

2015

## High Fedelity Simulation: Its Impact on Self-Confidence and Satisfaction in Learning Among Sophomore and Senior Students

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HIGH FIDELITY SIMULATION: ITS IMPACT ON SELF-CONFIDENCE AND  
SATISFACTION IN LEARNING AMONG SOPHOMORE AND SENIOR NURSING  
STUDENTS

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

in

The School of Human Resource Education  
and Workforce Development

by

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December 2015

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In memory of my precious mother, Hilda Dillon Simoneaux, who encouraged me to climb trees and read books.

## **ACKNOWLEDGEMENTS**

I extend a very special thanks to Tabitha Jones-Thomas, Karen Clark, Valerie Schluter, and Denise Martin, Simulation Lab nursing faculty at Our Lady of the Lake College, for their interest and encouragement, and enthusiastic assistance with this research study.

To Suzanne Carpenter, a colleague and friend, thank you for continuing to tell me to “get it done.”

Thanks also to my dissertation committee who were so very supportive and provided much needed input and advice.

And to Dr. Burnett, my committee chair, a special appreciation for the MANY hours of reading, editing, and encouraging me in the process.

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## **ABSTRACT**

The purpose of this study was to determine the perceptions of selected aspects of high fidelity simulation among students enrolled in a baccalaureate nursing program and the influence of these perceptions on students' satisfaction and self-confidence in learning.

In order to collect the necessary data, the Satisfaction and Self-confidence in Learning and Simulation Design Scale instruments were used. These instruments were completed by both sophomore and senior baccalaureate nursing students following simulation lab experiences.

The majority of students surveyed is female of the Millennial Generation and averaged a GPA of 3.14. There were approximately equal numbers of sophomore and senior students, as well as students who had previous healthcare employment and those who did not have previous healthcare employment. The demographics of age, gender, and GPA had few significant relationships. The most significant relationships identified were between sophomore and senior students and those with and without previous healthcare employment. Generally, students perceived they were satisfied and were self-confident in learning through the use of simulation. They also agreed that all simulation design elements were used during their simulation experiences. Using multiple regression analysis, models were found that explained 68.3% of the variance in satisfaction in learning and 60.1% of the variance in self-confidence in learning through the use of simulation. The majority of the factors identified were elements of simulation design that require direct interaction with faculty.

Based on these findings, the researcher concluded that simulation is an effective modality to teach the practice of nursing. Also, although most students were generally satisfied and self-confident in learning through the use of simulation, senior students and those with previous healthcare employment were less satisfied and less self-confident.

The researcher recommends that schools of nursing expand their use of simulation as a clinical teaching experience, and that administration supports the development of faculty in the implementation of best practices in simulation.

## **CHAPTER 1. INTRODUCTION**

### **Rationale**

Having access to quality healthcare services is important for increasing the quality of life for everyone. One of the primary features in the delivery of healthcare is the availability of a skilled workforce that is adequate in number, knowledgeable in the needs of the patient, and skilled in the delivery of care.

Comprising 80% of the healthcare workforce, nurses are the human capital that supports the delivery of healthcare and the promotion of health (American Association of Colleges of Nursing (AACN), 2013). It is this group of caregivers who are the foundation of healthcare in the United States. An abundance of research identifies the hazards related to the lack of nursing staff, which include higher patient mortality, readmission rates, patient complications, poor patient satisfaction and longer hospital stays (Meyer, Hou, & Gajewski, 2011; Weaver, 2011; Robinson & Dearmon, 2013; Wooton et al, 2010; Norman, 2012).

Although there is an overwhelming need for adequate nursing staff, there are substantial political and societal threats to the development of a stable and skilled nursing workforce. Central to the issue is a shortage of nurses and nursing faculty, and the lack of adequate clinical facilities needed for educating nursing students (Hayden et al, 2014; Rutherford-Hemming, 2012).

Compounding the problem is the need for additional nurses due to the aging population's increased healthcare needs, and the increased healthcare needs as a result of policies included in the Affordable Care Act (Budden, et al, 2013).

## **Nursing Shortage**

The Bureau of Labor Statistics in their Employment Projections 2012-2022 released in December 2013 identified Registered Nurses (RN) among the top occupations in terms of job growth through 2022 (Bureau of Labor Statistics, 2013). The RN workforce is expected to grow from 2.71 million in 2012 to 3.24 million in 2022, an increase of 526,800 or 19%. The present and future shortage of nurses is influenced by several coinciding events (Bureau of Labor Statistics, 2013).

Since the passage of the Patient Protection and Affordable Care Act in 2010, more than 32 million Americans gained access to healthcare services (United States Department of Health and Human Services, 2014). This has resulted in nurses being needed for both the preventative and screening aspects, as well as disease management. This increasing need for nurses is combined with the realization that the majority of the nursing workforce is nearing retirement age. In a 2013 survey conducted by the National Council of State Boards of Nursing and The Forum of State Nursing Workforce Centers 55% of the RN workforce is age 50 or older (National Council of State Boards of Nursing (NCSBN), 2013)). Additionally, the population of the United States is aging as a result of baby boomers entering the age group typically needing expansive healthcare resources. These coinciding events have the potential to produce a profound lack of healthcare services in the coming years.

## **Shortage of Nursing Faculty**

Limited nursing faculty is making substantial impacts on the availability of nurses. According to American Association of Colleges of Nursing's report on 2012-2013 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing (AACN, 2013) U.S. nursing schools turned away 79,659 qualified applicants from baccalaureate and graduate

nursing programs in 2012 in part due to insufficient number of faculty (AACN, 2013). In that survey, almost two-thirds of the nursing schools pointed to faculty shortages as a reason for not accepting all qualified applicants into their programs.

The major factor limiting faculty numbers is increasing age (NCSBN, 2013). Over half of nursing faculty are over the age of 50, and therefore, near retirement age.

The offering of the nurse practitioner tract has limited the number of nurses entering the education tract as their graduate program choice. The nurse practitioner role offers salaries often double those of nurse educators, more independent patient care options, and a ‘front and center’ role in patient care (AACN, 2005).

Dealing with the characteristics of the millennial student population has created substantial difficulties for faculty. Schaeffer (2013) reported that “incivility in nursing education is a major distraction to higher learning levels, may contribute to psycho-social problems, physiological ailments, and is a major cause of both nursing student and nursing faculty attrition” (p. 181). Although incivility has always been reported, never to the extent as in recent years. Research reports millennial students demonstrate entitlement and a ‘consumer’ mentality. This translates in academic settings as expecting a high grade for minimal effort, and believing that faculty owes them job placement and success without regard to their effort and performance. This is a particular challenge to nursing faculty who expect students to be active learners preparing to pass a state board-licensing exam.

Other factors causing faculty shortages identified in the literature included, the increasing workloads and multiple work roles of faculty, frustrations related to demands of technology, and responsibility with having to find clinical placement for students (Institute of Medicine (IOM), 2010).



## **Shortage of Clinical Facilities**

In 2009, the National League for Nursing reported that nationwide the number one barrier to clinical learning was the lack of clinical sites (National League for Nursing (NLN), 2009).

There are many contributing factors to this situation, including decreased number of patients who receive in-patient care, increased acuity of patients, and the inadequacy of alternate clinical sites.

A recent trend in healthcare has been the decrease in patients who receive in-patient care. This results in increasing numbers of students being assigned to the in-patient nursing units with fewer patients available for student interaction. Because patients may be cared for by multiple students from different schools, they report being tired of answering the same questions from each student, as students are required to obtain health histories and perform thorough physical assessments on each of their patients (NLN, 2009). Unit nurses also complain that they are spending too many work hours with students who need instruction and assistance with care giving tasks (NLN, 2009). This increases their workload so they often ask their managers to restrict students to specific days of the week, or shifts in the day (NLN, 2009).

The increased acuity of patients also poses a significant threat to adequate patient learning experiences and patient care errors. Patients who have complex medical problems offer problem-solving scenarios too difficult for most students. This creates a situation that, without intensive supervision from faculty and staff, may result in patient care errors. Patient acuity is a major limiting factor in the number of patients available for student involvement (NLN, 2009).

There have been a variety of attempts to remedy lack of clinical sites. Many schools are using alternative sites. However, this creates increased travel times, more time spent in multiple facility orientations, and increased administrative work addressing contracts, etc. (NLN, 2009).

The most pronounced effects are that these alternative sites rarely provide sufficient patient care experiences for students that are equal to those on hospital patient care units (NLN, 2009).

The more common remedies have been to allow students to have more observational experiences. However, on these units students are often restricted from delivering care. This is the most undesirable as it limits student active learning and application of skills (NLN, 2009).

The goal of clinical learning experiences for student nurses is to develop a myriad of skills needed to provide appropriate patient care. It is critical that nursing students are able to demonstrate transfer of learning from the classroom to clinical settings.

Significant clinical learning experiences are the backbone of the development of a nurse who can manage patient care and all of the corollary needs of the patient. Changes in patient care settings, increased acuity of patients, and limited clinical sites have resulted in significant implications for nursing education. The use of simulation has been lauded as presenting an acceptable alternative to clinical learning experiences (Meyer, Hou, & Gajewski, 2011).

### **Simulation**

Finding innovative and effective teaching methods to replace hospital-based clinical teaching is imperative in solving the problem of limited clinical opportunities and faculty shortage. Nurse educators have responded by incorporating high fidelity patient simulation. Dr. Pamela Jeffries, NLN project director and well-known researcher in the field of simulation, summarizes the beliefs of many educators regarding simulation when she stated, “Probably the most important reason to adopt this pedagogy is because of the ability to create standardized environments that present students with safe, problem-solving encounters that require real-time assessment and interventions for real clinical problems” (Jeffries, 2005, p. 101).

As with any teaching design, simulation must be well planned by the educator. The National League for Nursing (NLN) has been a leader in the research and promotion of simulation in nursing through their Simulation Innovation Research Center (SIRC). They identify the best practices used in simulation as active learning, collaboration, diverse ways of learning, and high expectations (SIRC, 2013). These practices have become widely accepted and incorporated in the evaluation of simulation models.

The identification of ‘best practices’ is an important step, in that it allows simulation research to become more useful to its consumers. Just as every classroom teaching experience is different, simulation is also extremely varied based on the design and use of selected best practices. Discussion of the design and practices used while performing the research better allows consumers to determine if the finding would be generalizable to their simulation design.

Nursing research supports (Artino, 2012; Choi, 2005; Cannoon-Diehl, 2009; Cant & Cooper, 2009; Schlairet, 2010) a link between self-confidence and the acquisition of clinical skills, and the transference of these skills to the patient care setting. This transference is particularly important, as it prepares students to appropriately apply what is learned in the classroom, which is a primary focus in nursing education. Literature suggested that self-confidence has a positive effect on psychological functioning and coping behaviors of the student. Patient care settings are stressful and require students to be able to perform under difficult situations, therefore, the relationship between self-confidence scores and clinical skills performance is an important factor to address in nursing education.

As nurse educators attempt to find suitable replacements for standard clinical education, simulation has offered possibilities. Many state boards of nursing throughout the United States have begun allowing schools of nursing to introduce limited numbers of hours of simulation in

the curriculum, replacing hospital clinical care (NCSBN, 2013). As the research base supporting the positive effects of simulation increases, nurse educators are expecting to use simulation lab for a major portion of student's clinical education.

### **Purpose of Study**

The primary purpose of the study was to determine the perceptions of selected aspects of high fidelity simulation among students enrolled in a baccalaureate nursing program and the influence of these perceptions on students' satisfaction and self-confidence in learning.

### **Objectives of the Study**

The following specific objectives were formulated to guide this research study:

1. To describe currently enrolled baccalaureate degree nursing students based on selected characteristics:
  - (a) Age;
  - (b) Gender;
  - (c) GPA;
  - (d) Previous healthcare employment;
  - (e) Education level.
2. To describe baccalaureate degree nursing students' satisfaction in learning through the use of simulation.
3. To describe baccalaureate degree nursing students' self-confidence in learning through the use of simulation.
4. To describe baccalaureate nursing students' perceptions of the implementation of best simulation elements during simulation.

5. To determine if a relationship exists among baccalaureate nursing students between satisfaction in learning through the use of simulation and participant demographics.
6. To determine if a relationship exists among baccalaureate nursing students' self-confidence in learning and through the use of simulation and participant demographics.
7. To determine if a relationship exists among baccalaureate nursing students' perception of the implementation of best simulation design elements during simulation and participant demographics.
8. To determine if a relationship exists between satisfaction in learning and self-confidence in learning through the use of simulation among baccalaureate nursing students.
9. To determine if a relationship exists between perceptions of the implementation of best simulation design elements during simulation and satisfaction in learning among baccalaureate nursing students.
10. To determine if a relationship exists between perceptions of the implementation of best simulation design elements during simulation and satisfaction in learning among baccalaureate nursing students.
11. To determine if a model exists explaining the variance in satisfaction in learning from participant demographics and student perceptions of implementation of best simulation design during simulation.
12. To determine if a model exists explaining the variance in self-confidence in learning from participant demographics and student perceptions of the implementation of best simulation design during simulation.
13. To compare sophomore and senior perceptions of the implementation of best simulation design elements during simulation.

14. To compare sophomore and senior students' perceptions of satisfaction related to their simulation experience.
15. To compare sophomore and senior students' perceptions of self-confidence in learning related to their simulation experience.

### **Definition of Terms**

Demographic information, as reported by the Office of the Registrar at a college in the Southeastern region of the United States, or as determined by the researcher from the information reported by each student on the data collection instrument was as follows:

1. Gender – as reported by the student as female or male
2. Educational Level – sophomore or senior, as determined by the course roster developed by the Office of the Registrar
3. Age – as reported by the student
4. GPA – grade point average for all college courses on the college transcript, as determined by the Office of the Registrar
5. Previous Healthcare Employment – as reported by the student as defined as any work or volunteer service where the study was involved in direct patient care (Nurse Technician, LPN, Nursing Assistant, Medical Assistant, etc.)

### **Significance of the Study**

While there are several studies which addressed student perceptions of simulation design elements and their impact on self-confidence and satisfaction in learning, none could be found which studied the differences of their impact between sophomore and senior nursing students. The study will investigate student perceptions of simulation design elements, in relation to

student self-confidence and satisfaction in learning. It will also make an attempt to determine if there is a propensity for difference in perceptions between sophomore and senior level students. As simulation is being used to a greater extent in nursing schools, and as faculty time and resources are decreasing, it behooves faculty to determine which parts of the simulation design would warrant emphasis. The ability to determine the differences of perceptions between sophomore and senior level students would inform faculty, and direct their efforts to the parts of simulation design that have the most significant student impact.

If sophomore students are found to have greater self-confidence than seniors, it may indicate a degree of difficulty inherent in the senior student scenarios and related expectations, which is not supported by other elements of the simulation design, and therefore a need for the simulation design to be re-evaluated for change. If seniors are found to have a greater degree of self-confidence, it would support that the simulation design elements in place are appropriate, as seniors are expected to have a greater degree of self-confidence as a feature of successes in patient care over a longer period of time.

The study is also expected to identify which elements of the simulation design best promote satisfaction and self-confidence in sophomores and seniors. This would allow faculty who teach these different levels of students to design simulation with a focus on selected elements, with their level of student in mind.

Additionally, results of the study would directly impact the design of nursing faculty orientation, and the development of continuing education programs for nursing faculty, particularly those whose workload involves simulation as their clinical component.

## **CHAPTER 2.** **REVIEW OF RELATED LITERATURE**

### **Introduction**

The International Nursing Association for Clinical Simulation and Learning (INACSL, 2013), in their Standards of Best Practice: Simulation, defined simulated-based learning experience as “an array of structured activities that represent actual or potential situations in education and practice and allow participants to develop or enhance knowledge, skills, and attitudes or analyze and respond to realistic situations in a simulated environment or through an unfolding case study.” Simulation is offering a new pedagogy in nursing, to promote critical thinking, self-confidence, and practical experience performing nursing skills.

### **History of Simulation**

Educators have been using simulation for decades. Nehring (2010) noted that in the *Handbook for Hospital Sisters* (1847), every nursing school was to have a “mechanical dummy, models of legs and arms to learn bandaging, a jointed skeleton, a black drawing board, and drawings, books, and models” (p.10). In the past two decades the most common use of simulation in healthcare was in the use of Resusi-Annie, a mannequin designed to prepare for performing cardiopulmonary resuscitation (Hyland & Hawkins, 2009). This led to use of mannequins for skills training and evaluation in many other areas of healthcare education. Healthcare educators were leaders in the use of simulation, in part, because practice on actual patients would be too dangerous and was often seen as unethical. However, with the advent of computer technology, simulation is providing opportunities for more sophisticated replication of actual clinical environments.

Simulation experiences have been classified by their degree of fidelity, which is defined as “how well the simulation/simulator mimics the physical environment of the real task;



psychological fidelity is the extent to which the simulation/simulator matches the reality in the participant's mind.” (Maran & Glavin, 2003, p. 23). Simulation difficulty is measured by its degree of realism. It can be:

as simple as a case study, computerized program, or a partial task trainer, such as an IV arm. More complex, immersive and experiential situations such as high-fidelity simulation can offer a variety of physiologic parameters, all of which can be assessed during the simulation exercise. (Cannon-Diehl, 2009, p. 128)

Low-fidelity simulators refer to a model or manikin where students practice basic procedures and techniques without response from the manikin. They offer little in the way of real life environments and are usually used for basic skill development or practice.

Medium-fidelity simulation uses a manikin that incorporates a computerized program to provide voices and physiological responses that are realistic, such as a lung, heart, and bowel sounds. “However, simulation that includes the characteristics of a medium-fidelity manikin with the addition of realistic physiological responses to learners’ action is termed high fidelity” (Jeffries, 2007). Medium-fidelity stimulations offer more realism and complexity than low-fidelity manikins, and may be used to introduce new skills or maintain competencies.

High-fidelity stimulations “are used to teach critical thinking, teamwork, and critical incident management” (Nickerson & Pollard, 2010, p. 102). Most high-fidelity manikins used in healthcare programs allow for a range of programmed vital signs, EKG, pulse oximetry, and even give verbal responses to questions asked by the students. The simulation is usually accompanied by authentic equipment and in a setting designed to replicate an actual patient and/or hospital unit. Fidelity or realism of the simulation experience can be heightened if there are consequences to the decisions made during the simulation (Lasater, 2007).

## **Simulation Design**

As with any teaching design, simulation must be planned well by the educator (Jeffries, 2005; Lasater, 2007). The National League for Nursing (NLN) has been a leader in the research and promotion of simulation in nursing through their Simulation Innovation Research Center (SIRC). The purpose of the center, which is a collaborative alliance between the NLN and Laerdal Medical, is “to develop a community of nurse educators who can effectively use simulation to promote and evaluate student learning and who dialogue with one another in an effort to advance simulation in nursing education” (SIRC, 2013).

Dr. Pamela Jeffries, NLN project director and well-known researcher in the field of simulation, listed the best practices used in simulation as active learning, collaboration, diverse ways of learning, and high expectations (Jeffries, 2006). These practices have become widely accepted and incorporated in the evaluation of simulation models. In addition, she has developed *A Framework for Designing, Implementing, and Evaluating Simulations Used as Teaching Strategies in Nursing* (Jeffries, 2005). The framework identified certain design imperatives:

- 1- Objectives -must be clearly written and should be appropriate for the learners’ knowledge and experience.
- 2- Fidelity – mimic reality as much as possible with as many environmental factors similar to patient units as possible.
- 3- Complexity – patients with appropriate numbers of medical problems, a relationship between the problems, and proper proportion of relevant and irrelevant clinical information.
- 4- Cues – faculty providing cues as the scenario unfolds.

- 5- Debriefing – done by faculty and peers and provide feedback on decisions made and concepts understood during the simulation. (Jeffries, 2005)

Most discussion in the simulation literature has been in relation to debriefing, which is often referred to as the most important in the simulation experience and promotes critical thinking, professional growth and life-long learning (Cannon-Diehl, 2009; Sportsman, Schumacker, & Hamilton, 2011). Jeffries explained that debriefing is often “referred to as guided reflection, and is a planned session after the simulation that provides students with the time to assess their decisions, actions, communication, and ability to deal with the unexpected” (Jeffries, 2005, p. 101). This component is viewed as a time when students are assisted in developing critical thinking skills (Jeffries, 2005). It is often during the debriefing experience where students’ prior learning efforts are reinforced. Additionally, because so many valued learning experiences involve the mistakes made, this experience allows students to err and learn without the emotions involved with consequences. And debriefing, when done correctly, provides an environment of support, respect and safety. Simulation should be seen as a safe place for experiential learning, and that’s a pronounced advantage, particularly when working in the healthcare setting.

### **Best Practices in Simulation**

In 1987, Chickering and Gamson identified seven principles for good practice in undergraduate education. Their research spanned five decades and served as the foundation for the development of the National Survey of Student Engagement. Chickering and Gamson’s seven principles are active learning, prompt feedback, student/faculty interaction, collaborative learning, high expectations, allowing diverse styles for learning, and time on task. These principles can be used to guide simulation design and implementation.

Based on the work of Chickering and Gamson (1987), Jeffries (2008) has identified ‘best practices’ for simulation. They are:

- Ensure that specific simulation objectives match the content of the simulation.
- Set a time limit for the simulation and the debriefing encounter, and then adhere to it.
- Design assignments so students know their specific roles during the simulation.
- As an instructor, try not to interrupt the simulated encounter when students are trying to solve problems on their own.
- Involve a limited number of learners in the simulation experience in addition to one or two observers/recorders of the encounter – typically two-to-six students are assigned a role in the simulation experience.
- Develop simulations that are appropriate for the learner’s skill levels and cognitive abilities.
- When incorporating simulation into the teaching-learning environment, ensure that faculty development is included in the planning. (Jeffries, 2008)

Also, the International Nursing Association for Clinical Simulation and Learning (INACSL) has developed Standards of Best Practice: Simulation SM. The goal of INACSL is to “advance the science of simulation, share best practices, and provide evidence-based guidelines for implementation and training,” and accomplishes these through the online journal *Clinical Simulation in Nursing* (INACSL, n. d.).

The identification of best practices is an important step, in that it allows simulation research to become more useful to its consumers. Just as every classroom teaching experience is different, simulation is also extremely varied based on the design and use of selected best

practices. Discussion of the design and practices used while performing the research better allows consumers to determine if the finding would be generalizable to their simulation design.

### **Use of Simulation in Medical Education**

The research, and subsequent use of simulation in medical education has been extensive during the past decade. The literature reflected the primary focus of simulation in medical education as deliberate practice, which is aimed at mastery of psychomotor skills, and debriefing, which addresses the development of critical thinking. Related to deliberate practice, Issenberg, McGaghie, Perusa, and Scalese (2005) found that medical students using intensive deliberate practice techniques, defined as “focused, repetitive practice,” gave students “opportunities to correct errors, polish their performance and make skill demonstration effortless and automatic” (p. 23). Issenberg, a leader in simulation research in medical education, found that “whereas debriefing is often not a predominant feature of students performance in the clinical setting, debriefing is the lynch pin to successful high-fidelity simulation” (Issenberg et al, 2005, p. 24).

McGaghie et al (2011) provided a summative review of simulation research spanning a 20-year period from 1990-2010. They concluded that SBME (Simulation-based Medical Education) with DP (Deliberate Practice) is superior to traditional clinical medical education in achieving specific clinical skill acquisition goals (McGaghie et al, 2011).

The use of simulation in medical education is extensive, and is being used in many areas of both undergraduate and graduate medical education and medical sub-specialties (Nestel et al, 2011; Su & Juestel, 2010). Currently it is widely used to teach surgery, emergency medicine, anesthesiology, and intensive care medicine (Dieckmann et al, 2011). Based on the results of simulation research, the U.S. Medical Licensing Examination (USMLE) integrated standardized patients into the competency examination in 2004 (Johnson, 2003). The clinical skills component

of the USMLE requires examinees to obtain a health history, perform physical assessments, document appropriately, determine treatment plans, and develop rapport with the standardized patients (USMLE, 2015).

### **Motivation for Use of Simulation**

Simulation began to receive much more attention as a result of the Institute of Medicine's (IOM) reports, which focused on improving the nation's quality of health-care. The first published report in 1999, addressed the issues of mounting medical errors which were having a serious impact on patient outcomes (IOM, 1999). The second addressed reformation of the healthcare system to ensure improvement of healthcare services and the third, *Health Professions Education: A Bridge to Quality*, stated clinicians were not adequately prepared to address the increasingly complex needs of the nation's patient population (IOM, 2010). In addition, the 2010 Institute of Medicine (IOM) consensus report, *The Future of Nursing: Leading Change, Advancing Health*, recommended that 80% of all nurses have a bachelor's degree by 2020, a goal that it says will be achievable through the use of technology, including simulation in nursing education. (IOM, 2010).

Nursing responded to this report through an initiative called *Quality and Safety Education for Nurses* (QSEN). This initiative was funded by the Robert Wood Johnson Foundation, and was a call to educators to re-evaluate their educational practices and explore new educational strategies to meet the changing needs of the new student population and complex health care needs of patients.

In their own study of best practices in nursing education, The Carnegie Foundation for the Advancement of Teaching National Nursing Study, entitled *Educating Nurses: Teaching and Learning a Complex Practice of Care* (2010), led by nursing leader Dr. Patricia Benner,

identified a “significant gap that exists between current nursing practice and the education of nurses for that practice” (Benner et al, p. 49). This ‘theory-practice gap’ has been discussed by nursing educators for some time and simulation is being viewed as a tool that can narrow that divide.

### **Advantages of Simulation**

It is widely accepted that health care improvements require partnerships between academia and practice to bridge the gaps in nursing education and create positive patient outcomes. Although the IOM’s report (2010) stimulated the growing interest in simulation, there have been several factors that have influenced the serious decline in the quality of clinical experiences and encouraged healthcare educators to consider simulation as a viable teaching strategy (Weaver, 2011).

A major change in the health care environment has been the increasing acuity of patients, which creates substantial safety issues for patients and students. Regarding patient safety, the complex demands of today’s patient no longer offers a safe environment for students to practice their psychomotor and cognitive skills, and patients now have diagnoses that pose significant health threats to students if cautionary procedures are breached. Students are beginning practitioners and therefore they more frequently make mistakes. These safety issues are described in the statement, “Healthcare, especially the complex hospital care required to treat serious diseases, falls into the category of a high-hazard industry like aviation, chemical manufacturing, nuclear power generation, and the military” (Rutherford-Hemming, 2012, p. 130). Because of this complex clinical setting and the focus on patient and student safety, there have been negative implications for hands-on skills training. This has resulted in clinical experiences becoming more observational in nature, and thereby, limiting students’ transference

of knowledge to actual care settings (Hayden et al, 2014, Meyer, Hou, & Gajewski, 2011).

Meyer, Hou and Gajewski stated:

Simulation training is a recommended strategy to teach safe clinical practice, in part because initial learning for professionals in a real patient setting is hindered by changes in resources, such as shorter length of patient stay, higher patient acuity, nursing staff shortages, and a greater emphasis on prevention of medical errors. (Meyer, Hou, Gajewski, 2011, pg. 273)

Because simulation reflects the clinical setting and can imitate both expected and unexpected patient responses, it makes for an excellent learning environment for nursing students, yet occurs in a controlled, more secure, setting. It facilitates exploration of the consequences of clinical judgments without the fear of actually harming patients (Weaver, 2011; Robinson & Dearmon, 2013).

The high acuity of patients has also negatively impacted students' learning outcomes (Schoening, Sittner, & Todd, 2006). The faculty role has always been one of mentor to nursing students. Limited availability of patients for the faculty-student team to care for is decreasing opportunity for apprenticeship training. This has resulted in students having difficulty developing the skills required to meet specific course learning objectives (Hayden et al, 2014, Rutherford-Hemming, 2012). It also "can limit the breadth and depth of learning that can occur during any one clinical day, thereby undermining the potential value of the clinical experience" (Onello & Regan, 2013, p. 1).

The use of simulation experiences can be a feasible solution to this problem (Rutherford-Hemming, 2009). Simulation provides for students' acquisition of skills throughout the curriculum. In fundamental courses, this is done by assessing normal findings, practicing common skills and applying basic knowledge to a variety of common patient scenarios. This allows for exposure to prevalent patient conditions, basic skills and foundational knowledge. In



senior level courses, students are given more advanced opportunities, such as starting intravenous fluids in response to a patient's declining condition, detecting subtle changes in the patient's status, and being exposed to emergency scenarios (Nehring, Ellis, & Lashley, 2001). Bambini, Washburn and Perkins asserted that "the component of mastering clinical skills that is missing in the traditional skills lab setting is context" (2009). Simulation provides context and allows students to be prepared for the complexities they will be faced with in the future (Harder, 2010). One of the significant elements of simulation is that it allows an individual to learn a task while they are in the process of delivering patient care. It also allows educators to validate students' prior learning experiences and show how the knowledge they have is transferrable to new settings. The aim of simulation as described by Morton (1995) is "to replicate some or nearly all of the essential aspects of a clinical situation so that the situation may be more readily understood and managed when it occurs for real in clinical practice" (p. 76).

The limited availability of clinical opportunities has been multiplied by the fact that the length of hospital stays for patients has decreased. In addition, nursing shortages have resulted in an increased number of nursing students, therefore more students must vie for already limited clinical space (Wooton et al, 2010; Norman, 2012). This creates difficulties for a nursing faculty's ability to assign students to patients who have diagnoses that are being taught in the classroom. Simulation can remedy this by allowing students to be exposed to common, rare and complex situations where patients can demonstrate a myriad of responses to students' interventions (Kenner & Pressler, 2011). Also, being involved with patients who have sentinel events can now become an opportunity of all students rather than a few. Simulation can target a range of clinical skills that will be required after graduation, but are not routinely performed in the academic clinical setting due to limited exposure (Kenner & Pressler, 2011; Wooton, et al,

2010; Norman, 2012). And nursing students need practice not only for the motor components of a skill, but also the cognitive components, understanding how interventions need to be adapted based on patient conditions (Shinnik, Woo, & Menten, 2011). Simulation scenarios can be designed to address a variety of clinical situations for students with varying knowledge and skill levels.

Another factor affecting the clinical time of students is the lack of nursing education faculty. As a result of the nurse educator shortage, “nurse leaders and professional nursing organizations are calling for new clinical models and encouraging nursing educators to seek innovative approaches to traditional nursing education” (Jeffries, 2008, p. 75). The American Association of Colleges of Nursing has responded to the nursing faculty shortage by issuing a request for educators “to explore the use of simulated clinical experiences in supervised learning resource centers” (AACN, 2009).

As adult learners, students want to see how what they are learning will be applicable in a real work environment. Simulation allows students to be directly involved with the didactic material they are learning, and go beyond just talking about content. This learning strategy enhances the understanding and promotes the transfer of knowledge and skills. It actually allows the student to assume the role of a registered nurse, which is not the case in the actual clinical setting. They feel the weight of responsibility and begin to understand the consequences of their decisions and actions (Lasater, 2007). Katz (2010) asserted that “mannequin-based clinical simulation education potentially offers nursing students varied clinical patient situations that rate comparable with an acute setting” (p. 46).

Simulation also supports active learning. Although most of students’ previous education experiences may have made them more dependent learners, simulation moves them into a

situation where they are required to be active participants. Simulation is a type of experiential learning and “is embraced largely due to the belief that students learn better by experience compared to other types of learning such as lecture format” (Shinnick & Woo, 2011, p. 65). This may be a stressful situation initially, as students may have to unlearn some of the dependent habits previously established. However, students learn more when they are actively involved in the teaching-learning process. Simulation offers opportunities for students to participate actively in all phases of the endeavor. Although faculty usually initiates scenarios, upper level students can develop scenarios based on their own clinical experiences (Mackey et al, 2014).

Nursing educators are acutely aware that nursing students of today are different from years ago. Current students are dependent on technology, and expect technologically driven teaching methods. This millennial generation prefers to be “experiential learners, prefer group activities and expects immediate answers” (Robb, 2012). They have been exposed to technology for many years, and seem to do better with the use of technology in learner-centered teaching methods (Cannon-Diehl, 2009; Shinnick et al, 2011; Wolf et al, 2011; McDermott, 2012; Jeffries, 2005). Simulation meets the learning needs of the millennial student, and research supports their satisfaction with this form of teaching (Montenery et al, 2013).

Simulation also offers opportunities for deliberate practice (DP), the ability to repetitively practice skills in the context of a variety of clinical scenarios. This has proved to be valuable in the remediation of students who need more time to consolidate their learning, and for all students in the development of critical thinking skills.

One of the key features of most simulations is the focus on communication skills. Simulation has changed over the years and has become “a spectrum of education activities involving not just technological and computerized facilities, but including important human

interactions” (Bradley, 2006, p. 261). It is this feature that makes simulation a viable option for teaching those skills that enhance communication and team building, as well as develop empathy.

Increasing interest in simulation comes at a time when educators are also looking for ways to enhance training to include rapidly learned, learner-centered approaches. Nursing programs traditionally include only brief didactic information given over a few days, weeks or months, which shows limited knowledge and skill retention. Nursing faculty are encouraged to break from continuing to teach the same content in the same manner year after year. This promotes the use of simulation, as studies have shown that skills learned in simulations can be transferred to the practice environment (Nickerson, 2010; Jeffries, 2005; Alinier et al, 2006; Kirkman, 2013; Rutherford-Hemming, 2012; McGaghie et al, 2010).

Jeffries summarized the beliefs of many educators regarding simulation when she stated, “Probably the most important reason to adopt this pedagogy is because of the ability to create standardized environments that present students with safe, problem-solving encounters that require real-time assessment and interventions for real clinical problems” (Jeffries, 2008, p. 73).

### **Barriers to the Use of Simulation**

Although there are many advantages of using simulation, there are also challenges and limitations. Educators have long been summoned to embrace the role of guide and facilitator, but facilitating simulations requires a new skill set best learned through a series of educational and mentoring opportunities. The time required to develop and incorporate simulation as a teaching strategy is intensive. In addition, the cost of initial equipment, possible space limitations, and the need for personnel to run and maintain simulators is considerable (Rice & Gonzales, 2007).

Simulation can never perfectly replicate the actual clinical setting and patient care, but it has been shown to be a viable option to take the place of a portion of the required clinical hours.

### **Support for Simulation in Nursing**

The use of simulation has received support from all major organizations that influence nursing education. The American Association of Colleges of Nursing (AACN), which serves as the organization guiding schools of nursing in their curricula development stated in *The Essentials of Baccalaureate Education for Professional Nursing Practice*,

Simulation experiences augment clinical learning and are complementary to direct care opportunities essential to assuming the role of the professional nurse. Simulation experiences provide an effective safe environment for learning and applying the cognitive and performance skills needed for practice. (p. 34)

The National League for Nursing (NLN) Board of Governors' position statement on transforming nursing education has directed nurse educators to more effectively incorporate technology into their teaching (NLN, 2005). In 2009, the State Board of Nurse Examiners (SBNE) endorsed use of simulation as partial fulfillment of required clinical hours in their statement, "Clinical experiences might also include innovative teaching strategies that complement clinical experience for entry into practice competence" (SBNE, n. d.). The SBNE reported receiving an upsurge of requests from schools of nursing to increase the number of hours simulation could be used in place of clinical experiences. Because of limited quality studies demonstrating that students learned as adequately from simulation as traditional methods, they partnered with the NLN for further research. The joint study, *The NCSBN National Simulation Study: A Longitudinal, Randomized, Controlled Study Replacing Clinical Hours with Simulation in Prelicensure Nursing Education* (2014), concluded that "there were no differences among study groups regarding end-of-program nursing knowledge, clinical competency, or overall readiness for practice among new nursing graduates when 50% of traditional clinical

experiences in the undergraduate nursing program was replaced by simulation” (Hayden et al, 2014). As a result, the SBNE has supported those schools that chose to use simulation in the place of 50% of their clinical experiences, under the condition that nursing programs are “committed to the simulation program and have enough dedicated staff members and resources to maintain it on an ongoing basis” (Hayden et al, 2014). The conditions were discussed as, “faculty members who are formally trained in simulation pedagogy, had an adequate number of faculty members to support the student learners, had subject matter experts who conduct theory-based debriefing, and equipment and supplies to create a realistic environment” (Hayden et al, 2014).

Other organizations, which support the use of simulation in education, include the Agency for Healthcare Research and Quality, American College of Surgeons, American Council for Graduate Medical Education, American Nurses Association, and the American Association of Critical Care Nurses (Kenner & Pressler, 2011).

### **Theoretical Support of Simulation**

The concept of self-efficacy was developed through the result of Bandura’s (1982) proposition of social cognitive theory (Robb, 2012). It is defined by Bandura as “beliefs in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (Bandura, 1995, p. 2).

Self-efficacy is influenced by several sources of information: performance mastery, vicarious learning experiences, social persuasion, and psychological state.

The simulation lab offers opportunities to incorporate all of these elements.

The major focus of the simulation lab is the mastery of critical thinking and technical skills through deliberate practice, where students see the consequences of their clinical decisions

immediately. Bandura espoused that these mastery experiences are the most instrumental in the development of efficacy (Bandura, 1995).

Mastery is also achieved in concert with other students in an active learning environment. This is important because when a student observes success in others, who they perceive as similar to themselves, it supports their belief that they can also accomplish the task at hand (Bandura, 1977). The ‘social persuasion’ required for efficacy development can be achieved through the observation of other students’ successes as well as through the feedback or debriefing, which occurs following the simulation experience. As stated by Bandura (1988, p. 277), competencies are superbly developed when, “modeling is combined with guided practice and success experiences.”

Robb (2010) stated, when developing the simulation experience, “knowledge of the consequences of self-efficacy may enable the nurse educator to focus attention on the effects of students’ perceptions” (p. 170). It is the perception of success, feedback from others, and the person’s emotional state that determine the degree of self-efficacy (Bandura, 1999). Simulation offers opportunities for the mastery of skills, feedback from peers and faculty, and interfacing with faculty who promote a supportive milieu. It is the combination of these properties that makes the simulation lab an excellent environment for the development of self-efficacy.

Efficacy is important in the nursing profession because, according to Bandura, the stronger the perceived self-efficacy, the higher the goal challenges individuals set for themselves (Bandura, 1994). Students with increased self-efficacy have a staunch personal belief they can master an activity, attain a desired goal, and cope well in stressful situations (Bandura, 1994). Nurses generally are employed in areas where they experience high levels of stress and have

high performance expectations, and therefore, self-efficacy is a requirement for success in the profession.

In a review of theoretical models used with simulation, it was found that Self-Efficacy Theory, which appeared frequently in reviews, provides a “sound framework of constructs that resonate with participants’ experiences of HFS and with nursing programs’ educational objectives for HFS” (Rourke et al, 2010, p. 10). Although the characterized attributes of self-efficacy include confidence, perceived capability, and perseverance (Bandura, 1994), self-efficacy is often described as self-confidence in the literature (Artino, 2012). Perry (2011) supported the understanding that the term self-confidence is often used in place of the term self-efficacy when she reported self-efficacy and self-confidence are ‘surrogate terms’ (p.218). Leigh (2008), offered similar support by stating the “empirical referents associated with confidence/self-confidence are research variables and measurements of “self-confidence” and “self-efficacy” (p. 227). And based on the understanding that self-confidence increases as self-efficacy increases, a self-confidence scale was often trusted as an indicator of ability to carry out a clinical task (Cant & Cooper, 2009).

### **Effects of Self-confidence**

The correlation between perceived self-efficacy and academic success has been reported in the literature (Choi, 2005; Black et al, 2007; Jeffries & Rizzolo, 2006). Landis reported that students with greater feelings of competence demonstrate more effort while learning (Landis et al, 2007). Clark, Owen and Tholcken (2004) found students with lower levels of perceived self-efficacy benefited from emotional and academic support to meet their learning needs before they could suitably perform clinical skill competence.



An important aspect of related research is the link between self-efficacy and the acquisition of clinical skills (Bambini, Washburn, & Perkins, 2009; Wagner, Bear, & Sander, 2009). The transference of these skills to the patient care setting has also been suggested. (Bambini, Washburn, & Perkins, 2009; Wagner, Bear, & Sander, 2009). This transference is particularly important, as it will narrow the theory-practice gap, which is a primary focus in nursing education. (Kuiper & Pesut, 2004; Kuiper, Murdock, & Grant, (2010). Jeffries reported that it is this transference of skills that generates increased self-confidence and improved clinical judgments (Jeffries, 2005).

The literature also suggested that self-efficacy has a direct effect on psychological functioning of the student. Self-efficacy beliefs can affect how vulnerable a person may be to emotional stressors, alter their coping responses, and determine how much effort and persistence will be displayed during difficulties (Harder, 2010). Patient care settings are stressful and require students to be able to perform under difficult situations. The relationship between self-confidence scores and clinical skills performance is seen as an important aspect of simulation.

### **Self-confidence and Simulation**

The acquisition of self-confidence “must be recognized as a central tenet for the design and delivery of undergraduate programs” (Chesser-Smyth & Long, 2012, p. 145). One researcher stated, “Only when nursing students have confidence in their own abilities are they able to shift focus to the needs of their patients. Shifting from their own needs to that of a patient is essential to being a safe and competent practitioner.” (Leigh, 2008, p. 3). Multiple studies supported the connection between simulation and the development of self-confidence (Bambini, Washburn, & Perkins, 2009; Davis & Kimble, 2011; Lambton, O’Neill, & Dudum, 2008; Sinclair & Ferguson, 2009; Jeffries & Rizzoli, 2006).

One of the major initiatives of the National League for Nursing is to evaluate the use of simulation. In one study “three themes that emerged in the qualitative results were communication, confidence, and clinical judgment,” all of which improved and are important aspects of nursing care (Bambini et al 2009, p.81). In another study, increased confidence and satisfaction with the learning experience was discovered as positive outcomes of simulation among nursing students (Smith & Roehrs, 2009). The American Association of Colleges of Nursing (AACN) report included the increase of self-confidence in communication, psychomotor skills, and professional role development as a result of participation in reality-based simulation. (AACN, 2005)

Other studies have found that students did not perceive high-fidelity simulation increased their confidence, or saw no difference in those who did participate in simulation and those who did not (Feingold, Calaluce, & Kallen, 2004; Alinier, Hunt, & Gordon, 2004; Alinier et al., 2006).

Although a substantial number of studies have been conducted prior to 2010 related to self-confidence and simulation, they have used researcher-developed Likert scales, and are inconsistent in providing validity and reliability data (Shinnick et al, 2011). Jeffries and Rizzoli (2006) conducted a major study using a valid and reliable instrument to examine the effects of high vs. low fidelity simulation on self-confidence. They had a large convenience sample, used randomized controls to experimental groups, and found increases in student confidence in the groups’ learning with both high-fidelity simulation and static mannequins. This study “has made significant contribution to nursing education because it provided one of the first standardized frameworks for the use of HFS” (Onello & Regan, 2013, p.6).

There has been some difficulty in evaluating the studies related to simulation because simulation experiences vary widely and are dependent on well-trained faculty. Few studies actually provided adequate descriptions of the study design. A lack of an adequate description and discussion of best practices used, as well as lack of identification of faculty experience, prevents the consumer of the research from comfortably generalizing the findings to their own setting.

### **Satisfaction in Learning and Simulation**

Satisfaction in learning has often been a variable used by researchers when evaluating simulation and student learning outcomes. Although student satisfaction in learning is a noteworthy instructional outcome, it is the relationship to evaluating the use of effective teaching methods and students ability to practice in the clinical setting that makes it a valuable indicator of student success (Jeffries & Rizzoli, 2006).

Chickering and Gamble (1987) developed guidelines for good practices in undergraduate education, which served as the foundation for the development of the *National Survey of Student Engagement*. These principles have become a standard by which instructional methods are evaluated in higher education. Pamela Jeffries, a leading nurse researcher in the field of simulation, included the assessment of student satisfaction in learning as a variable on the instrument developed with Laerdal Medical Corporation, *Satisfaction and Self-Confidence in Learning* (Jeffries & Rizzoli, 2006). Jeffries concluded that if students' satisfaction is high, more of the principles of best practices in education, as described by Chickering and Gamson, are being incorporated into the learning environment (Jeffries & Rizzoli, 2006).

Additionally, Jeffries and Rizzoli (2006) stated that “when students perceive satisfaction with the simulation experience, this realization may carry over and increase their confidence and

ability to care for actual patients” (p. 12). Levett-Jones et al (2011) concurred with the belief that student satisfaction assists in building self-confidence which helps a student develop the skills and knowledge required by a graduate nurse. Other researchers have also reported the relationship between the development of self-confidence and academic success (Choi, 2005; Black et al, 2007).

Although many studies have been conducted in the past few decades related to student satisfaction in learning through simulation experiences, most have used small sample sizes and researcher-developed instruments that lacked reliability and validity data. Those researchers who conducted more rigorous studies, have found that student satisfaction is high when teaching using simulation experiences (Bambini et al, 2009; Nehring et al, 2010; Norman, 2012; Schoening et al, 2006; Shinnick et al, 2011; Smith & Roehrs, 2009; Wooten, 2010).

The literature supported continued research in the areas of satisfaction and self-confidence in learning through the use of simulation with the use of valid and reliable measurement instruments, randomized assignment of groups with group descriptions, larger sample sizes, and with varied teaching content.

## **CHAPTER 3. METHODOLOGY**

### **Purpose of the Study**

The primary purpose of this study was to determine the perceptions of selected aspects of high fidelity simulation among students enrolled in a baccalaureate nursing program and the influence of these perceptions on students' satisfaction and self-confidence in learning.

### **Objectives of the Study**

1. To describe currently enrolled baccalaureate degree nursing students based on selected characteristics:
  - (a) Age;
  - (b) Gender;
  - (c) GPA;
  - (d) Previous healthcare employment;
  - (e) Education level.
2. To describe baccalaureate degree nursing students' satisfaction in learning through the use of simulation.
3. To describe baccalaureate degree nursing students' self-confidence in learning through the use of simulation.
4. To describe baccalaureate nursing students' perceptions of the implementation of best simulation elements during simulation.
5. To determine if a relationship exists among baccalaureate nursing students' between satisfaction in learning through the use of simulation and participant demographics.
6. To determine if a relationship exists among baccalaureate nursing students' self-confidence in learning through the use of simulation and participant demographics.

7. To determine if a relationship exists among baccalaureate nursing students' perception of the implementation of best simulation design elements during simulation and participant demographics.
8. To determine if a relationship exists between satisfaction in learning and self-confidence in learning through the use of simulation among baccalaureate nursing students.
9. To determine if a relationship exists between perceptions of the implementation of best simulation design elements during simulation and satisfaction in learning among baccalaureate nursing students.
10. To determine if a relationship exists between perceptions of the implementation of best simulation design elements during simulation and self-confidence in learning among baccalaureate nursing students.
11. To determine if a model exists explaining the variance in satisfaction in learning from participant demographics and student perceptions of implementation of best simulation design during simulation.
12. To determine if a model exists explaining the variance in self-confidence in learning from participant demographics and student perceptions of the implementation of best simulation design during simulation.
13. To compare sophomore and senior perceptions of the implementation of best simulation design elements during simulation.
14. To compare sophomore and senior perceptions of satisfaction in learning related to their simulation experience.
15. To compare sophomore and senior perceptions of self-confidence in learning related to their simulation experience.

### **Population and Sample**

The target population for this study was defined as students enrolled in a baccalaureate degree nursing program in the southeastern United States. The accessible population was defined as the students enrolled in a baccalaureate degree nursing program at one private college in Louisiana. The sample that was selected for participation in the study included the following two groups: (1) all sophomore students in the selected nursing program who were enrolled in one specified sophomore level nursing course which included high fidelity simulation in the instructional activities of the course and (2) all senior students in the selected nursing program who were enrolled in one specified senior level nursing course which included high fidelity simulation in the instructional activities of the course. Permission to conduct research with the selected classes of students was obtained from the Dean. The sophomore students were enrolled in the first semester medical-surgical course in their curriculum and the senior students were enrolled in their final medical-surgical course in the curriculum. There were two sections of each of the selected courses with approximately 40-45 students in each section. Each of the sections included students who are out of sequence in the curriculum plan (due to a previous course failure, etc.). Data from these students who do not meet the year classification (e.g. junior level students enrolled in the sophomore level course, etc.) was excluded from the final useable data in the study.

### **Instrumentation**

Two instruments, developed by the National League for Nursing, were used to collect the data for this study. A brief description of each of the instruments is provided in the following sections.

*The Simulation Design Scale (student version)*, a 20-item instrument using a five-point Likert-type scale, was designed to evaluate the five design features of the instructor-developed

simulations used in the NLN/Laerdal study (1). The five design features include: 1) objectives/information; 2) support; 3) problem solving; 4) feedback; 5) fidelity. The instrument has two parts: one asks about the presence of specific features in the simulation, the other asks about the importance of those features to the learner. The instrument's reliability was tested using Cronbach's alpha, which was found to be 0.92 for presence of features, and 0.96 for the importance of features (NLN, n. d.).

*Student Satisfaction and Self-Confidence in Learning*, a 13-item instrument designed to measure student satisfaction (five items) with the simulation activity and self-confidence in learning (eight items) using a five-point Likert-type scale. This instrument includes two subscales: satisfaction and self-confidence. The student satisfaction subscale measures student satisfaction with five items related to simulation activities. The self- confidence subscale is comprised of eight items to measure students' confidence in the skills and knowledge presented in the simulation scenarios. Reliability was established using Cronbach's alpha: satisfaction = 0.94; self-confidence = 0.87 (NLN, n. d.).

### **Data Collection**

To begin the data collection process, a letter was sent to the Dean of Nursing at a small private in college in southeastern Louisiana asking permission to conduct the study. The letter asked permission to access demographics, GPA data of sophomore and senior nursing students, to distribute the surveys, have students complete them, and for survey collection. The letter included study objectives and assurances related to maintaining confidentiality.

An email was sent to the National League for Nursing (NLN) asking for permission to use their instruments in the study. Additionally, the researcher sought and received approval from the participating College and the LSU Office of Institution Review Board (IRB). The



researcher also requested approval from the nursing faculty in each of the courses involved in the study and the Simulation Lab Coordinator, and worked with faculty to determine days/times to conduct the study.

The researcher attended each class section to discuss the study and answer questions potential participants had about the study. Students provided their demographics related to work experience and student identification. Other demographics were obtained from the Registrar's office.

Students participated in HFS in the lab under the direction of faculty from their respective courses. After the simulation experience, the students were directed to the classrooms across the hall from the lab to complete the research instruments, which were distributed by the researcher.

Data from instruments were downloaded to Excel spreadsheets, with demographics and GPA, and then imported into SPSS for analysis. The paper and electronic copies of participant data have been protected to ensure privacy and confidentiality.

## **CHAPTER 4: RESULTS**

### **Objective One Results**

The first objective of this study was to describe currently enrolled baccalaureate degree nursing students in the southeastern region of the United States on the following demographic and academic characteristics:

- (a) Age;
- (b) Gender;
- (c) Overall college grade point average (GPA);
- (d) Previous healthcare employment (This variable is measured as whether they have had healthcare experience in direct patient care – Licensed Practical Nurse, Nursing Assistant, Nurse Technician, other);
- (e) Educational level (sophomore or senior).

There were a total of 158 study participants who provided responses to these demographic items. The results for each of these variables follow.

#### **Age**

The first variable on which the students were described was age. The mean age was 24.32 years ( $SD = 4.00$ ) for these students. The students' ages ranged from a low of 20 years to a high of 39 years. To further examine the study participants on the variable age, the reported ages were grouped into four categories. These categories were established by the researcher because of their relatedness to maturity and college/work experience. When data related to age were examined in ranges of measurements, the range that had the largest number of students was 22 - 23 years ( $n = 53$ , 33.5%). The distribution of all of these ranges is presented in Table 1.

Table 1 Age of Currently Enrolled Baccalaureate Degree Nursing Students at a Private College in the Southeastern Region of the United States

Age Range	Frequency	Percent
21 or less	38	24.1
22 – 23	53	33.5
24 – 25	28	17.7
26 or more	30	24.7
Total	149	100.0

Note: Mean Age = 24.32 years (SD = 4.00); Range = 20 – 39 years

### Gender

Another variable on which subjects were described was their gender. Of the 158 baccalaureate degree nursing students, 144 students (91.1%) were identified as female and 14 students (8.9%) were identified as male.

### Overall College Grade Point Average

The overall college grade point average (GPA) was another variable that was used to describe these baccalaureate nursing students. Overall college GPA was defined as the grade point average for all courses on their college transcript. The overall college GPAs ranged from a low of 2.16 to a high of 4.00 for these students, with a mean of 3.14 (SD = 0.36).

To further examine the study participants on the variable overall college GPA, the reported GPAs were grouped into four categories. These categories were established by the researcher based on their expected importance in the evaluation of their perceived self-confidence and satisfaction in learning. When the overall college GPA data were examined in ranges of measurements, the range of scores that had the largest number of students was 3.00 to

3.49 ( $n = 76$ , 48.1%). The complete information regarding the distribution of study participants in GPA ranges of measurement is presented in Table 2.

Table 2 Overall College Grade Point Average (GPA) of Currently Enrolled Baccalaureate Degree Nursing Students at a Private College in the Southeastern Region of the United States

Overall GPA Range	Frequency	Percent
3.50 or more	25	15.8
3.00 – 3.49	76	48.1
2.50 – 2.99	51	32.3
Less than 2.5	6	3.8
Total	158	100.0

Note: Mean Overall GPA = 3.14 ( $SD = 0.36$ ); Range = 2.16 – 4.00.

### **Previous Healthcare Employment**

Another variable on which students were described was whether they had previous healthcare employment. This was measured as whether they had healthcare employment in direct patient care as a Licensed Practical Nurse, Nursing Assistant, Nurse Technician, and/or other employment involving direct patient care. Of the 158 baccalaureate nursing students, 77 (48.7%) indicated they did have previous healthcare employment that met these criteria and 81 (51.3%) indicated they did not.

### **Educational Level**

The educational level of the baccalaureate nursing students was another variable that was investigated in this study. The sophomore students were currently enrolled in their second medical-surgical nursing course, and the senior students were currently enrolled in their fourth

medical-surgical nursing course. Of the 158 nursing students in the study, 73 (46.2%) were sophomore nursing students and 85 (53.8%) were senior nursing students.

### **Objective Two Results**

Objective two was to describe nursing students' satisfaction in learning, which was measured by the Student Satisfaction and Self-Confidence in Learning instrument. The researcher measured the participants' level of agreement on a total of five statements based on the following scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree. Participants indicated the highest level of agreement with two statements "The teaching methods used in this simulation were helpful and effective" ( $M = 4.16$ ,  $SD = 0.8$ ) and "I enjoyed how my instructor taught the simulation" ( $M = 4.16$ ,  $SD = 0.89$ ). The statements which reflected the lowest level of agreement were "The teaching materials used in this simulation were motivating and helped me to learn" ( $M = 4.04$ ,  $SD = 0.92$ ) and "The way my instructor(s) taught the simulation was suitable to the way I learn" ( $M = 4.04$ ,  $SD = 0.98$ ). The following interpretive scale was developed by the researcher to aid in reporting students' responses to the items: 4.5 – 5 = Strongly Agree, 3.5 - 4.49 = Agree, 2.5 – 3.49 = Undecided, 1.5 - 2.49 – Disagree, 1 – 1.49 = Strongly Disagree. When the data were examined using these interpretive descriptors, all five items received a rating of "Agree" (See Table 3).

To further examine the students' perception of satisfaction in learning, the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett's test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed

statistic for the KMO was .847, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis.

Table 3 Students' Satisfaction in Learning Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
The teaching methods used in this simulation were helpful and effective.	4.16	.80	A
I enjoyed how my instructor taught the simulation.	4.16	.89	A
The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	4.06	.84	A
The teaching materials used in this simulation were motivating and helped me to learn.	4.04	.92	A
The way my instructor(s) taught the simulation was suitable to the way I learn.	4.04	.98	A

<sup>a</sup> The response scale used was 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree.

<sup>b</sup> The interpretive scale used was 4.5–5 = strongly agree (SA), 3.5–4.49 = agree (A), 2.5–3.49 = undecided (U), 1.5–2.49 = disagree (D), 1–1.49 = strongly disagree (SD).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .904 to a low of .846. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et

al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 4.

Table 4 Factor Analysis of Responses to Satisfaction in Learning among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
The teaching methods used in this simulation were helpful and effective.	.904
The teaching materials used in this simulation were motivating and helped me to learn.	.887
I enjoyed how my instructor taught the simulation.	.886
The way my instructor(s) taught the simulation was suitable to the way I learn.	.853
The simulation provided me with a variety of learning materials and activities to promote my learning the medical surgical curriculum.	.846

Note: Eigenvalue = 3.83, percent of explained variance = 76.63

Based on the resulting one factor solution, an overall student perception of satisfaction in learning was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.09 (SD = .77), and the values ranged from a low of 1.00 to a high of 5.00.

### **Objective Three Results**

Objective three was to describe nursing students' self-confidence in learning, which was measured by the Student Satisfaction and Self-Confidence in Learning instrument. The researcher measured the participants' level of agreement on a total of eight statements using the following scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree. Participants indicated the highest level of agreement with the statement "It is my

responsibility as the student to learn what I need to know from this simulation experiment” (M = 4.28, SD = .789). The statement which reflected the lowest level of agreement was “I am confident that I am mastering the content of the simulation activity that my instructors presented to me” (M = 3.46, SD = 1.032). The following interpretive scale was developed by the researcher to aid in reporting students’ responses to the items: 4.5 – 5 = Strongly Agree, 3.5 - 4.49 = Agree, 2.5 – 3.49 = Undecided, 1.5 - 2.49 – Disagree, 1 – 1.49 = Strongly Disagree. When the data were examined using these interpretive descriptors, all five items received a rating of “Agree” (See Table 5).

To further examine the students’ perception of self-confidence in learning, the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett’s test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .871, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis.

Table 5 Students’ Self-Confidence in Learning Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
It is my responsibility as the student to learn what I need to know from this simulation activity	4.28	.79	A
I know how to get help when I do not understand the concepts covered in the simulation	4.21	.75	A



(Table 5 continued)

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
My instructors used helpful resources to teach the simulation	4.09	.88	A
I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum	0.06	.89	A
I know how to use simulation activities to learn critical aspects of these skills	3.91	.81	A
I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting	3.89	.92	A
It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time	3.82	.93	A
I am confident that I am mastering the content of the simulation activity that my instructors presented to me	3.46	1.03	A

<sup>a</sup> The response scale used was 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = strongly agree (SA), 3.5 = 4.49 = agree (A), 2.5 – 3.49 = undecided (U), 1.5 – 2.49 = disagree (D), 1 - 1.49 = strongly disagree (SD).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .904 to a low of .846. The loadings for items in the factor

extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 6.

Table 6 Factor Analysis of Responses to Self-Confidence in Learning Scale of Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
I am confident that I am developing the skills and obtaining the required knowledge from this simulation to perform necessary tasks in a clinical setting	.856
I know how to use simulation activities to learn critical aspects of these skills	.820
I am confident that this simulation covered critical content necessary for the mastery of medical surgical curriculum	.792
My instructors used helpful resources to teach the simulation	.766
I know how to get help when I do not understand the concepts covered in the simulation	.756
I am confident that I am mastering the content of the simulation activity that my instructors presented to me	.742
It is my responsibility as the student to learn what I need to know from this simulation activity	.666
It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time	.437

Note: Eigenvalue = 4.38, percent of explained variance = 54.71

Based on the resulting one factor solution, an overall student self-confidence and satisfaction in learning was computed as the mean of the responses to the eight items in the scale. The mean of this overall score was 3.96 (SD = .64), and the values ranged from a low of 1.00 to a high of 5.00.

### **Objective Four Results**

Objective four was to describe nursing students' perception of elements of simulation design, which was measured by the Simulation Design Scale (Student Version). The scale measures the five elements of simulation design – objectives and information, support, problem-solving, feedback/guided reflection, and fidelity (realism). For each of these design elements, subjects were asked to respond on 2 scales – assessment and importance.

#### **Objectives and Information – Assessment**

The researcher measured the participants' level of agreement on a total of five statements related to simulation objectives and information based on the following scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree. Participants indicated the highest level of agreement with the statement, "I clearly understood the purpose and objectives of the simulation" ( $M = 4.17$ ,  $SD = .908$ ). The statement, which reflected the lowest level of agreement, was "There was enough information provided at the beginning of the simulation to provide direction and encouragement" ( $M = 3.83$ ,  $SD = 1.125$ ). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the simulation element objectives and information assessment: 4.5 – 5 = Strongly Agree, 3.5 - 4.49 = Agree, 2.5 – 3.49 = Undecided, 1.5 - 2.49 – Disagree, 1 – 1.49 = Strongly Disagree. When the data were examined using these interpretive descriptors, all five items received a rating of "Agree" (See Table 7).

To further examine the students' perception regarding assessment of the simulation design element of objectives and information, the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett's test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to

Table 7 Students' Perception of the Assessment of the Simulation Design Element of Objectives and Information Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
I clearly understood the purpose and objectives of the simulation	4.17	.91	A
The cues were appropriate and geared to promote my understanding	3.97	.94	A
There was enough information provided to me during the simulation	3.88	1.06	A
The simulation provided enough information in a clear manner for me to problem-solve the situation	3.85	1.03	A
There was enough information provided at the beginning of the simulation to provide direction and encouragement	3.83	1.13	A

<sup>a</sup> The response scale used was 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = strongly agree (SA), 3.5 – 4.49 = agree (A), 2.5 – 3.49 = undecided (U), 1.5 – 2.49 = disagree (D), 1 - 1.49 = strongly disagree (SD).

determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .843, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order

of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .906 to a low of .766. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 8.

Based on the resulting one factor solution, an overall students' assessment of the simulation design element of objectives and information was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 3.94 (SD = .849), and the values ranged from a low of 1.40 to a high of 5.00.

Table 8 Factor Analysis of Responses to the Simulation Design Element of Objectives and Information Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
There was enough information provided to me during the simulation	.906
The simulation provided enough information in a clear manner for me to problem-solve the situation	.887
The cues were appropriate and geared to promote my understanding	.829
There was enough information provided at the beginning of the simulation to provide direction and encouragement	.799

(Table 8 continued)

Responses	Factor Loading
I clearly understood the purpose and objectives of the simulation	.766
Note: Eigenvalue = 3.52, percent of explained variance = 70.42	

### **Objectives and Information - Importance**

The researcher measured the participants' perception of the level of importance of the simulation design element related to objectives and information on a total of five statements based on the following scale: 5 = Very Important, 4 = Important, 3 = Neutral, 2 = Somewhat Important, 1 = Not Important. Participants indicated the highest level of importance with statement "There was enough information provided to me during the simulation" (M = 4.59, SD = .581). The statements, which reflected the lowest level of importance, were "The simulation provided enough information in a clear matter for me to problem-solve the situation" (M = 4.55, SD = .607), and "The cues were appropriate and geared to promote my understanding" (M = 4.55, SD = .639). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the importance of the simulation element objectives and importance: 4.5 – 5 = Very Important, 3.5 - 4.49 = Important, 2.5 – 3.49 = Neutral, 1.5 - 2.49 – Somewhat Important, 1 – 1.49 = Not Important. When the data were examined using these interpretive descriptors, all five items received a rating of "Very Important" (See Table 9).

To further examine the students' perception of the importance of simulation design element of objectives and information, the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett's test of Sphericity was used to

Table 9 Students Perception of the Importance of the Simulation Design Element Objectives and Information Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
There was enough information provided to me during the simulation	4.59	.58	VI
There was enough information provided at the beginning of the simulation to provide direction and encouragement	4.57	.69	VI
I clearly understood the purpose and objectives of the simulation	4.56	.67	VI
The cues were appropriate and geared to promote my understanding	4.55	.64	VI
The simulation provided enough information in a clear manner for me to problem-solve the situation	4.55	.61	VI

<sup>a</sup> The response scale used was 5 = very important, 4 = important, 3 = neutral, 2 = somewhat important, 1 = not important.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = very important (VI), 3.5 = 4.49 = important (I), 2.5 – 3.49 = neutral (N), 1.5 – 2.49 = somewhat important (SI), 1 - 1.49 = not important (NI).

determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .889, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis.

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .928 to a low of .885. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 10.

Based on the resulting one factor solution, an overall students' assessment of the importance of the simulation design element of objectives and information was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.56 ( $SD = .574$ ), and the values ranged from a low of 2.20 to a high of 5.00.

Table 10 Factor Analysis of Responses to Students' Perception of Importance of the Simulation Design Element of Objectives and Information Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
There was enough information provided to me during the simulation	.928
The simulation provided enough information in a clear manner for me to problem-solve the situation	.913



(Table 10 continued)

Responses	Factor Loading
I clearly understood the purpose and objectives of the simulation	.898
The cues were appropriate and geared to promote my understanding	.897
There was enough information provided at the beginning of the simulation to provide direction and encouragement	.885

Note: Eigenvalue = 4.09, percent of explained variance = 81.75

### **Support - Assessment**

The researcher measured the participants' level of agreement on a total of four statements related to the simulation design element of support based on the following scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree. Participants indicated the highest level of agreement with the statement "I was supported in the learning process" ( $M = 4.12$ ,  $SD = .90$ ). The statement, which reflected the lowest level of agreement, was "I felt supported by the teacher's assistance during the simulation" ( $M = 3.92$ ,  $SD = 1.14$ ). The following interpretive scale was developed by the researcher to aid in reporting students' perception of the simulation element support: 4.5 – 5 = Strongly Agree, 3.5 - 4.49 = Agree, 2.5 – 3.49 = Undecided, 1.5 - 2.49 – Disagree, 1 – 1.49 = Strongly Disagree. When the data were examined using these interpretive descriptors, all five items received a rating of "Agree" (See Table 11).

To further examine the students' perception regarding the assessment of the simulation design element of support, the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett's test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling

Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .856, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

Table 11 Students' Perception of the Assessment of the Simulation Design Element of Support Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
I was supported in the learning process	4.12	.90	A
Support was offered in a timely manner	4.07	.95	A
My need for help was recognized	3.94	1.02	A
I felt supported by the teacher's assistance during the simulation	3.92	1.14	A

<sup>a</sup> The response scale used was 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = strongly agree (SA), 3.5 = 4.49 = agree (A), 2.5 – 3.49 = undecided (U), 1.5 – 2.49 = disagree (D), 1 - 1.49 = strongly disagree (SD).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .917 to a low of .882. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as

specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 12.

Table 12 Factor Analysis of Responses to Perceptions of the Simulation Design Element of Support Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
I felt supported by the teacher's assistance during the simulation	.917
I was supported in the learning process	.912
Support was offered in a timely manner	.909
My need for help was recognized.	.882

Note: Eigenvalue = 3.28, percent of explained variance = 81.92

Based on the resulting one factor solution, overall students' assessment of the simulation design element of support was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.02 (SD = .91), and the values ranged from a low of 1.00 to a high of 5.00.

### **Support - Importance**

The researcher measured the participants' perception of the level of importance of the simulation design element of support on a total of four statements based on the following scale: 5 = Very Important, 4 = Important, 3 = Neutral, 2 = Somewhat Important, 1 = Not Important. Participants indicated the highest level of importance with statement "I was supported in the learning process" (M = 4.60, SD = .58). The statements, which reflected the lowest level of importance, were "Support was offered in a timely manner" (M = 4.57, SD = .63), and "I felt

supported by the teacher’s assistance during the simulation” ( $M = 4.57$ ,  $SD = .63$ ). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the importance of simulation element support: 4.5 – 5 = Very Important, 3.5 - 4.49 = Important, 2.5 – 3.49 = Neutral, 1.5 - 2.49 – Somewhat Important, 1 – 1.49 = Not Important. When the data were examined using these interpretive descriptors, all five items received a rating of “Very Important” (See Table 13).

Table 13 Students’ Perceptions of the Importance of Simulation Design Element of Support Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
I was supported in the learning process	4.60	.58	VI
My need for help was recognized	4.58	.62	VI
Support was offered in a timely manner	4.57	.63	VI
I felt supported by the teacher’s assistance during the simulation	4.57	.63	VI

<sup>a</sup> The response scale used was 5 = very important, 4 = important, 3 = neutral, 2 = somewhat important, 1 = not important.

<sup>b</sup> The interpretive scale used was 4.5–5 = very important (VI), 3.5–4.49 = important (I), 2.5–3.49 = neutral (N), 1.5–2.49 = somewhat important (SI), 1–1.49 = not important (NI).

The researcher further examined the students’ perception of the importance of the simulation design element of support by conducting a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett’s test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining

sampling adequacy. The computed statistic for the KMO was .817, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .914 to a low of .903. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 14.

Based on the resulting one factor solution, an overall students' perception of the importance of the element of support in simulation design was computed as the mean of the responses to the four items in the scale. The mean of this overall score was 4.58 (SD = .57), and the values ranged from a low of 3.00 to a high of 5.00.

Table 14 Factor Analysis of Responses to Students' Perceptions of Importance of the Simulation Design Element of Support Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
I was supported in the learning process	.941
My need for help was recognized	.936
I felt supported by the teacher's assistance during the simulation	.927

(Table 14 continued)

Responses	Factor Loading
Support was offered in a timely manner	.903

Note: Eigenvalue = 3.43, percent of explained variance = 85.92

### **Problem Solving - Assessment**

The researcher measured the participants' level of agreement on a total of five statements related to the simulation design element of problem-solving based on the following scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree. Participants indicated the highest level of agreement with statements "I was encouraged to explore all possibilities of the simulation" ( $M = 4.27$ ,  $SD = .80$ ) and "The simulation allowed me the opportunity to prioritize nursing assessments and care" ( $M = 4.27$ ,  $SD = .86$ ). The statement, which reflected the lowest level of agreement, was "The simulation provided me an opportunity to goal set for my patient" ( $M = 4.09$ ,  $SD = .97$ ). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the simulation element problem solving: 4.5 – 5 = Strongly Agree, 3.5 - 4.49 = Agree, 2.5 – 3.49 = Undecided, 1.5 - 2.49 – Disagree, 1 – 1.49 = Strongly Disagree. When the data were examined using these interpretive descriptors, all five items received a rating of "Agree" (See Table 15).

To further examine the students' perception regarding the assessment of the simulation design element of problem-solving, the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett's test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by

examining sampling adequacy. The computed statistic for the KMO was .822, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

Table 15 Students' Perception of the Assessment of the Simulation Design Element of Problem-Solving Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
I was encouraged to explore all possibilities of the simulation	4.27	.80	A
The simulation allowed me the opportunity to prioritize nursing assessments and care	4.27	.86	A
Independent problem-solving was facilitated	4.23	.81	A
The simulation was designed for my specific level of knowledge and skills	4.12	.97	A
The simulation provided me an opportunity to goal set for my patient	4.09	.97	A

<sup>a</sup> The response scale used was 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = strongly agree (SA), 3.5 – 4.49 = agree (A), 2.5 – 3.49 = undecided (U), 1.5 – 2.49 = disagree (D), 1 - 1.49 = strongly disagree (DS).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .884 to a low of .785. The loadings for items the factors

extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 16.

Table 16 Factor Analysis of Responses to Perceptions of the Simulation Design Element of Problem-Solving Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States.

Responses	Factor Loading
The simulation provided me an opportunity to goal set for my patient	.884
The simulation was designed for my specific level of knowledge and skills	.867
The simulation allowed me the opportunity to prioritize nursing assessments and care	.852
I was encouraged to explore all possibilities of the simulation	.843
Independent problem-solving was facilitated	.785

Note: Eigenvalue = 3.59, percent of explained variance = 71.73

Based on the resulting one factor solution, overall students' assessment of the simulation design element of problem-solving was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.20 (SD = .74), and the values ranged from a low of 1.00 to a high of 5.00.

### **Problem Solving - Importance**

The researcher measured the participants' perception of the level of importance of the simulation design element of problem-solving on a total of five statements based on the following scale: 5 = Very Important, 4 = Important, 3 = Neutral, 2 = Somewhat Important, 1 =



Not Important. Participants indicated the highest level of importance with statement “The simulation allowed me the opportunity to prioritize nursing assessments and care” ( $M = 4.61$ ,  $SD = .58$ ). The statement which reflected the lowest level of importance, was “The simulation provided me an opportunity to goal set for my patient” ( $M = 4.51$ ,  $SD = .66$ ). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the importance of the simulation element problem solving: 4.5 – 5 = Very Important, 3.5 - 4.49 = Important, 2.5 – 3.49 = Neutral, 1.5 - 2.49 – Somewhat Important, 1 – 1.49 = Not Important. When the data were examined using these interpretive descriptors, all five items received a rating of “Very Important” (See Table 17).

The researcher further examined the students’ perception of the importance of the simulation design element of problem-solving by conducting a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett’s test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .871, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

Table 17 Students’ Perceptions of the Importance of Simulation Design Element of Problem-Solving Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
The simulation allowed me the opportunity to prioritize nursing assessments and care	4.61	.58	VI

(Table 17 continued)

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
The simulation was designed for my specific level of knowledge and skills	4.56	.63	VI
Independent problem-solving was facilitated	4.53	.70	VI
I was encouraged to explore all possibilities of the simulation	4.53	.64	VI
The simulation provided me an opportunity to goal set for my patient	4.51	.66	VI

<sup>a</sup> The response scale used was 5 = very important, 4 = important, 3 = neutral, 2 = somewhat important, 1 = not important.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = very important (VI), 3.5 = 4.49 = important (I), 2.5 – 3.49 = neutral (N), 1.5 – 2.49 = somewhat important (SI), 1 - 1.49 = not important (NI).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .919 to a low of .883. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 18.

Based on the resulting one factor solution, overall students' assessment of the importance of the simulation design element of problem-solving was computed as the mean of the responses

to the five items in the scale. The mean of this overall score was 4.54 (SD = .57), and the values ranged from a low of 3.00 to a high of 5.00.

Table 18 Factor Analysis of Responses to Students Perceptions of Importance of the Simulation Design Element of Problem-Solving Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
I was encouraged to explore all possibilities of the simulation	.919
The simulation allowed me the opportunity to prioritize nursing assessments and care	.904
Independent problem-solving was facilitated	.888
The simulation was designed for my specific level of knowledge and skills	.886
The simulation provided me an opportunity to goal set for my patient	.883

Note: Eigenvalue = 4.02, percent of explained variance = 80.31

### **Feedback / Guided Reflection - Assessment**

The researcher measured the participants' level of agreement on a total of four statements related to the simulation design element of feedback/guided reflection based on the following scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree.

Participants indicated the highest level of agreement with the statement "Feedback was provided in a timely manner" ( $M = 4.57$ , SD = .63). The statement, which reflected the lowest level of agreement, was "The simulation allowed me to analyze my own behavior and actions" ( $M = 4.46$ , SD = .75). The following interpretive scale was developed by the researcher to aid in reporting students' perception of the simulation element feedback/guided reflection: 4.5 – 5 = Strongly Agree, 3.5 - 4.49 = Agree, 2.5 – 3.49 = Undecided, 1.5 - 2.49 – Disagree, 1 – 1.49 =

Strongly Disagree. When the data were examined using these interpretive descriptors, all five items received a rating of “Agree” (See Table 19).

To further examine the students’ perception regarding the assessment of the simulation design element of feedback/guided reflection, the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett’s test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .771, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

Table 19 Students’ Perception of the Assessment of the Simulation Design Element of Feedback/Guided Reflection Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
Feedback was provided in a timely manner	4.57	.63	SA
There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level	4.56	.72	SA
Feedback provided was constructive	4.54	.69	SA
The simulation allowed me to analyze my own behavior and actions	4.46	.75	A

<sup>a</sup> The response scale used was 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = strongly agree (SA), 3.5 – 4.49 = agree (A), 2.5 – 3.49 = undecided (U), 1.5 – 2.49 = disagree (D), 1 - 1.49 = strongly disagree (SD)

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .891 to a low of .821. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 20.

Table 20 Factor Analysis of Responses to Perceptions of the Simulation Design Element of Feedback/Guided Reflection Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
Feedback was provided in a timely manner	.891
Feedback provided was constructive	.870
There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level	.866
The simulation allowed me to analyze my own behavior and actions	.821

Note: Eigenvalue = 2.97, percent of explained variance = 74.36

Based on the resulting one factor solution, overall students' assessment of the simulation design element of feedback/guided reflection was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.52 (SD = .65), and the values ranged from a low of 1.00 to a high of 5.00.

### Feedback / Guided Reflection - Importance

The researcher measured the participants' perception of the level of importance of the simulation design element of feedback/guided reflection on a total of four statements based on the following scale: 5 = Very Important, 4 = Important, 3 = Neutral, 2 = Somewhat Important, 1 = Not Important. Participants indicated the highest level of importance with the statement, "Feedback provided was constructive" (M = 4.66, SD = .55). The statement which reflected the lowest level of importance was "The simulation allowed me to analyze my own behavior and actions" (M = 4.62, SD = .62). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the importance of the simulation element feedback/guided reflection: 4.5 – 5 = Very Important, 3.5 - 4.49 = Important, 2.5 – 3.49 = Neutral, 1.5 - 2.49 – Somewhat Important, 1 – 1.49 = Not Important. When the data were examined using these interpretive descriptors, all four items received a rating of "Very Important" (See Table 21).

Table 21 Students' Perceptions of the Importance of Simulation Design Element of Feedback/Guided Reflection Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
Feedback provided was constructive	4.66	.55	VI
There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level	4.66	.57	VI
Feedback was provided in a timely manner	4.65	.58	VI

(Table 21 continued)

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
The simulation allowed me to analyze my own behavior and actions	4.62	.62	VI

<sup>a</sup> The response scale used was 5 = very important, 4 = important, 3 = neutral, 2 = somewhat important, 1 = not important.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = very important (VI), 3.5 = 4.49 = important (I), 2.5 – 3.49 = neutral (N), 1.5 – 2.49 = somewhat important (SI), 1 - 1.49 = not important (NI).

The researcher further examined the students' perception of the importance of the simulation design element of feedback/guided reflection by conducting a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett's test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .795, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with loadings ranging from a high of .950 to a low of .892. The loadings for items in the factor

extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 22.

Table 22 Factor Analysis of Responses to Students' Perceptions of Importance of the Simulation Design Element of Feedback/Guided Reflection Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
Feedback was provided in a timely manner	.950
The simulation allowed me to analyze my own behavior and actions	.938
There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level	.933
Feedback provided was constructive	.892

Note: Eigenvalue = 3.45, percent of explained variance = 86.22

Based on the resulting one factor solution, overall students' perception of the importance of the simulation design element of feedback/guided reflection was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.65 (SD = .54), and the values ranged from a low of 3.00 to a high of 5.00.

### **Fidelity (Realism) - Assessment**

The researcher measured the participants' level of agreement on a total of two statements related to the simulation design element of fidelity (realism) based on the following scale: 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree. Participants indicated the highest level of agreement with the statement "Real life factors, situation, and



variables were built into the simulation scenario” (M = 4.34, SD = .95). The statement, which reflected the lowest level of agreement, was “The scenario resembled a real-life situation” (M = 4.23, SD = 1.02). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the simulation design element fidelity (realism): 4.5 – 5 = Strongly Agree, 3.5 - 4.49 = Agree, 2.5 – 3.49 = Undecided, 1.5 - 2.49 – Disagree, 1 – 1.49 = Strongly Disagree. When the data were examined using these interpretive descriptors, all five items received a rating of “Agree” (See Table 23).

Table 23 Students’ Perception of the Simulation Design Element of Fidelity (Realism) Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
Real life factors, situations, and variables were built into the simulation scenario	4.34	.95	A
The scenario resembled a real-life situation	4.23	1.02	A

<sup>a</sup> The response scale used was 5 = strongly agree, 4 = agree, 3 = undecided, 2 = disagree, 1 = strongly disagree.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = strongly agree (SA), 3.5 = 4.49 = agree (A), 2.5 – 3.49 = undecided (U), 1.5 – 2.49 = disagree (D), 1 - 1.49 = strongly disagree (SD).

To further examine the students’ perception regarding the assessment of the simulation design element of fidelity (realism), the researcher conducted a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett’s test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .50, and .5 is the level at

which a factor analysis is recommended. Both tests met the assumption for the use of factor analysis (Hair et al, 2010).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

When the factor analysis was examined, the number of factors extracted was one with both statements having a loading of .97. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 24.

Based on the resulting one factor solution, overall students' assessment of the simulation design element of fidelity (realism) was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.28 (SD = .95), and the values ranged from a low of 1.00 to a high of 5.00.

Table 24 Factor Analysis of Responses to Perceptions of the Simulation Design Element of Fidelity (Realism) Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
Real life factors, situations, and variables were built into the simulation scenario	.97
The scenario resembled a real-life situation	.97

Note: Eigenvalue = 1.88, percent of explained variance = 93.91

### **Fidelity (Realism) - Importance**

The researcher measured the participants' perception of the level of importance of the simulation design element of fidelity (realism) on a total of five statements based on the following scale: 5 = Very Important, 4 = Important, 3 = Neutral, 2 = Somewhat Important, 1 = Not Important. Participants indicated the highest level of importance with statement "Real life factors, situations, and variables were built into the simulation scenario" ( $M = 4.66$ ,  $SD = .56$ ). The statement which reflected the lowest level of importance, was "The scenario resembled a real-life situation" ( $M = 4.61$ ,  $SD = .64$ ). The following interpretive scale was developed by the researcher to aid in reporting student perceptions of the importance of the simulation element fidelity (realism): 4.5 – 5 = Very Important, 3.5 - 4.49 = Important, 2.5 – 3.49 = Neutral, 1.5 - 2.49 – Somewhat Important, 1 – 1.49 = Not Important. When the data were examined using these interpretive descriptors, all five items received a rating of "Very Important" (See Table 25).

The researcher further examined the students' perception of the importance of the simulation design element of fidelity (realism) by conducting a factor analysis to determine if there were any underlying constructs in the scale. The Bartlett's test of Sphericity was used to determine the degree of deviation from normality by comparing the samples to determine the degree of correlation among the items. In addition, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was used to determine the appropriateness of using factor analysis by examining sampling adequacy. The computed statistic for the KMO was .500, and .5 is the level at which a factor analysis is appropriate. Both tests met the assumption for the use of factor analysis (Hair, et al, 2010).

To determine the factors to be extracted from the responses the scree plot technique was used. The scree plot is created by plotting the latent roots against the number of factors in order of extraction and identifying the most pronounced bend in the scree plot curve. The extraction method used was the Principal Component Analysis with Varimax rotation.

Table 25 Students' Perceptions of the Importance of Simulation Design Element of Fidelity (Realism) Among Baccalaureate Nursing Students at a Private College in the Southeast Region of the United States

Statement	Mean <sup>a</sup>	Standard Deviation	Interpretation <sup>b</sup>
Real life factors, situation, and variables were built into the simulation scenario	4.66	.56	VI
The scenario resembled a real-life situation	4.61	.64	VI

<sup>a</sup> The response scale used was 5 = very important, 4 = important, 3 = neutral, 2 = somewhat important, 1 = not important.

<sup>b</sup> The interpretive scale used was 4.5 – 5 = very important (VI), 3.5 – 4.49 = important (I), 2.5–3.49 = neutral (N), 1.5–2.49 = somewhat important (SI), 1-1.49 = not important (NI).

When the factor analysis was examined, the number of factors extracted was one with both having a loading of .97. The loadings for items in the factor extracted were examined to determine that they met the minimum acceptable loading criteria as specified by Hair, Black, Babin, Anderson, and Tatham (2010). For exploratory research Hair et al. (2010) suggested that this criterion may be as low as .30. The results of the factor analysis are presented in Table 26.

Based on the resulting one factor solution, overall students' perception of the importance of the simulation design element of fidelity (realism) was computed as the mean of the responses to the five items in the scale. The mean of this overall score was 4.64 (SD = .59), and the values ranged from a low of 3.00 to a high of 5.00.

Table 26 Factor Analysis of Responses to Students' Perceptions of Importance of the Simulation Design Element of Fidelity (Realism) Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

Responses	Factor Loading
Real life factors, situation, and variables were built into the simulation scenario	.97
The scenario resembled a real-life situation	.97

Note: Eigenvalue = 1.89, percent of explained variance = 94.62

### **Objective Five Results**

Objective five was to determine if a relationship existed between satisfaction in learning, using the Student Satisfaction and Self-Confidence in Learning instrument and demographic characteristics of age, gender, GPA, previous healthcare experience, and educational level. The demographic characteristics are identified and measured as follows: age (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare employment (yes or no); and educational level (sophomore or senior).

#### **Relationship between Satisfaction in Learning and Age**

In order to determine if a relationship existed between satisfaction in learning (dependent variable) and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between satisfaction in learning and age of the baccalaureate nursing student ( $r = -.026$ ,  $N = 158$ ,  $p = .749$ ).

#### **Relationship between Satisfaction in Learning and GPA**

In order to determine if a relationship existed between satisfaction in learning (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used

the Pearson Product Moment correlation coefficient. There was no significant correlation between satisfaction in learning and age of the baccalaureate nursing student ( $r = .071$ ,  $N = 158$ ,  $p = .374$ ).

### **Relationship between Satisfaction in Learning and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between satisfaction in learning and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of these 3, 2 of the variables were found to be statistically significant. (See Table 27).

Table 27 Relationship between Satisfaction in Learning and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

		n	m	sd	t	df	p
Educational	Sophomore	73	4.50	.46	7.08	136	<.001 Level
	Senior	85	3.75	.82			
Previous Healthcare Employment	Yes	77	3.89	.86	-3.29	156	<.001
	No	81	4.29	.63			
Gender	Female	144	4.10	.80	.307	22	.762
	Male	14	4.06	.44			

These included: 1) having previous healthcare employment ( $t = -3.29$ ,  $p = .001$ ) and 2) educational level ( $t = 7.08$ ,  $p = <.001$ ). The variable which was found to have no statistical significance was gender ( $t = .307$ ,  $p = .762$ ). Those students without previous health care employment rated their satisfaction in learning higher than those with previous healthcare employment. Sophomore students had higher satisfaction in learning than senior students.

### **Objective Six Results**

Objective six was to determine if a relationship existed between self-confidence in learning, using the Student Satisfaction and Self-Confidence in Learning instrument and demographic characteristics of age, gender, GPA, previous healthcare employment, and educational level. The demographic characteristics are identified and measured as follows: age (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare employment (yes or no); and educational level (sophomore or senior).

#### **Relationship between Self-Confidence in Learning and Age**

In order to determine if a relationship existed between self-confidence in learning (dependent variable) and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between self-confidence in learning and age of the baccalaureate nursing student ( $r = -.053$ ,  $N = 158$ ,  $p = .508$ ).

#### **Relationship between Self-Confidence in Learning and GPA**

In order to determine if a relationship existed between self-confidence in learning (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant

correlation between satisfaction in learning and GPA of the baccalaureate nursing student ( $r = .030$ ,  $N = 158$ ,  $p = .711$ )

### **Relationship between Self-Confidence in Learning and Gender, Previous Healthcare Employment and Educational Level**

In order to determine if a relationship existed between self-confidence in learning and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of these 3, 2 of the variables were found to have a significant difference. They were educational level ( $t = 5.98$ ,  $p < .001$ ) and previous healthcare experience ( $t = -2.71$ ,  $p < .007$ ) (See Table 28).

Table 28 Relationship between Self-Confidence in Learning and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

		<i>n</i>	<i>m</i>	<i>sd</i>	<i>t</i>	<i>df</i>	<i>p</i>
Educational	Sophomore	73	4.25	.41	5.98	138	<.001 Level
	Senior	85	3.75	.70			
Gender	Female	144	3.98	.65	.76	156	.448
	Male	14	3.84	.51			
Previous Healthcare Employment	Yes	77	3.82	.67	-2.71	156	.007
	No	81	4.10	.58			



Sophomore students reported greater self-confidence in learning than senior students, and those students without previous healthcare employment reported greater self-confidence than those with previous healthcare employment.

### **Objective Seven Results**

Objective Seven was to determine if a relationship existed between students' perceptions of the implementation of best simulation design elements, as measured by the SDS instrument, and demographic characteristics of age, gender, GPA, previous healthcare employment, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare experience (yes or no); and educational level (sophomore or senior).

### **Objectives and Information - Assessment**

#### **Relationship between the Assessment of Objectives and Information and Age**

In order to determine if a relationship existed between the simulation design element objectives and information (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the element objectives and information and age of the baccalaureate nursing student ( $r = -.134$ ,  $N = 156$ ,  $p = .094$ ).

#### **Relationship between the Assessment of Objectives and Information and GPA**

In order to determine if a relationship existed between the simulation design element objectives and information (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the element objectives and information and age of the baccalaureate nursing student ( $r = -.063$ ,  $N = 156$ ,  $p = .434$ ).

## Relationship between the Assessment of Objectives and Information and Gender, Previous Healthcare Employment, and Educational Level

In order to determine if a relationship existed between the simulation design element objectives and information and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of these 3, the only variable for which significant difference was found was educational level ( $t = 4.87$ ,  $p = <.001$ ) (See Table 29). The nature of the relationship was such that sophomore students tended to have higher scores on their assessment of the simulation design element objectives and information than senior students.

Table 29 Relationship between the Simulation Design Element Related to Objectives and Information and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern Region of the United States

		n	m	sd	t	df	p
Educational	Sophomore	71	4.27	.65	4.87	151	<.001 Level
	Senior	85	3.66	.90			
Previous Healthcare Employment	Yes	76	3.86	.85	-1.176	154	.241
	No	80	4.02	.85			
Gender	Female	142	3.95	.88	.633	25	.532
	Male	14	3.86	.44			

## **Objectives and Information – Importance**

The researcher measured the participants' perception of the level of importance of the simulation design element related to objectives and information and demographic characteristics of age, gender, GPA, previous healthcare employment, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare employment (yes or no); and educational level (sophomore or senior).

### **Relationship between the Importance of Objectives and Information and Age**

In order to determine if a relationship existed between the importance of the simulation design element objectives and information (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the assessment of the element of objectives and information and age of the baccalaureate nursing student ( $r = -.034$ ,  $N = 153$ ,  $p = .679$ ).

### **Relationship between the Importance of Objectives and Information and GPA**

In order to determine if a relationship existed between the importance of the simulation design element objectives and information (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the importance of objectives and information and age of the baccalaureate nursing student ( $r = .148$ ,  $N = 153$ ,  $p = .068$ ).

## Relationship between the Importance of Objectives and Information and Gender, Previous Healthcare Employment, and Educational Level

In order to determine if a relationship existed between the importance of the simulation design element objectives and information and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. All of the 3 variables were found to have significant differences, educational level ( $t = 2.65$ ,  $p = .009$ ), previous healthcare employment ( $t = -2.591$ ,  $p = 0.11$ ), and gender ( $t = 3.705$ ,  $p = <.001$ ) (See Table 30).

Table 30 Relationship between the Importance of the Simulation Design Element Related to Objectives and Information and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Gender	Female	139	4.62	.54	3.705	151	<.001
	Male	14	4.04	.66			
Educational Level	Sophomore	71	4.69	.46	2.65	150	.009
	Senior	82	4.45	.64			
Previous Healthcare Employment	Yes	73	4.44	.64	-2.591	134	.011
	No	80	4.68	.49			

The nature of the relationship was that sophomore students tended to have higher values on the assessment of the importance of the simulation design element objectives and information

than seniors. Students, who had no previous healthcare employment, tended to have higher values on the assessment of the importance of the simulation design element objectives and information than students with previous healthcare employment. Female students tended to have higher values on the assessment of the importance of the simulation design element objectives and information than male students.

### **Support - Assessment**

#### **Relationship between the Assessment of Support and Age**

In order to determine if a relationship existed between the assessment of the simulation design element support (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was a significant, but low, correlation between the element of support and age of the baccalaureate nursing student ( $r = -.165$ ,  $N = 155$ ,  $p = .04$ ). To identify the strength of the relationship, results were analyzed according to Davis' (1971) descriptors of association ( $.00 - .09 =$  negligible,  $.10 - .29 =$  low,  $.30 - .49 =$  moderate,  $.50 - .69 =$  substantial,  $> .70 =$  very strong). The nature of the relationship was such that individuals with a greater age tended to have lower values on the assessment of the simulation design element of support.

#### **Relationship between the Assessment of Support and GPA**

In order to determine if a relationship existed between the simulation design element support (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the assessment of support and age of the baccalaureate nursing student ( $r = .66$ ,  $N = 155$ ,  $p = .418$ ).

### Relationship between the Assessment of Support and Gender, Previous Healthcare Employment, and Educational Level

In order to determine if a relationship existed between the simulation design element support and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of these 3, the only variable for which significant difference was found was educational level ( $t = 5.688$ ,  $p = <.001$ ) (See Table 31). The nature of the relationship was such that sophomore students tended to have higher values on the assessment of the simulation design element of support than senior students.

Table 31 Relationship between the Assessment of the Simulation Design Element Support and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Educational	Sophomore	71	4.42	.57	5.688	136	<.001 Level
	Senior	84	3.69	1.00			
Previous Healthcare Employment	Yes	75	3.88	.93	-1.91	153	.058
	No	80	4.16	.87			
Gender	Female	141	4.03	.93	.328	153	.743
	Male	14	3.94	.60			

## **Support – Importance**

The researcher measured the participants' perception of the level of importance of the simulation design element related to support and demographic characteristics of age, gender, GPA, previous healthcare experience, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare employment (yes or no); and educational level (sophomore or senior).

### **Relationship between the Importance of Support and Age**

In order to determine if a relationship existed between the importance of the simulation design element support (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between importance of support and age of the baccalaureate nursing student ( $r = .027$ ,  $N = 152$ ,  $p = .744$ ).

### **Relationship between the Importance of the Simulation Design Element Support and GPA**

In order to determine if a relationship existed between the importance of the simulation design element support (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between importance of support and age of the baccalaureate nursing student ( $r = .023$ ,  $N = 152$ ,  $p = .780$ ).

### **Relationship between the Importance of Support and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between the importance of the simulation design element support and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for

ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of the 3 variables, only one was found to have significant differences, gender ( $t = 3.814$ ,  $p = <.001$ ) (See Table 32). The nature of the relationship was such that female students tended to have higher values on the assessment of the importance of the simulation design element support than male students.

Table 32 Relationship between the Importance of the Simulation Design Element Support and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Gender	Female	138	4.63	.54	3.814	150	<.001
	Male	14	4.05	.52			
Previous Healthcare Employment	Yes	73	4.49	.59	-1.910	145	.058
	No	79	4.66	.53			
Educational Level	Sophomore	71	4.67	.52	1.906	150	.059
	Senior	81	4.50	.59			

### Problem Solving - Assessment

#### Relationship between the Assessment of Problem Solving and Age

In order to determine if a relationship existed between the assessment of the simulation design element problem solving (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient.



There was a significant, but low, correlation between the element of problem solving and age of the baccalaureate nursing student ( $r = -.190$ ,  $N = 155$ ,  $p = .018$ ). To identify the strength of the relationship, results were analyzed according to Davis' (1971) descriptors of association (.00 - .09 = negligible, .10 - .29 = low, .30 - .49 = moderate, .50 - .69 = substantial,  $> .70$  = very strong). The nature of the relationship was such that individuals with a greater age tended to have lower values on the assessment of the simulation design element of problem solving.

### **Relationship between the Assessment of Problem Solving and GPA**

In order to determine if a relationship existed between the simulation design element of problem solving (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the assessment of problem solving and age of the baccalaureate nursing student ( $r = -.016$ ,  $N = 155$ ,  $p = .840$ ).

### **Relationship between the Assessment of Problem Solving and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between the simulation design element of problem solving and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of these 3, the only variable for which significant difference was found was educational level ( $t = 3.67$ ,  $p = < .001$ ) (See Table 33). The nature of the relationship was such that sophomore students tended to have higher values on the assessment of the simulation design problem solving than senior students.

## Problem Solving-Importance

The researcher measured the participants' perception of the level of importance of the simulation design element related to problem solving and demographic characteristics of age, gender, GPA, previous healthcare employment, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare employment (yes or no); and educational level (sophomore or senior).

Table 33 Relationship between the Assessment of the Simulation Design Element Problem Solving and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Educational	Sophomore	71	4.42	.60	3.67	151	<.001 Level
	Senior	84	4.01	.80			
Previous Healthcare Employment	Yes	75	4.11	.73	-1.42	153	.158
	No	80	4.28	.75			
Gender	Female	141	4.22	.75	1.20	153	.231
	Male	14	3.97	.68			

## Relationship between the Importance of Problem Solving and Age

In order to determine if a relationship existed between the importance of the simulation design element of problem solving (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation

coefficient. There was no significant correlation between importance of problem solving and age of the baccalaureate nursing student ( $r = -.101$ ,  $N = 153$ ,  $p = .214$ ).

### **Relationship between the Importance of Problem Solving and GPA**

In order to determine if a relationship existed between the importance of the simulation design element of problem solving (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between importance of problem solving and age of the baccalaureate nursing student ( $r = .085$ ,  $N = 153$ ,  $p = .294$ ).

### **Relationship between the Importance of Problem Solving and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between the importance of the simulation design element of problem solving and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. All of the 3 variables, were found to have significant differences, gender ( $t = 2.862$ ,  $p = .005$ ), educational level ( $t = 2.862$ ,  $p = .005$ ), previous healthcare employment ( $t = -2.476$ ,  $p = .014$ ) (See Table 34). The nature of the relationship was such that female students tended to have higher values on the perception of the importance of the simulation design element problem solving than male students. Sophomore students tended to have higher values on the perception of the importance of the simulation design element problem solving than senior students. Students without previous healthcare employment tended to have higher values on the perception of the importance of the simulation design element than students who had no previous healthcare employment.

Table 34 Relationship between the Importance of the Simulation Design Element Problem Solving and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Educational Level	Sophomore	71	4.68	.45	2.862	146	.005
	Senior	82	4.43	.63			
Gender	Female	139	4.59	.55	2.862	151	.005
	Male	14	4.14	.60			
Previous Healthcare Employment	Yes	74	4.43	.61	-2.476	143	.014
	No	79	4.66	.51			

### **Feedback / Guided Reflection - Assessment**

#### **Relationship between the Assessment of Feedback / Guided Reflection and Age**

In order to determine if a relationship existed between the assessment of the simulation design element feedback / guided reflection (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the assessment of feedback / guided reflection and age of the baccalaureate nursing student ( $r = -.058$ ,  $N = 154$ ,  $p = .476$ ).

#### **Relationship between the Assessment of Feedback / Guided Reflection and GPA**

In order to determine if a relationship existed between the simulation design element of feedback / guided reflection (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient.

There was no significant correlation between the assessment of feedback / guided reflection and age of the baccalaureate nursing student ( $r = -.053$ ,  $N = 154$ ,  $p = .512$ ).

### **Relationship between the Assessment of Feedback / Guided Reflection and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between the simulation design element of feedback / guided reflection and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of these 3, the only variable for which significant difference was found was educational level ( $t = 2.426$ ,  $p = .016$ ) (See Table 35). The nature of the relationship was such that sophomore students tended to have higher values on the assessment of the simulation design element feedback, / guided reflection than senior students.

The researcher measured the participants' perception of the level of importance of the simulation design element related to feedback / guided reflection and demographic characteristics of age, gender, GPA, previous healthcare experience, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare experience (yes or no); and educational level (sophomore or senior).

The researcher measured the participants' perception of the level of importance of the simulation design element related to feedback / guided reflection and demographic characteristics of age, gender, GPA, previous healthcare experience, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare experience (yes or no); and educational level (sophomore or senior).

Table 35 Relationship between the Assessment of the Simulation Design Element Feedback / Guided Reflection and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Educational	Sophomore	71	4.65	.53	2.426	152	.016 Level
	Senior	83	4.40	.72			
Previous Healthcare Employment	Yes	75	4.42	.72	-1.804	152	.073
	No	79	4.61	.57			
Gender	Female	140	4.54	.64	1.287	152	.200
	Male	14	4.30	.69			

### Feedback / Guided Reflection – Importance

The researcher measured the participants' perception of the level of importance of the simulation design element related to feedback / guided reflection and demographic characteristics of age, gender, GPA, previous healthcare employment, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare employment (yes or no); and educational level (sophomore or senior).

### Relationship between the Importance of Feedback / Guided Reflection and Age

In order to determine if a relationship existed between the importance of the simulation design element of feedback / guided reflection (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment

correlation coefficient. There was no significant correlation between importance of feedback / guided reflection and age of the baccalaureate nursing student ( $r = .013$ ,  $N = 154$ ,  $p = .869$ ).

### **Relationship between the Importance of Feedback / Guided Reflection and GPA**

In order to determine if a relationship existed between the importance of the simulation design element of feedback / guided reflection (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between importance of feedback / guided reflection and age of the baccalaureate nursing student ( $r = .064$ ,  $N = 154$ ,  $p = .427$ ).

### **Relationship between the Importance of Feedback / Guided Reflection and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between the importance of the simulation design element of feedback / guided reflection and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Only 1 of the 3 variables, were found to have significant differences, gender ( $t = 2.828$ ,  $p = .005$ ) (See Table 36). The nature of the relationship was such that female students tended to have higher values on the perception of the importance of the simulation design element feedback/guided reflection than male students.

Table 36 Relationship between the Importance of the Simulation Design Element Feedback / Guided Reflection and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Gender	Female	140	4.69	.52	2.828	152	.005
	Male	14	4.27	.58			

(Table 36 continued)

		n	m	sd	t	df	p
Educational Level	Sophomore	71	4.72	.52	1.594	151	.113
	Senior	83	4.58	.55			
Previous Healthcare Employment	Yes	75	4.60	.55	-.996	152	.321
	No	79	4.69	.53			

### Fidelity (Realism) - Assessment

#### Relationship between the Assessment of Fidelity (Realism) and Age

In order to determine if a relationship existed between the assessment of the simulation design element fidelity (realism) (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was a significant, but low, correlation between the element of problem solving and age of the baccalaureate nursing student ( $r = -.190$ ,  $N = 155$ ,  $p = .018$ ). To identify the strength of the relationship, results were analyzed according to Davis' (1971) descriptors of association (.00 - .09 = negligible, .10 - .29 = low, .30 - .49 = moderate, .50 - .69 = substantial,  $> .70$  = very strong). The nature of the relationship was such that individuals with a greater age tended to have lower values on the assessment of the simulation design element of fidelity (realism). ( $r = -.179$ ,  $N = 152$ ,  $p = .028$ ).

#### Relationship between the Assessment of Fidelity (Realism) and GPA

In order to determine if a relationship existed between the simulation design element of fidelity (realism) (dependent variable) and the demographic characteristic of GPA (independent



variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between the assessment of fidelity (realism) and age of the baccalaureate nursing student ( $r = -.083$ ,  $N = 152$ ,  $p = .307$ ).

### **Relationship between the Assessment of Fidelity (Realism) and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between the simulation design element of fidelity (realism) and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Of these 3, the only variable for which significant difference was found was educational level ( $t = 2.346$ ,  $p = .002$ ) (See Table 37). The nature of the relationship was such that sophomore students tended to have higher values on the assessment of the simulation design element fidelity (realism) than senior students.

Table 37 Relationship between the Assessment of the Simulation Design Element Problem Fidelity (Realism) and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Educational	Sophomore	70	4.47	.75	2.346	145	.002 Level
	Senior	82	4.12	1.08			
Gender	Female	138	4.30	.97	.870	150	.386
	Male	14	4.07	.76			
Previous Healthcare Employment	Yes	74	4.24	.92	-.498	150	.619
	No	78	4.32	.99			

### **Fidelity (Realism) – Importance**

The researcher measured the participants' perception of the level of importance of the simulation design element related to objectives and information and demographic characteristics of age, gender, GPA, previous healthcare employment, and educational level. The demographic characteristics were identified and measured as follows: age by divisions (as continuous data); gender (Male or Female); GPA (as continuous data); previous healthcare employment (yes or no); and educational level (sophomore or senior).

#### **Relationship between the Importance of Fidelity (Realism) and Age**

In order to determine if a relationship existed between the importance of the simulation design element of fidelity (realism) (dependent variable), and the demographic characteristic of age (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between importance of fidelity (realism) and age of the baccalaureate nursing student ( $r = -.085$ ,  $N = 153$ ,  $p = .298$ ).

#### **Relationship between the Importance of Fidelity (Realism) and GPA**

In order to determine if a relationship existed between the importance of the simulation design element of fidelity (realism) (dependent variable) and the demographic characteristic of GPA (independent variable), the researcher used the Pearson Product Moment correlation coefficient. There was no significant correlation between importance of fidelity (realism) and age of the baccalaureate nursing student ( $r = .135$ ,  $N = 153$ ,  $p = .096$ ).

#### **Relationship between the Importance of Fidelity (Realism) and Gender, Previous Healthcare Employment, and Educational Level**

In order to determine if a relationship existed between the importance of the simulation design element of fidelity (realism) and the demographics that were measured as dichotomous variables, the researcher chose to utilize the independent t-test for the analysis. This procedure

was chosen for ease of interpretation of the relevant findings. A total of 3 dichotomous variables were included in this analysis. Only 1 of the 3 variables, was found to have significant differences, gender ( $t = 3.699$ ,  $p = <.001$ ) (See Table 38). The nature of the relationship was such that female students tended to have higher values on the perception of the importance of fidelity (realism) than senior students.

Table 38 Relationship between the Importance of the Simulation Design Element Fidelity (Realism) and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

		n	m	sd	t	df	p
Gender	Female	139	4.69	.56	3.699	151	<.001
	Male	14	4.11	.56			
Educational Level	Sophomore	70	4.74	.52	1.960	151	.052
	Senior	83	4.55	.63			
Previous Healthcare Employment	Yes	75	4.55	.63	-1.744	145	.083
	No	78	4.72	.53			

### **Objective Eight Results**

Objective eight was to determine if a relationship existed between self-confidence in learning and satisfaction in learning, both of which are measured by the Student Satisfaction and Self-confidence in Learning instrument.

In order to determine if a relationship existed between self-confidence and satisfaction in learning, the researcher used the Pearson Product Moment correlation coefficient, which

identified a statistically significant correlation ( $r = .837$ ,  $N = 158$ ,  $p = <.001$ ). To identify the strength of the relationship, results were analyzed according to Davis' (1971) descriptors of association (.00 - .09 = negligible, .10 - .29 = low, .30 - .49 = moderate, .50 - .69 = substantial,  $> .70$  = very strong). The nature of this very strong relationship was such that individuals with higher values on the measure of satisfaction in learning tended to have higher values on the measure of self-confidence.

### **Objective Nine Results**

Objective nine was to determine if a relationship existed between students' perceptions of the implementation of simulation design elements, as measured by the SDS instrument, and satisfaction in learning, as measured by the Student Satisfaction and Self-Confidence instrument.

In order to determine if this relationship existed, the researcher used the Pearson Product Moment correlation coefficient. The results indicated a significant correlation between satisfaction in learning and all elements of stimulation design. To identify the strength of the relationship, results were analyzed according to Davis' (1971) descriptors of association (.00 - .09 = negligible, .10 - .29 = low, .30 - .49 = moderate, .50 - .69 = substantial,  $> .70$  = very strong). The variable which had the highest correlation was the simulation design element objectives and information ( $r = .647$ ,  $N = 156$ ,  $p = <.001$ ). The nature of this relationship was such that individuals with higher values on the measure of assessment of objectives and information tended to have higher values on the measure of satisfaction in learning. The variable which had the lowest correlation on the measure of satisfaction in learning was the simulation design element of feedback / guided reflection ( $r = .404$ ,  $N = 154$ ,  $p = <.001$ ) (See Table 39). The nature of this relationship was such that individuals with higher values on the measure of

assessment of feedback / guided reflection tended to have higher values on the measure of satisfaction in learning.

Table 39 Relationship between Students' Perceptions of the Implementation of Simulation Design Elements and Satisfaction in Learning among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

Simulation Design Elements	r	n	p	Descriptor
Objectives and Information	.647	156	<.001	S
Support	.645	155	<.001	S
Problem Solving	.545	155	<.001	S
Fidelity (Realism)	.430	152	<.001	L
Feedback / Guided Reflection	.404	154	<.001	L

<sup>A</sup> Davis' Descriptors (1971): .00 to .09 = Negligible Association (N), .10 to .29 = Low Association (L), .30 to .49 = Moderate Association (M), .50 to .69 = Substantial Association (S), and .70 or higher = Very Strong Association (VS)

### **Objective Ten Results**

Objective ten was to determine if a relationship existed between students' perceptions of the implementation of simulation design elements, as measured by the SDS instrument, and self-confidence in learning, as measured by the Student Satisfaction and Self-Confidence instrument.

In order to determine if this relationship existed, the researcher used the Pearson Product Moment correlation coefficient. The results indicated a significant correlation between self-confidence in learning and all elements of stimulation design. To identify the strength of the relationship, results were analyzed according to Davis' (1971) descriptors of association (.00 -

.09 = negligible, .10 - .29 = low, .30 - .49 = moderate, .50 - .69 = substantial, > .70 = very strong). The variable which had the highest correlation was the simulation design element related to support ( $r = .602$ ,  $N = 155$ ,  $p = <.001$ ). The nature of this relationship was such that individuals with higher values on the measure of support tended to have higher values on the measure of self-confidence. The variable which had the lowest correlation was the simulation design element of feedback / guided reflection ( $r = .421$ ,  $N = 154$ ,  $p <.001$ ) (See Table 40).

The nature of this relationship was such that individuals with higher values on the measure of Feedback / Guided Reflection tended to have higher values on the measure of self-confidence.

Table 40 Relationship between Students' Perceptions of the Implementation of Simulation Design Elements and Satisfaction in Learning among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

Simulation Design Elements	r	n	p	Descriptor
Support	.602	155	<.001	S
Objectives and Information	.595	156	<.001	S
Problem Solving	.553	155	<.001	S
Fidelity (Realism)	.525	152	<.001	S
Feedback / Guided Reflection	.421	154	<.001	M

<sup>A</sup> Davis' Descriptors (1971): .00 to .09 = Negligible Association, .10 to .29 = Low Association (L), .30 to .49 = Moderate Association (M), .50 to .69 = Substantial Association (S), and .70 or higher = Very Strong Association (VS).

### **Objective Eleven Results**

Objective eleven was to determine if a model existed explaining a significant portion of the variance in satisfaction in learning, as measured by the Satisfaction and Self-Confidence in Learning instrument, from student perceptions of the implementation of best simulation design elements during simulation, as measured by the Simulation Design Scale (SDS), and the following demographic measures:

- a. Age;
- b. Gender;
- c. GPA;
- d. Previous healthcare employment;
- e. Educational level.

This was accomplished by using multiple regression analysis with satisfaction in learning as the dependent variable. The other variables were treated as independent variables and entered for stepwise analysis as this was an exploratory study. Variables were entered into the model that added 1% or more to the explained variance as long as the overall model remained significant. The independent variables assessing student perceptions of best simulation design included five subscales (“Objectives and Information,” “Problem-solving,” “Support,” “Feedback / Guidance,” and “Fidelity (Realism)”).

The independent variables gender, previous healthcare employment, and educational level were dichotomous, and the choices of responses were Female or Male; Yes or No; and senior or sophomore. Both independent variables age and GPA were continuous variables.

To accomplish the purpose of this analysis the researcher first examined the bivariate correlations between the factors used as independent variables and the dependent variable,

satisfaction in learning (See Table 41). Of the 10 correlations, 7 were found to be statistically significant. The highest correlations with “Satisfaction in Learning” scores were found to be with the elements of simulation design, “objectives and information” ( $r = .74$   $p < .001$ ) and “support” ( $r = .73$ ,  $p < .001$ ).

The next step in the analysis was to examine the variables for excess multi-collinearity. According to Hair et al (2010), “A common cutoff threshold is a tolerance value of .10 which corresponds to a VIF value of 10” (p. 230). The tolerance values for this analysis ranged from .458 to .936. Therefore, no excess multi-collinearity was present in the data.

Table 41 Relationship between Selected Demographic Characteristics and Elements of Simulation Design, and “Satisfaction in Learning” Scores among Currently Enrolled Baccalaureate Students at a Private College in the Southeastern United States

Variable	n	r	p	Descriptor <sup>a</sup>
Objectives and Information	150	.74	<.001	VS
Support	150	.73	<.001	VS
Problem-solving	150	.61	<.001	S
Feedback / Guidance	150	.49	<.001	M
Fidelity (Realism)	150	.48	<.001	M
Educational Level	150	-.48	<.001	M
Previous Healthcare Employment	150	.25	.001	L
Age	150	-.08	.173	N
GPA	150	.08	.153	N
Gender	150	-.03	.379	N

<sup>a</sup> Davis’ Descriptors (1971): .00 to .09 = Negligible Association (N), .10 to .29 = Low Association (L), .30 to .49 = Moderate Association (M), .50 to .69 = Substantial Association (S), and .70 or higher = Very Strong Association (VS)



The variable which entered the regression model first was the element of simulation design “objectives and information.” Considered alone, this variable explained 54.2% of the variance in “Satisfaction in Learning” scores of baccalaureate nursing students enrolled in a private college in the southeastern United States.

Five additional variables explained an additional 14.1% of the variance in “Satisfaction in Learning” scores. These variables included the elements of simulation design “support” and “problem solving,” and demographics that included “educational level,” “age,” and “previous healthcare employment.” These six variables explained a total of 68.3% of the variance in “Satisfaction in Learning” scores among these baccalaureate nursing students (See Table 42).

The nature of the influence of these variables was such that participants who had higher scores related to perceptions of the elements of simulation design “objectives and information,” “support,” and “problem-solving,” and demographics of “educational level,” “age,” and “previous healthcare employment” (no = 0, yes = 1) also had higher scores related to “self-confidence in learning.”

Table 42 Multiple Regression Analysis of the Influence of Elements of Simulation Design and Selected Demographics on Satisfaction in Learning among Currently Enrolled Baccalaureate Nursing Students at a Private College in the Southeastern United States

ANOVA				
Source of Variation	df	MS	F	p
Regression	6	8.983	50.87	<.001
Residual	143	.177		
Total	149			

(Table 42 continued)

Model Summary								
Model	R	R Square	R Square Change	F Change	df1	df2	Sig. F Change	Standardized Coefficients Beta
Objectives/ Information	.736	.542	.538	174.812	1	148	<.001	.736
Support	.781	.609	.068	25.524	1	147	<.001	.396
Educational Level	.798	.637	.028	11.057	1	146	.001	-.183
Problem- Solving	.809	.654	.018	7.386	1	145	.007	.177
Age	.816	.666	.012	5.116	1	144	.025	.113
Previous Healthcare Employment	.825	.681	.015	6.567	1	143	.011	.129
Excluded Variables								
Variables	t		p					
Fidelity (Realism)	-.789		.431					
Gender	.672		.502					
Feedback / Guided Reflection	.455		.650					
GPA	.239		.811					

### **Objective Twelve Results**

Objective twelve was to determine if a model existed explaining a significant portion of the variance in self-confidence in learning, as measured by the Satisfaction and Self-Confidence in Learning instrument, from student perceptions of the implementation of best simulation design during simulation, as measured by the Simulation Design Scale (SDS), and the following demographic measures:

- a. Age;
- b. Gender;
- c. GPA;

- d. Previous healthcare employment;
- e. Educational level.

This was accomplished by using multiple regression analysis with self-confidence in learning as the dependent variable. The other variables were treated as independent variables and entered for stepwise analysis as this was an exploratory study. Variables were entered into the experimental model that added 1% or more to the explained variance as long as the overall model remained significant. The independent variables assessing student perceptions of best simulation design included five subscales (“Objectives and Information,” “Problem-solving,” “Support,” “Feedback / Guidance,” and “Fidelity (Realism)”).

The independent variables gender, previous healthcare employment, and educational level were dichotomous, and the choices of responses were Female or Male; Yes or No; and senior or sophomore. Both independent variables age and GPA were continuous variables.

To accomplish the purpose of this analysis the researcher first examined the bivariate correlations between the factors used as independent variables and the dependent variable, self-confidence in learning (See Table 43). Of the 10 correlations, 8 were found to be statistically significant. The highest correlations with “Self-confidence in Learning” scores were found to be with the elements of simulation design, “objectives and information” ( $r = .70, p < .001$ ) and “support” ( $r = .70, p < .001$ ).

Table 43 Relationship between Selected Demographic Characteristics and Elements of Simulation Design, and “Self-confidence in Learning” Scores Among Currently Enrolled Baccalaureate Students at a Private College in the Southeastern United States

Variable	n	r	p	Descriptor <sup>a</sup>
Objectives and Information	150	.70	<.001	VS
Support	150	.70	<.001	VS
Problem-solving	150	.64	<.001	VS
Feedback / Guidance	150	.50	<.001	S

(Table 43 continued)

Variable	n	r	p	Descriptor <sup>a</sup>
Fidelity (Realism)	150	.59	<.001	S
Educational Level	150	-.402	<.001	M
Previous Healthcare Employment	150	.202	.007	L
Age	150	-.106	.098	L
Gender	150	-.079	.17	N
GPA	150	.02	.406	N

<sup>a</sup> Davis' Descriptors (1971): .00 to .09 = Negligible Association (N), .10 to .29 = Low Association (L), .30 to .49 = Moderate Association (M), .50 to .69 = Substantial Association (S), and .70 or higher = Very Strong Association (VS)

The next step in the analysis was to examine the variables for excess multi-collinearity. According to Hair et al (2010), "A common cutoff threshold is a tolerance value of .10 which corresponds to a VIF value of 10," (p.230). The tolerance values for this analysis ranged from .468 to .960. Therefore, no excess multi-collinearity was present in the data.

The variable which entered the regression model first was the element of simulation design "objectives and information". Considered alone, this variable explained 49.3% of the variance in "Self-confidence in Learning" scores of baccalaureate nursing students enrolled in a private college in the southeastern United States.

Two additional variables explained an additional 10.8% of the variance in "Self-confidence in Learning" scores. These variables included the elements of simulation design "support" and "problem solving." These three variables explained a total of 60.1% of the variance in "Self-confidence in Learning" scores among these baccalaureate nursing students (See Table 44).

The nature of the influence of these variables was such that participants who had higher scores related to perceptions of the elements of simulation design "objectives and information,"

“support,” and “problem-solving” also had increased scores related to “self-confidence in learning.”

Table 44 Multiple Regression Analysis of the Influence of Elements of Simulation Design and Demographics on Self-Confidence in Learning among Currently Enrolled Baccalaureate Nursing Students at a Private College in the Southeastern United States

ANOVA								
Source of Variation		df	MS	F	p			
Regression		3	10.27	73.11	<.001			
Residual		146	.140					
Total		149						
Model Summary								
Model	R	R Square	R Square Change	F Change	df1	df2	Sig. F Change	Standardized Coefficients Beta
Objectives/ Information	.702	.493	.493	144.074	1	148	<.001	.702
Support	.749	.561	.068	22.599	1	147	<.001	.396
Problem- Solving	.775	.600	.040	14.453	1	146	<.001	.265
Excluded Variables								
Variables				t	p			
Fidelity (Realism)				1.9	.059			
Educational Level				-1.783	.077			
Previous Healthcare Employment				1.71	.089			
Feedback / Guided Reflection				.887	.377			
Age				.864	.389			
Gender				-.740	.460			
GPA				.231	.817			

### **Objective Thirteen Results**

Objective thirteen was to compare sophomore and senior students' perceptions of the implementation of best simulation design elements as measured by the Simulation Design Scale (SDS).

The findings of significant differences between sophomore and senior students was most evident regarding the simulation design element related to support ( $t = 5.69$ ,  $p = <.001$ ), and the element of least significant difference was related to fidelity (realism) ( $t = 2.35$ ,  $p = .024$ ) (See Table 45).

Table 45 Relationship between the Simulation Design Element Related to Objectives and Information and the Selected Demographic Characteristics Among Baccalaureate Nursing Students Enrolled in a Private College in the Southeastern United States

Design Element	Educational Level	n	m	sd	t	df	p
Support	Sophomores	71	4.42	.57	5.69	136	<.001
	Seniors	84	3.69	1.00			
Objectives and Information	Sophomores	71	4.27	.65	4.87	151	<.001
	Seniors	85	3.66	.90			
Problem Solving	Sophomores	71	4.42	.60	3.58	153	<.001
	Seniors	84	4.01	.80			
Feedback Guided Reflection	Sophomores	71	4.65	.53	2.48	149	.014
	Seniors	83	4.40	.72			
Fidelity (Realism)	Sophomores	70	4.47	.75	2.35	145	.020
	Seniors	82	4.12	1.08			

### **Objective Fourteen Results**

Objective fourteen was to compare sophomore and senior students' perceptions of satisfaction in learning as measured by the Student Satisfaction and Self-confidence in Learning instrument.

The findings support significant differences between sophomore and senior students related to satisfaction in learning ( $t = 7.08$ ,  $p = < .001$ ). (See Table 46). Sophomore students ( $m = 4.49$ ) had a higher satisfaction score than senior students ( $m = 3.75$ ).

Table 46 Students' Perceptions of Satisfaction in Learning Among Sophomore and Senior Baccalaureate Students Enrolled in a Private College in the Southeastern United States

Educational Level		n	m	sd	t	df	p	
Satisfaction in	Sophomores	73	4.49	.46	7.08	136	<.001	Learning
	Seniors	85	3.75	.82				

### **Objective Fifteen Results**

Objective fifteen was to compare sophomore and senior students' perceptions of self-confidence in learning as measured by the Student Satisfaction and Self-confidence in a Learning instrument.

The findings support significant differences between sophomore and senior students related to self-confidence in learning ( $t = 5.98$ ,  $p = < .001$ ) (See Table 47). Sophomore students ( $m = 4.25$ ) had a higher confidence in learning score than senior students ( $m = 3.72$ ).

Table 47 Students' Perceptions of Satisfaction in Learning Among Sophomore and Senior Baccalaureate Students Enrolled in a Private College in the Southeastern United States

	Educational Level	n	m	sd	t	df	p
Self-confidence in Learning	Sophomores	73	4.25	.41	5.98	138	<.001
	Seniors	85	3.72	.70			



## **CHAPTER 5. SUMMARY**

### **Purpose of the Study**

The primary purpose of this study was to determine the perceptions of selected aspects of high fidelity simulation among students enrolled in a baccalaureate nursing program and the influence of these perceptions on students' satisfaction and self-confidence in learning.

### **Objectives of the Study**

1. To describe currently enrolled baccalaureate degree nursing students based on selected characteristics:
  - (a) Age;
  - (b) Gender;
  - (c) GPA;
  - (d) Previous healthcare employment;
  - (e) Education level.
2. To describe baccalaureate degree nursing students' satisfaction in learning related to their simulation experience.
3. To describe baccalaureate degree nursing students' self-confidence in learning.
4. To describe baccalaureate nursing students' perceptions of the implementation of best simulation elements during simulation.
5. To determine if a relationship exists among baccalaureate nursing students' between satisfaction in learning and participant demographics.
6. To determine if a relationship exists among baccalaureate nursing students' self-confidence in learning and participant demographics.

7. To determine if a relationship exists among baccalaureate nursing students' perception of the implementation of best simulation design elements during simulation and participant demographics.
8. To determine if a relationship exists between satisfaction in learning and self-confidence in learning among baccalaureate nursing students.
9. To determine if a relationship exists between perceptions of the implementation of best simulation design elements during simulation and satisfaction in learning among baccalaureate nursing students.
10. To determine if a relationship exists between perceptions of the implementation of best simulation design elements during simulation and self-confidence in learning among baccalaureate nursing students.
11. To determine if a model exists explaining the variance in satisfaction in learning from participant demographics and student perceptions of implementation of best simulation design during simulation.
12. To determine if a model exists explaining the variance in self-confidence in learning from participant demographics and student perceptions of the implementation of best simulation design during simulation.
13. To compare sophomore and senior perceptions of the implementation of best simulation design elements during simulation.
14. To compare sophomore and senior perceptions of satisfaction in learning related to their simulation experience.
15. To compare sophomore and senior perceptions of self-confidence in learning related to their simulation experience.

## **Summary of Methodology**

### **Population and Sample**

The target population for this study was defined as students enrolled in a baccalaureate degree nursing program in the southeastern United States. The accessible population was defined as the students enrolled in a baccalaureate degree nursing program at one private college in Louisiana. The sample that was selected for participation in the study included the following two groups: (1) all sophomore students in the selected nursing program who were enrolled in one specified sophomore level nursing course which included high fidelity simulation in the instructional activities of the course and (2) all senior students in the selected nursing program who were enrolled in one specified senior level nursing course which included high fidelity simulation in the instructional activities of the course.

### **Instrumentation**

The instruments used to collect data for this study were the “Satisfaction and Self-Confidence in Learning” and “Simulation Design Scale.” The National League developed both of the instruments for Nursing and gave permission for their use. Demographic information was collected from the students and from the Office of the Registrar at the participating College.

### **Data Collection**

Due to the confidential nature of the questions, the researcher determined the survey would be a hard copy, delivered and collected by the researcher. Permission was received from the Dean of the College to conduct the survey. The researcher attended a class of each of the participants and distributed a letter explaining the purpose, stating that all participation was voluntary, and that all information collected would be kept in confidence. The researcher, following each simulation experience involving the participants, collected surveys. Permission to

use the instruments was obtained from the National League for Nursing. In addition, the researcher obtained permission from the Institutional Review Board of Louisiana State University and the College in which the study was conducted.

### **Summary of Major Findings**

The major findings of this study are discussed by objective.

#### **Objective One**

Objective one was to describe currently enrolled baccalaureate degree nursing students based on a number of selected characteristics. Findings for Objective one indicated that the majority of participants were in the age group 22-23 years ( $n = 53$ , 33.5%), with mean age of 24.32 years ( $SD = 4.00$ ). The majority were also female ( $n = 144$ , 91.1%) and had a mean GPA score of 3.14 ( $SD = 0.36$ ). Of the 158 nursing students in the study, 77 (48.7%) indicated they did have previous healthcare employment and 81 (51.3%) indicated they did not, and 73 (46.2%) were sophomore nursing students and 85 (53.8%) were senior nursing students.

#### **Objective Two**

Objective two was to describe nursing students' satisfaction in learning. The mean score for satisfaction in learning was 4.09 ( $SD = .77$ ), and the values ranged from a low of 1.00 to a high of 5.00. Additionally, students 'agreed' (based on the researcher-designed interpretive scale) with all statements on the survey as related to being satisfied with learning through their simulation experience.

#### **Objective Three**

Objective three was to describe nursing students' self-confidence in learning. The mean score for self-confidence in learning was 3.96 ( $SD = .64$ ), and the values ranged from a low of 1.00 to a high of 5.00. Additionally, students 'agreed' (based on the researcher-designed

interpretive scale) with all statements on the survey as related to having self-confidence with learning through their simulation experience.

### **Objective Four**

Objective four was to describe nursing students' perception of elements of simulation design. The scale measures the five elements of simulation design – objectives and information, support, problem-solving, feedback/guided reflection, and fidelity (realism). For each of these design elements, subjects were asked to respond on 2 scales – assessment and importance.

#### **Objectives and Information**

Regarding items related to students' assessment of objectives and information, the mean overall score was 3.94 ( $SD = .849$ ), and the values ranged from 1.00 to a high of 5.00.

Additionally, students 'agreed' (based on the researcher-designed interpretive scale) with each statement asking if the practices related to objectives and information were implemented.

When asked about the importance of practices related to objectives and information, the mean overall score was 4.56 ( $SD = .574$ ), and the values ranged from a low of 2.20 to a high of 5.00. Students also rated each individual item as 'very important' (based on the researcher designed interpretive scale).

#### **Support**

The overall students' perception of the simulation design element of support was computed as the overall mean score of 4.02 ( $SD = .91$ ), and the values ranged from a low of 1.00 to a high of 5.00. Additionally, students 'agreed' (based on the researcher-designed interpretive scale) with each statement asking if the practices related to support were implemented.

When asked about the importance of practices related to support, the mean overall score was 4.56 ( $SD = .574$ ), and the values ranged from a low of 2.20 to a high of 5.00. Students also

rated each individual item as ‘very important’ (based on the researcher-designed interpretive scale).

### **Problem-Solving**

The overall students’ perception of the simulation design element of problem-solving was computed as the overall mean score of 4.20 (SD = .74), and the values ranged from a low of 1.00 to a high of 5.00. Additionally, students ‘agreed’ (based on the researcher-designed interpretive scale) with each statement asking if the practices related to problem-solving were implemented.

When asked about the importance of practices related to problem-solving, the mean overall score was 4.54 (SD = .57), and the values ranged from a low of 3.00 to a high of 5.00. Students also rated each individual item as ‘very important’ (based on the researcher-designed interpretive scale).

### **Feedback / Guided Reflection**

The overall students’ perception of the simulation design element of feedback / guided reflection was computed as a mean score of 4.52 (SD = .65), and the values ranged from a low of 1.00 to a high of 5.00. Additionally, students ‘strongly agreed’ (based on the researcher-designed interpretive scale) with each of the following statements: “Feedback was provided in a timely manner” (M = 4.57, SD = .63), “There was an opportunity after the simulation to obtain guidance /feedback from the teacher in order to build knowledge to another level” (m = 4.65, SD = .72), and “Feedback was constructive.” (M = 4.54, SD = .69). Students ‘agreed’ (based on the researcher-designed interpretive scale) with the statement “The simulation allowed me to analyze my own behavior and actions” (M = 4.46, SD = .75).

When asked about the importance of practices related to feedback /guided reflection, the mean overall score was 4.65 (SD = .54), and the values ranged from a low of 3.00 to a high of

5.00. Students also rated each individual item as ‘very important’ (based on the researcher-designed interpretive scale).

### **Fidelity (Realism)**

The overall students’ perception of the simulation design element of fidelity was computed as the overall mean score of 4.28 (SD = .95), and the values ranged from a low of 1.00 to a high of 5.00. Additionally, students ‘agreed’ (based on the researcher designed interpretive scale) with each statement asking if the practices related to fidelity were implemented.

When asked about the importance of practices related to fidelity, the mean overall score was 4.64 (SD = .59), and the values ranged from a low of 3.00 to a high of 5.00. Students also rated each individual item as ‘very important’ (based on the researcher designed interpretive scale).

### **Objective Five**

Objective five was to determine if a relationship existed between satisfaction in learning and selected demographic characteristics. There was no significant correlation between satisfaction in learning and age ( $r = .071$ ,  $N = 158$ ,  $p = .749$ ), GPA ( $r = .071$ ,  $N = 158$ ,  $p = .374$ ), or gender ( $t = .31$ ,  $p = .762$ ) of the nursing student. The demographic characteristics of previous healthcare employment ( $t = -3.29$ ,  $p = .001$ ) and educational level ( $t = 7.08$ ,  $p = <.001$ ) were both found to be statistically significant. The nature of the relationships were such that those students without previous health care employment had higher values related to their perceived satisfaction in learning than those students with previous healthcare employment, and sophomore students had higher values related to their perceived satisfaction in learning than senior students.

### **Objective Six**

Objective six was to determine if a relationship existed between self-confidence in learning and selected demographic characteristics. . There was no significant correlation between self-confidence in learning and age ( $r = -.053$ ,  $N = 158$ ,  $p = .508$ ), GPA ( $r = .030$ ,  $N = 158$ ,  $p = .711$ ), or gender ( $t = .76$ ,  $p = .448$ ). The demographic characteristics of educational level ( $t = 5.978$ ,  $p = <.001$ ) and previous healthcare employment ( $t = -2.71$ ,  $p = .007$ ) were found to be statistically significant. The nature of the relationship was such that sophomore students reported greater self-confidence in learning than senior students, and those students without previous healthcare employment reported greater self-confidence than those with previous healthcare employment.

### **Objective Seven**

Objective seven was to determine if a relationship existed between students' perceptions of the implementation of best simulation design elements and selected demographic characteristics.

### **Objectives and Information**

The Pearson Product Moment correlation coefficient was used to determine if relationships existed between the element objectives and information, and age and GPA. There was no significant correlation between the element objectives and information and age of the baccalaureate nursing student ( $r = -.134$ ,  $N = 156$ ,  $p = .094$ ) or GPA ( $r = -.063$ ,  $N = 156$ ,  $p = .434$ ).

The independent t-test was used to determine if there was a relationship between the element of objectives and information, and gender, previous healthcare experience, and educational level. There was no significant difference found related to gender ( $t = .633$ ,  $p = .532$ )



or previous healthcare employment ( $t = -1.176$ ,  $p = .241$ ). There was a significant difference found between the assessment of objectives and information and educational level ( $t = 4.87$ ,  $p = <.001$ ). The nature of the relationship was such that sophomore students tended to have higher scores on their assessment of the simulation design element objectives and information than senior students.

Regarding the importance of the element of objectives and information, the Pearson Product Moment correlation coefficient was used to assess for significant correlation for the demographic characteristics of age and GPA. There was found to be no significant correlation between either age ( $r = -.034$ ,  $N = 153$ ,  $p = .679$ ) or GPA ( $r = .148$ ,  $N = 153$ ,  $p = .068$ ).

Using the independent t-test, there were significant differences found related to the importance of objectives and information and gender ( $t = 3.705$ ,  $p = <.001$ ), previous healthcare employment ( $t = -2.591$ ,  $p = 0.11$ ), and educational level ( $t = 2.65$ ,  $p = .009$ ).

The nature of the relationships was such that sophomore students tended to have higher values on the assessment of the importance of the simulation design element objectives and information than seniors; students who had no previous healthcare employment tended to have higher values on the assessment of the importance of the simulation design element objectives and information than student with previous healthcare employment; and female students tended to have higher values on the assessment of the importance of the simulation design element objectives and information than male students.

## **Support**

The Pearson Product Moment correlation coefficient was used to determine if relationships existed between the element support, and age and GPA. There was a significant, but low, correlation between the element support and age of the baccalaureate nursing student ( $r = -.165$ ,

$N = 155, p = .04$ ). The nature of the relationship was such that older students tended to have higher values on the assessment of the simulation design element of support.

There was no significant correlation related to GPA ( $r = .66, N = 155, p = .418$ ).

The independent t-test was used to determine if there was a relationship between the element of support, and gender, previous healthcare experience, and educational level. There was no significant difference found related to gender ( $t = .328, p = .743$ ) or previous healthcare employment ( $t = -1.91, p = .058$ ). There was a significant difference found between the assessment of support and educational level ( $t = 5.688, p = <.001$ ).

The nature of the relationship was such that individuals with a greater age tended to have lower values on the assessment of the simulation design element of support.

Regarding the importance of the element of support, the Pearson Product Moment correlation coefficient was used to assess for significant correlation for the demographic characteristics of age and GPA. There was found to be no significant correlation between either age ( $r = -.027, N = 152, p = .744$ ) or GPA ( $r = .023, N = 152, p = .780$ ).

Using the independent t-test, there were no significant differences found related to the importance of support and previous healthcare employment ( $t = -1.910, p = .058$ ), and educational level ( $t = 1.906, p = .059$ ). A significant difference was found between the importance of support and gender ( $t = 3.814, p = <.001$ ). The nature of the relationship was such that female students tended to have higher values on the assessment of the importance of the simulation design element support than male students.

### **Problem-Solving**

The Pearson Product Moment correlation coefficient was used to determine if relationships existed between the element problem-solving and age and GPA. There was a

significant, but low, correlation between the element problem-solving and age of the baccalaureate nursing student ( $r = -.190$ ,  $N = 155$ ,  $p = .018$ ). The nature of the relationship was such that individuals with a greater age tended to have lower values on the assessment of the simulation design element of problem solving. There was no significant correlation related to GPA ( $r = .016$ ,  $N = 155$ ,  $p = .840$ ).

The independent t-test was used to determine if there was a relationship between the element of problem-solving, and gender, previous healthcare employment, and educational level. There was no significant difference found related to gender ( $t = 1.20$ ,  $p = .231$ ) or previous healthcare experience ( $t = -1.42$ ,  $p = .158$ ). There was a significant difference found between the assessment of problem-solving and educational level ( $t = 3.67$ ,  $p = <.001$ ). The nature of the relationship was such that sophomore students tended to have higher values on the assessment of the simulation design problem solving than senior students.

Regarding the importance of the element of problem-solving, the Pearson Product Moment correlation coefficient was used to assess for significant correlation for the demographic characteristics of age and GPA. There was found to be no significant correlation between either age ( $r = -.101$ ,  $N = 153$ ,  $p = .214$ ) or GPA ( $r = .085$ ,  $N = 153$ ,  $p = .294$ ). Using the independent t-test, there was a significant difference found related to the importance of problem-solving and previous healthcare employment ( $t = -2.476$ ,  $p = .014$ ), educational level ( $t = 2.862$ ,  $p = .005$ ), and gender ( $t = 2.862$ ,  $p = .005$ ). The nature of the relationships was such that female students tended to have higher values on the assessment of the importance of the simulation design element problem solving than male students; sophomore students tended to have higher values on the assessment of the importance of the simulation design element problem solving than senior students; and students without previous healthcare employment tended to have higher

values on the assessment of the importance of the simulation design element than students who had no previous healthcare employment.

### **Feedback / Guided Reflection**

The Pearson Product Moment correlation coefficient was used to determine if relationships existed between the element feedback/guided reflection and age and GPA. There was a no correlation between the element feedback/guided reflection and age of the baccalaureate nursing student ( $r = -.058$ ,  $N = 154$ ,  $p = .476$ ) or GPA ( $r = -.053$ ,  $N = 154$ ,  $p = .512$ ).

The independent t-test was used to determine if there was a relationship between the element of feedback/guided reflection, and gender, previous healthcare experience, and educational level. There was no significant difference found related to gender ( $t = 1.287$ ,  $p = .200$ ) or previous healthcare employment ( $t = -1.804$ ,  $p = .073$ ). There was a significant difference found between the assessment of feedback/guided reflection and educational level ( $t = 2.426$ ,  $p = <.016$ ). The nature of the relationship was such that sophomore students tended to have higher values on the assessment of the simulation design element feedback / guided reflection than senior students.

Regarding the importance of the element of feedback/guided reflection, the Pearson Product Moment correlation coefficient was used to assess for significant correlation for the demographic characteristics of age and GPA. There was found to be no significant correlation between either age ( $r = .013$ ,  $N = 154$ ,  $p = .869$ ) or GPA ( $r = .064$ ,  $N = 154$ ,  $p = .427$ ). Using the independent t-test, no significant difference were found related to the importance of feedback/guided reflection and previous healthcare employment ( $t = -.996$  -  $p = .321$ ) or educational level ( $t = 1.594$ ,  $p = .113$ ). There was a significant difference found between the

element of feedback/guided reflection and gender ( $t = 2.828, p = .005$ ). The nature of the relationship was such that female students tended to have higher values on the assessment of the importance of the simulation design element feedback / guided reflection than male students.

### **Fidelity (Realism)**

The Pearson Product Moment correlation coefficient was used to determine if relationships existed between the element fidelity (realism) and age and GPA. There was a significant, but low, correlation between the element fidelity (realism) and age of the baccalaureate nursing student ( $r = -.190, N = 155, p = .018$ ) and GPA ( $r = -.083, N = 152, p = .307$ ). The nature of the relationship was such that individuals with a greater age tended to have lower values on the assessment of the simulation design element of fidelity (realism).

The independent t-test was used to determine if there was a relationship between the element of fidelity, and gender, previous healthcare experience, and educational level. There was no significant difference found related to gender ( $t = 1.287, p = .200$ ) or previous healthcare employment ( $t = -1.804, p = .073$ ). There was a significant difference found between the assessment of fidelity and educational level ( $t = 2.426, p = <.016$ ). The nature of the relationship was such that sophomore students tended to have higher values on the assessment of the simulation design element fidelity (realism) than senior students.

Regarding the importance of the element of fidelity, the Pearson Product Moment correlation coefficient was used to assess for significant correlation for the demographic characteristics of age and GPA. There was found to be no significant correlation between either age ( $r = .013, N = 154, p = .869$ ) or GPA ( $r = .064, N = 154, p = .427$ ).

Using the independent t-test, there was no significant differences found related to the importance of fidelity and previous healthcare experience ( $t = -.996 - p = .321$ ) or educational

level ( $t = 1.594$ ,  $p = .113$ ). There was a significant difference found between the element of fidelity and gender ( $t = 2.828$ ,  $p = .005$ ). The nature of the relationship was such that female students tended to have higher values on the assessment of the importance of fidelity (realism) than senior students.

### **Objective Eight**

Objective eight was to determine if a relationship existed between self-confidence in learning and satisfaction in learning. In order to determine if a relationship existed between self-confidence and satisfaction in learning, the researcher used the Pearson Product Moment correlation coefficient, which identified a statistically significant correlation ( $r = .837$ ,  $N = 158$ ,  $p = <.001$ ). The nature of this very strong relationship was such that individuals with higher values on the measure of satisfaction in learning tended to have higher values on the measure of self-confidence.

### **Objective Nine**

Objective nine was to determine if a relationship existed between students' perceptions of the implementation of the elements of simulation design and satisfaction in learning. In order to determine if this relationship existed, the researcher used the Pearson Product Moment correlation coefficient. The results indicated a significant correlation between satisfaction in learning and all elements of stimulation design. The variable that had the highest correlation was the simulation design element objectives and information ( $r = .647$ ,  $N = 156$ ,  $p = <.001$ ). The other elements that had a strong correlation were support ( $r = .645$ ,  $p = <.001$ ) and problem-solving ( $r = .545$ ,  $p = <.001$ ). The elements that had a low correlation were fidelity ( $r = .430$ ,  $p = <.001$ ) and feedback / guided reflection ( $r = .404$ ,  $p = <.001$ ).

### **Objective Ten**

Objective ten was to determine if a relationship existed between students' perceptions of the implementation of the elements of simulation design and self-confidence in learning. In order to determine if this relationship existed, the researcher used the Pearson Product Moment correlation coefficient. The results indicated a significant correlation between self-confidence in learning and all elements of stimulation design. The variable that had the highest correlation was the simulation design element related to support ( $r = .602$ ,  $N = 155$ ,  $p = <.001$ ). The other elements that had a strong correlation were objectives and information ( $r = .595$ ,  $p <.001$ ), problem-solving ( $r = .553$ ),  $p = <.001$ ), and fidelity ( $r = .525$ ,  $p = <.001$ ). The element that had a moderate correlation was feedback/ guided reflection ( $r = .421$ ,  $p <.001$ ).

### **Objective Eleven**

Objective eleven was to determine if a model existed explaining a significant portion of the variance in satisfaction in learning, as measured by the Satisfaction and Self-Confidence in Learning instrument, from student perceptions of the implementation of best simulation design elements during simulation, as measured by the Simulation Design Scale (SDS), and the following demographic measures:

- a. Age;
- b. Gender;
- c. GPA;
- d. Previous healthcare employment;
- e. Educational level.

This was accomplished by using multiple regression analysis with satisfaction in learning as the dependent variable. The other variables were treated as independent variables and entered

for stepwise analysis as this was an exploratory study. The independent variables assessing student perceptions of best simulation design included five subscales (“Objectives and Information”, “Problem-solving,” “Support,” “Feedback / Guidance,” and “Fidelity (Realism)”). The independent demographic variables include age, GPA, gender, previous healthcare employment, and educational level. Findings are that an exploratory stepwise model does exist that explains 68.3% of the variance. The variable that entered the regression model first was the element of simulation design “objectives and information.” Considered alone, this variable explained 54.2% of the variance in “Satisfaction in Learning” scores. Five additional variables explained an additional 14.1% of the variance in “Satisfaction in Learning” scores. These variables included the elements of simulation design “support” and “problem-solving,” and demographics, which included “educational level,” “age,” and “previous healthcare employment.”

The variance inflation factor (VIF) was analyzed to determine whether or not the excluded variables entered into the regression analysis had excessive collinearity. A VIF value of 10 represents the level at which excess collinearity is present (Hair et al, 2006). The VIF values ranged from .458 to .936, which indicates that there is no presence of excess collinearity.

### **Objective Twelve**

Objective twelve was to determine if a model existed explaining a significant portion of the variance in self-confidence in learning from student perceptions of the implementation of best simulation design elements and selected demographic characteristics. This was accomplished by using multiple regression analysis with self-confidence in learning as the dependent variable. The other variables were treated as independent variables and entered for stepwise analysis as this was an exploratory study. The independent variables assessing student



perceptions of best simulation design included five subscales (“Objectives and Information,” “Problem-solving,” “Support,” “Feedback / Guidance,” and “Fidelity (Realism)”). The independent demographic variables include age, GPA, gender, previous healthcare employment, and educational level. Findings are that an exploratory stepwise model does exist that explains 60.1% of the variance. The variable that entered the regression model first was the element of simulation design “objectives and information.” Considered alone, this variable explained 49.3% of the variance in “Self-confidence in Learning” scores. Two additional variables explained an additional 10.8% of the variance in “Self-confidence in Learning” scores. These variables included the elements of simulation design “support” and “problem-solving.”

The variance inflation factor (VIF) was analyzed to determine whether or not the excluded variables entered into the regression analysis had excessive collinearity. A VIF value of 10 represents the level at which excess collinearity is present (Hair et al, 2006). The VIF values ranged from .468 to .960, which indicates that there is no presence of excess collinearity.

### **Objective Thirteen**

Objective thirteen was to compare sophomore and senior students’ perceptions of the implementation of best simulation design elements. The findings of significant differences between sophomore and senior students was most evident regarding the simulation design element related to support ( $t = 5.45$ ,  $p < .001$ ), and the element of least significant difference was related to fidelity (realism) ( $t = 2.28$ ,  $p = .024$ ). The other elements demonstrating differences were objectives and information ( $t = 4.87$ ,  $p < .001$ ), problem-solving ( $t = 3.58$ ,  $p < .001$ ), and feedback/guided reflection ( $t = 2.48$ ,  $p < .001$ ). The nature of the relationship was such that sophomore students tended to have higher values on all of these simulation design elements than senior students.

### **Objective Fourteen**

Objective fourteen was to compare sophomore and senior students' perceptions of satisfaction in learning. The findings support significant differences between sophomore and senior students related to satisfaction in learning ( $t = 7.08$   $p = <.001$ ). The nature of the relationship was such that sophomore students tended to have higher satisfaction in learning than senior students.

### **Objective Fifteen**

Objective fifteen was to compare sophomore and senior students' perceptions of self-confidence in learning. The findings support significant differences between sophomore and senior students related to self-confidence in learning ( $t = 5.98$ ,  $p = <.001$ ). The nature of the relationship was such that sophomore students tended to have higher self-confidence in learning than senior students.

### **Conclusions, Implications, and Recommendations**

The researcher has derived the following conclusions, implications, and recommendations, based on the findings from this study:

#### **Conclusion One**

1. Simulation is an effective modality to teach the practice of nursing.

This conclusion is based on several findings of the study. The first is that students are generally satisfied with learning through the use of simulation experiences, as determined by students' responses on the Satisfaction and Self-Confidence in Learning instrument. When evaluating their satisfaction in learning the mean score was 4.09, with a score of one indicating students 'strongly disagree' that they are satisfied in learning through the use of the simulation experience and a score of five indicating students 'strongly agree' with being satisfied in learning

through the use of the simulation experience. Additionally, the analysis of each of the individual items on the Satisfaction and Self Confidence in Learning instrument indicated that students agreed with all statements related to being satisfied in learning through the use of simulation.

These findings supported the results of earlier researchers who found that students were satisfied with simulation experiences. Jeffries & Rizzolo (2006), in the multi-site, multi-method study, concluded that students using high-fidelity patient simulations had a significantly higher level of satisfaction with their learning experience than did students who were taught by other instructional methods. Smith & Roehrs (2009), using the NLN instrument Satisfaction and Self-confidence in Learning, found when surveying 68 baccalaureate nursing students enrolled in their first medical-surgical nursing course, students reported satisfaction in learning using simulation ( $M=4.5$ ,  $SD = 0.5$ ). When comparing baccalaureate nursing students who were taught using simulation to those taught by lecture method, Sinclair & Ferguson (2009) found the students exposed to learning through simulation noted a 91% satisfaction rating compared to 70% by the students taught by lecture.

The findings of satisfaction related to learning through simulation are important because satisfaction is foundational to increased engagement in the learning process. When students are satisfied, they are more likely to actively participate in the learning process, which is an important part of the simulation experience. Creating an environment of shared learning is where students are able to learn from each other during the simulation and provide valuable feedback during the debriefing following simulation experiences. Sinclair & Ferguson reported that students involved in simulated learning may experience a decrease in anxiety, which promotes more meaningful learning (Sinclair & Ferguson, 2009).

Secondly, the study found that students reported being self-confident in learning through the use of simulation, as determined by students' responses on the Satisfaction and Self-Confidence in Learning scale. When evaluating their self-confidence in learning the mean score was 3.96, with a score of one indicating students 'strongly disagree' that they are satisfied in learning through the use of the simulation experience and a score of five indicating students 'strongly agree' with being satisfied in learning through the use of the simulation experience. Additionally, the analysis of each of the individual items on the Satisfaction and Self Confidence in Learning instrument indicated that students agreed with all statements related to being self-confident in learning through the use of simulation.

Research studies by Sinclair and Ferguson (2009), Shinnick, Woo and Menten (2001) and Smith and Roehrs (2009) have all indicated that self-confidence is enhanced through the use of simulation. Smith and Roehrs (2009), using the NLN instrument Satisfaction and Self-confidence in Learning, found when surveying 68 baccalaureate nursing students enrolled in their first medical-surgical nursing course, students reported self-confidence in learning using simulation ( $M=4.2$ ,  $SD = 0.4$ ).

Sinclair and Ferguson (2009) compared 174 students who were divided into nonrandomized control and experimental groups where one had both lecture and simulation as a teaching method and one with only lecture. The group receiving simulation showed higher mean self-efficacy scores. Shinnick, Woo, and Menten (2001) conducted a review of studies related to HPS (human patient simulation) used in pre-licensure nursing education, and summarized that "In general, the literature reports that use of HPS increases self-efficacy in nursing students." (p. 67).

The findings of increased self-confidence among students in this study is significant in that students who are expected to perform skills and make important decisions in the clinical setting must be confident in their skill set and problem-solving skills. Also, the correlation between perceived self-efficacy and academic success has been reported in the literature (Choi, 2005; Black et al, 2007; Jeffries & Rizzolo, 2006). Choi (2005) concluded that a positive relationship exists between self-efficacy and academic performance. Students with increased self-efficacy have strong personal beliefs that they will be successful in activities in which they engage, can accomplish goals, and cope with stress (Bandura, 1994). These are all important to persons working in the healthcare field.

There is also an important aspect related to self-efficacy and the acquisition of clinical skills (Bambini, Washburn, & Perkins, 2009; Wagner, Bear, & Sander, 2009). One researcher stated, “Only when nursing students have confidence in their own abilities are they able to shift focus to the needs of their patients. Shifting from their own needs to that of a patient is essential to being a safe and competent practitioner” (Leigh, 2008, p.1).

The implications of this conclusion are important to nursing faculty as they provide insight into alternate methods of instruction to remedy the problem of lack of clinical site availability. With clinical sites becoming more limited, schools of nursing are faced with using secondary clinical sites and limiting the number of admissions. Simulation can be a desirable substitute for a portion of the clinical experience by providing a teaching method that supports active learning. Nursing students are exposed to limited patient situations. Simulation can remedy that limitation by providing the student with a variety of scenarios during the simulation experience. This supports all students receiving instruction in nursing care related to important,

but infrequent, consequences of disease and healthcare interventions. It also provides a safe environment in which students can provide interventions without fear of harming a patient.

The use of simulation could also promote the increased admission of nursing students, which has been limited in the past by lack of adequate clinical placement. As research continues to support the use of simulation in the nursing curriculum, state boards of nursing may encourage the use of simulation for a higher percentage of clinical experiences in schools of nursing.

Additionally, the results of this study supports the fact that faculty are skilled in the development and implementation of simulation experiences. This, in part, is related to the decision by nursing administration to appoint a Coordinator of the simulation lab and assigned selected faculty to begin professional development related to simulation.

Therefore, one recommendation based on the study findings, is that the nursing administration continue to support faculty development in this area and investigate expanded use of the simulation lab. In addition, based on the success of the process used by the Nursing department, they should become a model for other healthcare departments who plan to implement teaching experiences in the simulation lab. Further, nursing faculty should serve as consultants for faculty at other schools of nursing planning to implement simulation labs in their program.

This study should be replicated in the future to determine if other class groups have similar responses regarding their simulation experience. Because the baccalaureate nursing program and use of the simulation lab is relatively new, there was a major focus on “getting it right,” which may prove to be less in the years to come and impact future class groups. Conversely, it may be that faculty gains more self-confidence and experience in developing and implementing simulation experiences, and scores related to satisfaction and self-confidence

increase with future classes. The study should also be replicated in other disciplines that use the simulation as part of their curriculum, to determine if those outcomes are similar to nursing.

### **Conclusion Two**

2. Sophomore baccalaureate students are more satisfied and self-confident in learning through simulation, and believe all elements of simulation design are better implemented than senior baccalaureate students.

This conclusion is based on the findings that sophomores scored higher than seniors in their satisfaction ( $t = 7.08$ ,  $p < .001$ ) and self-confidence ( $t = 5.98$ ,  $p < .001$ ) in learning.

Additionally, sophomore students assess the implementation of all of the elements of simulation design as higher than senior students; support ( $t = 5.69$ ,  $p < .001$ ), objectives and information ( $t = 4.87$ ,  $p < .001$ ), problem-solving ( $t = 3.58$ ,  $p < .001$ ), feedback / guided reflection ( $t = 2.48$ ,  $p = .014$ ), and fidelity (realism) ( $t = 2.35$ ,  $p = .020$ ).

There are multiple possibilities that might explain these differences. In 2013 the College of the study institution admitted their first baccalaureate nursing students. As a result these students have been exposed to the multiple stressors associated with a new program, which included the implementation of new teaching styles unfamiliar to the students, courses being taught by inexperienced faculty, changes in course and clinical schedules, etc. This has resulted in poor student satisfaction in the program, which was evidenced by low course evaluation scores and student complaints. The lower scores the senior students attributed to their satisfaction and self-confidence in learning may be a consequence of their dissatisfaction related to the program in general.

Another possibility might be that sophomore students have had less clinical exposure than senior students and are more impressed by being in the high tech environment of the

simulation lab. These students also have less knowledge of the practice of nursing and haven't had the opportunity to apply what they've learned. Consequently, the simulation lab provides unique opportunities for development of decision making and skills practice in a setting similar to the high tech environment of clinical sites.

Additionally, there was one senior faculty member who taught the simulation lab for the senior students. Perhaps, she was less skilled compared to the faculty who taught the sophomore students, or there may have been issues related to her demeanor or attitude during the simulation lab.

Based on these findings and conclusion the researcher recommends further research be conducted to identify factors that would promote greater satisfaction and self-confidence in learning in a simulation setting among senior students. One possible solution to mitigate the issue of lack of satisfaction and self-confidence among senior nursing students might be to alter the roles they play during the simulation experience; give them opportunities to incorporate the knowledge they have into the scenario and debriefing. Mackey et al (2014) promoted allowing senior nursing students to take on the role of the standardized patient, which provides an additional opportunity to apply skills of observation, reflection and evaluation from the perspective of the patient. This would give senior students occasion to expand upon their previous learning experiences and feel they have achieved more from the simulation.

Because this study was conducted using a single faculty member conducting the simulation experiences with sophomore and another with senior students, the study should be replicated using a variety of faculty teaching the labs to decrease the intrinsic factors when using a single faculty member.



Additionally, this study should be replicated when the present sophomore students are seniors to assess whether their satisfaction and self-confidence in learning through simulation has changed. This would lend some insight into whether additional clinical experiences affect satisfaction or self-confidence in the simulation lab.

### **Conclusion Three**

3. Having previous healthcare employment decreases students' satisfaction and self-confidence in learning through the use of simulation.

This conclusion is based on the findings that when students were asked to score their satisfaction and self-confidence in learning, those without healthcare employment indicated greater satisfaction ( $t = -3.29$ ,  $p = <.001$ ) and self-confidence ( $t = -2.71$ ,  $p .007$ ).

The explanations for these results may be similar to those explaining the differences in sophomore and senior students' scores in satisfaction and self-confidence. Those students who have been exposed to multiple clinical settings and patient care situations may be disinclined to feel the simulation experience provided much in the way of new learning experiences. Thus, the researcher would recommend that faculty develop simulation scenarios that provide sufficient complexity. This could be accomplished by creating patients with multisystem health problems, by providing more complex cueing during the simulation, or by asking more complex reflection questions during debriefing. This would provide higher level problem-solving and greater engagement from students with previous healthcare employment.

In addition, the researcher recommends further research related to how students with previous healthcare employment might benefit to a greater degree from learning through simulation.

### **Conclusion Four**

4. A model does exist explaining a substantial portion of the variance in Satisfaction in Learning through the use of simulation among baccalaureate nursing students enrolled in a private college in the Southeastern United States.

Based on the following findings of the study, a model was found which explained 68.3% of the variance in satisfaction in learning through the use of simulation. The variable which entered the regression model first was the element of simulation design “objectives and information.” Considered alone, this variable explained 54.2% of the variance in “Satisfaction in Learning” scores of baccalaureate nursing students enrolled in a private college in the southeastern United States.

Five additional variables explained an additional 14.1% of the variance in Satisfaction in Learning scores. These variables included the simulation design element of problem-solving which accounted for 6.54% of the variance, support accounted for 6.09%, and demographics that included previous healthcare employment, which accounted for 6.81% of the variance, age accounted 6.66%, and educational level accounted for 6.37%.

Perhaps one of the most important aspects of this conclusion is that 3 of the 6 variables, objectives and information, support, and problem-solving are all elements of design that have high levels of faculty interaction. This supports the premise that success of the simulation experience is dependent upon faculty who are skilled at both the development of simulation scenarios and the implementation of the simulation experiences. This includes learning how to provide well-timed and significant cues for students, recognizing students’ need for help, and allowing the student to be the most active ‘player’ in the simulation experience. This supports the researcher’s earlier recommendation that nursing administration provide the resources for the

professional development of faculty involved in simulation. This should begin by querying faculty to identify those who are most interested in working in the simulation environment. They should be given exposure to simulation experiences and mentored by faculty who have been successful in teaching in the simulation lab.

### **Conclusion Five**

5. A model does exist explaining a substantial portion of the variance in Self-confidence in Learning through the use of simulation among baccalaureate nursing students enrolled in a private college in the Southeastern United States.

From the results of the regression analysis, a model was found which explains 60.1% of the variance in self-confidence in learning through the use of simulation. The variable which entered the regression model first was the element of simulation design “objectives and information.” Considered alone, this variable explained 49.3% of the variance in “Self-confidence in Learning” scores of baccalaureate nursing students enrolled in a private college in the southeastern United States.

Two additional variables explained an additional 10.8% of the variance in “Self-confidence in Learning” scores. These variables included the elements of simulation design “support,” which accounted for 6.8% of the variance, and “problem solving” which accounted for 4.0%.

All of the variables that explain much of the variance related to self-confidence are those simulation design elements that require direct interaction with faculty. This requires faculty who are skilled in the implementation of simulation experiences, and therefore, supports the earlier recommendation that nursing administration promote professional development of all faculty who will be working with students in the simulation lab.

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## APPENDIX A. IRB APPROVALS

### ACTION ON EXEMPTION APPROVAL REQUEST



Institutional Review Board

P: 225.578.8692

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[irb@lsu.edu](mailto:irb@lsu.edu) | [lsu.edu/irb](http://lsu.edu/irb)

**TO:** Km Hurst Dr. Dennis Landin, Chair 130 David Boyd Hall School of Human Resource Educ. & Workforce Dev. Baton Rouge, LA 70803

**FROM:** Dennis Landin  
Chair, Institutional Review Board

**DATE:** March 5, 2015

**RE:** IRB# E9218

**TITLE:** High Fidelity Simulation: It's Impact on Self-Confidence among Sophomore and Senior Nursing Students

**New Protocol/Modification/Continuation:** New Protocol

**Review Date:** 3/5/2015

**Approved** X **Disapproved** \_\_\_\_\_

**Approval Date:** 3/5/2015 **Approval Expiration Date:** 3/4/2018

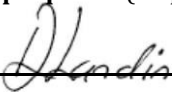
**Exemption Category/Paragraph:** 2b

**Signed Consent Waived?:** No

**Re-review frequency:** (three years unless otherwise stated)

**LSU Proposal Number** (if applicable): \_\_\_\_\_

**Protocol Matches Scope of Work in Grant proposal:** (if applicable) \_\_\_\_\_

**By:** Dennis Landin, Chairman \_\_\_\_\_  


**PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING - Continuing approval is CONDITIONAL on:**

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects\*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.

8. **SPECIAL NOTE:**

*\*All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at <http://www.lsu.edu/irb>*



Date: March 10, 2015

Study Number: 1510

Study Title: *High Fidelity Simulation: It's Impact on Self-Confidence and Satisfaction in Learning among Sophomore and Senior Nursing Students*

Primary Investigator: Kim Hurst, RN, MN

Secondary Investigator: None

Primary Reviewer: Lindsay Bratton-Mullins

Secondary Reviewer: Rhoda Reddix

Approval Designation: Exempt

Approval Date: March 10, 2015

Expiration Date: March 10, 2016

Dear Ms. Hurst,

I am pleased to inform you that Lindsay Bratton-Mullins and Rhoda Reddix of the Our Lady of the Lake College Institutional Review Board have reviewed and approved your proposed study entitled *High Fidelity Simulation: It's Impact on Self-Confidence and Satisfaction in Learning among Sophomore and Senior Nursing Students* conducted by Kim Hurst.

Please be aware that this approval is only valid for one year. If your research extends past that time, you will need to submit a Reapplication form no later than two weeks before the end of the approval period.

Thank you for your submission and I would like to wish you success with your study.

Best regards,

Dr. Michael T. Dreznick,  
Associate Professor and OLOL College IRB Chair

## APPENDIX B. SATISFACTION AND SELF CONFIDENCE IN LEARNING

### Student Satisfaction and Self-Confidence in Learning

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

Mark:

1 = STRONGLY DISAGREE with the statement

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



## APPENDIX C. SIMULATION DESIGN SCALE

### Simulation Design Scale (Student Version)

In order to measure if the best simulation design elements were implemented in your simulation, please complete the survey below as you perceive it. There are no right or wrong answers, only your perceived amount of agreement or disagreement.

Use the following rating system when assessing the simulation design elements: 1 - Strongly Disagree with the statement 2 - Disagree with the statement 3 - Undecided - you neither agree or disagree with the statement 4 - Agree with the statement 5 - Strongly Agree with the statement NA - Not Applicable; the statement does not pertain to the simulation activity performed.							Rate each item based upon how important that item is <b>to you</b> . 1 - Not Important 2 - Somewhat Important 3 - Neutral 4 - Important 5 - Very Important				
Item	1	2	3	4	5	NA	1	2	3	4	5
<b>Objectives and Information</b>											
1. There was enough information provided at the beginning of the simulation to provide direction and encouragement.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
2. I clearly understood the purpose and objectives of the simulation.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3. The simulation provided enough information in a clear matter for me to problem-solve the situation.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
4. There was enough information provided to me during the simulation.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
5. The cues were appropriate and geared to promote my understanding.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
<b>Support</b>											
6. Support was offered in a timely manner.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
7. My need for help was recognized.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
8. I felt supported by the teacher's assistance during the simulation.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
9. I was supported in the learning process.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> NA	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

## Simulation Design Scale (Student Version)

In order to measure if the best simulation design elements were implemented in your simulation , please complete the survey below as you perceive it. There are no right or wrong answers, only your perceived amount of agreement or disagreement.

Please use the following code to answer the questions.

Use the following rating system when assessing the simulation design elements: 1 - Strongly Disagree with the statement 2 - Disagree with the statement 3 -Undecided -you neither agree or disagree with the statement 4 -Agree with the statement 5 -Strongly Agree with the statement NA -Not Applicable; the statement does not pertain to the simulation activity performed.							Rate each item based upon how important that item is <b>to you</b> . 1 - Not Important 2 - Somewhat Important 3 - Neutral 4 - Important 5 - Very Important				
Item	1	2	3	4	5	NA	1	2	3	4	5
<b>Problem Solving</b>											
Independent problem-solving was facilitated. 10.	1	2	3	4	5	NA	1	2	3	4	5
I was encouraged to explore all possibilities of the simulation. 11.	1	2	3	4	5	NA	1	2	3	4	5
12. The simulation was designed for my specific level of knowledge and skills.	1	2	3	4	5	NA	1	2	3	4	5
13. The simulation allowed me the opportunity to prioritize nursing assessments and care.	1	2	3	4	5	NA	1	2	3	4	5
14.The simulation provided me an opportunity to goal set for my patient.	1	2	3	4	5	NA	1	2	3	4	5
<b>Feedback/Guided Reflection</b>											
Feedback provided was constructive. 15.	1	2	3	4	5	NA	1	2	3	4	5
Feedback was provided in a timely manner. 16.	1	2	3	4	5	NA	1	2	3	4	5
The simulation allowed me to analyze my own behavior and actions. 17.	1	2	3	4	5	NA	1	2	3	4	5
There was an opportunity after the simulation to obtain guidance/feedback from the teacher in order to build knowledge to another level. 18.	1	2	3	4	5	NA	1	2	3	4	5
<b>Fidelity (Realism)</b>											
19. The scenario resembled a real-life situation.	1	2	3	4	5	NA	1	2	3	4	5
20. Real life factors, situations, and variables were built into the simulation scenario.	1	2	3	4	5	NA	1	2	3	4	5

## **VITA**

Kim Simoneaux Hurst was born in Baton Rouge, Louisiana, and graduated from Glen Oaks High School in 1972. She received a Bachelor of Science in Nursing in 1977 from Southeastern Louisiana University, and a Master of Nursing from Louisiana State University Health Science Center in New Orleans in 1980.

Her professional experience includes employment in a variety of clinical, educational, and administrative roles including Staff Registered Nurse in Intensive Care, Clinical Nurse Specialist (CNS) in Medical-Surgical nursing, and Nurse Educator in New Orleans area hospitals, and Director of Education at Our Lady of the Lake Regional Medical Center.

For many years she's been a faculty member at Our Lady of the Lake College and has maintained a certification as a Certified Nurse Educator. She is a candidate to receive her Doctor of Philosophy degree at the December 2015 ceremony.