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Cardiac Arrest High-Fidelity Simulation: Improving Nursing Students' Resuscitation Response in Preparation for Transition to Professional Practice

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Cardiac Arrest High-Fidelity Simulation: Improving Nursing Students' Resuscitation Response in Preparation for Transition to Professional Practice

by

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APPROVAL FOR SUCCESSFUL DEFENSE

Phoebe Hanna has successfully defended and made the required modifications to the text of the DNP Final Scholarly Project for the Doctor of Nursing Practice during this Fall, 2023

Final Scholarly Project Committee

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Dedication

To my incredibly supportive family

&

To new nurses everywhere and the patients who will need your help in their darkest moments.

"For from Him and through Him and to Him are all things. To Him be glory forever. Amen."
-Romans 11:36

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Abstract

New graduate nurses report critical hands-on skills are not taught in school and contribute to the increased stress they feel when managing a life-threatening patient condition (Bennett et al., 2017). In the United States, approximately 290,000 in-hospital cardiac arrests occur annually (Andersen et al., 2019). The current Bachelor of Science in Nursing (BSN) curriculum at a large university in northern New Jersey does not include the implementation of a high-fidelity cardiac arrest simulation. This project was designed to enhance classroom didactic education of nursing care during an emergency cardiac arrest by exposing traditional senior-level BSN students to a high-fidelity cardiac arrest simulation conducted in a controlled environment. This type of simulation allows students to experience, understand, and practice the necessary nursing response while caring for a patient suffering a life-threatening emergency prior to becoming licensed nurses. This initiative will prepare them to respond promptly and with confidence as novice licensed registered nurses when faced with an emergency in the clinical practice setting.

Background

Introduction of the Clinically Focused Practice Problem/Issue

Every year in the United States there are approximately 290,000 in-hospital cardiac arrests (Andersen et al., 2019). Novice nurses often feel uncomfortable with managing life threatening conditions, and cite critical hands-on skills not being taught in nursing school as the culprit (Bennett et al., 2017; DeGrande et al., 2018). Insufficient mastery and poor self-confidence during these critical patient conditions can induce high levels of stress and anxiety in new graduate nurses (Najafi & Nasiri, 2023; Wu et al., 2012). Currently at a large nursing program in northern New Jersey, nursing students do not participate in cardiac arrest simulation prior to graduating. In order to help develop self-confidence, improve critical thinking, and enhance decision making during a resuscitation response, this project was developed. It is designed to enhance classroom didactic education of nursing care during an emergency by exposing baccalaureate senior-level nursing students to a high-fidelity cardiac arrest simulation. These students are in their final academic semester and will soon be taking the National Council Licensure Examination for Registered Nurses (NCLEX) and transitioning to professional nursing practice. Implementing this simulation allows them to understand, practice, and anticipate the necessary nursing response and care for a patient during an emergency prior to becoming licensed nurses, which in turn will help them respond promptly and with confidence in the professional practice setting.

Description of the Project

This simulation was designed for and implemented with senior-level traditional baccalaureate nursing students at a large university in northern New Jersey. The project sought to enhance classroom didactic education of nursing care during an emergency cardiac arrest and

prepare students for clinical emergencies in the professional practice setting. Senior-level undergraduate nursing students were provided with comprehensive classroom didactic review of necessary nursing knowledge pertaining to an adult emergency resuscitation response. Topics that were reviewed included: identifying an unresponsive patient and implementing appropriate immediate interventions, basic life support review, cardiac rhythm interpretation and treatment, appropriate emergency medication administration, team roles and responsibilities, and code cart and defibrillator review. Students were then given the opportunity to develop self-confidence by applying their knowledge, critical thinking, and decision-making skills during a high-fidelity cardiac arrest simulation. This simulation was conducted in a safe and controlled environment, in which students were responsible for all nursing care and actions. At the conclusion of the simulation experience, students participated in a debriefing process and survey responses were collected to understand and evaluate students' understanding of the resuscitation response, self-confidence, and experience as well as gain student feedback on their experience.

The intended goals and expected outcomes throughout this project design and implementation were to:

- Understand students' experience and perspective regarding patient emergency resuscitation.
- Ensure nursing students receive comprehensive classroom review of nursing care and responsibility during an emergency.
- Expose and help students become more familiar with the emergency response process by allowing them to fully practice within the nursing scope.
- Promote and develop critical thinking and decision making during an emergency.

- Encourage the development of interprofessional communication, teamwork, and collaboration to improve patient outcomes.

Significance of the Project for Nursing

Novice nurses often report feeling that critical hands-on skills are not covered or taught in nursing school and that classroom-taught theory is not easily transferred to the clinical training setting, which adds to the many challenges they face that cause increased anxiety, insecurity, and self-doubt (Bennett et al., 2017). Currently, there is a national shortage of nurses that is expected to last through 2030, with the Bureau of Labor Statistics predicting 193,100 job openings each year (U.S. Bureau of Labor Statistics, 2023). This shortage will create challenges for novice nurses transitioning into professional practice because a significant segment of the current nursing workforce will be retiring in the next few years (American Association of Colleges of Nursing, 2022). In addition, over 66% of acute care nurses are considering or planning to leave the nursing profession after the hardships endured during the COVID-19 pandemic which aggravated feelings of burn-out, stress, frustration, and exhaustion (American Association of Colleges of Nursing, 2022). Therefore, today's novice nurses are entering the nursing profession during unprecedented times and under less-than-ideal circumstances. Amidst a diminishing supply of experienced nurses available to mentor new graduates and the rising complexity of patient care, it is paramount for novice nurses to possess not only theoretical knowledge but also the practical skills necessary to seamlessly apply academic learning in professional practice. This is essential to ensure the delivery of safe and effective care to patients.

Simulation is a teaching method and educational strategy that allows for learning and understanding of theoretical knowledge and practical skills. The gap between theory and practice can be substantially reduced with the use of simulations conducted in protected environments

that provide a sense of security (Koukourikos et al., 2021). This allows students to experience "some significant issues they may face in their daily work" and enhances self-esteem, confidence, and learning (Koukourikos et al., 2021, p. 15). Given the challenges novice nurses encounter and the frequency of in-hospital cardiac arrests, providing nursing students with practice in this clinical scenario will enhance their readiness for such situations in clinical practice. This preparation empowers them to anticipate patient needs, administer high-quality, evidence-based care, and builds a solid foundation for further development in their clinical skills.

Literature Review

Theoretical Foundation of the Project

Benner's From Novice to Expert theoretical framework outlines the developmental stages nurses go thorough to eventually become experts: novice, advanced beginner, competent, proficient, and expert (Benner, 1984). This theory describes a shift from abstract principles and textbook 'hard rules' to a reliance on concrete experience as a means to shape nursing practice. It illustrates a change in the perception and understanding of a demand situation "so that the situation is seen less as a compilation of equally relevant bits and more as a complete whole in which only certain parts are relevant" (Benner, 1982, p. 402). Providing nursing students with a cardiac arrest simulation gives them a concrete experience where they can practically implement into clinical practice the abstract concepts they were taught in the classroom. This will then serve as a reference point in their future nursing careers each time they encounter this clinical scenario, thereby contributing to their development from novice to expert nurses.

Another theoretical framework used in this project is Kolb's Experiential Learning Theory. This theory asserts that learning is a process "whereby knowledge results from the combination of grasping and transforming experience" (Kolb, 1984, p. 41). Kolb describes a 4-phase learning cycle that consists of:

> (1) the learner participating in a concrete experience,
>
> (2) reflective observation where the learner reflects on the experience,
>
> (3) abstract conceptualization where the learner considers thoughts and reflections to identify the significance of the learning experience and considers what may have been done differently to enhance the outcome, and

(4) active experimentation which involves using what was learned to direct future practice (Kolb, 1984).

This theoretical framework, in addition to Benner's theory, was vital to the implementation of a cardiac arrest simulation with undergraduate nursing students. The goal was to help them experience a high-stress emergency during which they needed to identify a decompensating patient, trigger the appropriate hospital-wide notification, implement immediate appropriate nursing actions, and reflect and process on how this experience will change the way they deliver nursing care once they become licensed registered nurses. Students' participation in the simulation provided them with the concrete experience, which is the first of Kolb's learning phases, but to ensure learning did not stop once the simulation scenario concluded, this project was designed so that students continued to learn by reflecting during the debriefing sessions. These sessions were designed and sought to achieve the following goals:

- Encourage students to reflect on the simulation experience.
- Allow students to talk about what happened and what it meant to them.
- Challenge students to think of things they would have wanted to do differently if given a chance to repeat the experience.
- Prompt students to conceptualize how they plan on using the experience to improve their nursing practice once they become licensed registered nurses.

Critique of Empirical Studies Related to the Central Concept of the Project

Healthcare delivery is more complex and intricate today than ever before and nurses are at the heart of it all. Novice nurses face many challenges upon entering the nursing work force with the literature indicating that a majority feel critical hands-on skills are not taught or covered in nursing school and that classroom-taught theory is not transferred to the clinical setting

(Bennett et al., 2017; Hallaran et al., 2022). Furthermore, stress is identified as a chief factor that influences the competence of new nurses, with many novice nurses hired in intensive care units reporting feeling uncertain and lacking confidence, leading them to feel "uncomfortable with managing life-threatening patient situations" (DeGrande et al., 2018, p. 75). Even when new graduate nurses have prior healthcare experience, they still become uncertain and uncomfortable when they realize their lack of knowledge, which is an essential step to developing into a competent nurse (Benner, 1982; DeGrande et al., 2018). More exposure to varying clinical situations, especially when conducted in a safe environment, lets nurses learn and become comfortable with managing life-threatening and uncomfortable patient situations. Over time, novice nurses will develop and possess an intuition that allows them to know that something is wrong, what to look for, and what to do for their patients (DeGrande et al., 2018).

While it is well known that it takes time to learn, novice nurses still feel stressed when trying to transition to professional practice. Feeg et al. (2022) used a qualitative design to understand the experiences of new nurse graduates with their work environment and their perceived stressors. Of 1,456 responses, the most frequently described stress category was the nurse/patient ratio followed by high expectations, responsibility, and fear of making a mistake (Feeg et al., 2022). New graduate nurses report feeling they struggle to care for multiple high-acuity patients at one time and believe they are unable to provide complete care to their patients. They also worry about being able to handle emergency situations and maintaining the safety of their patients; feeling stressed, not knowing what to do in a given situation, and not knowing everything they need to know compounds their fear of making a mistake or causing harm (Feeg et al., 2022). This becomes concerning because while novice nurses are initially excited to start their jobs, as they progress and transition into the nurse role, stress levels intensify because of

self-doubt and lack of confidence, which creates space for harm to occur to patients. Gaining experience and competence are therefore necessary to feeling comfortable with nursing practice and bridging the theory-practice gap (Feeg et al., 2022).

The work environment and culture play an important role in the development and assimilation of novice nurses to professional practice. Hallaran et al. (2022) analyzed 217 survey responses regarding novice nurses' transition to practice. They concluded that novice nurses feel unprepared for the workforce and that a lack of sufficient orientation or continuing education did not help facilitate the transition to professional practice (Hallaran et al., 2022). In addition, nurse administrators have reported novice nurses are "simply not ready for all aspects of their jobs" (Hickerson et al., 2016, p. 18). The literature indicates supportive teams and work cultures with friendly and helpful staff encourage new nurses to ask questions, feel comfortable, and transition into the new role (Hallaran et al., 2022; Hickerson et al., 2016). The problem in the post-covid pandemic era is that while novice nurses acknowledge their nursing education prepared them for the NCLEX, they believe it did not prepare them for clinical practice and they must quickly get accustomed to being uncomfortable in a work setting that lacks mentors and support (DeGrande et al., 2018; Hickerson et al., 2016). The literature also clearly points out the pandemic's forced shift to online learning left a significant negative impact on student nurses' education and reduced their hands-on clinical practice, resulting in a critical deficiency of real-world knowledge. This not only contributes to students' difficulty in applying textbook knowledge to patient care, but also leads to a shortfall in critical thinking during an emergency as students could not grasp concepts that they could not apply during their studies (Leaver et al., 2022; Powers et al., 2022).

Simulation is one way novice nurses can gain concrete experiences and be introduced to various life-threatening clinical scenarios while allowing them to practice providing nursing care and develop their confidence, competence, knowledge, critical thinking, and teamwork skills. (Hung et al., 2021; Hyland & Hawkins, 2009; Kim, 2018). In 2021, a descriptive literature review about simulation in nursing education concluded that it rebuilds a skill or clinical experience by allowing students to interact in a hospital setting without exposing human patients to any risk (Koukourikos et al., 2021). In this manner, novice nurses can learn valuable lessons from the mistakes made during simulation, and in the long run can "reduce the probability of errors" occurring with live patients (Koukourikos et al., 2021, p. 16). As a result, this increases students' satisfaction with the educational learning process, and enhances their self-confidence, self-esteem, and comfort in skill performance. Furthermore, the authors discovered that simulations designed to create a training environment with immediate feedback allow students to actively participate while feeling psychologically safe, thereby creating a learning atmosphere that bridges theory and clinical practice and promotes the development of decision-making and critical thinking skills (Koukourikos et al., 2021).

Another study published in 2021 evaluated the effectiveness of simulation-based cardiopulmonary resuscitation (CPR) training programs on fourth-year nursing students. It found that post-test CPR knowledge scores significantly increased after the simulation and were significantly higher than pre-test results (Demirtas et al., 2021). Most students were worried prior to the simulation because they did not know exactly what to do during CPR and expressed not having enough knowledge and fear of harming the model; they recognized that the application of knowledge is not as easy as it seemed. However, after the simulation, almost all students expressed their satisfaction and reported the training was a beneficial learning experience that

improved their self-confidence and allowed them to learn more about the practice of resuscitation. (Demirtas et al., 2021). Despite the feelings of uncertainty experienced before and during the simulation, students reported feeling more confident, calm, relaxed, less fearful, and happy to be informed after having participated in this experience. Furthermore, students suggested CPR simulation training should be implemented with all nursing students and emphasized the necessity of performing it periodically (Demirtas et al., 2021). These results indicate students' skills and confidence greatly increase when simulation is combined with theoretical education. The findings from this study were also echoed in a two-group quasi-experimental study conducted by Chen et al. (2018) where the experimental group received a simulation-based emergency and intensive care nursing curriculum focused on incorporating prioritization, basic resuscitation skills, airway/breathing/circulation management, and teamwork. At the end of the curriculum, the experimental group demonstrated consistent and significant improvement in performance, including a decrease in resuscitation response time, whereas the control group that only received traditional instruction did not (Chen et al., 2018). Moreover, another peer-reviewed article found that repeated exposures to simulation lead to statistically significant improvements in nursing competence, self-efficacy, and learning satisfaction scores (Hung et al., 2021). Therefore, exposing nursing students to simulations involving emergency situations is beneficial to their growth and development as clinicians.

The literature indicates students believe interactive, simulated clinical experiences recreate real-life scenarios, test clinical skills and decision making, reinforce clinical objectives, and enhance learning (Demirtas et al., 2021; Hyland & Hawkins, 2009). High-fidelity simulation has been used to illustrate the nursing care of clients experiencing certain emergent conditions, including myocardial infarction, deep vein thrombosis leading to pulmonary embolism, and

anaphylactic and hypovolemic shock, and has been found to be more effective than written case studies in helping undergraduate nursing students gain knowledge and improve critical-thinking performance (Hyland & Hawkins, 2009). In fact, one study published in *Nurse Education Today* implemented a role-playing simulated cardiac arrest in which students were assigned roles as doctors and nurses after receiving a lecture based on the American Heart Association's CPR guidelines and found these students scored significantly higher self-efficacy scores post-simulation compared to a traditional lecture group (Kim, 2018). This indicates that not only does simulation help enhance classroom didactic education, but it also improves student's self-efficacy scores and expands their critical thinking abilities, which will continue to improve with increased exposure to simulations and caring for patients. In addition to improving self-efficacy and critical thinking, Labrague and Obeidat (2021) concluded high-fidelity simulation is effective in improving and enhancing nursing students' self-confidence and reducing their anxiety when caring for patients and implementing nursing skills. They assert all clinical nursing courses should implement and utilize simulation-based activities as high-fidelity simulation is one of the most effective methods to improve students' experiences (Labrague & Obeidat, 2021).

In terms of implementing a cardiac arrest simulation, there is further evidence in the literature that such a simulation would be highly beneficial to nursing students. Simko et al.'s prospective pre-test post-test study evaluated if the use of SimMan in a mock code increased students' knowledge of code procedures and data application (Simko et al., 2014). The mock code simulation was introduced into a junior level medical-surgical course for traditional BSN students and in the accelerated second-degree nursing program at Duquesne University. Ten test questions from the American Heart Association's Advanced Cardiovascular Life Support exam were used for the pre-test and post-test. A statistically significant increase in score from the pre-

test to post-test supported the use of SimMan in a mock code to foster improvement in students' knowledge of code procedures and data application. The authors concluded simulation for code procedures increases confidence during a resuscitation response and decreases fear in encountering a code following the simulated experience (Simko et al., 2014). Likewise, when Victor et al. (2017) examined the relationships between clinical nursing judgement development, simulation performance, and clinical performance by utilizing the Creighton Competency Evaluation Instrument and the Lasater Clinical Judgement Rubric in a quantitative study conducted with 80 prelicensure nursing students, they identified a significant positive relationship between clinical nursing judgment development and performance in the simulation setting. They further noted a significant positive relationship between simulation performance and clinical performance (Victor et al., 2017). This indicates engaging students within simulation-based learning activities results in more highly developed clinical judgement, increases the likelihood of students successfully managing similar situations in real clinical practice, and produces outcomes having the same probability of occurrence as in a clinical situation. In other words, simulation can imitate the clinical setting and lessons learned in the simulated setting are directly transferrable to clinical practice. This can go very far in helping students overcome the theory-practice gap that is inevitably felt during their first nursing jobs. This concept was clearly depicted in a qualitative study published in *Clinical Simulation in Nursing* where small group interviews were conducted with nursing students who reported they found the knowledge acquired from simulation experiences were directly applicable to clinical practice, thus aiding them in better understanding and prioritizing patient care and developing communication skills (Verkuyl et al., 2022). Clinical instructors who were interviewed also reported and observed that students' increased knowledge and practice gained via simulation

translated into enhanced student self-confidence when working with human patients (Verkuyl et al., 2022).

The literature demonstrates that simulation presents many enhanced benefits to nursing students including increased critical thinking, enhanced hands-on nursing skills, improved communication, higher levels of self-efficacy, and improved confidence which then "provides an ongoing motivation for learning" (Theobald et al., 2021, p. 8). One of the unique benefits to simulation that stands out from experiences gained during a standard typical clinical rotation experienced by nursing students is that simulation can often provide immediate feedback and can be repeated to allow students to select again when they make a mistake. For example, if a student selects a vasoconstricting medication instead of the desired vasodilating agent to lower a blood pressure, the high-fidelity simulation mannequin can be set to give a relatively immediate hypertensive blood pressure reading that quickly lets the student re-think their decision and hopefully realize their error. Conversely, this sort of scenario is not only something to avoid while caring for live patients, but if it happens often takes time for the error to be realized as medications require time to show their effects. In this way, simulation has the added benefit that very serious mistakes can occur, while concomitantly not making the student feel guilty for causing harm to a human being, thus the space to truly learn and become aware of correct critical thinking processes greatly increases and serves only to benefit the student nurse.

Another unique and noteworthy benefit to simulation is that it can provide the opportunity to slow down an action that typically occurs very quickly in the real clinical setting (Verkuyl et al., 2022). By slowing down a process or an action, it can be broken down into pieces that can be analyzed and understood in a debriefing. This is not always available or feasible in the clinical setting due to time constraints and inability to go back and repeat

something that has already occurred or been done to a patient. In this manner, using high-fidelity simulation to expose nursing students to an otherwise highly stressful, fast-paced, and overwhelming patient emergency, such as a cardiac arrest, allows them to learn, practice, and develop their confidence and skill set while also helping reduce their anxiety level. This is vastly different from being a nursing student who sees a cardiac arrest occur during clinical rotations, where they are limited to the role of an observer because the nursing and medical staff at the clinical site will be the ones responding and caring for the patient.

Proposed Methodology of the Project

Anticipated Approval Process for the Project

Implementation of this program began by obtaining approval and support from the Director of the Doctor of Nursing Practice (DNP) Program. Once this project received approval, it was necessary to present and gain approval from the Director of Simulation and the Lead Instructor of the Synthesis Seminar course at the time of project implementation. Synthesis Seminar is the very last academic course all undergraduate nursing students take at a large university in northern New Jersey prior to graduating and sitting for their licensure exam. The project was reviewed and received exempt status from the university Institutional Review Board (Appendix A). This initiative received full approval for implementation with undergraduate senior-level traditional BSN nursing students.

The project was implemented in the High-Fidelity Simulation Suite at a large university in northern New Jersey. Nursing students have participated in several simulations at this location throughout their nursing education and are very familiar with this environment. Educators, faculty, and the Director of Simulation are also well versed with the equipment capabilities and can implement the cardiac arrest simulation at this location at no additional cost.

An analysis of potential risks and benefits of implementing this project was conducted to identify potential challenges. The greatest risks to this project's success that were identified include long-term sustainability and implementation, the risk of malfunctioning equipment, and exhaustion from student participants leading to lack of motivation to participate and learn from this experience.

Successful long-term implementation of this project was identified as the biggest potential risk as the doctoral student conducting this project will inevitably graduate, thereby

opening the potential threat this simulation will not continue for future nursing students. To overcome the risk of this simulation not being implemented in the future, very close collaboration occurred with the College of Nursing Director of Simulation and nursing faculty to ensure a sustainable simulation was developed. This collaboration made certain the newly developed and implemented simulation could be incorporated and reproduced into the nursing curriculum for all future students. Continuous feedback from the Director of Clinical Simulation was taken into consideration and incorporated throughout the development of the simulation. All materials developed and used in this project received approval from the Director of Clinical Simulation and the DNP Program Director.

The possibility of technical problems and time constrictions were also potential risks that were recognized and addressed. Collaboration with nursing faculty and the Director of Simulation occurred to secure sufficient time allotment for students to participate in the simulation and receive a thorough debriefing. To overcome the potential for equipment malfunction and technical problems, several simulation run-throughs occurred at the High-Fidelity Simulation Suite where this project was implemented. The equipment was tested and experimented with, and trouble-shooting attempts were made multiple times prior to allowing students to participate in this experience. Furthermore, backup equipment was also tested for proper functioning and was available on standby during the simulations. During the simulations, in the event the defibrillator/monitor started in automated external defibrillator (AED) mode due to the improper sequence of actions required by the student nurse operator, the ACLS provider that responded to the Code Blue being called, which was this DNP candidate, preformed the necessary actions to have the monitor function in the appropriate defibrillator mode while also ensuring student participants continued with their resuscitation efforts. Discussions regarding

trouble shooting equipment occurred in post-simulation debriefing sessions as these issues of equipment malfunction also occur in real life. Additionally, student safety was of utmost concern during this project implementation. Multiple shock delivery attempts to the mannequin were made during simulation run-throughs to ensure there was absolutely no risk of a participant being electrically shocked during the simulation experience. For added safety measure, students were not allowed to charge the monitor and deliver the shock during the simulation; this role was completed by the DNP candidate who vigilantly ensured all participants were "cleared" prior to administering any shocks.

Lastly, to overcome the risk of student participants being mentally exhausted and lacking in motivation to fully participate and learn from this simulation experience, we appealed to their being close to graduation and beginning their careers as licensed nurses. By having them realize they will be responsible for the care of their patients upon graduating and passing the NCLEX in just a few short months, students were encouraged and motivated to participate to the fullest extent of nursing scope of practice and learn from a highly interactive and clinically realistic simulation. Similarly, since this simulation was conducted on a high-fidelity, yet still plastic mannequin to ensure safety and a controlled environment, the potential risk that students may not respond in this simulation as if this were a real person was noted. To appropriately overcome this challenge, very careful consideration was taken to develop a patient scenario that is highly interactive and clinically realistic; the simulation patient scenario has occurred in the real clinical setting. Care was taken to develop a dynamic simulation where the results, events, and patient responses were dependent on students' actions, and the mannequin's response was appropriately altered from the control room as the simulation unfolded. This not only encouraged and prompted students to participate but ensured the simulation truly mimicked the real world.

The benefits that were identified for implementing this project was that first and foremost it would bring one of the most stressful patient scenarios into the simulated learning environment; it can serve as a drill for a patient emergency without a real patient emergency occurring. The equipment required to implement this simulation was also readily available and accessible to nursing students; no additional costs were incurred to implement this project. Additionally, highly qualified educators dedicated to improving nursing education and setting up students for success were of great benefit and played key roles that contributed to the success of this project. Nursing faculty also recognized that the classroom didactic education and the simulation implemented in this project would help facilitate students' transition to professional practice. Without any of these resources, this project would not have been possible.

Anticipated Phases of the Project

Phase I: Needs Assessment Process

The initial needs assessment consisted of recognition of novice nurses' difficulty in managing emergency patient scenarios and performing a preliminary literature review on the topic. The next step involved finding out if the university's College of Nursing implements a cardiac arrest high-fidelity simulation. Information was obtained regarding the current simulations being implemented and the overall nursing curriculum provided by the college. Upon conclusion of the needs assessment and approval from the Director of the DNP Program, the project concept was presented to key stakeholders to gain approval and support for implementation.

Phase II: Obtaining Support from Stakeholders Process

Promotion of this DNP project required identification of key stakeholders who would be involved in this initiative. The first key stakeholder identified was the Director of Simulation at a

large nursing program in northern New Jersey. The Director of Simulation is a master's prepared registered nurse responsible for simulation development and implementation with students. This project received approval and support from the Director of Simulation for implementation in the BSN program. The Director of Simulation was vital in helping develop the patient clinical scenario as well as identifying areas where students tend to struggle to grasp concepts during simulation. All resources and materials developed for this project were reviewed and approved by the Director of Simulation. Without the support and collaboration of the Director of Simulation, this project would not have been possible.

The next key stakeholder identified was the Synthesis Seminar Lead Instructor, who also served as the Nursing Undergraduate Department Chair at the time of project development and implementation. It was important to get the support of the Lead Instructor to obtain class time with students to present a pre-briefing and review of the nursing response for a patient experiencing a sudden cardiac arrest. The Lead Instructor believed that this project would not only help students in preparing for their NCLEX licensure examination, but also develop their critical thinking skills transitioning into professional practice.

Clinical instructors were also identified as key stakeholders. The Director of Simulation held meetings with clinical instructors introducing this simulation and its objectives. Clinical faculty verbalized their support and appreciation for this simulation's development. Clinical instructors were vital in grouping and identifying students' strengths and weaknesses during the simulation and in encouraging students to review pre-briefing materials prior to simulation day.

Lastly, senior level nursing students were identified as the consumers and directly participated in this project. The designed simulation required students to be engaged and interactive with the simulated patient, the available equipment, their environment, and each

other. Therefore, it was vitally important to get students' buy in and support of this clinical simulation. During the pre-briefing sessions, many students expressed concern over not having encountered a cardiac arrest in real life, believing they will not know what to do in this type of scenario, and worry over being able to make the transition from academia to clinical practice. It was explained to students they will be provided the opportunity to participate in a simulated emergency to help bridge this gap. During the pre-briefing sessions, students were highly engaged and asked appropriate nursing care related questions, indicating they were open and looking forward to this simulation experience.

This project received the support and approval from all the key stakeholders and received exemption status from the university Institutional Review Board for implementation (Appendix A).

Plans were made to implement the simulation with traditional BSN students in the Spring 2023 semester. Findings were collected and shared with the Director of the DNP program, the Director of Clinical Simulation, and the Synthesis Seminar Lead Instructor/Undergraduate Department Chair. The long-term goal is to have this simulation be incorporated as part of the nursing curriculum for all future nursing students prior to graduating.

Phase III: Initial Implementation Steps

Project planning for the implementation of this initiative commenced once it received approval from the Director of Clinical Simulation and the Lead Instructor for Synthesis Seminar. The planning phase of this project included:

- Creation of the patient clinical scenario for the simulation.
- Creation of a didactic PowerPoint presentation for the pre-briefing sessions.
- Creation of a Student Learner Guide specific for this simulation.

- Creation of a ‘patient chart’ for the simulation, including lab results and orders.
- Development of pre-and-post simulation surveys for students to complete.
- Development of faculty post-simulation survey.
- Multiple simulation run-throughs to ensure proper functioning of the equipment.

Once the simulation scenario and all associated materials were developed and approved by the Director of the DNP Program and the Director of Simulation, the next step was to begin the initial implementation of the project with senior-level nursing students. This involved:

- Obtaining pre-simulation survey responses from students.
- Presenting to students during Synthesis Seminar class time regarding the care of a patient during a cardiac arrest which included basic life support review, life-threatening cardiac arrythmia review, and code cart review.
- Providing students with the opportunity to practice administering CPR and bag-valve-mask ventilation while getting instructor feedback.
- Ensuring the Student Learner Guide created for this simulation was available to students approximately one week prior to their simulation.

Phase IV: Ongoing Implementation Process

The ongoing implementation process was the time during which students experienced and participated in the high-fidelity cardiac arrest simulation conducted at the Interprofessional Health Sciences Campus. This included:

- Orienting students to the simulation space and the correct procedure to have the monitor turn on in manual defibrillator mode and not Automated External Defibrillator (AED) mode.

- Implementing the simulation with each of the clinical groups scheduled to experience this simulation.
- Debriefing students after the simulation and getting feedback.
- Obtaining post-simulation survey responses from students and faculty.

Table 1 presents a timeline along with actions taken during each stage of the project.

Table 1

Project Timeline and Actions

Timeline	**Project Stage**	**Actions Taken**
Nov 2022-Feb 2023	Planning	-Development of simulation patient scenario. -Creation of didactic PowerPoint Presentation. -Creation of Student Learner Guide. -Creation of patient chart with provider orders and patient laboratory results. -Creation of nursing assessment form for students to utilize during simulation. -Creation of Code Blue Documentation form for students to utilize during simulation. -Development of student pre-simulation survey. -Development of student post-simulation survey. -Development of faculty post-simulation survey.
March-April 2023	Planning	Finalization of: -Simulation patient scenario -PowerPoint presentation -Student Learner Guide -Patient chart with physician orders -Blank Nursing Assessment Form -Code Blue Documentation Form -Student pre-simulation survey -Student post-simulation survey -Faculty post-simulation survey -Simulation equipment testing/troubleshooting -Simulation run-throughs
April 3, 2023: Session 1: 11 am – 12 pm Session 2: 3 pm – 4pm	Implementation	-Students completed pre-simulation survey. -PowerPoint and classroom didactic education provided to students during Synthesis seminar.

		In-person code cart and monitor/defibrillator review provided. CPR chests and Ambu bags were available for students to practice.
April 18, 2023	Implementation	The first synthesis clinical group participates in simulation. -Students received pre-briefing and orientation to the clinical space. -Students experienced and participated in the simulation. -Students were debriefed and provided feedback. -Students completed post-simulation survey. -Clinical faculty completed post-simulation survey.
April 25, 2023	Implementation	The second synthesis clinical group participates in simulation. -Students received pre-briefing and orientation to the clinical space. -Students experienced and participated in the simulation. -Students were debriefed and provided feedback. -Students completed post-simulation survey. -Clinical faculty completed post-simulation survey.
April 26, 2023	Implementation	The third, fourth, and fifth synthesis clinical groups participate in simulation. (5 total clinical sections participated in this simulation) -Students received pre-briefing and orientation to the clinical space. -Students experienced and participated in the simulation. -Students were debriefed and provided feedback. -Students completed post-simulation survey. -Clinical faculty completed post-simulation survey.
May – August 2023	Evaluation	Evaluation and synthesis of student simulation debriefing feedback and survey responses.

Phase V: Project Evaluation Process

Evaluation of this project occurred by distributing anonymous pre-simulation and post-simulation surveys to students and collecting feedback from clinical faculty. The surveys were developed and administered using the Qualtrics®XM online software, which provides data analysis, and were distributed via a QR scanning code to provide ease of access to respondents. Students were informed that no personal information would be collected; that all responses would remain anonymous but be shared with the Director of the DNP Program, the Director of Simulation, and Synthesis Seminar Lead Instructor; and that their responses on the surveys and during the simulation and debriefing would have no impact on their course grades.

The pre-simulation survey was distributed to students prior to the start of the pre-briefing and comprehensive classroom didactic PowerPoint presentation regarding the adult emergency nursing response. It gathered information from students regarding whether they work in the clinical/healthcare setting, if they have previously observed or participated in an emergency, how anxious they feel about providing care during a cardiac arrest, how strongly they feel their nursing education has prepared them to identify and promptly care for a decompensating patient, as well as what concerns they have regarding their upcoming transition to professional practice.

The post-simulation survey was distributed to each clinical group only after the debriefing sessions were completed and students were provided the opportunity to ask questions and give feedback regarding the simulation they experienced. The post-simulation survey evaluated how well students think the simulation went, how anxious they felt during the simulation, whether the classroom presentation they received help prepare them for the simulation, whether they feel the simulation helped decrease their anxiety over needing to care for a patient having a cardiac arrest, and whether they believe this simulation would be useful for

future nursing students. Similarly, clinical faculty were given the opportunity to provide feedback on the simulation their students participated in. Results were reviewed and the aggregate findings were shared with the Director of the DNP Program, the Director of Clinical Simulation, and the Synthesis Seminar Lead Instructor.

Pre-Simulation Survey Results. A total of 56 students responded to the pre-simulation survey. Of those responses, 76.79% stated they had some experience working in the healthcare setting as either a nursing assistant (NA), patient care assistant (PCA), medical assistant (MA), emergency medical services/technician (EMS/EMT), a student nurse extern, or in home care. Of those that work in healthcare, 65.12% reported having observed or participated in an emergency cardiac or respiratory arrest. In these instances, they simply observed or provided ancillary support such as getting vital signs, checking blood sugars, or serving as a runner to get supplies for nursing staff. Two respondents stated they have been the first EMT to arrive at a cardiac arrest scene and attached a Lucas device to the patient.

During nursing clinical rotations, 46.30% reported observing or participating in an emergency where a patient was suffering from respiratory or cardiac arrest, and one student reported doing chest compressions during a cardiac arrest that occurred while at clinical. Two students observed a cardiac arrest in the cardiac intensive care unit and reported feeling the response was "organized." All other respondents who observed an emergency described the response efforts as "disorganized" and having "too many people in the room." When asked how they felt observing these response efforts, they reported feeling "helpless," "sad," "anxious," "stressed," "scared," "overwhelmed," and having "high adrenaline." One student reported observing the telemetry monitor at the nurses' station of a patient that went into cardiopulmonary

arrest and overheard the medical residents talking to family on the phone, resulting in feeling "a lot of stress from the intensity of it all."

When asked the question, "How nervous/anxious do you feel in being able to identify and provide care to a patient having an emergency, such as a sudden cardiac arrest," responses were registered as the following: 75.92% stated they felt either "nervous/anxious" or "very nervous/anxious" and 24.08% reported feeling either "neutral" or "comfortable". No respondent indicated they felt "very comfortable." Similarly, regarding confidence in being able to identify and provide care to a patient having a sudden cardiac arrest, 53.7% of students selected either "not confident" or "very unconfident," 35.19% reported "neutral," 9.26% selected "confident," and 1.85% stated they felt "very confident."

In the pre-simulation survey, students were asked, "How strongly do you agree with the following statement: My education has prepared me to provide a patient who is decompensating with immediate or emergency nursing interventions, with no hesitations, in an effort to stabilize them and I believe I will be able to do this as a new-graduate nurse?" More than half of respondents either disagreed or felt neutral about this statement, echoing what has been stated in the literature. The breakdown of the results for this question was as follows:

- Strongly agree: 0/54 responses (0.00%)
- Agree: 2/54 responses (3.70%)
- Somewhat agree: 18/54 responses (33.33%)
- Neither agree nor disagree: 4/54 responses (7.41%)
- Somewhat disagree: 15/54 responses (27.78%)
- Disagree: 11/54 responses (20.37%)
- Strongly disagree: 4/54 responses (7.41%)

The remainder of the pre-simulation survey asked open-ended qualitative questions to further understand how students felt about their imminent entrance into professional nursing practice. Students were asked to describe what concerns they have regarding taking care of a patient who suddenly declines and requires an emergency response while being a newly licensed nurse. All responses expressed concern over:

- "Not knowing what to do" (including not knowing medications, emergency equipment, and how to initiate CPR),
- Not being able to recognize an emergency and get the help necessary,
- Not having prior exposure in real life; it was only taught during lecture but never kinesthetically learned,
- Not knowing the nurse's role during an emergency and within a team, how to assign roles, or perform roles correctly,
- Not being able to think quickly, prioritize, and choose correct interventions,
- Lack of confidence and fear of being reprimanded by code teams if it is not a real emergency.

To broaden the scope of the pre-simulation survey, students were then asked to describe the concerns they had about their upcoming transition to professional practice. As expected, the results echoed the responses to the previous question and what is described in the literature. Students expressed a concern that they will struggle with putting classroom taught theory into clinical practice. In particular, they reported feeling nursing courses were geared towards helping them pass the NCLEX but that they do not feel they were prepared for clinical practice. Students also expressed a fear of being off orientation and having to be autonomous without being told what to do by a more experienced nurse. Fear over knowledge deficits, not knowing how to

respond during an emergency or with a declining pateint, being able to speak with physicians, using clinical judgement and critical thinking, as well as concerns over making the transition from student or patient care technician to nurse were also expressed. One response that helped highlight the concerns and fears expressed by students throughout the process of this project's implementation stated: "Will I be a good nurse? Will I kill someone? Can I keep up?"

Lastly, students were given an opportunity on the pre-simulation survey to add or express any additional thoughts. While most students did not add or respond to this optional question, one student expressed a concern regarding "charting", two students expressed wanting to have had clinical experiences in an emergency department or critical care setting to gain exposure to caring for unstable patients as all their clinical rotations were on medical-surgical units, and one student wrote "It is so scary, and I am so nervous."

The results of the pre-simulation survey responses not only reiterated current literature regarding the stress, fear, and concerns held by novice nurses, but it reinforced the need to implement this initiative and for students to have exposure to participating in emergency patient situations. Furthermore, students' responses underscored Benner's and Kolb's theories regarding how nurses develop and learn. Students clearly expressed in the survey responses, as well as prior to the start of the didactic classroom presentation, the need to have practical experience for this type of situation. They repeatedly emphasized that traditional classroom instruction regarding the care of a patient having an emergency, on its own, will not suffice the moment this becomes a reality, and they are the licensed nurses responsible for the care of this patient. They reiterated the need to have first-hand experience coupled with traditional classroom learning.

Post-Simulation Survey Results. After students experienced the cardiac arrest simulation and participated in the debriefing process, they were asked to complete the post-

simulation survey by scanning a QR code with their mobile phones. A survey was also given to their clinical course instructors to get feedback from faculty.

The first question was a 5-point Likert scale regarding how well they thought the simulation went and the results were as follows: 31.82% stated it went very well; 59.09% stated it went well; and 9.09% stated it was neutral. When asked to expand on their responses, students articulated this simulation helped them better understand the roles during a cardiac arrest, the importance of communication and teamwork, decreased their anxiety and increased their confidence and knowledge of an emergency response. They expressed an appreciation that this simulation was a great learning experience for their senior year as almost new-graduate nurses. One student commented, "it was a lot of our first times experiencing this kind of circumstance and it was great to be able to do so before officially entering the profession. While I would not say I am an expert yet, I definitely feel prepared to enter a room and perform a delegated task." Students also expressed that the controlled environment played a role in helping them learn, stating "having experienced this in a safe environment is going to be helpful for that first actual code with a real patient" and that it afforded them clarity on a situation they had previously perceived as disorganized and chaotic. This simulation was designed with control and organization in mind, seeking to truly depict how an optimal resuscitation response should occur in accordance with American Heart Association guidelines and algorithms, and thus empowering students for when they encounter such a scenario in professional practice. This clearly translated and resonated with students, earning responses such as:

- "It was controlled chaos. Codes are high intensity scenarios but with assigned roles you don't have to worry about much."

- "It helped me know exactly what the specific roles are during a code, and it was nice to have a calmer environment so we can focus more on our separate roles."
- "I now know what to expect in terms of what roles are to be assigned and what position the nurses play. I understand better the role of the primary nurse as well as what steps are taken once proper help arrives."
- "I didn't know there were such detailed roles. I thought I would just have to go into a room and know how to do everything."
- "My anxiety levels regarding a patient having a cardiac arrest have drastically decreased after today due to the reassurance that there will be a team to help you and that your main goal is to focus on the role assigned for you, rather than being overwhelmed by everything happening around you."

When asked to rank their level of nervousness/anxiety during the simulation, the results were broken down as: 13.64% very nervous/anxious; 54.55% nervous/anxious; 20.45% neutral; 9.09% comfortable; and 2.27% very comfortable. Students stated they felt anxious or nervous because they had never had this type of experience, had never witnessed a cardiac arrest, or participated in a mock cardiac arrest simulation, and were therefore nervous about forgetting what to do once the patient coded. They expressed "knowing what to do is different from being able to actually do it" and that "not knowing what was going to happen" contributed to their anxiety. Students who reported feeling neutral indicated feeling initially nervous during the simulation, but once they understood and performed their role, they felt less anxious and knew that the "patient was not really coding." Those who felt comfortable during the simulation stated that knowing they were not alone and having an assigned role with good teamwork during the simulation helped them feel comfortable. Only one student reported feeling very comfortable

during the simulation because of their experience as an EMT. During the debriefing sessions, some students expressed feeling nervous during simulations because they are being directly observed from the control room. The Director of Clinical Simulation pointed out that in the real clinical practice setting, nurses are always being watched by their patients, fellow colleagues, health professionals, and members of leadership and management. During the debriefing it was expressed to students that it is normal to feel nervous and anxious in a situation that is new or unexpected, and that over time and with experience, nurses gain the skill of "being comfortable with being uncomfortable" as they do everything possible to help their patient. It was expressed to students that the simulation was designed and implemented to give them an experience that they can use to build upon once they graduate.

All students (100% of respondents) confirmed that the classroom didactic presentation they received during their Synthesis Seminar course helped prepare them for the simulation. All students (100% of respondents) also stated that this simulation helped them understand and practice the appropriate nursing response for a patient having a cardiac arrest, and that it should be implemented in the future with all nursing students. When students were asked how strongly they felt the cardiac arrest simulation helped decrease their anxiety regarding taking care of a patient having a cardiac arrest, 16.28% reported feeling neutral, 55.81% reported their anxiety has decreased, and 27.91% reported their anxiety has significantly decreased. Students indicated they still felt nervous about experiencing their first real cardiac arrest with a live patient simply because it will be their first time resuscitating a human being and not a simulation mannequin in a controlled environment. However, after experiencing this simulation they stated, "a code now does not seem like a foreign experience, but one we now have been able to take part in and have the baseline knowledge in moving forward," and that "the simulation gave us an introduction and

prepared us more for starting to work as a nurse and the responsibilities of a nurse during a code." During the debriefing sessions many students stated this was the best simulation experience they had during their academic career, and they thought it was a great final simulation to experience prior to graduating and becoming nurses. Students also said they would have liked to have multiple opportunities to have this simulation throughout their nursing education so they would get to practice more.

Clinical instructors were asked to provide feedback on the simulation. They believed this simulation demonstrated similar real-life emergent and uncontrolled clinical scenarios new nurses may encounter while providing similar resources expected of a hospital setting. They stated they thought the simulation was very organized and the students were given the opportunity to understand their roles and use their current skills to respond to the patient's needs. All clinical faculty indicated they believe this simulation will be beneficial for future nursing students as it provides firsthand experience of what will happen in the clinical setting during unforeseen events. They believe this simulation helped highlight the resources available in the acute care setting during an emergency and allowed students to practice and be part of a team, which is different than when they simply observe as a student during clinical. One clinical instructor commented "this is a vital simulation. This will prepare new nurses for code situations. This has not been done in the past." All instructors indicated that similar simulations should be implemented in the future with nursing students.

The comprehensive evaluation of this initiative indicates that the implementation of a cardiac arrest simulation with senior level nursing students was a success and should be implemented for all future nursing students. The quantitative and qualitative results and feedback from nursing students and clinical faculty indicate that students learn through their experiences

and subsequently apply this knowledge to shape their nursing practice. These results indicate that simulation is a tool that can be utilized to help students experience, learn from, and process a stressful clinical scenario and feel better prepared and thankful for having gained the learning opportunity.

The results and feedback obtained from the evaluation of this project were shared with the Director of Simulation, the DNP Program Director, and Synthesis Seminar Lead Instructor. Moving forward, the College of Nursing plans to implement this simulation with future nursing students. The Director of Simulation was provided with copies of all materials developed throughout this initiative so that future replication of this simulation would be possible.

Conclusion

This DNP project was successful in enhancing classroom education of nursing care during an emergency by allowing students to participate in a high-fidelity cardiac arrest simulation. Through the utilization of Benner's Novice to Expert and Kolb's Experiential Learning theories, senior-level BSN students gained first-hand experience and knowledge in managing a cardiac arrest clinical emergency. They will be able to rely on this learning experience when they encounter clinical emergencies during their transition to professional nursing practice; this will assist them in providing high-quality healthcare to patients.

Feedback from students indicate they believe this simulation gave them clarity and decreased their anxiety about managing a cardiac arrest once they start working as nurses. Clinical faculty have also provided feedback and support for the implementation of this simulation to help bridge the theory-practice gap and assist nursing students with their transition to professional practice. Upon evaluation of this project and in discussion with the Director of Simulation, the College of Nursing plans to incorporate this simulation scenario with future nursing students.

References

American Association of Colleges of Nursing. (2022, October). *Nursing Shortage Fact Sheet*. https://www.aacnnursing.org/news-data/fact-sheets/nursing-shortage

Andersen, L. W., Holmberg, M. J., Berg, K. M., Donnino, M. W., & Granfeldt, A. (2019). In-Hospital Cardiac Arrest: A Review. *JAMA*, *321*(12), 1200. https://doi.org/10.1001/jama.2019.1696

Benner, P. (1982). From Novice to Expert. *The American Journal of Nursing*, *82*(3), 402. https://doi.org/10.2307/3462928

Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Prentice Hall.

Bennett, L. L., Grimsley, A., Grimsley, L., & Rodd, J. (2017). The Gap Between Nursing Education and Clinical Skills. *ABNF Journal*, *28*(4), 96–102.

Chen, J., Yang, J., Hu, F., Yu, S.-H., Yang, B.-X., Liu, Q., & Zhu, X.-P. (2018). Standardised simulation-based emergency and intensive care nursing curriculum to improve nursing students' performance during simulated resuscitation: A quasi-experimental study. *Intensive and Critical Care Nursing*, *46*, 51–56. https://doi.org/10.1016/j.iccn.2018.02.003

DeGrande, H., Liu, F., Greene, P., & Stankus, J.-A. (2018). The experiences of new graduate nurses hired and retained in adult intensive care units. *Intensive and Critical Care Nursing*, *49*, 72–78. https://doi.org/10.1016/j.iccn.2018.08.005

Demirtas, A., Guvenc, G., Aslan, Ö., Unver, V., Basak, T., & Kaya, C. (2021). Effectiveness of simulation-based cardiopulmonary resuscitation training programs on fourth-year nursing

students. *Australasian Emergency Care*, *24*(1), 4–10. https://doi.org/10.1016/j.auec.2020.08.005

Feeg, V. D., Mancino, D. J., & Kret, D. D. (2022). First Job Workplace Stressors for New Nurse Graduates in Their Own Words: A Secondary Analysis. *Nursing Education Perspectives*, *43*(1), 30–34. https://doi.org/10.1097/01.NEP.0000000000000894

Hallaran, A. J., Edge, D. S., Almost, J., & Tregunno, D. (2022). New Nurses' Perceptions on Transition to Practice: A Thematic Analysis. *Canadian Journal of Nursing Research*, 084456212210748. https://doi.org/10.1177/08445621221074872

Hickerson, K. A., Taylor, L. A., & Terhaar, M. F. (2016). The Preparation–Practice Gap: An Integrative Literature Review. *The Journal of Continuing Education in Nursing*, *47*(1), 17–23. https://doi.org/10.3928/00220124-20151230-06

Hung, C.-C., Kao, H.-F. S., Liu, H.-C., Liang, H.-F., Chu, T.-P., & Lee, B.-O. (2021). Effects of simulation-based learning on nursing students' perceived competence, self-efficacy, and learning satisfaction: A repeat measurement method. *Nurse Education Today*, *97*, 104725. https://doi.org/10.1016/j.nedt.2020.104725

Hyland, J. R., & Hawkins, M. C. (2009). High-fidelity human simulation in nursing education: A review of literature and guide for implementation. *Teaching and Learning in Nursing*, *4*(1), 14–21. https://doi.org/10.1016/j.teln.2008.07.004

Kim, E. (2018). Effect of simulation-based emergency cardiac arrest education on nursing students' self-efficacy and critical thinking skills: Roleplay versus lecture. *Nurse Education Today, 61*, 258–263. https://doi.org/10.1016/j.nedt.2017.12.003

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Prentice Hall.

Koukourikos, K., Tsaloglidou, A., Kourkouta, L., Papathanasiou, I., Iliadis, C., Fratzana, A., & Panagiotou, A. (2021). Simulation in Clinical Nursing Education. *Acta Informatica Medica, 29*(1), 15–20. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8116070/

Labrague, L. J., & Obeidat, A. A. (2021). Transformational leadership as a mediator between work–family conflict, nurse-reported patient safety outcomes, and job engagement. *Journal of Nursing Scholarship*, jnu.12756. https://doi.org/10.1111/jnu.12756

Leaver, C. A., Stanley, J. M., & Goodwin Veenema, T. (2022). Impact of the COVID-19 Pandemic on the Future of Nursing Education. *Academic Medicine*, *97*(3S), S82–S89. https://doi.org/10.1097/ACM.0000000000004528

Najafi, B., & Nasiri, A. (2023). Explaining Novice Nurses' Experience of Weak Professional Confidence: A Qualitative Study. *SAGE Open Nursing*, *9*, 1–9. https://doi.org/10.1177/23779608231153457

Poore, J. A., Cullen, D. L., & Schaar, G. L. (2014). Simulation-Based Interprofessional Education Guided by Kolb's Experiential Learning Theory. *Clinical Simulation in Nursing*, *10*(5), e241–e247. https://doi.org/10.1016/j.ecns.2014.01.004

Powers, K., Pate, K., Montegrico, J., & Pagel, J. (2022). Faculty Perceptions of the Impact of the COVID-19 Pandemic on New Graduate Nurses' Transition to Practice: A Qualitative Study. *Journal of Professional Nursing*, *43*, 33–41. https://doi.org/10.1016/j.profnurs.2022.09.003

Simko, L. C., Henry, R., McGinnis, K. A., & Kolesar, A. L. (2014). Simulation and mock code: A safe way for nursing students to learn. *Journal of Nursing Education and Practice*, *4*(7), 95–103. https://doi.org/10.5430/jnep.v4n7p95

Theobald, K. A., Tutticci, N., Ramsbotham, J., & Johnston, S. (2021). Effectiveness of using simulation in the development of clinical reasoning in undergraduate nursing students: A systematic review. *Nurse Education in Practice, 57,* 1–9. https://doi.org/10.1016/j.nepr.2021.103220

U.S. Bureau of Labor Statistics. (2023, September 6). *Registered Nurses*. United States Department of Labor. https://www.bls.gov/ooh/healthcare/registered-nurses.htm

Verkuyl, M., St-Amant, O., Atack, L., MacEachern, D., Laird, A., Mastrilli, P., Flores, G., & Soul Hamilton Gunn, H. (2022). Virtual Simulations' Impact on Clinical Practice: A Qualitative Study. *Clinical Simulation in Nursing*, *68,* 19–27. https://doi.org/10.1016/j.ecns.2022.04.001

Victor, J., Ruppert, W., & Ballasy, S. (2017). Examining the Relationships Between Clinical Judgment, Simulation Performance, and Clinical Performance. *Nurse Educator*, *42*(5), 236–239. https://doi.org/10.1097/NNE.0000000000000359

Wu, T.-Y., Fox, D. P., Stokes, C., & Adam, C. (2012). Work-related stress and intention to quit in newly graduated nurses. *Nurse Education Today*, *32*(6), 669–674. https://doi.org/10.1016/j.nedt.2011.09.002

Appendix A

Institutional Review Board Letter of Approval for Exclusion

August 14, 2023

Phoebe Hanna
Seton Hall University

Dear Phoebe,

1. The Proposal entitled "Cardiac Arrest High-Fidelity Simulation: Improving Nursing Students' Resuscitation Response in Preparation for Transition to Professional Practice " has been reviewed by the Research Ethics Committee of the Seton Hall University Institutional Review Board and based on the information provided we found the same to be exempt from IRB approval. As per CFR § 46.104, this project fall under *(1) Research, conducted in established or commonly accepted educational settings, that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.*

Thank you for your cooperation.

THE IRB TEAM

Office of the Institutional Review Board
Presidents Hall · 400 South Orange Avenue · South Orange, New Jersey 07079 · Tel: 973.275.4654 · Fax 973.275.2978 ·
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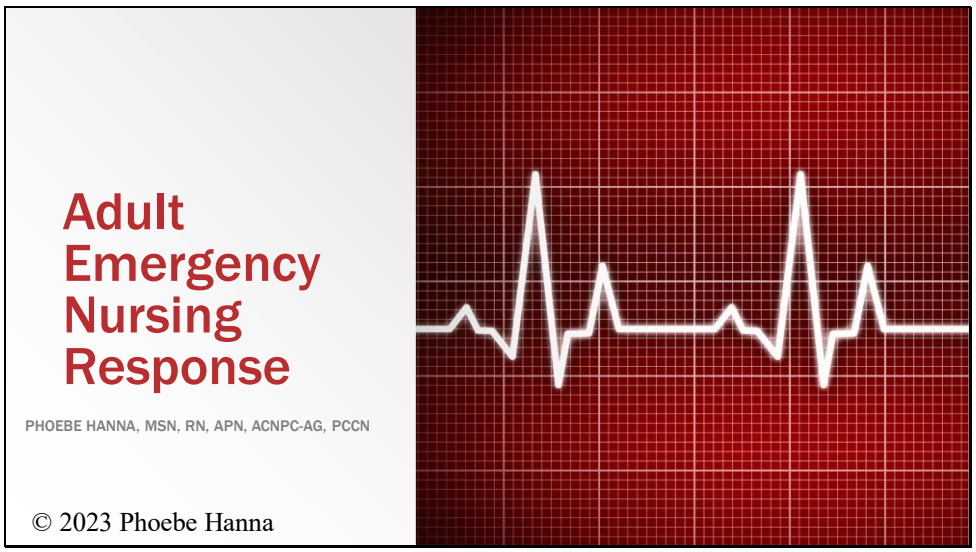
Appendix B

Classroom Didactic PowerPoint Presentation Selected Slides



The Code Team

HIGH PERFORMANCE TEAM DYNAMICS

Cardiac Rhythm Review

Emergency Medications

Code Cart Review

IN-PERSON REVIEW