varied, while the majority had not attended an educational program on simulation (n=7, 58%), the majority had received hands-on training using simulation (n=9, 75%). The participants have experience with HPS with majority of participants (n=10, 83%) identifying they have used HPS as a teaching tool previously. When participant was asked if they had used HPS in the last academic year the range was from zero times (n=4) to 30 times (n=1),

with the majority of participants (n=7, 70%) using HPS three times or less. These participants were familiar with HPS and had either used HPS or received education related to HPS.

Major Findings

Phase 1 Major Findings

The Theory of Planned Behavior (TPB) attributes of attitude, subjective norm, perceived behavioral control, and intent to use HPS, were measured through questions with a Likert type scale with values 1 (*strongly disagree*) through 5 (*strongly agree*). A composite mean score was calculated based on the questions related to each attribute. A mean score of 4.0 or higher was considered a positive finding, remaining consistent with the King et al. (2008) study. Table 1 reflects the composite mean scores for all of the TPB variables.

Table 1

Phase 1: Composite Mean Scores for the TPB Constructs

Faculty (n = 12)	Attitude	Subjective Norm	Perceived Behavioral Control	Intent to Use HPS
Composite Mean	3.98	3.61	3.61	7.82
Standard Deviation	0.53	0.43	0.76	2.60

Attitude. The attribute of attitude was determined by averaging the rank participants provided on eight questions which included their views on application of HPS, comfort using HPS, competence using HPS, effectiveness of HPS in nursing education, and if HPS provides a realistic clinical experience. Table 2 notes the descriptive statistics for each item related to the construct of attitude. The overall attitude composite mean score was 3.98 (SD = 0.53).

Table 2

Attitude Construct Item Results

Item	N	Mean	Std. Deviation
Human Patient Simulation (HPS) fits well into the nursing course(s) I teach.	12	3.92	1.08
I feel comfortable using HPS as a teaching tool.	12	3.42	1.240
I feel comfortable using different instructional technologies, such as PowerPoint.	12	4.17	1.115
I feel competent using HPS as a teaching tool.	12	3.25	1.138
Using the HPS is an effective teaching strategy.	12	4.33	.651
Using HPS provides a realistic patient care experience.	12	3.58	.900
I choose teaching strategies based on their effectiveness.	12	4.42	.515
Providing students a realistic patient care experience is important to me.	12	4.75	.452
Providing students a realistic patient care experience is important to me.	12	4.75	.452

Subjective norm. The attribute of subjective norm (SN) identified three groups as being potentially influential for the faculty member decision to use HPS or not use HPS. Six questions explored the participants' view of the desire of each group for them to use HPS and their perceived importance of each group's opinions. These groups were the School of Nursing Administration, peers, and students. The participants didn't feel overly positive that School of Nursing Administration desires for them to use HPS (mean = 3.42, SD = 1.08), but they did acknowledge that the opinions of this group are important to them (mean = 4.0, SD = 0.447). The participants do not feel that their peers desire for them to participate in HPS (mean = 3.0, SD = 0.95), and their view of their peer opinions are not as positive as the administration (mean = 3.82, SD = 0.98). Student opinions were noted to be the most important to this group of participants with the highest mean score of 4.09 (SD = 0.83), but weren't seen as a group desiring the participants to use HPS (mean = 3.33, SD = 1.16). Table 3 provides the descriptive statistics for each item in the SN construct. The overall composite mean score for SN was 3.61 (SD = 0.43).

Table 3

Subjective Norm Construct Item Results

Item	N	Minimum	Maximum	Mean	Std. Deviation
School of Nursing Administration wants me to use HPS.	12	1	5	3.42	1.084
The opinions of the School of Nursing administrators are important to me.	11	3	5	4.00	.447
Other faculty members want me to use the HPS.	12	1	4	3.00	.953
The opinions of other faculty members are important to me.	11	2	5	3.82	.982
Students want me to use HPS	12	1	5	3.33	1.155
The opinions of students are important to me.	11	2	5	4.09	.831

Perceived behavioral control. The attribute of perceived behavioral control (PBC) results were based on eight items measuring experience with HPS, preparation time for HPS, ease of using HPS as a teaching tool, and if the participant received training or education of the use of HPS. The participants were confident they could become proficient with HPS (mean = 4.42, SD = 0.79). However, they do not believe that HPS is easy to use as a teaching tool (mean = 2.5, SD = 0.674). They believe that HPS requires a lot of extra preparation time to be used (mean = 3.83, SD = 0.84). Table 4 provides the item results for the construct of PBC. The overall PBC composite mean score was 3.61 (SD = 0.76).

Table 4

Perceived Behavioral Control Construct Item Results

Item	N	Minimum	Maximum	Mean	Std. Deviation
I'm confident I can become proficient in using HPS with more experience.	12	3	5	4.42	.793
Using HPS requires a lot of extra preparation time for me.	12	2	5	3.83	.835
When deciding to use a specific teaching strategy, the amount of preparation time required is import...	12	3	5	3.92	.515
HPS is easy to use.	12	1	3	2.50	.674
The ease of use of teaching strategies is important to me.	12	3	4	3.83	.389
The amount of time it takes to be proficient in using HPS exceeds its educational effectiveness.	11	2	3	2.36	.505
It is important that the time it takes to become proficient using a particular teaching strategy does...	12	3	5	4.25	.754
I would use HPS more if an easy and simple instructor's guide was available to me.	11	2	4	3.73	.647

Intent to use HPS. One item on the survey explored participants' intent to use HPS as a teaching tool. The faculty member's intent to use HPS as a teaching tool, which had a mean score of 7.82 (SD = 2.6) on a scale of 0 (definitely not use) through 10 (definitely use) demonstrates a high level of intent to use HPS by these participants.

Qualitative data. The pre-intervention survey also contained five open-ended questions to gather data on salient beliefs of the participants about HPS and a sixth open-ended question for additional comments. The narrative comments were read and grouped based on the TPB constructs. These salient beliefs assisted in the development of an educational intervention for this capstone project. Participants believe that adequate lab space, personnel to facilitate HPS, training, and increased time for HPS are valuable to using HPS as an educational adjunct. They also purported that HPS is valuable for providing a realistic patient care experience in a safe, non-threatening learning environment to promote skill acquisition, critical-thinking, and clinical reasoning. In addition, the participants believe that HPS offers the opportunity to experience care situations not available in clinical settings. However, a lack of time, support, education of HPS use, and larger classes are detriments to HPS use for the participants. A complete listing of the salient beliefs used for creation of the educational workshop is noted in Table 5.

Table 5

Phase 1: Qualitative Data Results based on the TPB Constructs

Item	Salient Beliefs	TPB Variable
"I would use the HPS more if I had…"	• Adequate lab space	• PBC
	• Lab Coordinator/personnel to assist with HPS	• PBC
	• Scenarios	• PBC
	• Appropriate to course	• PBC
	• Training	• PBC
	• Increased time for HPS	• PBC
"The advantages of using HPS are…"	• Provides realistic patient care experience	• Attitude
	• Safe, non-threatening learning environment	• Attitude
	• Promotes skill acquisition.	• Attitude
	• Promotes critical-thinking, clinical-reasoning.	• Attitude
	• Increases student confidence	• Attitude
	• Situations not experienced in the clinical settings.	• Attitude
"The disadvantages of using HPS are…"	• Lack of time	• PBC
	• Lack of support	• PBC
	• Lack of education/ expertise	• PBC
	• Students don't take seriously	• Attitude
	• Use of small groups, when classes are larger	• Attitude
"What do you associate with using the HPS?"	• Learning from errors	• Attitude
	• Reflection on learning	• Attitude
	• Interactive, engaged, enriched learning environment	• Attitude • PBC
	• Should not be used as a substitute for patient interactions.	• Attitude
	• Promotes technical skills	• PBC
	• Time commitment	• Attitude
	• Use in variety of subjects.	

"I think the following should be included in an educational program on HPS…"	• Creating scenarios • Use of HPS in the hospital and community setting • How to operate HPS equipment • How to utilize in a scenario • How to debrief	• PBC • PBC • PBC • PBC • PBC

Summary. Factors related to HPS use by faculty members were identified in Phase 1. The project administrator was looking for those items with means of less than 4.0 within each construct. The attitudes items with means less than 4.0 were "HPS fits well in courses I teach," "comfortable using HPS," "feel competent using HPS," and "HPS provides a realistic patient care experience." SN items with means less than 4.0 were "administration wants me to use HPS," "other faculty members want me to use HPS," "opinions of other faculty members are important to me," and "students want me to use HPS." Six items in the PBC construct demonstrated means of less than 4.0. These items were "using HPS requires a lot of extra preparation time," "when deciding to use a specific teaching strategy, the amount of preparation time required is important," "HPS is easy to use," "the amount of time it takes to be proficient in using HPS exceeds its educational effectiveness," and "I would use HPS more if an easy and simple instructor's guide was available to me." The intent to use HPS by the participants was high with a mean of 7.82, however four participants did not use HPS in the last academic year, and three participants used HPS three times or less.

Analysis of the Phase 1 data indicated that while 75% (n=5) had received hands-on training with HPS, 58% (n=7) had not attended an educational program on HPS to provide the foundation for using HPS as a teaching tool. This result along with the mean scores on the items in the constructs supported the need for an educational program and

was consistent with the literature findings (Nehring & Lashley, 2010; Lean et al., 2006; Kardong-Edgren et al., 2008; Feingold et al., 2004; King et al., 2008). These results assisted the project administrator in developing an educational program based on these TPB constructs for the second phase of the capstone project. The educational program presentation is found in Appendix E along with the simulation scenario worksheet found in Appendix F.

Phase 2 Major Findings

Phase 2 consisted of the same participants that completed the pre-intervention survey in Phase 1. Four participants, who were not faculty during the Phase 1 data collection, were provided the pre-intervention survey to facilitate statistical analysis. Seven surveys were able to be matched with a unique identifier determined by the participants and identifiable only to them. These seven were the paired surveys used for the paired *t*-test analysis. The composite scores were utilized from all of the returned surveys. The TPB attributes of attitude, subjective norm, perceived behavioral control, and intent to use HPS, were measured through questions with a Likert-type scale with values 1 (*strongly disagree*) through 5 (*strongly agree*). A composite mean score was calculated based on the questions related to each attribute. This phase looks at any statistically significant change in the attribute items and the overall construct mean.

Attitude. The composite mean score for the construct of attitude increased from 3.98 in the pre-intervention survey to 4.46 (SD = 0.20) in the post-intervention survey. The educational program had statistically significant positive effects ($p < .05$) on three of the eight attitude mean items. These three items were "I feel comfortable using HPS as a

teaching tool," "I feel competent using HPS as a teaching tool," and "using HPS provides a realistic patient care experience." Analysis of all eight items is provided in Table 6.

Table 6

Phase 2: Paired t Test Results for Attitude

Measure	Paired Differences Mean	Std. Deviation	Sig.
Human Patient Simulation (HPS) fits well into the nursing course(s) I teach.	-.429	1.272	.407
I feel comfortable using HPS as a teaching tool.	-1.286	1.380	.049
I feel comfortable using different instructional technologies, such as PowerPoint.	-.429	.787	.200
I feel competent using HPS as a teaching tool.	-1.286	1.380	.049
Using the HPS is an effective teaching strategy	-.143	.690	.604
Using HPS provides a realistic patient care experience.	-.571	.535	.030
I choose teaching strategies based on their effectiveness.	.000	.577	1.000
Providing students a realistic patient care experience is important to me.	.286	.488	.172

Significance at $p < .05$

Subjective norms. The composite mean score for the construct of SN increased from 3.61 in the Phase 1 survey to 4.26 (SD = 0.17) after the educational program. The paired *t* test results for the SN items demonstrated the educational intervention only had a statistically significant positive influence on the item of "School of Nursing

administration wants me to use HPS" ($p < .05$). While not statistically significant at the $p < .05$, a positive change was also noted in the item "other faculty members want me to use HPS" ($p = .066$). There were no changes noted in the items of "opinions of the School of Nursing administration are important to me" or "opinions of other faculty members are important to me." The results of the paired *t* test for the six SN items are provided in Table 7.

Table 7

Phase 2: Paired t Test Results for Subjective Norms

Measure	Paired Differences Mean	Std. Deviation	Sig.
School of Nursing Administration wants me to use HPS	-1.143	1.069	.030
Other faculty members want me to use the HPS.	-1.143	1.345	.066
The opinions of students are important to me.	.000	.577	1.00
Students want me to use HPS.	-.714	1.254	.182

Significance at $p < .05$.

Perceived behavioral controls. Eight items were used to measure PBC and calculate the composite mean score. The mean composite PBC score increased slightly from 3.61 in the Phase 1 survey to 3.70 (SD = 0.69) after the educational program. There was a statistically significant change ($p < .05$) in two items of the PBC construct. These two items were "using HPS requires a lot of extra preparation time for me" and "HPS is easy to use." The results of the paired *t* test for the eight PBC items are provided in Table 8.

Table 8

Phase 2: Paired t Test Results for Perceived Behavioral Controls

Measure	Paired Differences Mean	Std. Deviation	Sig.
I'm confident I can become proficient in using HPS with more experience.	.000	.577	1.00
Using HPS requires a lot of extra preparation time for me.	.714	.756	.047
When deciding to use a specific teaching strategy, the amount of preparation time required is import...	-.286	.488	.172
HPS is easy to use.	-1.286	1.254	.035
The ease of use of teaching strategies is important to me.	-.143	.690	.604
The amount of time it takes to be proficient in using HPS exceeds its educational effectiveness.	.143	.690	.604
It is important that the time it takes to become proficient using a particular teaching strategy doe...	.143	.690	.604
I would use HPS more if an easy and simple instructor's guide was available to me.	.167	.983	.695

Significance at $p < .05$.

Intent to use HPS. Comparison between the behavioral intention item in the pre-intervention and post-intervention surveys was analyzed. There was an increase from the pre-intervention survey composite mean of 7.82 to 8.83 (SD = 1.47) after the educational program. Analysis using a paired *t* test noted a mean difference of -1.286, SD = .138, with a significance of 0.163, which is not statistically significant ($p < .05$).

Summary. There were some statistically significant differences in the construct items after the educational program. The educational program had a statistically significant ($p < .05$) impact on the construct of attitude for the participants. There was also a positive improvement in the subjective norms after the educational program, though not statistically significant. Table 9 provides the paired t test results for the TPB constructs.

Table 9

Phase 2: Paired t Test Results for TPB Subscale Composite Means

Measure	Paired Differences Mean	Std. Deviation	Sig.
Attitude Composite	-.482	.423	.024
Subjective Norm Composite	-.500	.561	.056
Perceived Behavioral Control Composite	-.099	.267	.363
Intent to Use	-1.29	2.13	.163

Significance at $p < .05$.

The project administrator tested the surveys for reliability (Cronbach's alpha) within the factors (attitude, SN, PBC). The results ranged from 0.447 for the attitude pre-intervention survey to 0.841 for the SN post-intervention survey. Due to the small sample size, these results are acceptable to the project administrator and are congruent with the results from the King et al. (2008) study.

Multiple regression was used to determine if the constructs of attitude, SN, or PBC determine intent to use HPS. None of the factors (attitude, SN, PBC) were statistically significant in explaining the intent to use HPS. Table 10 provides the multiple regression results on the TPB construct composite means.

Table 10

Phase 2 Multiple Regression on TPB Construct Composite Means

	Unstandardized Coefficients B	Standard Error	Standardized Coefficients Beta	*t*	Sig.
Attitude	1.029	1.393	.225	.739	.736
Subjective Norm	1.903	1.277	.492	1.491	.174
Perceived Behavioral Control	-1.816	1.704	-.332	-1.066	.174

Significance at $p < .05$.

The educational program was successful in changing the attitudes of the faculty toward HPS use in nursing education. The three items in the attitudes construct which demonstrated significant improvement, "I feel comfortable using HPS as a teaching tool," "I feel competent using HPS as a teaching tool," and "using HPS provides a realistic

patient care experience" were comparable to the outcomes seen in by King et al. (2008). Also, there were some significant changes in PBC with the items of "using HPS requires a lot of extra preparation time for me" and "HPS is easy to use", which were the same changes noted in the study by King et al. (2008). There were no statistically significant determinations of which variable was most important in determining intent to use HPS.

Results Summary

Phase 1 provided an exploration of the attitudes, subjective norms, perceived behavioral controls, and intent to use HPS by the participating nurse educators. This data provided a foundation to develop an educational program with the aim of improving the variables. Phase 2 occurred after the educational program and explored the same attitudes, SN, PBC, and intent to use HPS. The data from Phase 1 and phase 2 were compared using paired *t* tests to determine any significant changes after the educational program. The educational program was found to have a statistically significant ($p < .05$) positive influence on the attitudes of those participating. Multiple regression demonstrated no significant factor in determining intent to use HPS after the educational program.

Chapter V

Discussion

Development and preparation for entry into today's healthcare environment have changed and nurse educators have been challenged to re-think clinical education to incorporate innovative teaching strategies to meet these changes (National Council of State Boards of Nursing, 2005; National League for Nursing, 2003). Though simulation has been used in various forms for many years (Nehring & Lashley, 2010), many nurse educators have been hesitant to incorporate this innovative strategy into their teaching activities. Faculty perceptions have been identified as being one potential reason that educators do not use HPS (Nehring & Lashley, 2010). These perceptions have led to an underutilization of HPS as a teaching tool in nursing education. This capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, focused on faculty perspectives of HPS, intent to use HPS, and the use of an educational intervention program to impact these perspectives and intent to use.

Implication of Findings

This capstone project attempted to answer three research questions. The first question, "What are the faculty member's attitudes, subjective norms, perceived behavioral controls, and intent to use HPS," was addressed in Phase 1. Positive perceptions were denoted with a mean of 4.0 or higher. While exploring the construct of attitude, the participants were noted to feel comfortable with the use of technology in education. They also believed that HPS is an effective teaching strategy. The need to provide a realistic patient care experience and choosing teaching strategies based on their effectiveness were also strongly supported by the participants. This sample noted the

influence of the opinions of their administrators and students as important. While looking at perceived behavioral controls, the participants believed that HPS is not easy to use and the amount of time it takes to be proficient exceeds its educational effectiveness. But, they did strongly indicate that they could become more confident with HPS with more experience. The participants also indicated what they desired from an educational program in HPS, which included scenario development, and operation of the HPS equipment. The educational program was developed to include both of these concerns.

The other two research questions were addressed in Phase 2 of this capstone project. The question, "What is the effect of the educational intervention on attitudes, subjective norms, perceived behavioral controls, and intent to use HPS" was explored through a comparison of the composite means of the pre-intervention survey and the post-intervention survey. It was noted there was an improvement in all of the construct composite means after the educational program. It was determined that the participants felt more comfortable and competent using HPS as a teaching tool after the educational program, which was not surprising since many of the participants had not received a formal HPS educational program previously. And they also felt that using HPS provides a realistic patient care experience, which was an improvement from before the educational program. The capstone project also exposed that after the educational program the participants more strongly agreed that the School of Nursing administration wanted them to use HPS as a teaching tool. Since this educational program was supported, and encouraged by the Director of the School of Nursing, this could explain this significant change. However, the educational program did have a significant positive impact the faculty members' perceptions of the ease of using HPS and that using HPS

doesn't require extra preparation time. These changes in perceptions of the faculty members that participated in this capstone program demonstrate the potential effectiveness of an educational program in increasing HPS use as was noted with an increased mean in the intent to use HPS. The final question for this capstone project attempted to determine which factor, attitude, subjective norms, or perceived behavioral control, was the most important in explaining the intent of the faculty member to use HPS. Through multiple regression, a single factor wasn't determined to be able to determine a faculty member's intent to use HPS. It appears a combination of all of these constructs is valuable in determining the intent of faculty members to use HPS. This would indicate addressing all three constructs to improve the intent of faculty members to use HPS.

The findings of this capstone project were different from those of the study it sought to replicate. Many of the participants of this capstone project have been exposed to HPS either through hands-on experience or previous educational offerings. The researchers of the original study noted significant improvement in the perceptions of the fit of HPS into nursing courses, comfort and competence using HPS, that using HPS is an effective teaching strategy, and that HPS provides a realistic patient care experience (King et al., 2008). This capstone project also noted improved perceptions of comfort and competence using HPS, and the view of HPS providing a realistic patient care experience after the educational program, but not in the other aspects of attitude. The participants in the original study were found to have a significant difference in the subjective norms concerning peers, and students, while demonstrating that the opinions of all three groups, administrators, peers, and students, became more important to them

after the educational program. This capstone project did not find this same result, with the only significant change being in the view of administration desiring the participant to use HPS. There was an increase in the view that other faculty members desire the participant to use HPS that wasn't statistically significant, but still noteworthy. With regard to perceived behavioral controls, this capstone project demonstrated the same improvements after the educational program that was reported in the original study by King et al. (2008). These changes were in the view that HPS is easy and does not require a lot of extra preparation time to use.

The overall implications of these findings are that the use of an educational program can improve the perceptions of HPS held by faculty members. An educational program can also increase the probability that faculty members will use HPS as a teaching tool. While not statistically significant, there was improvement in every aspect of attitude and perceived behavioral controls after an educational program. The project administrator strongly believes that the positive effects noted in phase 2 are directly related to the use of the Phase 1 survey to discover the participants' perceptions and desires for an educational program and developing the program to encompass these beliefs.

Application of Theoretical and Conceptual Framework

The Theory of Planned Behavior was an appropriate framework for this capstone project. Ajzen (1991) described the importance of a person's attitudes, subjective norms, and perceived behavioral controls as an indicator to perform a specific behavior. While this capstone project didn't determine a significant relation between any of these constructs and the intent to use HPS, there was a noticeable improvement of each

attribute after the educational program and an increase in the probability that the faculty member will use HPS as a teaching tool. By assessing the state of these attributes in the participants initially and developing an educational program to address these views, based on the TPB framework, there is the potential to improve the perspective and the intent to perform the expected behavior.

Limitations

In the capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, there were a number of limitations that would directly impact the generalization of the outcomes. The overriding limitation would be the restriction of the capstone project to a single organization instead of incorporating participants from various institutions. Since this is the only undergraduate nursing program in the region, the inclusion of additional institutions wasn't reasonably possible for the scale of this project. Because of this limitation, there was a small sample size for the project. Almost the entire undergraduate prelicensure faculty participated from the institution, but this was still a small number of subjects. One method of address this limitation would be to repeat the project with faculty members from different institutions participating. Another limitation is the possible feeling that administration desired faculty members to utilize HPS in the upcoming semester since the institution had just completed a building project which included a new simulation laboratory. Also, since the educational workshop was allowed to be presented in this new simulation laboratory with the consent of the Director of the School of Nursing, participants may have been lead to believe HPS use was a requirement for the upcoming semester. This particular limitation may have directly affected the subjective norms aspect of the project, since participants

knew that the educational program would be forthcoming in the future and it was supported by their administration. This limitation could be avoided by holding the educational workshop at a neutral location and offering the opportunity for participation independently from the participants' institution. The final limitation that was noted was the generalizability of the results. The results of this capstone project were different than the results of the replicated study by King et al. (2008), but this difference may be related to the difference in participant population. The participants for this capstone project were all prelicensure undergraduate faculty members in a Bachelor of Science in Nursing program, while the participants in the King et al. (2008) study were from a prelicensure Associate Degree in Nursing program. This project occurred in a single geographic region, with a state institution, and was developed based on these participants' salient beliefs and desires. A different group of nursing educators in a different region, at a different type of institution, such as a private institution, and a difference degree program may have different salient beliefs and desires in relation to HPS. An educational workshop would need to be developed based on those participants pre-intervention survey to address their attitudes, subjective norms, and perceived behavioral controls. While this project does add to the body of knowledge concerning HPS use in nursing education, the limitations restrict generalization.

Implications for Nursing

Human patient simulation is an interactive, teaching modality that is useful in nursing education. However, many nurse educators do not utilize this teaching method because of personal attitudes, subjective norms, and perceived behavioral controls. This capstone project demonstrated that some changes in attitudes and perceived behavioral

controls could possibly be impacted by an educational workshop intervention. With changed attitudes and diminished perceived behavioral controls, there could be increased use of HPS in nursing education. In this capstone project the nurse faculty members demonstrated significant improvement in their comfort level, competence and view of HPS as a realistic clinical experience after the educational workshop, which assisted in changing the overall attitudes of the educators. Two perceived behavioral controls were also significantly changed with nurse faculty members indicating their change in view from HPS requiring a lot of extra preparation time for use and that HPS is easy to use as a teaching method. These results provide a manner to assist schools of nursing with introduction and implementation of HPS in their curriculum. An educational workshop provided when HPS is first introduced will assist in improving faculty member perceptions and possibly increase usage.

Recommendations

Future study into faculty member perceptions is needed to expand the body of knowledge. Replication of this intervention project with broader scope will assist in increasing the generalization of the results. The primary recommendation is the expansion of the participant pool. This would encompass offering participation to several school of nursing faculty members at various institutions. This provides improved ability to generalize the results and also a larger number of subjects for statistical analysis. The second recommendation would be to offer the educational workshop at a neutral location, which is not affiliated with any institution from which the participants are gathered. This assists in addressing any bias that was relevant in the subjective norm portion of the study by removing administration from directly supporting the project. Participants would not

perceive that participation is an expectation of their superiors. By using these two recommendations, future study would be more generalizable and provide increased statistical support for analysis.

Conclusion

This capstone project, Improving Faculty Perceptions of and Intent to Use Simulation: An Intervention Project, attempted to answer three questions concerning human patient simulation use and nurse faculty member perceptions. Phase 1 of this project addressed what faculty member perceptions were in regard to attitude, subjective norm, and perceived behavioral controls. The participants in this project demonstrated their belief that a realistic patient care experience was important in nursing education. They were comfortable with technology, but chose teaching strategies based on their effectiveness, not just the latest trend. While they believed HPS is an effective teaching method, they indicated it was too time consuming, difficult to use, and the amount of time required to become proficient decreases the educational effectiveness. However, they felt that with instruction and increased experience would improve their confidence with HPS use in nursing education.

Phase 2 addressed the second and third questions from this project. An educational workshop demonstrated significant improvement of nurse faculty members' attitudes concerning HPS use. While there were noted improvements in all of the construct components, statistically significant changes were noted with improved comfort and confidence in using HPS, and a changed view that HPS does offer realistic patient care experiences for nursing students. While there wasn't a significant overall improvement of the construct of perceived behavioral controls, there were statistically

significant improvements in some of the items contained within the construct. Nurse faculty participants indicated an improved view on the ease of use of HPS and that using HPS doesn't require a lot of extra preparation time. The third question of which factor, either attitudes, subjective norms, or perceived behavioral controls is the most important in explaining intent to use HPS was addressed during Phase 2 also. While no factor was noted as being statistically significant in determining intent to use HPS, it could be deduced addressing all factors would be most feasible.

Due to the limitations of this capstone project, generalization of the results to nursing education is not possible. However, this project assists in adding to the limited body of knowledge concerning nurse faculty perceptions related to HPS. An educational intervention in the form of a workshop was demonstrated in statistically improving overall attitudes, and select perceived behavioral controls concerning HPS. While not statistically significant in improving intent to use HPS in this project, biases and limitations may have played a large component in limiting this result. There was already a high intent to use HPS among the participants prior to the educational workshop, which impacts this outcome. Recommendations to expand the project to multiple institutions would assist in controlling this bias and expanding the subject pool for improved statistical strength.

While the results of this capstone project were different from the project being replicated, there were beneficial results for the subjects participating. Improved attitudes, subjective norms, and perceived behavioral controls were noted after the educational intervention. This capstone project supports the use of an educational workshop to address these factors. While not indicative of improved intent to use HPS in this project,

the Theory of Planned Behavior suggests that improvement of attitude, subjective norm, and perceived behavioral controls would predict improved intent to use HPS by the nurse faculty members. Using this framework, an educational workshop is an appropriate method to address these factors in nursing education faculty members.

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Appendix A

Informed Consent to Participate in Educational Project

Project Title: Improving Faculty Perceptions of Simulation: An Intervention Project
Purpose of the Project:

This is an interventional project in nursing education that is being conducted by Chuck Tucker, Adjunct Professor at Western Carolina University in Cullowhee, North Carolina. This intervention capstone project will focus on identifying attitudes, subjective norms, perceived behavioral controls, and intent to use human patient simulation (HPS) by faculty in a prelicensure baccalaureate nursing program and developing an intervention program to address these concepts through education.

What will be Done?

You will complete an online survey that is accessed via the link contained in this email. The survey will take approximately 15 minutes to complete. The survey includes questions about your perceptions of human patient simulation (HPS) and your intention to use HPS as a teaching modality. An educational program will be offered at the beginning of the fall 2012 semester that you will be able to attend to provide training on the use of HPS in your courses. The educational program will last approximately eight hours and will include continuing education units (CEU) for attending. Upon completion of the program, you will have the opportunity to participate again in another online survey. The survey is similar to the one you take before the educational program and again will take approximately 15 minutes to complete.

Benefits of this Project

If you participate in the educational program, you will learn more about HPS and how to integrate HPS into your teaching activities. In addition, you will receive CEU for attending the program. You will also be contributing to the knowledge about faculty perceptions of HPS and the role an educational program can play in changing these perceptions. There are no financial rewards for participating.

Risks or Discomforts

No risks or discomforts are anticipated from taking part in this project. If you feel uncomfortable with a question, you can skip it during the survey. You can also participate in the educational program without completing the pre-intervention or post-intervention surveys if you desire.

Confidentiality

All surveys will be anonymous. You will use the same link as all other participants. You will be asked to create a unique identifier that you supply on your pre-intervention survey, but this identifier is never directly related to the person supplying it. The only time you will use this unique identifier again will be when you complete the post-intervention survey. This identifier will allow statistical analysis of the survey results and comparison of your answers before and after the educational program, but without identifying who you are to the project administrator. This unique identifier will not be used during the reporting of the data analysis at any point. It is strictly for statistical analysis.

Decision to Quit at Any Time

Your participation is voluntary. If you begin the survey, but decide to withdraw, just leave the survey site without submitting the survey. If you do not click the "Submit" button at the end of the survey, then your answers and participation will not be recorded. You may also skip any questions on the survey without answering, but still submit the survey if you click the "Submit" button. You are not required to have completed the pre-intervention survey to participate in the educational program, nor are you required to complete the post-intervention survey after the educational program.

How the Finding will be Used

The results of this project will be used for scholarly purposes only. The results will be presented in an educational setting by Chuck Tucker for completion of a graduate degree. Results will also be submitted to professional journals for publication or presented at professional conferences. Because the surveys are anonymous, demographic data will only be presented as an aggregate, with no individual survey results presented.

Contact Information

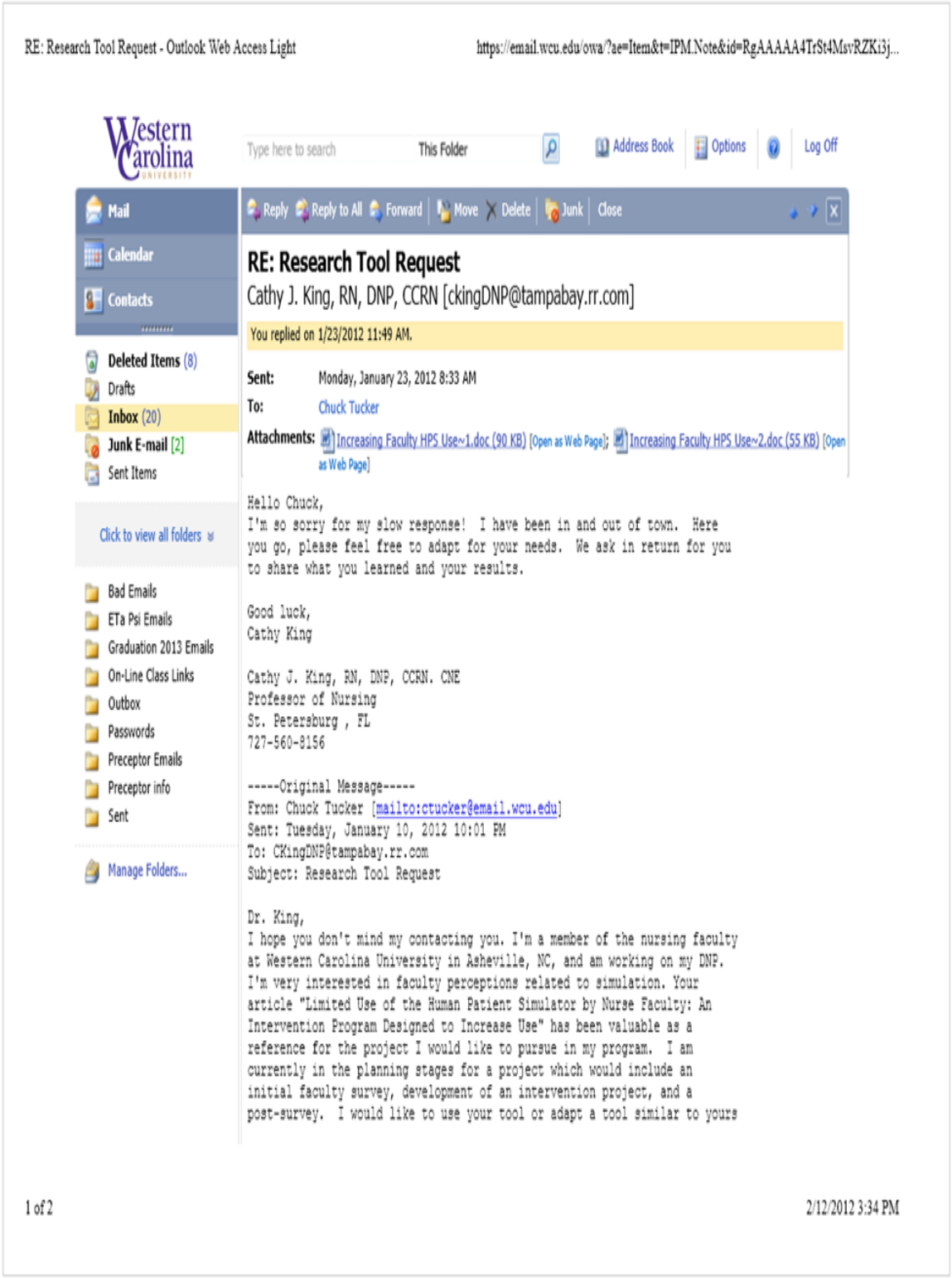
If you have any concerns or questions about this capstone project, please contact Chuck Tucker at (828) 230-6064 or email Chuck.TuckerRN@gmail.com; Dr. Mary Knowlton at (828) 670-8810 ext. 246 or email at mcknowlton@email.wcu.edu; or the Gardner-Webb University IRB Institutional Administrator, Dr. Franki Burch at (704) 406-4724 or email at fburch@gardner-webb.edu.). If you have concerns about your treatment as a participant in this capstone project, contact the chair of WCU's Institutional Review Board through the office of Research Administration at WCU (828-227-7212).

By beginning the survey, you acknowledge that you have read this information and agree to participate in this research, with the knowledge that you are free to withdraw your participation at any time without penalty.

PLEASE PRINT THIS DOCUMENT FOR YOUR RECORDS

Appendix B

Permission for Use of Instrument



RE: Research Tool Request - Outlook Web Access Light https://email.wcu.edu/owa/?ae=Item&t=IPM.Note&id=RgAAAAA4TrSt4MsvRZKi3j...

Western Carolina University

Type here to search | This Folder | Address Book | Options | Log Off

Mail | Calendar | Contacts

Deleted Items (8)
Drafts
Inbox (20)
Junk E-mail [2]
Sent Items

Click to view all folders

Bad Emails
ETa Psi Emails
Graduation 2013 Emails
On-Line Class Links
Outbox
Passwords
Preceptor Emails
Preceptor info
Sent

Manage Folders...

Reply | Reply to All | Forward | Move | Delete | Junk | Close

RE: Research Tool Request

Cathy J. King, RN, DNP, CCRN [ckingDNP@tampabay.rr.com]

You replied on 1/23/2012 11:49 AM.

Sent: Monday, January 23, 2012 8:33 AM

To: Chuck Tucker

Attachments: Increasing Faculty HPS Use~1.doc (90 KB) [Open as Web Page]; Increasing Faculty HPS Use~2.doc (55 KB) [Open as Web Page]

Hello Chuck,
I'm so sorry for my slow response! I have been in and out of town. Here you go, please feel free to adapt for your needs. We ask in return for you to share what you learned and your results.

Good luck,
Cathy King

Cathy J. King, RN, DNP, CCRN. CNE
Professor of Nursing
St. Petersburg , FL
727-560-8156

-----Original Message-----
From: Chuck Tucker [mailto:ctucker@email.wcu.edu]
Sent: Tuesday, January 10, 2012 10:01 PM
To: CKingDNP@tampabay.rr.com
Subject: Research Tool Request

Dr. King,
I hope you don't mind my contacting you. I'm a member of the nursing faculty at Western Carolina University in Asheville, NC, and am working on my DNP. I'm very interested in faculty perceptions related to simulation. Your article "Limited Use of the Human Patient Simulator by Nurse Faculty: An Intervention Program Designed to Increase Use" has been valuable as a reference for the project I would like to pursue in my program. I am currently in the planning stages for a project which would include an initial faculty survey, development of an intervention project, and a post-survey. I would like to use your tool or adapt a tool similar to yours

1 of 2 2/12/2012 3:34 PM

Appendix C

Pre-intervention Survey

PRE-EDUCATIONAL PROGRAM SURVEY

Completion of this survey is voluntary. The results will be used for educational purposes and no identifying information will be disclosed. Your completion of this survey indicates your 'consent to participate'.

Thanks!

Chuck Tucker, MSN, RN, CNE

*** 1.** Please provide a number (3-6 digits) unique to you.

***Please remember it or write it down* ... you will use this same number for the Post-survey.**
Thank you!

2. Human Patient Simulation (HPS) fits well into the nursing course(s) I teach.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

3. I feel comfortable using HPS as a teaching tool.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

4. I feel comfortable using different instructional technologies, such as PowerPoint.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

5. I feel competent using HPS as a teaching tool.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

6. Using the HPS is an effective teaching strategy.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

7. Using HPS provides a realistic patient care experience.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

8. Other faculty members want me to use the HPS.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

9. Students want me to use HPS.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

10. School of Nursing Administration wants me to use HPS.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree

5 = Strongly Agree

11. I'm confident I can become proficient in using HPS with more experience.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

12. Using HPS requires a lot of extra preparation time for me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

13. HPS is easy to use.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

14. The amount of time it takes to be proficient in using HPS exceeds its educational effectiveness.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

15. I would use HPS more if an easy and simple instructor's guide was available to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

16. The opinions of other faculty members are important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

17. The opinions of students are important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

18. The opinions of the School of Nursing administrators are important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

19. I choose teaching strategies based on their effectiveness.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

20. Providing students a realistic patient care experience is important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

21. When deciding to use a specific teaching strategy, the amount of preparation time required is important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

22. The ease of use of teaching strategies is important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

23. It is important that the time it takes to become proficient using a particular teaching strategy does not exceed its educational effectiveness.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

24. Please rate your 'intention to use HPS as a teaching tool' on a scale of 0-10.

A "0" rating signifies "definitely not use" and a "10" signifies "definitely use".

25. "I would use the HPS more if I had…"

26. "The advantages of using HPS are…"

27. "The disadvantages of using HPS are…"

28. "What do you associate with using the HPS?"

29. "I think the following should be included in an educational program on the HPS…"

30. "Any additional comments…"

Part II. DEMOGRAPHICS

31. Years of Experience as Nursing Faculty (round to the nearest whole year).

32. Primary Area of Clinical Expertise

_____.

33. I am a ___faculty member.

1. PART TIME
2. FULL TIME

34. I have had hands-on training using the SIMULATOR(S).

1. NO
2. YES

35. I have attended an educational program on the SIMULATOR(S).

1. NO
2. YES

36. I have used the SIMULATOR(S) as a teaching tool with students.

1. NO
2. YES

37. I have used HPS as a teaching tool with students _____ times during the past academic year (2011-2012). If you have not used HPS, please enter zero (0).

Appendix D

Post-intervention Survey

POST-EDUCATIONAL PROGRAM SURVEY

Completion of this survey is voluntary. The results will be used for educational purposes and no identifying information will be disclosed. Your completion of this survey indicates your 'consent to participate'.

Thanks!

Chuck Tucker, MSN, RN, CNE

*** 1.** Please provide YOUR unique number (3-6 digits). (The same one you created on the pre-survey)

Thank you!

2. Human Patient Simulation (HPS) fits well into the nursing course(s) I teach.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

3. I feel comfortable using HPS as a teaching tool.

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2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

4. I feel comfortable using different instructional technologies, such as PowerPoint.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

5. I feel competent using HPS as a teaching tool.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

6. Using the HPS is an effective teaching strategy.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

7. Using HPS provides a realistic patient care experience.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

8. Other faculty members want me to use HPS.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

9. Students want me to use HPS.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

10. School of Nursing Administration wants me to use HPS.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

11. I'm confident I can become proficient in using HPS with more experience.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

12. Using HPS requires a lot of extra preparation time for me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

13. HPS is easy to use.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

14. The amount of time it takes to be proficient in using HPS exceeds its educational effectiveness.

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2 = Disagree
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5 = Strongly Agree

15. I would use HPS more if an easy and simple instructor's guide was available to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

16. The opinions of other faculty members are important to me.

1 = Strongly Disagree
2 = Disagree

3 = Uncertain
4 = Agree
5 = Strongly Agree

17. The opinions of students are important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

18. The opinions of the School of Nursing administrators are important to me.

1 = Strongly Disagree
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4 = Agree
5 = Strongly Agree

19. I choose teaching strategies based on their effectiveness.

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2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

20. Providing students a realistic patient care experience is important to me.

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5 = Strongly Agree

21. When deciding to use a specific teaching strategy, the amount of preparation time required is important to me.

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3 = Uncertain
4 = Agree
5 = Strongly Agree

22. The ease of use of teaching strategies is important to me.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

23. It is important that the time it takes to become proficient using a particular teaching strategy does not exceed its educational effectiveness.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

24. Please rate your 'intention to use HPS as a teaching tool' on a scale of 0-10.

A "0" rating signifies "definitely not use" and a "10" signifies "definitely use".

25. Most of my change in attitude regarding HPS can be attributed to this educational program.

1 = Strongly Disagree
2 = Disagree
3 = Uncertain
4 = Agree
5 = Strongly Agree

Appendix E

Educational Program Presentation

8/13/2012

Simulation in Nursing Education: How Do We Do This?

Chuck Tucker

Gardner-Webb University

Changes in Nursing

- Changes in Nursing Practice:
  - Increased patient acuity
  - Advanced technology
  - Shortened hospital stays
  - Increase in community-based care

(Benner, Tanner, & Chelsa, 2009)

- Factors driving change:
  - Safety and quality
  - Improved nursing education
  - Technology advances
  - Shortages of Nurses
  - Changing needs of patients and system in modern nursing

(Nehring and Lashley, 2010)

Challenge to Nursing Education

- Radical change away from content driven curriculum to more innovative curriculum
- Prepare students for contemporary practice.

(Greiner & Knebel, 2003; National League for Nursing, 2003)

- Re-think clinical education to incorporate innovative teaching strategies
- Facilitate practice development
- Prep students for entry into today's healthcare environment.

(National Council of State Boards of Nursing ,2005; National League for Nursing , 2003)

Meeting these Challenges

- To meet challenges, seek new, innovative teaching strategies.
- Require educators to look outside of the traditional classroom and clinical setting.
- Human Patient Simulation (HPS) is one innovative teaching modality to meet this challenge
- Essentials of Baccalaureate Education for Professional Nursing calls simulation a valuable element of clinical preparation to augment clinical practicums.

(American Association of Colleges of Nursing, 2008)

Simulation in Nursing Education

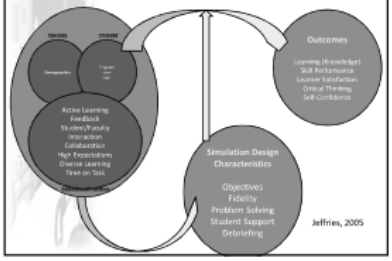
- Nursing has been using simulation for many years.
- Originally began with task-trainers, anatomically correct models.
  - Used for urinary catheter insertion, IV insertion.
- Then, articulated manikins that could be turned in bed, anatomically correct for tasks.
  - Several also had inserts to practice IM injections.
- Low-fidelity manikins were presented with auscultated breath sounds.

(Nehring & Lashley, 2010)

Human Patient Simulation

- Medium and High-fidelity Human Patient Simulation
  - Provides realistic patient situations
  - Uses computerized, life-sized, interactive mannequins
  - Develops skills, knowledge, and clinical judgment.

Nursing Education Simulation Framework



Jeffries, 2005

Teacher and Student Concepts

Teacher

- Demographics
  - Age
  - Computer Ability
  - Years of Teaching
  - Educational Preparation
  - Experience with active learning

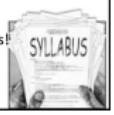
Students

- Program
  - Accelerated vs Traditional
- Level
  - Junior vs Senior
- Age
  - Young vs older student.
  - Maturity

Learner Outcomes

- What are your desired learner outcomes?
  - Knowledge
  - Skill Performance
  - Critical Thinking
- What are the outcomes for this particular course?
  - Assessment
  - Skill mastery
  - Application of Knowledge

These flow from your course objectives! You have to fit your simulation to your Course.



Other Outcomes??

- Are there others?
  - Self-confidence
  - Learner Satisfaction
- Others???
- Biggest problem in simulation is expecting outcomes that the student isn't prepared to provide! Simulation too complex for level.

Educational Practices

- Active Learning
  - Must participate
  - Observation is not active!
- Feedback
  - During simulation?
  - After simulation?
- Student/Faculty Interaction
  - Present or absent?
  - Faculty play a role: MD, radiology, etc.
- Collaboration
  - Will multiple roles be used.
  - Students work together or individually
- High Expectations
  - Maintain expectations
  - Hold student accountable
- Diverse Learning
  - Cultural scenario
- Time on Task
  - 20 minutes is usually max for small group.

Simulation Design Characteristics

- Objectives
  - Based on course
- Fidelity
  - Low fidelity is fine for lower level outcomes!
- Problem Solving
  - Appropriate for student level
  - Have they received the knowledge needed.
- Student Support
  - Facilitated by faculty or just observed
  - Cues provided
- Debriefing
  - Where learning occurs!
  - Supportive
  - Reaffirming
  - Corrective, with care.

Creating a Simulation Scenario Where do I start?

- Think of a patient situation.
  - Something you have experienced
  - Something you would see in the hospital
- What skills do you want the student to perform?
  - Assessment?
  - Room assessment for safety?
  - IV start, NG, Foley, Medication Administration?

Creating a Simulation Scenario Where do I start?

- Objectives
  - What do you want to get out of this scenario
  - Course objectives tell you this information!
  - Keep the scenario at the level of the course/ student
- Example: (From Foundations Course)
  - Course Objective: Demonstrate the ability to create and maintain a safe patient-care environment.
  - Scenario Objective:
    - Recognizes patient safety issues in the patient-care environment
    - Introduces self to patient.
    - Follows proper hand-care upon entering the room.

Preparing the Student

- Is there anything they need to know to be successful?
  - Assign readings related to scenario.
  - Assign readings or videos of any skills as refresher.
  - Know breath sounds before arrival.
- Not the time for surprises.
- A prepared student performs better and has a better experience in simulation!

Roles in Simulation

- Are there any roles the students will play?
  - Patient
  - Nurse
  - Radiology
  - Respiratory Therapy
  - Physician
  - Code Nurse
  - Nursing Assistant
  - Family Member
- Roles allows the student to better understand those they are to be collaborating with.
- Assign a review of roles to students so they are prepared.

Equipment Needed

- Type of Manikin
  - Vita-Sim
  - Sim-Man
  - Low-fidelity manikin
  - Birthing manikin
  - Sim-Baby
- Room Setting
  - Bedside Table
  - Telephone

- What's attached or needs to be available in room:
  - IV/ INT
  - IV Pump
  - NG Tube
  - Urinal/ Bedpan
  - Foley
  - Oxygen devices
  - Syringes/ Medications

Information Available

- History:
  - Given on report
  - Provided during scenario
- Diagnositics
  - Labs
  - 12 Lead EKG
  - X-rays
  - Others?

- Do you have these available as hardcopies or do you have a computer available with image files for them to look at?
- Do they need to know how to access them?
  - Needs to be included in instructions.

Charting (Yes, it's important!)

- Documentation Forms
  - Physician Orders
  - Flowsheet
  - MAR
  - Assessment Form
  - Kardex/ Care Plan
- Will there be a computer program available in the future?
  - Will require preparation, but once done can be saved for future uses.

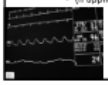
Who's on the Bed?

- Need to Make it Real, not just "Sim-Man"
- Providing a realistic scenario means a real patient name, history, and demographics!

- ID Band
- Name
- Age
- DOB
- Sex
- Height/ Weight
- Cultural Aspects
  - Religion

What State is the Patient In?

- Monitor:
  - Rhythm/ Heart Rate
  - B/P
  - SpO_2
  - Resp. Rate
  - Temperature
  - Next rhythm
    - (if applicable)



- Manikin
  - Breath Sounds
  - Heart Sounds
  - Bowel Sounds
  - Pulse Strength
    - (usually related to B/P)
  - Complications
    - Pneumothorax

Cues for Students

- What will they ask?
  - Allergies
  - Pain
  - Condition related
- What will you provide?
  - The answers appropriate to the scenario.
- Students frequently need cues to help direct their actions.
- What if they go off course?
  - Cues to redirect the student.
  - Patient statements to get them back on track.
    - "My chest is really hurting, can I get a Tums?"

Progression

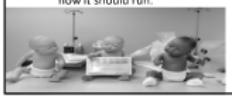
- Reactions to Interventions:
  - Pain Relief
  - Improved HR, RR, B/P
  - Comfort
  - Positive comments reflecting caring of the student.
- Plan ahead!
- Be prepared for what you will see based on the actions or non-actions of the students.
- The faculty must be intimately familiar with the situation in order to respond appropriately.

NCLEX? Yes, even in Sim-Lab!!

- Identify NCLEX-RN Test Plan Categories and Subcategories you will address.
- Document these for your simulation!
- If there are categories/ subcategories you want to include, plan for them.
- Simulation is not just Physiological Integrity!
- Incorporate Psychosocial Integrity
  - Abuse/Neglect
  - Chemical Dependency
  - End of Life Care
  - Religious/ Spiritual influences
  - Therapeutic Communication and Environment.

Preparation for Sim-Lab Day

- Setting:
  - Set up the room
    - Equipment
    - Manikin
    - Documents
  - Review the scenario to familiarize yourself with how it should run.
- Student Prep:
  - Assign readings prior to Sim-Lab day.
  - Remind students at least two days before of readings.
  - Encourage them to complete them for their success.



Now that we are done, what's next? Debriefing, where learning occurs

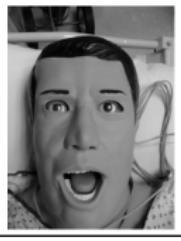
- Debrief Questions:
  - What do you think/feel (identify specifically) went well during the scenario?
  - What do you think/feel did not go well during the experience?
  - How did you feel during/as the scenario played out?
  - What would you do differently if you had to do it again?
  - What do you feel you got out of this experience?
  - What did you learn about yourself during this experience?
- Your Job:
  - Be Supportive
  - Establish and uphold ground rules of confidentiality and trust.
  - Encourage dialogue
  - Listen Attentively
  - Help the student deal with feelings of ambiguity
  - Promote recognition of patterns.
  - Facilitate the transfer of knowledge
  - Challenge the learner to initiate change for improvement
  - Support the learner to act on his/her insights.

All Done ,We Go Home Now, Right?

- Clean-up:
  - Clean the manikin
    - Remove tape residue
    - Flush the IV Arm with water
    - Remove attachments (Foley, NG, etc.)
  - Equipment
    - Return to storage area
    - Note any items that need replacing and let someone know!
- Leave the room and manikin like you would like to find it!!!
- Student work:
  - Reflective journaling is a great learning experience.
  - Use some of the debriefing questions and ask to the students to reflect on them.
  - Have them evaluate their performance.
  - What would they do differently if they had it to do over again.
  - What didn't they know about the content, good time for them to explain it in writing to facilitate learning.

Time to Build a Scenario!!!

- Each person will build a scenario for their course this semester.
- Can work in groups:
  - Foundations
  - Adult med
  - Pediatric/ Obstetric
  - Community/ Mental Health
- We will help you as your go, answer questions, and give advice…



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Appendix F

Simulation Scenario Design Worksheet

Scenario Design

Course Name: _____ Discipline: _____

Student Level: _____

Basic Scenario Description: _____

Basic Skills Set: _____

_____

Scenario Objectives:

1.

2.

3.

4.

5.

Required learning activities prior to simulation experience: _____

_____

_____

Roles for Scenario:

Manikins needed for this scenario:

Manikin	Number needed
SimMan	
SimBaby	
VitalSim Nursing Anne	
Noelle Birthing simulator	

Equipment attached to manikin: (check what is needed)

- IV tubing with primary line _____ fluids running at ____ml/hr
- Secondary IV line _____ running at _____ml/hr
- IV pump Type _____
- INT
- IVPB with _____ running at _____ml/hr
- PCA pump with _____ drug at _____basal _____bolus rate
- Oxygen applied _____ (type of device) at _____L/min
- ECG monitor
- NG tube ____clamped or to _____suction
- Chest tube
- Foley catheter
- ID band
- Arterial line

Equipment available in room: (check what is needed)

- IV start kit (how many ____)
- IV pump Type _____
- IV tubing (how many ____)
- IVPB tubing (how many ____)
- IV fluids
- Pressure bag (how many ____)

- Oxygen delivery devices Type _____ (how many ____)
- Suction equipment
- Crash cart with airway devices and medications
- Defibrillator/AED/Pacer
- Incentive Spirometer
- Bedpan
- Urinal
- Foley kit
- Straight cath kit
- Emesis basin
- Syringe Type _____ (how many ____)
- Other _____

Medications and Fluids (check what is needed and list type)

- IV fluids _____
- Oral Meds _____
- IVPB _____
- IV Push _____
- IM or SQ _____

Diagnostics Available (check what is needed)

- Labs
- 12 lead EKG
- X-rays (Images)

- Other

Documentation Forms (check what is needed)

- Physician Orders
- Flowsheet
- Graphic Record
- Medication Administration Record
- Assessment sheet
- Triage forms
- Transfer orders
- Kardex

Other props needed:

Patient Biographical Data

Patient Name: _____ Age: _____ Sex: ____

Height: _____ Weight: _____ Race: ____

Unit: _____

Past Medical History (signs, symptoms, medications, allergies, last oral intake, what lead up to this event): _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Scenario Programming

Initial State (starting patient condition):

ECG rhythm: _____ Arterial B/P: _____

SpO2: ____ PAP:_____ Cardiac output: _____

NIBP ___/_____ Core Temp: _____ Peripheral Temp: _____

Respiratory Rate: _____ Lung sounds: _____right _____left

Heart Sounds: _____ Standby ECG Rhythm: _____

etCO2:_____

Bowel sounds: _____

Pulses: ___normal ___weak ___absent

Complications:

- Decreased lung compliance Right Left
- Pneumothorax/Decompression Right Left
- Lung Resistance Right Left
- Laryngospasm
- Tongue edema
- Trismus
- Pharyngeal Obstruction
- Decreased Cervical ROM
- Difficult airway Can ventilate/can't intubate Can't intubate/can't ventilate
- Defibrillation # to convert _____
- External Pacemaker Biphasic Monophasic Capture @ _____mA
- EMD/PEA

Vocal Sounds:

Cues for Students (Optional):

Changes in Patient Condition:

ECG rhythm: _____ Arterial B/P: _____

SpO2: ____ PAP:_____ Cardiac output: _____

NIBP ___/_____ Core Temp: _____ Peripheral Temp: _____

Respiratory Rate: _____ Lung sounds: _____right _____left

Heart Sounds: _____ Standby ECG Rhythm: _____

etCO2:_____

Bowel sounds: _____

Pulses: ___normal ___weak ___absent

Complications:

- Decreased lung compliance Right Left
- Pneumothorax/Decompression Right Left
- Lung Resistance Right Left
- Laryngospasm
- Tongue edema

- Trismus
- Pharyngeal Obstruction
- Decreased Cervical ROM
- Difficult airway Can ventilate/can't intubate Can't intubate/can't ventilate
- Defibrillation # to convert _____
- External Pacemaker Biphasic Monophasic Capture @ _____mA
- EMD/PEA

Vocal Sounds:

Cues for Students (optional):

2010 NCLEX-RN Test Plan Categories and Subcategories (choose all that apply to this simulation)

OVERVIEW OF CONTENT
All content categories and subcategories reflect client needs across the lifespan in a variety of settings.

Safe and Effective Care Environment (includes Management of Care and Safety and Infection Control)

The nurse promotes achievement of client outcomes by providing and directing nursing care that enhances the care delivery setting in order to protect clients, family/significant others and other health care personnel.

Management of Care – providing and directing nursing care that enhances the care delivery setting to protect clients, family/significant others and other health care personnel.

☐ Advance Directives	☐ Establishing Priorities
☐ Advocacy	☐ Ethical Practice
☐ Case Management	☐ Informed Consent
☐ Client Rights	☐ Information Technology
☐ Collaboration with Interdisciplinary Team	☐ Legal Rights and Responsibilities
☐ Concepts of Management	☐ Performance Improvement (Quality Improvement)
☐ Confidentiality/Information Security	☐ Referrals
☐ Consultation	☐ Resource Management
☐ Continuity of Care	☐ Staff Education
☐ Delegation	☐ Supervision

Safety and Infection Control – protecting clients, family/significant others and health care personnel from health and environmental hazards.

☐Accident/Injury Prevention	☐Reporting of Incident/Event/Irregular
☐Emergency Response Plan	☐Occurrence/Variance
☐Ergonomic Principles	☐Safe Use of Equipment
☐Error Prevention	☐Security Plan
☐Handling Hazardous and Infectious Materials	☐Standard Precautions/Transmission-Based
☐Home Safety	☐Precautions/Surgical Asepsis
	☐Use of Restraints/Safety Devices

Health Promotion and Maintenance - The nurse provides and directs nursing care of the client and family/significant others that incorporates the knowledge of expected growth and development principles, prevention, and/or early detection of health problems, and strategies to achieve optimal health.

☐Aging Process ☐Ante/Intra/Postpartum and Newborn Care ☐Developmental Stages and Transitions ☐Health and Wellness ☐Health Promotion/Disease Prevention ☐Health Screening	☐High Risk Behaviors ☐Lifestyle Choices ☐Principles of Teaching/Learning ☐Self-Care ☐Techniques of Physical Assessment

Psychosocial Integrity - The nurse provides and directs nursing care that promotes and supports the emotional, mental and social well-being of the clients and family/significant others experiencing stressful events, as well as clients with acute or chronic mental illness.

☐Abuse/Neglect ☐Behavioral Interventions ☐Chemical and Other Dependencies ☐Coping Mechanisms ☐Crisis Intervention ☐Cultural Diversity ☐End of Life Care ☐Family Dynamics	☐Grief and Loss ☐Mental Health Concepts ☐Religious and Spiritual Influences on Health ☐Sensory/Perceptual Alterations ☐Stress Management ☐Support Systems ☐Therapeutic Communications ☐Therapeutic Environment

Physiological Integrity (includes Basic Care and Comfort, Pharmacological and Parenteral Therapies, Reduction of Risk Potential, and Physiological Adaptation) The nurse promotes physical health and wellness by providing care and comfort, reducing client risk potential and managing health alterations.

Basic Care and Comfort – providing comfort and assistance in the performance of activities of daily living.

☐Assistive Devices ☐Elimination ☐Mobility/Immobility ☐Non-Pharmacological Comfort Interventions	☐Nutrition and Oral Hydration ☐Personal Hygiene ☐Rest and Sleep

Pharmacological and Parental Therapies – providing care related to the administration of medications and parenteral therapies.

☐Adverse Effects/Contraindications/Side ☐Effects/Interactions ☐Blood and Blood Products ☐Central Venous Access Devices ☐Dosage Calculation	☐Expected Effects/Outcomes ☐Medication Administration ☐Parenteral/Intravenous Therapies ☐Pharmacological Pain Management ☐Total Parenteral Nutrition

Reduction of Risk – reducing the likelihood that clients will develop complications or health problems related to existing conditions, treatments or procedures.

☐Changes /Abnormalities in Vital Signs ☐Diagnostic Tests ☐Laboratory Values ☐Potential for Alterations in Body Systems ☐Potential for Complications of Diagnostic Tests/Treatments/Procedures	☐Potential for Complications from Surgical ☐Procedures and Health Alterations ☐System Specific Assessments ☐Therapeutic Procedures

Physiological Adaptation – managing and providing care for clients with acute, chronic or life threatening physical health conditions.

☐Alterations in Body Systems ☐Fluid and Electrolyte Imbalances ☐Hemodynamics ☐Illness Management	☐Medical Emergencies ☐Pathophysiology ☐Unexpected Response to Therapies