

SELF-DIRECTED SIMULATION: EXAMINING SELF-EFFICACY IN NURSING  
STUDENTS USING INNOVATIVE VIDEO STRATEGIES

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This work is dedicated to my entire family, I could not have done any of this without your love and support. To my husband, Paul, thank you for supporting me and for pushing me to finish any goal I set. To my daughter, Shelby, thank you for always standing by my side, I love you more than my luggage.

## ACKNOWLEDGEMENTS

In 2010, I began teaching full time for Indiana University; prior to 2010, I worked in the community college setting. I was a novice clinical assistant faculty with high hopes of making a difference in the profession of nursing by helping not only my patients, but students and their patients of the future as well. I began my nursing journey in 1993. I wanted to help others and, really, at the end of the day that is what fulfills me as an individual. As life happens my educational journey has been a long one with highs and lows, all while raising my daughter to the best of my ability. I essentially have been a student for many years striving to improve myself as a nurse and an educator. I include this insight because the meaning behind my educational research study stems from wanting to improve my profession, which requires lifelong learning.

I am very blessed to have an amazing dissertation committee. Thank you all for your patience and guidance along the way. Thank you to Dr. Barbara Dennis for helping me find my way through my data and always having kind words of encouragement, to Dr. David Flinders for always keeping me on track and for allowing me a non-traditional route in my course work, to Dr. Mary McMullen for her guidance and great critique and for showing me insight into various educational pathways, and to Dr. Deana Reising for helping keep me grounded, for telling me to just write, and for sharing helpful tips to make it all happen.

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Psychomotor nursing skills are a fundamental part of curricula for all schools of nursing no matter the degree level of the program. Demands placed on schools to produce a generalist nurse with the ability to safely practice in the clinical setting is high. There is no standard method of teaching or evaluation regarding psychomotor nursing skills, and there is much room for studies to demonstrate best practice. On top of the already mentioned high demands placed on schools of nursing are the demands of content-saturated nursing curricula on the students. Nursing students are placed under stress-producing situations that create high levels of anxiety. Schools expect students to perform at very high levels and to demonstrate competency of skills learned in a practicum setting. There is a need for best practice in teaching and evaluating psychomotor nursing skills. There is also a need for experienced faculty to teach the skills. The purpose of this exploratory study was to evaluate student levels of self-efficacy in the performance of psychomotor nursing skills after implementation of the learning strategy *self-directed simulation*. Self-directed simulation is a strategy created by the researcher in response to students' level of anxiety and uses theoretical knowledge of ways to decrease student anxiety and increase learning and retention.

Self-efficacy was measured in 94 students from a Midwestern school of nursing who were enrolled in a fundamentals of nursing course. Additionally, the researcher conducted 14 qualitative interviews to further investigate the self-directed simulation strategy, self-efficacy, and learning.

Dr. Barbara Dennis, PhD, Chair

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## LIST OF ABBREVIATIONS

CAI	Computer-Assisted Instruction
QSEN	Quality and Safety Education for Nurses
SDS	Self-Directed Simulation
SCT	Social Cognitive Theory

## CHAPTER I

### INTRODUCTION

Recall a time when you had to take a test or perform a skill for which you were being graded. What were your fears? What was your stress level? How did you feel during this time? Add to these typical fears the worry of hurting a person because of your actions. Baccalaureate nursing students face a variety of questions of this type daily during their pre-licensure programs.

Since U.S. nurse training programs began in the 1800s, student nurses have been taught nursing skills through on-the-job training. They watch others such as peers and nurses perform the skill then attempt to perform that same skill correctly. Historically, nursing education programs have evolved, but instructors continue to teach fundamental nursing skills in the same manner but by using updated equipment, resources, technologies, and literature. Formal nursing training programs began in 1860 (The Sentinel Watch, 2016), and Cooper (1982) reported that an effective demonstration is a very important component of the learning process for the nursing student; however, we are still, in some ways, using the same delivery methods of education that were used more than 38 years ago. Demonstration of nursing skills can be compared to the medical model created by Dr. William Halstead who created the medical residency program and the philosophy of *see one, do one, teach one*, for surgical residents. Researchers debate the philosophy's effectiveness and lack of safety in that practicing in this way involves performing surgery on living patients (Kotsis & Chung, 2013). Return demonstration (e.g., instructor demonstrates then student return demonstrates) is like Halstead's model with the exception that practice is done on simulators and static manikins, at least a few times, before students perform the skills on living patients. One of the most important implications of the current study is that innovative teaching and learning strategies need to be implemented in nursing education that will

encompass all that nursing has to offer students so that they will become confident, efficacious, successful, and safe practicing nurses.

Return demonstration consists of a student performing a psychomotor skill in the presence of an instructor at the bedside to determine competency of practice. A psychomotor skill requires the ability to assess, perform, and evaluate effectiveness. Examples of such skills include Foley catheter insertion, intravenous piggyback, peripherally inserted central line dressing change, subcutaneous injection, and medication administration.

In nursing education curricula, return demonstration of psychomotor skills is a *high stakes testing* requirement for all nursing students. High stakes testing is defined as an exam or a skill that learners are required to complete at a certain grade or level to pass a course. Based on the researcher's observational and verbal data collection over multiple semesters in a Bachelor of Nursing program and multiple semesters in an Associate Nursing Degree program, students' anxieties and fears increase in the presence of the faculty. Studies demonstrate that high levels of stress interfere with students' health and their ability to learn, comprehend, recall, or solve problems (Goff, 2011; Wallace et al., 2015). Not only are the students' abilities to learn hindered, their future ability to deliver high quality and safe patient care could be altered.

A goal of educators is the development of strategies to decrease student fear and stress to increase learning, comprehension, competency, and self-efficacy. It is important for the nursing student to have high levels of efficacy to deliver safe patient care in the clinical setting and to successfully complete the nursing course in which the skill is incorporated. Furthermore, the student needs not only to perform a skill successfully, but they must simultaneously communicate effectively and educate the client.

The profession of nursing continues to face shortages including both shortage of nursing faculty and staff nurses. Nursing programs turn away hundreds of qualified applicants each year due to program capacity because of decreased numbers of qualified faculty to teach them (Aiken et al., 2003; Buerhaus et al., 2017). Health care constantly evolves and the nursing profession and the way nurses are educated must evolve so that the highest level of safe patient care is delivered.

In 2011 the Institute of Medicine (now, the National Academy of Medicine) created an increased expectation for higher levels of education in the nursing profession to ensure safer patient care. Multiple studies suggest that nurses with higher levels of education will deliver safer patient care resulting in decreased patient mortality (Aiken et al., 2003, 2011, 2014; Institute of Medicine, 2011; Kutney-Lee et al., 2013; McHugh et al., 2013). To fulfill the goals of the *Future of Nursing* report (Institute of Medicine, 2011), nurse educators must create learning environments that foster students' abilities to acquire the knowledge and skills required in the rigorous world of nursing.

### **Statement of the Problem**

Historically, students demonstrate high levels of anxiety in learning environments that incorporate high stakes testing (Ball & Hussey, 2020; Bell, 1991; Chernomas & Shapiro, 2013; Melo et al., 2010; Quinn & Peters, 2017; Vannaja, 2005; Wang et al., 2019; Wedgeworth, 2016). Return demonstration of psychomotor skills is a form of high stakes testing that is required for nursing students to complete successfully to pass prelicensure nursing courses. Determining competence effectively in student nurses contributes to high-quality patient care as nursing professionals. If students are trained well, they become highly competent professionals with high levels of self-efficacy post-graduation.



The researcher defined *Self-Directed Simulation* (SDS) as a teaching strategy that provides students learning objectives to demonstrate competency in performing a psychomotor nursing skill. Students demonstrate skill competency by creating a video of themselves successfully performing the skill within the provided assignment requirements. Implementing an SDS teaching strategy can increase students' confidence in their abilities and, therefore, increase their self-efficacy. That confidence could prove to be a reliable manner in which to propel forward safe patient care (Aldridge, 2017; Baird et al., 2015; Ballard et al., 2012; Brydges et al., 2009; DeBourgh, 2011; DeBourgh & Prion, 2017; Dunn et al., 2014; Franklin et al., 2015; Goldenberg et al., 2005; Harris et al., 2014; Institute of Medicine, 2011; Jeffries, 2005; Karabacak et al., 2013; Knowles et al., 1998; Lasater, 2007; McAdams et al., 1989; Oetker-Black et al., 2014; Winters et al., 2003). Psychomotor skills include, but are not limited to, changing dressings, inserting medical devices such as Foley catheters, and starting intravenous lines. Psychomotor skills typically are interdisciplinary interventions that are ordered by a physician, nurse practitioner, or physician's assistant. Such psychomotor skills are otherwise not part of the autonomous scope of nursing practice.

The teaching strategy used in this research was videography using computer tablets or smartphones. Instructors gave students brief objectives for the activity and an educational demonstration of the skill. Students then created and submitted to the instructor a video of themselves that they created with playback of the skill incorporating all required objectives. The students often worked in small groups of one to three to complete the assignment; one student acted as the nurse, one served as the videographer, and one acted as the patient, rotating roles so that each student performed as the skills demonstrator.

Students uploaded completed videos to a collaboration and sharing service, VoiceThread (n.d.), for faculty and classmates to review. VoiceThread allows the uploading of videos, presentations, and images. VoiceThread technology allows peer review, with reviewers able to comment via text, voice, or video response. Students recorded their skills videos in the school's nursing skills lab after scheduling their recording time via computer based on their time preference and space availability. Students then received feedback via VoiceThread from their faculty and asynchronous peer feedback from peers after the videos were reviewed.

It is important when using technology within curricula that systems are compatible, and students do not have to visit multiple platforms to complete an assignment. Students and faculty can access VoiceThread through the web interface or via its integration with learning management systems such as Canvas used by universities. VoiceThread requires an educational license for use.

### **Background and Rationale**

The setting for this study was a Midwestern university in an undergraduate Bachelor of Science in Nursing program. The amount of information to be taught and learned within nursing curricula creates multiple learning challenges for nursing students. Overcoming the challenges created by content saturation requires a multifaceted approach with multiple educational interventions (Giddens & Brady, 2007).

Nursing students must learn a large amount of material in a short amount of time. Each day brings more medical advances, and therefore, more content and more requirements for nursing students (Ironsides, 2004). According to Diekelmann (2002), students continually complain of "too much content." Finding ways to help nursing students and faculty alike to overcome the growing and ever-present problem of content saturation will be invaluable to

students and faculty, and ultimately may promote safer patient care, higher grades, deeper learning, less stress, and better-prepared students to enter the real world of nursing. Jeffries (2005) reported that many students are not leaving nursing school with the ability to critically think and function in a clinical environment and that it is an educator's responsibility to better prepare nursing students. Giddens and Brady (2007) stated that "dramatic reform and innovation in nursing education are needed to prepare nurses for contemporary practice and to meet the current and future needs of the health care delivery system" (p. 66).

### **Significance**

The purpose of this study was to better understand how nursing students learn, the way they participate in self-directed learning (when instructors use a teaching strategy such as SDS), and their levels of self-efficacy. The researcher investigated the way technology influences not only learning psychomotor skills but also the levels of student self-efficacy because of using a technology-based learning strategy within the curriculum.

Data was collected on the learning environment including, but not limited to: (a) student learning and performance of psychomotor nursing skills with the use of videography and instructor critique, assisted by VoiceThread technology; (b) the use of students' time while in the practice space; (c) the methods of instruction employed by faculty; and (d) the methods of practice used by students.

The strategy used in this research was student-generated videography using a computer tablet or smartphone following instructor-delivered objectives and educational demonstration of the skill. The goal of the activity was for each student to provide a video recording of the skill incorporating all required objectives. After practice and recording, students uploaded their

completed videos to VoiceThread for faculty and classmates to review. Each student was responsible for uploading a total of five videos.

Teaching psychomotor skills is a fundamental nursing curriculum requirement in any prelicensure nursing program. Multiple methods of teaching skills and demonstration of competency are used. There is no current standard of practice for teaching skills. Additionally, no set evaluation standard exists in nursing curricula to evaluate competency of psychomotor skill performance. It also is important to understand the amount of time it takes to evaluate large numbers of students on psychomotor skills. Return demonstration is a typical way in which to evaluate, which requires faculty to observe each student performing each skill individually. If there are 150 students and 4 skills, at the minimum, faculty must review 600 skills demonstrations for competency. Data collection including observations, interviews, and surveys from this study, were used to further inquiry into best practices in teaching psychomotor nursing skills.

### **Research Questions**

Critiques possible after data collection include time, space use, learning environment organization, effectiveness of technology implementation, amount of practice time used by students, ability of faculty and students to use technology with ease, and improved competency of the student performing psychomotor skills. The SDS teaching strategy directly impacts both students and faculty. However, for purposes of this study, the focus remained on the student.

The researcher proposed that students would benefit from self-directed learning when the instructor used the SDS teaching strategy. Student videos would be available to play back at any time, enabling students the opportunity to reflect and to debrief on past performances.

Additionally, students would participate in peer review and gain competence in a required fundamental nursing skill. Therefore, the research questions for this study included:

1. How does the implementation of SDS teaching strategies impact nursing students' self-efficacy?
2. What is the relationship between SDS and self-efficacy?
3. How do the students experience SDS?

### **Conceptual Framework**

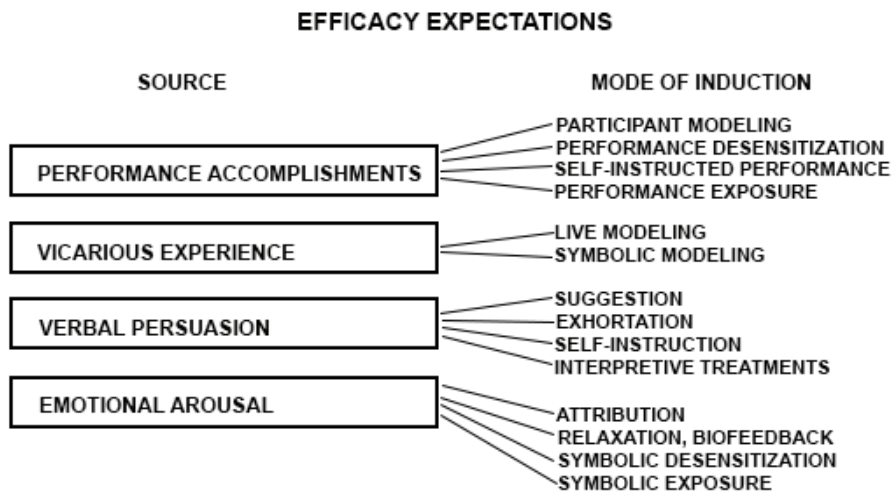
A part of the educational focus for a nurse educator is to teach students psychomotor nursing skills. Teaching psychomotor skills in nursing curricula is not standardized. Skills in which students are required to demonstrate competency vary, as do the methods of evaluation. Research on this topic dates back many years, but most studies up to the present time present significant limitations, and many of the same research questions remain unanswered. The question becomes, does nursing need a standardized teaching method or strategy for psychomotor skills development, or does it need to determine the ways in which students are best able to transition into the clinical practice role with the psychomotor abilities expected by all clinical partners? Many nursing programs train a nursing generalist who possesses small amounts of practice in a large variety of settings, with a focus on theoretical knowledge. The nursing generalist approach, then, leaves a gap between the ability of the student to practice autonomously upon entering the workforce and requiring months of additional training and orientation after graduating from an undergraduate nursing program. The cost of the additional training and orientation is a very expensive investment on the part of clinical agencies and healthcare networks.

Possessing a deeply rooted understanding in the theories and the practical realities of the nursing profession is essential to solving this knowledge gap reported in the literature. Three closely related frameworks provided a theoretical framework for the current study, including Jeffries' (2005) simulation framework, Bandura's (1977a, 1978) social cognitive theory, and Malcolm Knowles' (1980) model of andragogy that includes self-directed learning.

Social cognitive learning theory is learning that occurs through observation of one's environment. It encompasses the use of modeling, reflection, evaluation, and problem solving to improve self-efficacy. Self-efficacy is defined as one's level of belief that they are, in fact, performing a skill or task adequately (Bandura, 1977a, 1978). Similarly, Hays (2006), presented the concept of self-efficacy as a means for predicting and/or measuring learning. Students with high levels of self-efficacy are shown to strengthen their efforts in task-related skills, and those with low self-efficacy have demonstrated a decreased ability to do so. Bandura included four influences on self-efficacy in his theory: (a) mastery experiences, (b) vicarious experiences, (c) social persuasion, and (d) reduction of stress and negative emotional feelings (Hays, 2006; see Figure 1).

**Figure 1**

*Efficacy Expectations*



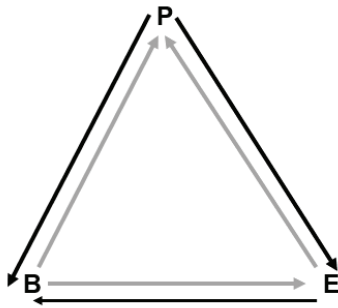
*Note.* From “Self-efficacy: Toward a unifying theory of behavioral change,” A. Bandura, 1977a, *Psychological Review*, 84, p 195. Reprinted with permission (see Appendix A, Figure A1).

Additionally, Bandura (1977a, 1977b, 1989, 1997) described a triad (see Figure 2) that exerts a causal relationship between personal factors (p), environmental factors (e), and behavior (b). Personal factors include cognitive, affective, and biological events. The triad represents a causal interaction, in which all three factors influence one another bidirectionally. The three factors may not hold equal weight in terms of action or events, and time is required for the causation to occur. The importance of human agency in relation to student learning involves assessment of the learner and having the ability to observe changes in behavior based on the learning environment. It is important also to note that many factors and interactions within a person’s environment are a part of what determines behavior, choices, and actions. According to Bandura (1997), there is a distinct difference in how things happen and how things are made to happen. The researcher designed SDS as a student-centered approach that allows for observation

and understanding of learning events as they take place over time. All human actions are reflective and impact one another (Bandura, 1977a, 1977b, 1978, 1989, 1997).

## Figure 2

### *Reciprocal Determinism*



*Note.* Adapted from “The self system in reciprocal determinism,” A. Bandura, 1978, p. 345  
*American Psychologist*, 33(4), p. 348. Reprinted with permission (see Appendix A, Figure A1).

Outcome expectancies as explained in Figure 3, help to explain how efficacy expectations (see Figure 2) and outcome expectations (see Figure 3) differ.

How one behaves largely determines the outcomes one experiences. Performance is thus causally prior to outcomes.... Similarly, the outcomes people anticipate depend largely on their judgments of how well they will be able to perform in given situations.”

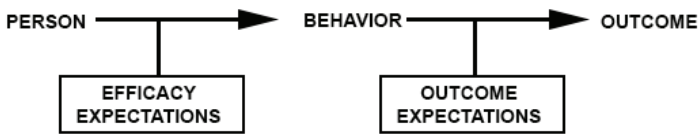
(Bandura, 1997, p. 21)

An outcome expectancy is defined as a person’s estimate that a given behavior will lead to certain outcomes. An efficacy expectation is “the conviction that one can successfully execute the behavior required to produce the outcomes” (Bandura, 1977, p. 193).



**Figure 3**

*Outcome Expectancies*



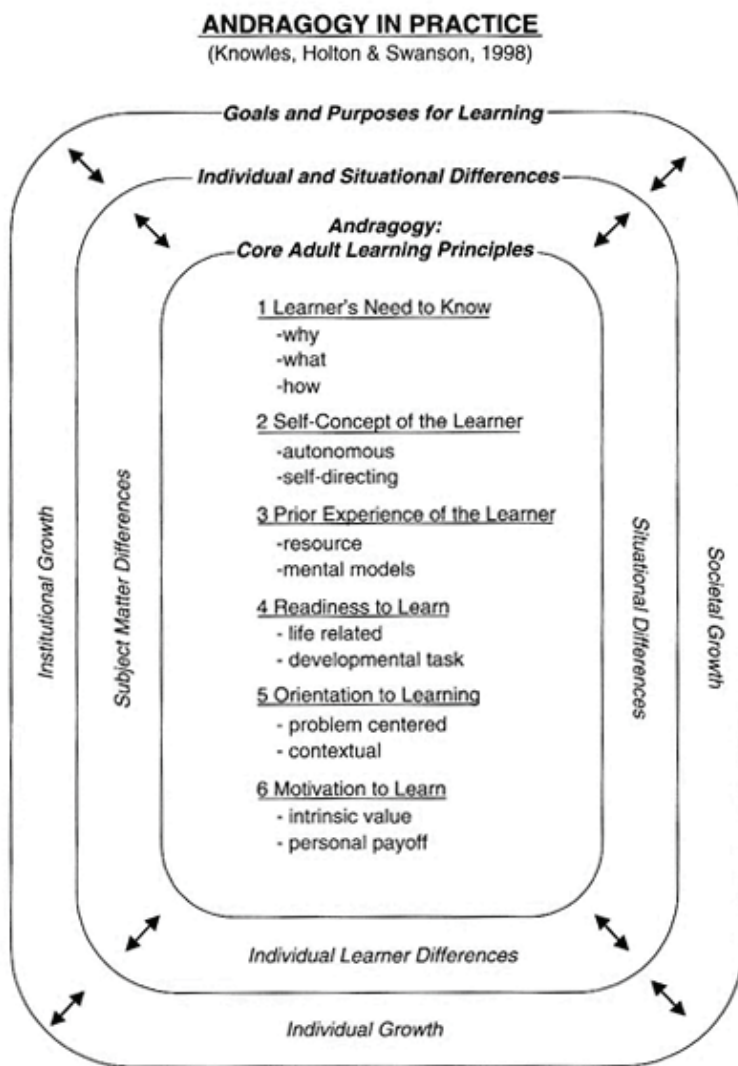
*Note.* From “Self-efficacy: Toward a unifying theory of behavioral change,” A. Bandura, 1977a, *Psychological Review*, 84, p. 195. Reprinted with permission (see Appendix A, Figure A1).

Self-directed learning is the ability of a student to “assess the demands of the task, evaluate their own knowledge and skills, plan their approach, monitor their progress and adjust their strategies as needed” (Ambrose et al., 2010, p. 190). The cycle of self-directed learning as presented by Ambrose et al. (2010) can be applied to any topic to be learned. The model can be used as a guide to understand students’ metacognitive processing. The steps of the model include “(a) assessing the task, (b) evaluating skills and knowledge and identifying strengths and weaknesses, (c) planning, (d) strategizing, (e) reflection” (Ambrose et al., 2010, p. 192).

Knowles’ core adult learning principles include the following: “(1) the learner’s need to know, (2) self-concept of the learner, (3) prior experience of the learner, (4) readiness to learn, (5) orientation to learning, and (6) motivation to learn” (Knowles et al., 1998, p. 3; see Figure 4). Instructors with a foundation of adult learning theory can understand better what students’ need to increase self-efficacy and improve self-directed learning abilities.

**Figure 4**

*Andragogy in Practice*



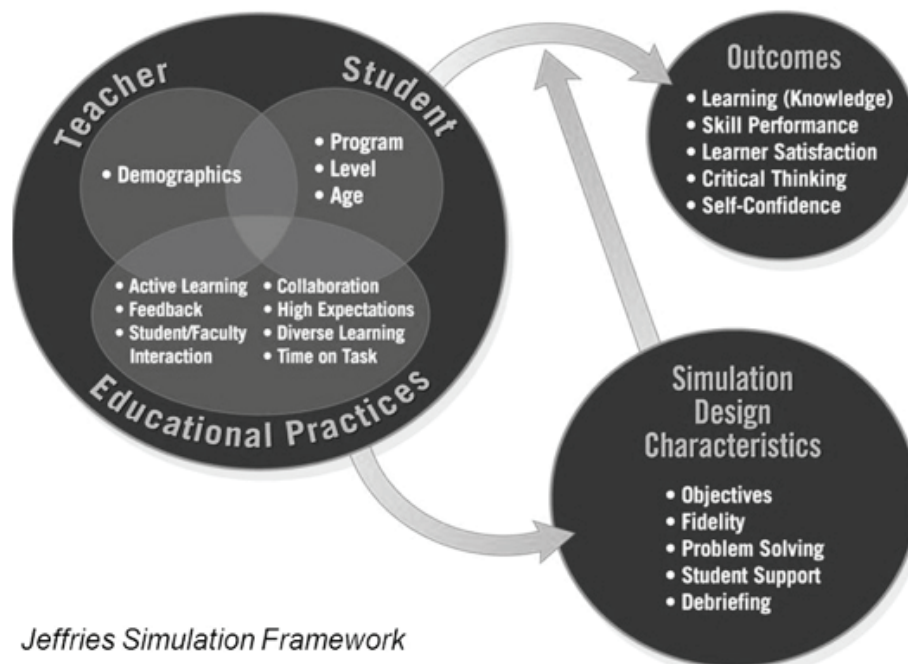
*Note.* From *The adult learner: The definitive classic in adult education and human resource development* (5<sup>th</sup> ed.), by M. S. Knowles, E. F. Holton, and R. A. Swanson, 1998). Reprinted with permission (see Appendix A, Figure A2).

Jeffries' simulation framework (2005) is used to design, implement, and evaluate simulations in nursing education (see Figure 5). The framework considers student learning, curriculum design, and learning outcomes. The intent of simulation in nursing education is to

allow for certain learning activities that students may not be able to complete in a clinical setting. Additionally, simulation creates a safe environment for students to learn critical thinking, communication techniques, teamwork, patient safety, and a multitude of other competencies within the nursing program curriculum. It is important to note that simulation activities also can provide students opportunities to become competent in skills that they are not allowed to do in clinical settings because of agency practice policies.

**Figure 5**

*Jeffries' Simulation Framework*



*Note.* From *A Framework for designing, implementing and evaluating simulations used as teaching strategies in nursing*, by P. R. Jeffries, 2005). Reprinted with permission (see Appendix A, Figure A3).

## **Definitions**

*SDS*: A teaching strategy that incorporates student-created simulations and performance of psychomotor skill competency using videography and cloud-based upload, peer/faculty review, and storage.

*Return demonstration*: A student performing a competency check-off of a psychomotor nursing skill with a faculty present.

*Psychomotor nursing skills*: Nursing skills that require the ability to assess, perform, and evaluate effectiveness. Examples of such skills in this study included Foley catheter insertion, intravenous piggyback, peripherally inserted central line dressing change, subcutaneous injection, and medication administration.

## **Summary**

Chapter I presented the study background and a history of nursing. The study problem statement, rationale, and significance explained the importance and need for this study. The research questions were identified. The study's conceptual framework was introduced by including figures of each model. Terms used throughout the study were defined.

Chapter II presents a literature review for three theories that the study's conceptual framework comprises. The search strategies used by the researcher also are included.

## CHAPTER II

### REVIEW OF LITERATURE

Chapter II presents a literature review of the three theories included in the conceptual framework of this study: Jeffries' simulation framework (2005), Bandura's social cognitive theory (1989), and Knowles' (Knowles et al., 1998) andragogy model, which includes self-directed learning. Additionally, the chapter reviews studies related to the anxiety present in nursing students.

#### **Methods of Searching**

To search the literature, the researcher used databases including Google Scholar, EBSCO, CINAHL, ERIC, and Medline with full text, fine-tuning search criteria throughout the research. To limit the number of studies, the research inclusion criteria included:

- Studies done with nursing students; there was not a preferred type of program of nursing.
- Studies done in the U.S.; however, a few from other countries were included because a large portion of studies within the field of nursing are done in other countries. More research needs to be completed in U.S. schools of nursing.

Key search terms included: anxiety in nursing students, anxiety in nursing students performing psychomotor skills, test anxiety in nursing students, self-efficacy in nursing students, self-efficacy and psychomotor skills, nursing student skills videos, simulation in nursing, self-directed learning in nursing students, Knowles and self-directed learning, psychomotor nursing skills, use of videography to teach psychomotor nursing skills, social cognitive theory and nursing, social cognitive theory, and Jeffries and simulation.

## **Anxiety**

Student nurses must demonstrate competency in fundamental nursing skills. The high stakes checkoffs that instructors use to evaluate students can be anxiety-producing, which leads to lower levels of knowledge and skill retention, and can result in ill effects to overall health. Additionally, there are no standardized methods for skills training for student nurses, and there is no list of skills required for student nurses to learn. Limited research about how to best teach and evaluate psychomotor nursing skills and the lack of standardization may be one of the contributing factors to knowledge and practice gaps for new nurse graduates. Lack of knowledge and practice ability can lead to unsafe patient care (QSEN Institute, n.d.; World Health Organization, 2019). Funded by the Robert Wood Johnson Foundation, the Quality and Safety Education for Nurses project (QSEN) functions to create quality and safety initiatives in pre-licensure nursing students (n.d.). The goals of QSEN are designed around creating a culture of safety for student nurses to incorporate into their nursing practice.

Anxiety and its effects on learning and health is well researched and documented in literature. High levels of anxiety contribute to decreased learning and retention and can have a negative impact on students' physical and mental health. Implementing strategies that help to increase students' learning, confidence, and efficacy can help to decrease anxiety in students, which can lead to higher levels of learning and, as a product, can produce safer levels of patient care when students enter into the nursing profession (Ball & Hussey, 2020; Bell, 1991a, 2020; Chernomas & Shapiro, 2013; Melo et al., 2010; Quinn & Peters, 2017; Vannaja, 2005; Wallace et al., 2015; Wang et al., 2019; Wedgeworth, 2016).

One of the most anxiety-producing events for student nurses is clinical practice. In the fundamentals nursing course in which skills are taught, novice students enter clinical settings and

complete supervised care of patients for the first time. Students are in a 10:1 ratio with their faculty. Students must work with the nursing unit's entire staff in which their clinical practicum occurs; for this activity, students generally are provided only a single day of orientation. Additionally, students provide care for patients with a wide variety of medical diagnoses that can range from a relatively healthy individual to one who is terminal and dying. Students have high levels of stress, anxiety, and apprehension about not only providing care for patients but also learning required skills in addition to the massive amount of theoretical knowledge that comes with didactic portions of their learning (Chernomas & Shapiro, 2013; Melo et al., 2010; Sun et al., 2016).

Following years of observing students develop high levels of anxiety because of the required psychomotor skills checkoffs, the researcher determined to create a strategy that would allow the students to demonstrate competency without invoking high levels of anxiety. When the researcher asked students, "what made you the most nervous?" The student response was always, "because [the instructor is] here watching me." Both prior to study data collection and in this study's pilot study, the theme of "you are watching me" emerged from students' testimonies. In addition to verbal statements, students' nonverbal communication in almost every instance was telling. Students' physical symptoms included shaking, crying, sweating, dropping things, stuttering, and in some cases demonstrating an inability to complete the skill they were attempting. Students were anxious, worried, and fearful—mainly of failing. The researcher experienced these student behaviors during approximately four years of teaching, which lead to implementing new strategies to see if behavior would change.

Literature supports using alternative methods of educational design to reduce anxiety, but in the arena of psychomotor skills there is no standard by which to measure and or model alternative strategies.

### **Videography**

The use of technology or videography is not a new idea in nursing education or education in general. In 1961, a botanist from Purdue University developed the autotutorial approach. This approach used audio, audiovisuals, and independent study as well as group discussion and quizzing to meet course competencies (Postlethwait et al., 1972).

In 1972 within nursing education, Quiring proposed the use of Postlethwaits' autotutorial approach to help improve skill performance; Quiring felt that taped feedback would be more effective than traditional verbal feedback (Miller et al., 2000; Quiring, 1972). In Quiring's 1972 study, the autotutorial approach proved to be more effective than the conventional teacher discussion–demonstration in increasing the performance of the skill needed to give a subcutaneous injection.

A 1978 study by Myers and Greenwood specifically researched the use of autotutorial instruction in a fundamental nursing skills course. The study specifically compared traditional teaching to a combination of traditional teaching and autotutorial instruction. The study, conducted over a period of three years, collected a comprehensive amount of data. The comparison data only included course grades and National League of Nursing exam scores. The results demonstrated that autotutorial instruction was beneficial but that further studies were needed (Myers & Greenwood, 1978). One problem with this study is that exam scores do not always equate to clinical practice abilities. It would be important to determine not only grades but also to practice competence to determine if the strategy was, in fact, effective.



Baldwin et al. (1991) conducted a study to compare two strategies for teaching psychomotor nursing skills. One strategy used textbook assignments and videotape without faculty assistance and the other strategy used textbook assignment, videotape, and faculty assistance. The study determined that faculty assistance is a necessary part of learning psychomotor skills for nursing students (Baldwin et al., 1991). Both Quiring (1972) and Baldwin et al. (1991) similarly noted a need for determining best methods for teaching psychomotor nursing skills. Faculty guidance is a necessary piece of educating the novice student nurse in new nursing skills.

A 2000 quasi-experimental study (Miller et al., 2000) used a post-test to determine if there were differences in student performance and student and faculty satisfaction when psychomotor skills were learned using video versus faculty being present. The results demonstrated that the videotaping group had a higher level of satisfaction; however, when compared individually, the medication administration skill was the only one that was statistically significant. Interestingly, the study also did a time analysis using a *t* test; the video method consumed less time than did the faculty present method. Additionally, faculty and students had higher levels of satisfaction with the in-person method. One of the main discussion points concluded that there was a need for faculty consistency and consensus in the year 2000 (Miller et al., 2000).

There is much literature to support using alternate methods of educational design to reduce anxiety but in the instance of psychomotor skills, there is not a standard by which to measure or model such strategies. Videography and the use of technology have been used for many years; however, accurate studies of best practice to teach psychomotor skills continues to be needed. The researcher believed that there was not one single theory that represented the ideas

foundational to the strategy of self-directed simulation and that a new model was needed for the use of teaching psychomotor skills and to demonstrate best practice in nursing education. With the help of simulation space and the ability to video record, the researcher designed SDS using the three theories that are discussed in further in this chapter. Each theory is described and related back to the self-directed simulation strategy along with literature to support.

## **Social Cognitive Theory and Bandura**

### ***Self-Efficacy in Nursing Education***

Human agency is defined as acts done intentionally. Within the context of social cognitive theory (SCT), agency functions as a triadic reciprocal causation relationship that includes personal factors of cognitive, affective, and biological events along with behavior and the environment (see Figure 2). It is important to understand the factors that affect students from a social perspective because many play a role in one's beliefs. Students who are given the freedom to make decisions and have some control over their learning environment will become more efficacious, will have a greater ability to reflect, learn, change, and will take on opportunities that arise (Bandura, 1997). In SCT students learn by observation, in which the student can be alone or with others. Observational learning is a key aspect of clinical education for student nurses regarding any skill, particularly psychomotor nursing skills. Students are taught skills via video, faculty demonstration, and in practice and peer review with a variety of simulators from high- to low-fidelity.

The "self" portion of SDS was derived from Banduras' (1977b) SCT. SDS provides students the flexibility and freedom to use a variety of tools to create and design the way they perform their skill competency. This flexibility (a) holds the student accountable, (b) requires the student to create and evaluate the simulation event, (c) requires the student to begin

self-evaluation and peer evaluation, and (d) removes the faculty from the skill scenario but not from teaching. The product of these four factors demonstrate how the use of SCT can improve students' levels of self-efficacy and decrease anxieties. Bandura also suggested that learning occurs not only through observation but by experiences that lead to expertise and self-regulatory feedback (Rutherford-Hemming, 2012).

Bandura's (1977a, 1977b) philosophy of self-efficacy directly correlates with nursing students' ability to perform skills. Self-efficacy can vary from individual to individual and can increase as a student gains experience. Self-efficacy directly correlates with confidence in one's abilities to perform a skill (Bandura, 1977a, 1977b). Using strategies that promote higher levels of self-efficacy can prove valuable to a student's level of competency, expertise, and confidence as a practitioner. Higher levels of self-efficacy also may lead to higher levels of safe patient care.

A second concept incorporated within SCT is the understanding of conditional relationships, efficacy beliefs, and outcome expectancies. SCT rejects the notion that behavior is regulated solely by reward and punishment. SCT suggests, rather, that people have standards, and they act based on self-satisfaction or dissatisfaction (see Figure 3). Furthermore,

those who judge themselves as highly efficacious will expect favorable outcomes, whereas those who expect poor performances of themselves will conjure negative outcomes.... People take action when they hold efficacy beliefs and outcome expectations that make the effort seem worthwhile. (Bandura, 1997, p. 24)

SDS requires the student to determine that they met the psychomotor skill competency before submitting to faculty for evaluation. The student can review their finished product and determine satisfaction or dissatisfaction. It is this type of repetitive action that encourages, enforces, and promotes ongoing practice and self-evaluation of each individual skill.

A third concept from SCT that is helpful for student learning is efficacy expectations (see Figure 1). Beliefs about personal efficacy come from four principles. *Performance accomplishment* provides learners with the most evidence because repeated success with a skill allows students to believe they can succeed. *Vicarious experiences* allow students to compare their success to other students, reinforcing that they, in fact, have learned something well. Efficacy beliefs can increase if students feel that they have done well compared to others in their same cohort. *Verbal persuasion* includes positive feedback from others. The positive feedback encourages students to do well and promotes development skills. *Emotional arousal* involves students reducing affective states that can alter or deter their self-efficacy. For purposes of this study, the researcher looked at anxiety as the affective state of concern. Reducing anxiety in students can increase their levels of self-efficacy (Bandura, 1997).

Zimmerman, Bandura, and Martinez-Pons (1992), in discussing SCT, wrote that: self-regulated learners direct their learning processes and attainments by setting challenging goals for themselves, by applying appropriate strategies to achieve their goals, and by enlisting self-regulative influences that motivate and guide their efforts. Self-regulated learners exhibit a high sense of efficacy in their capabilities, which influences the knowledge and skill goals they set for themselves and their commitment to fulfill these challenges. (p. 664)

The more experience students gain with SDS, the more self-regulation of learning increases as they become more comfortable with the processes.

Conclusions from published studies show that students who possess a high sense of efficacy, project a higher level of interest and, therefore, have higher levels of educational attainment (Zimmerman et al., 1992). SCT, as proposed by Bandura and the National Institute of

Mental Health (1986), demonstrates that “goals increase people’s cognitive and affective reactions to performance outcomes because goals specify the requirements for personal success” (Zimmerman et al., 1992, p. 664). As Zimmerman et al. (1992) concluded,

Self-regulation of motivation depends on self-efficacy beliefs as well as on personal goals. Perceived self-efficacy influences the level of goal challenge people set for themselves, the amount of effort they mobilize, and their persistence in the face of difficulties. Perceived self-efficacy is theorized to influence performance accomplishments both directly and indirectly through its influence on self-set goals. (p. 664)

Nursing students with higher levels of self-efficacy are better self-directed adult learners; however, a tool to specifically measure their ability to *evaluate self-efficacy adequately* is needed to truly confirm that assumption. The literature review revealed several studies that developed tools to measure aspects of self-efficacy. Stump et al. (2012), developed The Nursing Student Self-Efficacy Scale (NSSES) that specifically looked at self-efficacy of task performance and students’ ability to assess their self-efficacy adequately. The NSSES tool was demonstrated to be more useful to classical true score theory because the CTST tool is sample dependent and not easily compared across groups (Embretson & Reise, 2000). A NSSES adaptation for a fundamentals-level student would be a means to effectively evaluate student self-efficacy pre- and post-implementation of the SDS learning strategy (Stump et al., 2012).

Oetker-Black et al. (2014) developed the Clinical Self Efficacy Scale to measure self-efficacy. The tool measures student self-efficacy on performance of clinical skills. The purpose of the CSES measurement is to understand the “relationships between self-efficacy and successful clinical instruction” (Oetker-Black et al. 2014, p. 254). A study of the 14-item CSES

questionnaire involving 191 students resulted in the questionnaire being reduced to 11 items based on reliability testing. Results of the study demonstrated that the tool needed further development but could prove as a reliable means for identifying students with lower self-efficacy on completing the nursing skills listed on the questionnaire. Additionally, “increased self-efficacy may be a mediating variable for students to correctly transfer skills in a simulation clinical laboratory to the clinical setting” (Oetker-Black et al., 2014, p. 256). The Oetker-Black study demonstrated the need for a tool to measure self-efficacy appropriately in nursing students regarding skill performance. The study also described the benefits of understanding student self-efficacy and strategies as well as the importance of strategy implementation to increase student self-efficacy as defined by Bandura (1977a, 1977b, 1989, 1997). While the CSES tool was not used for purposes of data collection for the current study, it introduces a valid idea: with early assessment, students with lower self-efficacy may be identified early within a nursing program. Early identification could allow for faculty to develop more specific learning goals with students who exhibit lower self-efficacy and help promote student success.

Karabacak et al. (2013) studied the relationship between student nurses’ self-efficacy and psychomotor skill competence. The researchers developed a study to measure self-efficacy and did so using the Self-Efficacy Scale (SES). (One hundred students were administered the tool both pre- and post-theoretical training of how to administer an intramuscular injection. The students’ level of self-efficacy initially was high already, and therefore, may have contributed to the fact that significant data were not obtained in the comparison of the pre- and post-surveys. As shown in many other studies, Karabacak and colleagues believed that higher levels of self-efficacy equates to higher levels of student performance; in addition, students with higher

levels of self-efficacy tend to overcome obstacles at a greater rate than those with lower levels of self-efficacy (2013).

McConville and Lane (2005) studied the use of video clips as a strategy to increase student self-efficacy when dealing with difficult situations. A pre- and post-survey was conducted to see if self-efficacy increased after implementation of the learning. A 6-item survey was administered pre- and post- training then an additional 12-item survey was administered to determine the level of contribution that video versus traditional lecture had on learning. Results demonstrated that self-efficacy increased in two categories and use of video clips enhanced the student's self-efficacy (McConville & Lane, 2005).

Madorin and Iwasis (1999) performed a quasi-experimental study with a no-treatment comparison group: control group  $n = 12$ , experimental group  $n = 11$ . Both groups in pre- and post-test surveys reported higher levels of self-efficacy. The intervention in the study was a computer-assisted instruction (CAI) program that the experimental group completed on care of the surgical client. The mean self-efficacy scores for the experimental group were significantly higher after the 8-week clinical rotation and implementation of the CAI.

Currently, safe and competent care is central to practice guidelines and principles using QSEN initiatives as a tool. DeBourgh (2011) studied psychomotor skills of novice learners and determined that problems remain with teaching these skills that can lead to unsafe patient care. DeBourgh's research demonstrated that students felt a lack of preparation relative to skills and preferred to complete skills check-offs while learning. Students' overarching concerns included, first, a desire for repeated skill assessment and practice time. Secondly, they were concerned about inconsistencies between methods they were taught in school and agency practices, with the "agency" being any community setting in which the students were completing clinical rotations.

Agency policies and procedures must be followed in nursing practice. When schools of nursing teach students the latest evidence-based practice, and the agency is not up to date on procedures and processes, inconsistencies create a problem with students' ability to perform skills.

DeBourgh (2011) suggested strategies to address the foregoing concerns, particularly the first one, that included consistent guidelines for evaluation of competency with the use of a checklist, a learning-centered approach, evidence-based practice, and simulation to promote self-efficacy.

In another study, DeBourgh and Prion (2017) studied the use of videos as a means for evaluation of psychomotor nursing skills. The study used the term *student directed video validation* to describe the strategy. The study results demonstrated that the use of videos increased confidence and peer support among students (DeBourgh & Prion, 2017).

A meta-analysis of 13 studies by McNett (2012) concluded that CAI strategies were more effective than traditional methods, and a combination of CAI, lecture, and demonstration was more effective overall in teaching students psychomotor nursing skills (McNett, 2012). CAI has been an effective part of teaching psychomotor skills for many years. SDS couples the use of CAI, lecture, demonstration, and simulation strategies to teach psychomotor skills.

In a random control trial with occupational therapy students the effects of self-efficacy with patient transfers after training in the classroom and after training in simulation was measured. There were three group variations in the study, including observation dominant, participation dominant, and participation only. The students learned about patient transfers in three phases. The first phase was classroom teaching and laboratory practice, which is how nursing students traditionally are trained to develop psychomotor skills. The second phase occurred at the simulation center where students participated in three simulations based on their assigned group. In the third phase, the students were assigned randomly to complete two



transfers at the simulation center. The study results indicated that over time self-efficacy increased for all students regardless of assigned group; however, “the participation-dominant group showed an increase in knowledge self-efficacy over time when compared with the observation dominant and participation only groups” (Baird et al., 2015, p. 1).

The researcher found a study in Korea by Kim and Sohn (2019) to be relevant to the current study. It studied the relationship between self-efficacy and clinical performance in nursing students. The study design included a structural modeling design and looked at variables in relation to clinical performance and the relationships that occur within. The study demonstrated that self-efficacy and problem-solving ability were the two major factors that affected clinical performance (Kim & Sohn, 2019). The other variable studied by Kim and Sohn (2019) included emotional intelligence. The importance of incorporating self-efficacy into nursing curricula was stressed as a recommendation of the results of the study.

The studies reviewed, while done in different ways, all promote the need for students to gain higher levels of efficacy and all indicate a need for further research to determine the best method of assessment. To help create a culture of learning that promotes and encourages self-direction and high levels of self-efficacy, strategies used within curricula should be selected and planned mindfully. Assessing and determining levels of self-efficacy early in a course may help create a broader level of success among cohorts of nursing students when accompanied with early intervention strategies.

### ***Summary of SCT and Bandura***

The results of the literature review on self-efficacy further suggest the need for educational research focusing on self-efficacy in nursing students. While many variables are present, focusing on a student’s ability to evaluate their own skill set, efficacy can lead to strong,

well prepared, confident, and safe nurses in practice. Use of videography and self-directed learning activities are shown to help increase student efficacy.

## **Simulation and Jeffries**

### ***Simulation in Nursing Education***

Jeffries' (2007) simulation framework is the guide that institutions use to develop and evaluate simulation within a curriculum. The simulation framework was designed using constructivism, learner-centered practices, and collaboration (Jeffries, 2007). The framework includes simulation design, outcomes, and the teacher, student, and educational practices. Active learning is at the heart of simulation along with reflection and debriefing. The SDS strategy was developed using the simulation framework. It was important to include studies that demonstrate successful use of simulation strategies within the literature to support use of the framework as a means for strategy development.

The literature present a large number of studies that supports the use of simulation in nursing curricula to more effectively prepare student nurses for the world of the nursing profession. Encompassed within many of those studies is the goal of using simulation to increase self-efficacy even when exposed to it for the first time (Alinier et al., 2006; Ballard et al., 2012; Dunn et al., 2014; Franklin et al., 2015; Hayden et al., 2014; Kameg et al., 2010). A national simulation study with 10 nursing programs across the U.S. completed by the National Council of State Boards of Nursing demonstrated that programs can substitute for up to one-half of clinical hours with simulation activities and the same learning outcomes will occur (Hayden et al., 2014). Because of a lack of adequate numbers of clinical sites, an insufficient number of faculty, and the decreased nursing program size, many nursing programs are using simulation

intervention to provide similar learning experiences in a simulation center versus the clinical setting.

In a descriptive study (Goldenburg et al., 2005), 22 students completed a pre-activity to describe their confidence level in health teaching self-efficacy. Following a simulation using case studies and classroom simulation with role-play, the students completed a post-survey to self-report their levels of self-efficacy and found significantly increased self-efficacy following the simulation activity (Goldenburg et al., 2005). Other data that would prove effective for collection would be faculty and student satisfaction along with a comprehensive assessment of self-efficacy in relation to a wider range of the psychomotor skills that are required within nursing curriculum.

Dunn et al. (2014) conducted a study on high fidelity simulation and nursing student self-efficacy regarding communication and physical care. The study incorporated the The Nursing Student Self-Efficacy Scale (NSSSES) from the study by Stump and colleagues (2012). Pre- and post-tests were administered to 26 junior level nursing students at a Midwest university. Even though this was the researcher's first experience using simulation as a strategy, data showed a significant difference in both communication and physical care self-efficacy post-high-fidelity simulation.

In 2009, Sinclair and Ferguson completed a mixed methods study that examined students' self-efficacy relating to the use of simulation. The study included 250 students, 125 in a control group. Each student completed a demographic survey and a pre- and post-self-efficacy questionnaire created by Goldenberg et al. (2005). The control group received two hours of lecture content while the intervention group received one hour of lecture and one hour of

mid-fidelity simulated learning. Results demonstrated that all but one simulated learning activity about mental health increased student self-efficacy (Sinclair & Ferguson, 2009).

A quasi-experimental study by Harris et al. (2014) studied ways in which simulation can help improve medication administration skills of nursing students. Each of the control group and the intervention group comprised 79 students. The control group attended a lecture about medication administration and the intervention group participated in a medication administration review session. To determine effectiveness of the intervention all students were required to take a high stakes medication administration examination. The scores on the exam were significantly higher for the intervention group than those of the control group. While this study does provide some reliable information as with studies previously discussed, written tests may not be the best methods to determine competency in a psychomotor skill. Such skills require the use of hand and body movements and demonstration of the skill in conjunction with use of theoretical cognitive knowledge. Formalized review of skill ability along with test scores would be needed to determine the reality of an intervention's effectiveness.

Houghton et al. (2012) conducted 43 interviews along with observations in a qualitative study. The study was a case study design and looked at “factors that impact students’ implementation of clinical skills in the practice setting” (Houghton et. al., 2012, p. 1961). The study supports the need for preparing students for the realistic world of nursing and the multitude of factors involved in transitioning from a lab to practice setting with the ability to provide safe, reliable, high quality patient care across the lifespan.

### ***Summary of Simulation and Jeffries***

Simulation is a valuable tool to help enhance and increase self-efficacy in nursing students. Adding simulation to clinical setting practice also can help improve the student's ability

to practice at a higher and safer level. Furthermore, using the simulation framework (Jeffries, 2007) in designing simulation activities would provide a useful and necessary theoretical foundation for learning.

## **Self-Directed Learning and Knowles**

### ***Andragogy in Nursing Education***

In the 1970s Malcom Knowles put forth his argument of pedagogy versus andragogy. Pedagogy, according to Knowles, was defined as the teaching of children. He argued that pedagogy was a passive process of learning and that teaching models of that era did not, in fact, meet the learning demands of adult learners (Knowles, 1980). A large portion of K–12 education remains passive in 2020. According to Knowles, students are taught passively for more than 12 years yet are expected, as college students, to understand automatically what it means to be an adult learner. He argued that the foundation underlying that assumption does not work and that it is evident that freshmen college students enter higher education under-prepared for real world professions such as nursing. It is important to acknowledge that the model of passive learning in which the teacher teaches and the students passively listen is easier—easier to design, easier to implement, and easier to evaluate by means of standardized testing. An exam score or a course grade does not, in fact, equate to learning and retention. Merriam (2001) wrote that:

The five assumptions underlying andragogy describe the adult learner as someone who (1) has an independent self-concept and who can direct his or her own learning, (2) has accumulated a reservoir of life experiences that is a rich resource for learning, (3) has learning needs closely related to changing social roles, (4) is problem-centered and interested in immediate application of knowledge, and (5) is motivated to learn by internal rather than external factors. (p. 5)

Even though the beginnings of this curricular argument began many years ago, the same conversations still are occurring across curriculum development groups. Lack of concise studies within nursing education in the U.S. also further contributes to the ongoing issue of poor curriculum design, lack of theoretical background, and lack of forward thinking and use of technology within teaching. Clapper (2010) recommended that faculty need to ensure that they are considering the adult learner with a need to increase self-efficacy and move away from the passive learning strategies that have always been used to engage students in active learning. In his article, “Beyond Knowles: What Those Conducting Simulation Need to Know About Adult Learning Theory,” Clapper (2010) provided a thorough explanation of learning theories and provided many recommendations for faculty to implement in course design and use of technology in the curriculum and simulation learning experiences. Love et al. (1989) and McAdams et al. (1989) collaboratively studied the use of self-directed learning to effectively teach psychomotor skills. Their findings indicated that both students and faculty preferred the use of self-directed learning; however, whereas students preferred extended laboratory time, faculty preferred to teach skills in a clinical setting. Furthermore, in the same year, a randomized, controlled trial found no significant outcome differences for students taught in a structured manner versus those taught in a self-directed manner (Love et al., 1989; McAdams et al., 1989). Although these studies were conducted many years ago, faculty still grapple with similar issues in today’s nursing curricula. Questions remain such as, “what is the best method for teaching psychomotor skills” and “how does the way skills are taught develop the novice student and increase student self-efficacy.” Though the concept that is the focus of the current study now is called self-regulated rather than self-directed learning, it is fundamentally the same concept. Watts et al. (2009) studied the use of videotaping psychomotor skills to develop students’ ability

to self-assess and perform skills competently. Specifically, Watts and colleagues looked at whether there was a significant difference between the students' ability to assess competency versus the faculty's ability to assess competency. The results indicated, that although students struggled with self-assessment overall, the use of videotaping contributed significantly to the students' development. Therefore, this teaching strategy was implemented within the curriculum to promote professional growth and development (Watts et al., 2009). Brydges et al. (2009) studied medical students and their abilities to learn wound closure. While this is a different program than nursing, learning psychomotor skills is similar in that self-directed learning allows for improved retention of knowledge. Brydges et al.'s study had a self-guided group and a control group. The variable that was changed was access to instructional videos during practice time; the self-guided group could view these at any time. The results of the study demonstrated that with use of instructional videos both learning and self-directed behaviors were enhanced. Using Zimmerman's (1989) model of self-regulation, the results suggested increased student motivation because of autonomy of practice choices. Essentially, students who have control of resources and the manner of practice demonstrate increased learning because they can use resources in the manner that best suit their individual learning needs (Brydges et al., 2009). According to Yoo et al. (2010), "an opportunity for a student to evaluate his or her own performance enhances self-awareness and promotes self-directed learning" (p. 402). Correlation of self-directed learning and increased self-efficacy has been documented in the literature and would be a means of demonstrating effectiveness of implementation of SDS in nursing curriculum.

### ***Summary of Self-Directed Learning and Knowles***

Andragogy provides a framework for a student-centered learning approach that is active versus passive. The framework encompasses assessment of the students' learning and professional growth needs. The design of SDS gives students the opportunity to self-evaluate and self-direct their own performance of psychomotor nursing skills. The students also are given the opportunity to begin developing their own personal nursing practice methods as they learn skills and demonstrate competency. Andragogy provides a structural guide to designing and implementing learning strategies for the adult learner.

### **Integration in SDS**

SDS incorporates all three of the theories previously discussed (i.e., Bandura's SCT, 1997; Jeffries' simulation framework, 2007; Knowles' self-directed learning, 1980) within the design of the learning strategy. The researcher designed the SDS strategy for college-level nursing students—who are adult learners. From a cognitive perspective, the researcher taught the theoretical knowledge and skills knowledge concurrently except when students learned the theoretical knowledge as a prerequisite in another course. Prerequisite knowledge meant the students had to apply prior knowledge to competently complete the strategy. Based on the andragogy in practice model, the SDS strategy includes the six main principles identified in Figure 1 (Knowles et al., 1998). First, “learners need to know why” fundamental nursing skills serve as a foundation for nursing practice, “what” psychomotor skill competencies nurses need, and “how” to demonstrate skills using videography together with faculty and peer critique. Second, “self-concept of the learner” is “autonomous” as students in pairs or groups schedule times outside of class to record videos and “self-directing” as students, using an instructor-provided list of objectives, use creativity to design, practice, and record skill



competency. Third, “prior experience of the learner” uses “resource[s]” as student pairs or groups perform simulation that encompasses collaboration and peer review and “mental models” encourage students to be open-minded to new approaches to learning. Fourth, students are sophomores in college in a nursing program whose “readiness to learn” is life-related and appropriate and demonstrating the “developmental task” that students can practice with faculty and peers before recording the skill. Fifth, “orientation to learning” is “problem centered” as students must demonstrate psychomotor skill competency to pass the course—all skills involve a health issue that the demonstrated skill helps to resolve and the tasks are “contextual” as students are provided information and objectives to follow. Sixth, “motivation to learn,” is an “intrinsic value” because students desire to learn about the profession of nursing, to help others, and to perform psychomotor skills successfully. “Motivation to learn” is also a “personal payoff” because passing the course demonstrates adequate knowledge to function in clinical nursing and care for real patients.

In addition to the use of andragogy, SCT (Bandura, 1997) relies heavily on observation and modeling for learning and increased self-efficacy. For students to learn psychomotor nursing skills, they must spend a large amount of observation time prior to performing or practicing the skills. Students first practice on static manikins then on humans. Students are assigned readings and videos prior to class sessions; in class, faculty demonstrate skills live. Students then begin practicing the skills with their peers while faculty supervise. Students ask questions and seek critique during practice to better clarify techniques to be ready for continued practice and implementation of the SDS strategy.

The researcher also considered Jeffries’ (2007) simulation model when developing SDS by considering the criteria included in the model. SDS is a student-centered strategy that requires

collaboration with peers and faculty. Peer review with faculty and student feedback/critique, along with high expectations for learners were incorporated. Each criterion is interrelated and impact one another in a positive relationship. Student outcomes and improved performance was a goal during SDS implementation. Critical thinking, skill performance, and increased levels of confidence are a focus of the strategy along with a portion of the interview data collection process. Simulation design characteristics included having clear objectives that required students to problem solve and to seek support from faculty and peers. Education practices within the simulation model (Jeffries, 2007) directly relate to andragogy—particularly concepts three (prior experience of the learner) and four (readiness to learn). Outcomes of the Jeffries' (2007) simulation framework relate to the concepts of motivation to learn and the self-concept of the learner. Simulation design characteristics relate to the concept of andragogy including the learners need to know and orientation to learning.

As noted, the simulation framework follows the andragogy model closely; therefore, one might ask, “why would you use two similar models within a research study?” The simple answer to this question is lack of literature. Simulation in nursing is well documented in literature; however, most simulation research does not include specific information about skills. It is important to note that SDS varies from traditional simulation design templates. One of the key concepts in learning during simulation involves debriefing and reflection. Andragogy (Knowles et al., 1998) touches on reflection through life experience, but the simulation model (Jeffries, 2007) includes a more in-depth description of debriefing, reflection, and its importance. SCT more closely relates and intertwines the points of reflection and debriefing. SCT (Bandura, 1977a, 1978) also closely incorporates observation, which is a key part of the simulation framework. The majority of simulation studies demonstrate increases in student self-efficacy as a

result of simulation use. The differences between traditional simulation and SDS are important to note. Traditional simulation includes the use of faculty presence in a control room, watching the student as they perform or enact the simulation scenario that generally is run using a computerized program. Even during training where a standardized patient (trained human) is used, computerized programs still run parts of the scenario. In SDS, faculty are not present; students video record themselves performing a skill with the assistance of course peers. During the recording, one student plays the role of the nurse, one is the student, and one is the videographer. Faculty give students information about the skill and a checklist. Students in their roles are required to use effective communication, perform assessment, apply theoretical knowledge, and perform the skill. The students are allowed the opportunity to hypothetically create other portions of the scenario as they see fit including details such as name, allergies, date of birth, assessment questions, and sometimes, chief complaint depending on the skill. Reflection and peer review occur simultaneously as the students' record collaboratively.

The collaboration, peer review, and reflection simultaneously are one of the most important learning aspects in the SDS design. Students are encouraged to watch their video for self-critique and ask peers to watch the video for critique prior to submitting to faculty for evaluation. During these self- and peer-critiques, students often identify their own mistakes or peers will identify mistakes. This error identification, therefore, requires the student(s) to re-record the skill until it is performed correctly. Students report that video recording is commonly done multiple times before the student submits the final video-recording product for evaluation. This peer review and reflective process encourages students to not only critique, but to self-evaluate, review, and repeat as many times as necessary. Faculty critique and feedback occur after the student uploads their video in VoiceThread. In simulation scenarios, students are

given one opportunity to perform, debrief, and reflect. Also, during simulations, faculty are present behind a one-way glass and after the simulation ends, the students and the faculty debrief and reflect in a collaborative manner once; whereas, with SDS students can repetitively watch, review, and reflect. This study did not compare or test simulation and SDS; however, it is important to understand the differences. The researcher developed SDS on the theoretical foundation of the simulation framework but not all areas of the model are captured in SDS.

### **Summary of the Conceptual Framework**

The necessity of this research arises from the problem that student nurses are not being optimally prepared to function in the real world of nursing. Content saturation plays a huge role in why this is occurring—there is simply too much content for nursing students to learn. Along with content saturation and high levels of expectation placed upon nursing students, a greater than normal amount of stress and anxiety is produced in students contributing to decreased learning and poor mental and physical health as a result. In addition, many student nurses are not taking the steps necessary to become a competent graduate nurse. Students who take an active self-regulated approach to their learning have increased self-efficacy and, therefore, become more competent nurses. In addition, nurse educators need to be held more accountable in overcoming the challenge of content saturation as well as how student nurses are being prepared. Educators can do this by implementing teaching strategies that foster increased self-efficacy, active learning such as simulation, and self-direction. The theories of andragogy (Knowles, 1980), simulation (Jeffries, 2007), and SCT (Bandura, 1977a, 1978) closely relate and provide the theoretical framework used in SDS nursing practice. Ultimately, a new completely integrated model would be beneficial to develop for the theoretical foundation of teaching psychomotor nursing skills.

Chapter III presents the methodology used in this exploratory design study using qualitative and quantitative data analysis.

## CHAPTER III

### METHODOLOGY

The purpose of this study was to determine the effect of using self-directed simulation strategies in an undergraduate nursing curriculum on students' levels of self-efficacy. The three research questions explored in this study were:

1. How does the implementation of SDS teaching strategies impact nursing students' self-efficacy?
2. What is the relationship between SDS and self-efficacy?
3. How do the students experience SDS?

Ultimately, understanding the mutual influence of self-efficacy and SDS will answer the question, "Which comes first: Does performance lead to self-efficacy or does self-efficacy lead to better performance?"

#### **Study Design**

This study used an exploratory design using qualitative and quantitative data analysis. Quantitatively, the study used a pre- and post-test to measure levels of students' self-efficacy. The relationship between these two types of data collection created a better generalized sense of students' abilities, as well as their perceptions of self-learning, the way they learn, and their abilities to evaluate their strengths and weaknesses. Participant interviews (a qualitative research method) are time consuming even while leading to richer data after analysis; however, using quantitative research methods allowed the researcher to collect more data in a shorter time frame. Having the end goal of rich and meaningful data, using an exploratory study design allowed that goal to be reached. For the qualitative portion, the researcher followed Carspecken's (1996) critical qualitative framework that includes five stages: "(a) compiling the primary record,

(b) preliminary reconstructive analysis, (c) dialogical data generation, (d) describing system relations and (e) system relation as explanations of findings” (p. 43).

## Study Site

The study site was a Midwestern U.S. university situated on a large metropolitan campus. Understanding the city and university demographics provided the principal investigator with understanding of the populations from which the sample was selected. Table 1 shows the demographics of the site city and Table 2 shows the university’s demographics.

Table 1

### *City Demographics*

People	
Population	Data
Population estimates	867,125
Population estimates base	820,436
Population, percent change	5.7%
Population, Census	820,445
Age and Sex	Percent
Persons under 5 years	7.3%
Persons under 18 years	24.7%
Persons 65 years and over	11.9%
Female persons	51.8%
Race and Hispanic Origin	Percent
White alone	28.3%
Black or African American alone	28.3%
American Indian and Alaska Native alone	0.3%
Asian alone	3.2%
Native Hawaiian and Other Pacific Islander alone	0.1%

Table continues

Two or More Races	3.2%
Hispanic or Latino	10.2%
White alone, not Hispanic or Latino	55.2%

*Note.* From Census.gov. (n.d.) *Quick facts*.

<https://www.census.gov/quickfacts/indianapoliscitybalanceindiana>.

<sup>a</sup>The vintage year (e.g., V2019) refers to the final year of the series (2010 thru 2019). <sup>b</sup>Includes persons reporting only one race. <sup>c</sup>Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data.

Table 2

*University Demographics*

Variable	Data
<u>Overall Student Population</u>	
Total campus enrollment (fall 2018)	29,579 students
Undergraduate students	21,246
Graduate or professional students	8,333
Undergraduate students attending full time	83.0%
Residency	
Residents	86.5%
Nonresidents	13.5%
Gender	
Female	58.0%
Male	42.0%
Minority students	27.0%
International students	7.0%
Home residence	
Counties in the state	92
U.S. states	50
Countries and territories (including the U.S.)	142

Table continues



<u>Entering Freshmen (Fall 2018)</u>	
Total number	4,103
Average SAT score	1125
Average high school GPA	3.48/4.00
Average age	18
<u>Research</u>	
External funding (2017–2018)	\$435.9 million
University research centers	Approximately 100 including 11 Signature Centers
Research grants awarded (2017–2018)	1,999
<u>Community Engagement</u>	
Number of hours students engage with community partners per year through courses	> 1,000,000 hours
Number of community organizations engaged with the school through research, service learning, volunteer projects, and experiential learning	> 700
Number of major days of service hosted by the school annually	4
Number of other service events hosted by the school annually	> 20
<u>University Faculty</u>	
Number of faculty	> 2,800
Number of degree-granting schools	17
Number of degree-granting colleges	2
Number of full-time faculty possessing professional or doctoral degrees	> 95%
Percentage of women faculty	43%
Percentage of African American faculty	5%
Percentage of Hispanic faculty	3%
Percentage of People of Color faculty	26%

*Note.* From *Rankings and campus statistics*. (n.d.). <https://www.iupui.edu/about/rankings-statistics.html> and from Institutional Research & Decision Support. (n.d.). *Enrollment - 10 Year Headcount*. <https://irds.iupui.edu/data-link/index.html>.

The researcher conducted study observations on the university campus in the skills lab of the school of nursing's simulation center. This learning space is set up to be hospital-like (see

Appendix B, Figures B1, B2, B3). The researcher used caution to observe and interview only students who were not members of the researcher's own course. The researcher interviewed students in a closed office with only the interviewer and the participant present. It is important to note that the researcher conducted a similar pilot study in 2016.

## **Participants**

Study participants were sophomore-level nursing students in a Bachelor of Science in Nursing (BSN) program along with their clinical faculty. Table 3 reports the demographics of all students ( $N = 669$ ) enrolled in the BSN program at the time of data collection and separately identifies students ( $n = 87$ ) enrolled in the nursing fundamental skills course from which study participants were recruited. The researcher obtained permission to collect and use student demographic data from the university's institutional review board at the time of data collection (see Appendix C). The principal investigator sent students ( $n = 87$ ; 49 traditional; 38 accelerated) enrolled in the nursing fundamental skills course a recruiting email (see Appendix D). Students were assured that participation was voluntary, that they would receive no remuneration for participation, and that accepting or declining study participation would in no way impact their course grade. The researcher did not solicit participation from any student wherein the researcher was responsible for assigning grades.

Table 3

*BSN and B260 Student Demographic Data*

Demographic	Traditional <i>n</i> = 526	Accelerated <i>n</i> = 143	Total BSN <i>N</i> = 669	Traditional (B260) <i>n</i> = 49	Accelerated (B260) <i>n</i> = 38	Total B260 <i>n</i> = 87
<u>Nationality</u>						
Asian	17	5	22	2	3	5
Black	28	13	41	6	6	12
Hispanic	27	4	31	2	1	3
NR Alien <sup>a</sup>	5	0	5	2	0	2
2+ Races	13	5	18	2	2	4
Unknown	4	0	4	0	0	0
White	432	116	548	35	26	61
<u>Age</u>						
18–25	476	72	548	42	24	66
26–30	23	43	66	2	9	11
31–40	20	19	39	3	4	7
41–50	7	7	14	2	1	3
51–60	0	2	2	0	0	0
<u>Gender</u>						
Female	463	124	587	42	31	73
Male	63	19	82	7	7	14

*Note.* B260 is the course number assigned by the university to the nursing fundamental skills course. The total number of enrolled students in the BSN program was 4,168 in the fall 2016 data collection semester. From the school's Office of Evaluation and used with permission.

<sup>a</sup>NR Alien= Non-Resident Alien.

### Instrument

The researcher adapted The Nursing Student Self-Efficacy Scale (Stump et al., 2012) with permission (see Appendix A, Figure A4). The survey was administered as both a pre- and post-survey in collecting the quantitative data, described in the following section.

## Quantitative Data Procedures

Study data were collected and managed using REDCap (<https://redcap.uits.iu.edu/>) electronic data capture tools hosted by the study site university. The researcher inputted into REDCap the email address of each student ( $n = 87$ ) enrolled in the fall 2016 nursing fundamental skills course then to preserve anonymity, scheduled REDCap to send the pre-survey electronically to each student's email address. The email (see Appendix D) solicited participation in completing a pre-survey using the self-efficacy tool. Each email message contained a QR (Quick Response) code that allowed students to link to the pre-survey via a QR reader. Students then completed the survey on their smart phones on a computer of their choice.

Fifty-seven students completed the self-efficacy pre-survey. In December (the end of the fall 2016 semester), the researcher scheduled REDCap to send the post-survey to BSN students enrolled in nursing fundamental skills course (B260;  $n = 87$ ) who had been previously recruited to complete the pre-survey. The B260 faculty allowed students to use class time to complete the post-survey. Of the students ( $n = 87$ ) receiving the post-survey email, 37 completed the post-survey. The post-survey was administered using the same method as the pre-survey, using smart phones or computers to access the post-survey link via a QR reader.

Analysis procedures included uploading the data from REDCap (<https://redcap.uits.iu.edu/>) into Qualtrics (<https://qualtrics.iu.edu/>), Excel, and SPSS. The data from the pre- and post-test were not paired; therefore, limitations of statistical analysis existed. The researcher used IBM SPSS Statistics version 25 to perform quantitative analysis. The first step in the process was to run descriptive statistics on the two groups (pre-survey sent in October 2016 and post-survey sent in December 2016). Missing variables decreased the  $n$  in both groups: October pre-test (sample size was 57) decreased to  $n = 37$  and December post-test (sample size was 37) decreased to  $n = 26$ .

Next an independent  $t$  test was completed to determine if there was a difference between the self-efficacy of men and women. This test was completed independently for each group (October and December). The first hypothesis tested was for each group separately. December: Null-  $\mu \text{ male} \leq \mu \text{ female}$ ; Alternative-  $\mu \text{ male} > \mu \text{ female}$ .

Next an independent  $t$  test was completed to determine if there was a difference between the *means* of those students who worked in healthcare versus the students who did not. The  $t$  test also was completed separately for each group (October and December). The second hypothesis tested was as follows: December- Null-  $\mu \text{ work in healthcare} \leq \mu \text{ not work in healthcare}$ ; Alternative-  $\mu \text{ work in healthcare} > \mu \text{ do not work in healthcare}$ . October: Null-  $\mu \text{ male} \leq \mu \text{ female}$ ; Alternative-  $\mu \text{ male} > \mu \text{ female}$ .

Next an independent  $t$  test was completed to determine if there was a difference between the *self-efficacy* of those students who worked in healthcare versus the students who did not. The  $t$  test also was completed separately for each group (October and December). The second hypothesis tested was as follows: December- Null-  $\mu \text{ work in healthcare} \leq \mu \text{ not work in healthcare}$ ; Alternative-  $\mu \text{ work in healthcare} > \mu \text{ do not work in healthcare}$ . October- Null-  $\mu \text{ work in healthcare} \leq \mu \text{ not work in healthcare}$ ; Alternative-  $\mu \text{ work in healthcare} > \mu \text{ do not work in healthcare}$ .

Finally, a one-way Analysis of Variance (ANOVA) was performed to determine if there was a difference in the means when compared with ethnicity. ANOVA assumptions include normal distribution, robust sample size  $> 30$ , homogeneity of variance and that the dependent measure is independently sampled. The hypothesis = Null-  $\mu$  of groups 1–5 are equal and the Alternative  $\mu$  groups of 1–5 are not equal.

### **Validity**

The self-efficacy tool was adapted with permission (see Appendix A, Figure A4) from Stump et al. (2012). The adaptation differed from Stumps' original tool in the level of skills that were included. The adaptation (see Appendix E) included changing or deleting skills that were cognitively higher than the level of education of the study participants. The researcher tested the adapted tool prior to use. Based on recommendations from Bandura (2006, as cited in Stump et al., 2012), the researcher conducted a domain analysis (Stump et al., 2012). Per Bandura (2006), the most important factor in developing a self-efficacy tool is to ensure that the factors determine quality of function in the domain of interest. In the current study, this refers to a student's ability to perform psychomotor skills. To adapt the tool, the researcher altered the skill level of the instrument to match the skills required of a sophomore-level nursing student versus a senior-level nursing student, which was the intended user of the tool as originally designed (Stump et al., 2012).

The researcher developed the interview protocol (see Appendix F) and developed and copyrighted the SDS strategy in 2016 (see Appendix G). One of the primary reasons the researcher selected The Nursing Student Self-Efficacy Scale (Stump et al., 2012) to adapt was because of the documented high levels of validity. Stump completed exploratory factor analysis that determined that only one factor, which was self-efficacy, would explain any variance in the answers from the survey (Stump et al., 2012). The participants in Stump et al.'s (2012) study were senior-level nursing students.

## **Reliability**

As a measure for reliability, Cronbach's alpha was calculated using IBM SPSS 25. Cronbach's alpha was demonstrated for both the October pre-survey and the December post-survey groups. In both groups, internal consistency of 0.85 (December) and 0.89 (October) demonstrated that the SDS measures levels of self-efficacy in a reliable manner.

In the current study, variables were complex, particularly qualitatively. For simplification of the quantitative analysis, the dependent variable was a student's level of self-efficacy and their ability to perform psychomotor nursing skills independently. It is important to note that levels of self-efficacy across the sample were varied but, in all instances, self-efficacy increased on post-survey.

## **Qualitative Data Procedures**

### **Stage One**

#### ***Observations***

The researcher used Carspecken's (1996) critical qualitative research framework as the qualitative data analysis strategy to compiling the primary record. One observation was completed on a small section of 30 students. The observation was audio-recorded for transcribing, and a thick description was created during the experience. Additionally, prior data was collected in a pilot study in a similar manner.

The observation took place in a school of nursing simulation center that contains a flex classroom. The flex area contains cubicles set up like hospital patient rooms. See Appendix B for photos (Figure B1 and Figure B2) and an illustration of the floor plan (Figure B3). The class began with faculty teaching in front of the group to explain and demonstrate the skills and concepts students were going to practice that day. Three faculty led the class with approximately

30 students present in the space. The researcher teaches in this same space with a different set of students, leading to familiarity with fundamental skills course content and the structure of the class. The principal investigator had never conducted a classroom observation of the instructors who taught during this research observation. The classroom appeared to be a calm, relaxed, and safe learning environment. The students asked many questions and dialogued with the faculty. Each of the three instructors alternated speaking and leading the session. After the demonstration and lecture was complete, students formed groups to practice the activities. Students were still able to ask questions, and the faculty remained present. This interval could be expressed as a supervised practice time of psychomotor skills.

Typically, when one considers a classroom, a hierarchical structure of an instructor speaking and students passively listening is what comes to mind. During this teaching observation, active learning occurred, not passive. Prior to coming to this class session, faculty assigned students to read theory in texts and to review the steps of skills procedures in addition to watching video examples. The goal of this pedagogy is for students to come to class prepared to practice and be active participants in their learning. In observation, the researcher noted that some students demonstrated a greater ability to successfully perform skills than others. The questions arose, “Why was this occurring? Had one student prepared more than the others, or was the student simply more actively engaged in the process of learning the foundational skills of being a nurse? Why do some students learn more than others? Why do some students apply themselves at a higher cognitive level? What motivates and pushes those students? What encourages them to give their best effort?” These questions posed by the researcher during the observation could not be answered during the single observation; however, analyzing the collected data could lead to rationalizations of these. The researcher transcribed the audio



recording for coding and to determine themes from the observation experience. Resulting themes included clarification, questioning, understanding, critical thinking, and learning.

### ***Instrument***

The researcher used the interview protocol (see Appendix F) and relied upon personal nursing expertise and critique from other faculty. The researcher first tested the interview protocol (see Appendix F) for effectiveness in data collection along with ensuring that the right and important information was collected in the pilot study.

### ***Interviews***

Following completion of the initial survey, the researcher solicited volunteers to participate in a qualitative interview. Using both the recruitment email (see Appendix D) and classroom visits to explain the study to students, the researcher obtained 15 volunteers of which 14 completed the interview. During the interview, conducted in a private office at the school, the researcher explained to each interviewee that they were being voice recorded and that their name would not be used to identify the recording. Recordings were stored in the university's installation of Box, a cloud-based secure content management system, to which no one except the researcher had access; recordings were deleted after being transcribed.

As part of the course requirements students are required to learn and demonstrate competency of several skills throughout the semester. Of these, faculty require four skills, considered critically important to competency, to be submitted using the SDS strategy. For each skill, students read the theory underlying the skill, watch videos of the skill being performed, and observe faculty demonstrating the technique. To fulfill the assignment requirements, students must learn the skill then, with the help of a peer or two, record a video demonstrating the performance of the skill. Students then submit the video recording electronically using

VoiceThread technology into the learning management system that the university uses for all courses. The study interviews were designed to gather information about how the students experienced participation in SDS and how they learned psychomotor nursing skills.

To further support understanding of the learning strategy, it is important to understand the step-by-step process that each student completes to achieve this course competency. The four critical skills include (a) peripherally inserted central catheter (PICC) sterile dressing change; (b) Foley catheter insertion; (c) medication administration, specifically subcutaneous injection of a fast-acting insulin; and (d) intravenous piggyback antibiotic medication administration using an Alaris smart pump (see Appendix H, Figures H1, H2, H3, and H4). Students must submit video documentation of competency for each of these four psychomotor skills using the SDS method.

The faculty who teach the fundamental skills course determined these four skills to be critical foundational psychomotor skills needed by new practicing nurses. While these are not the only four skills taught or practiced, these skills are the ones for which SDS was used. Skills that require students to maintain sterility are typically harder for them to learn; therefore, the majority of the four skills require the use of sterility in some respect.

Students next schedule times in the simulation learning space outside of class time to record their videos. Students typically complete their skills performance and video recording in groups of two or three. In a group of two or three, students typically alternate the roles of student nurse, videographer, and patient until each participant has completed the assignment successfully. Students self-schedule electronically in one-hour time slots. The simulation center staff provide the students all of the materials needed for the skill they are recording. Students complete their video recording, review, assess, and re-record as needed. After completing a successful video recording, each student uploads their recording electronically into VoiceThread

for review by faculty and other students in their clinical group. Each clinical group typically includes up to 10 students. VoiceThread's integration in the learning management system used by the university provides a single location to view and grade the assignment. After each student–videographer sets the appropriate permissions for sharing with peers and the faculty, others in the class can view videos at their discretion (VoiceThread, n.d.).

Each student's faculty views and critiques each video and records comments throughout the video; VoiceThread time-stamps each comment for easy retrieval at the appropriate location in the recording. Faculty determine if the student achieves a satisfactory or unsatisfactory score and directs the student to re-record the self-directed simulation assignment when competency is not achieved. Asterisks included on the skills checklists indicate skills areas in which the student must achieve competency to receive a satisfactory score (see Appendix H, Figures H1, H2, H3, and H4).

## **Stage Two**

The researcher used preliminary reconstructive analysis with the thick description from the observation. The interviews were recorded then transcribed to allow for data analysis. To record the data, the software NVivo was used to store, code, analyze, and run queries. NVivo (n.d.) is an internet-based system that assists researchers to analyze qualitative and mixed methods data. All files were stored in the NVivo software and included all external content including fieldwork preparation, IRB documents, 14 interview files, and 14 transcribed interview files.

From a critical view, the researcher observed the students as they used the VoiceThread technology. Additionally, the researcher interviewed students to determine the effectiveness of

the technology, issues with the implementation of use, and assessment of the student learning. The researcher arranged the observations with course faculty and the course leader.

The researcher coded the first three interviews by hand using low level codes then used side-by-side Microsoft Word documents to review each interview and to assign codes. The next step was coding similarities using NVivo to demonstrate similarities across three interviews. The remaining interviews were coded in NVivo at a low level, including only items that were different than the first three. The researcher used thematic analysis and clustering of themes and sub-themes to further determine the core areas of focus.

### **Stage Three**

The researcher conducted interviews using the principal investigator-developed student protocol (see Appendix F) for dialogical data generation. Interviews were conducted in the principal investigator's private office, audio recorded then later transcribed for coding purposes. The researcher also took notes during each interview based on points of interest. The researcher used content analysis for primary level coding. To gain an understanding of the focus of the content, queries of the interviews were run using NVivo to determine word frequency (Carspecken, 1996).

### **Stage Four**

The principal investigator used the theory of cultural conditions of action (Carspecken, 1996) to describe system relations and to understand the culture of the nursing student. Within this concept, the notion of free will or volition was described and proved useful in understanding the peer review techniques and strategies as well as increased levels of practice because of fear of failure and being critiqued not only by faculty but also by peers. The researcher found that students were less likely to try any learning activity if it did not fit within the cultural context of

the VoiceThread technology and their ability to demonstrate the psychomotor nursing skills competently. Carspecken (1996) reported that “actors can only be innovative to the extent that culture allows” (p. 191), which directly relates to the desire of the student to use creativity and experience feelings of excitement as a result of being given that opportunity in the learning environment. The key to a researcher’s understanding of student professional identity formation and levels of self-efficacy also may result from using themes that are most recognized by the cultural group; according to Carspecken, this is how affirmed identities are constructed (1996). How does fear of failure point to system level issues and how does that show up in students’ nursing practice? If a student feels inadequately prepared for a skill, anxiety and fear will increase. Engaging students in strategies that enable them to increase feelings of confidence and preparedness could help reduce their fear of failure and increase their ability to perform in practice.

### **Stage Five**

In stage five, the researcher paired an existing social theory to very specific reconstructions used in stages one to four and used system relation as an explanation of the findings. Carspecken (1996) reported that it is important that the researcher has explained the themes economically and politically. Chapter V will include discussion of the theoretical information for stage five.

### **Validity**

For purposes of this study, the researcher used Carspecken’s (1996) critical qualitative research framework to guide collecting and analyzing data. “Critical epistemology focuses on validity because all truth claims are communicative acts that must meet certain formal conditions to win consent” (Carspecken, 1996, p. 84). It is important to further understand that these claims

are derived from human communication—verbal and non-verbal. Incorporated into this critical approach are the three ontological categories Carspecken (1996) based on Habermas’s theory of communicative action:

- “The objective realm—assertions about what is and what took place.
- The subjective realm—privileged access and assertions about feelings, intentions and states of awareness.
- The normative/evaluative realm—what is right, wrong, good, or bad (Carspecken, 1996, pp. 84–85).”

For purposes of establishing trustworthiness of the data, the three realms help to determine how validity is related to human interaction (Carspecken, 1996). “The aim is to produce truth claims that have met their validity requirements and that are therefore well supported” (Carspecken, 1996, p. 57). The researcher used these recommended strategies to promote validity: passive observation, recording interactions both on paper and with audio, use of a flexible observation schedule, low inference vocabulary, reflexivity, and prolonged engagement (Carspecken, 1996).

During the observation and during interviews, the researcher took field notes together with an audio recording to conduct passive observation. Low inference vocabulary was used in making observation notes and comments about actions that students took. The use of low inference vocabulary helped to eliminate the risk for alternative interpretations of the notes. A flexible observation schedule prevented biased attention (Carspecken, 1996).

According to Giddens’s notion of reflexivity, the researcher must be aware of their thoughts, feelings, and actions and must be willing to adapt and take on new perspectives that may become apparent throughout the study (Carspecken, 1996). The researcher acknowledged

biased initial assumptions; therefore, it was necessary to be cognizant to those assumptions during interviewing or when adding certain probes to the protocol. This awareness helped to prevent attempting to get the desired answers that were assumed present, but instead, encouraged effectively listening, interpreting, and absorbing what was being said by the participant.

Prolonged engagement is used to reduce Hawthorn effects (Carspecken, 1996). Hawthorn effects are changes in behavior resulting from a researcher's presence. Data was collected during one specific day for this study; however, the researcher made many visits to the learning space over the course of the year. As part of the team of faculty teaching the nursing fundamental skills (B260) course, the researcher's presence in the space was not out of the ordinary.

### **Researcher Positionality**

The researcher is a White, heterosexual, female, a middle child having two sisters of parents married for 50 years. The researcher grew up in a small Midwestern town, is married and has a blended family with six children and one grandson. The researcher works as a nurse and a nursing professor and is a PhD candidate. In relation to this study, the researcher assumed that participants would view the researcher in a role of power because of being a professor in the school of nursing in which the students attend. The researcher and students eventually become colleagues. After students graduate and become licensed, that hierarchal dynamic shifts to being on the same level. All things come full circle, and the researcher now works with many of the students who have been educated by the researcher.

The researcher has three viewpoints to consider: one as nurse, one as an educator, and one as a graduate student. The value contributed as an educator stems from work as a nurse and a graduate student and vice versus. The researcher continues to participate in each of these roles and has for more than 10 years. The researcher's desire to teach nurses stemmed from seeing a

need in the nursing profession, a profession that engenders pride. The need was understood that students suffer from a lack of training as well as a lack of knowledge. The researcher acknowledges that she cannot change the entire profession, but she can make a difference in the lives of those students she teaches and the patients for which she cares. She can *pay it forward* to the patients for whom her students will eventually care. This research study goes beyond merely examining students' level of self-efficacy; it has impact, in that it can be a part of empowering future generations of nurses in an ever changing and challenging healthcare delivery system.

As an educator, semester after semester, the researcher observed students struggling in the content-saturated field of nursing. Students would shake, cry, sweat, and even sometimes panic. Students have been noted to sweat through their scrubs and be unable to step into a patient's room. Students have been seen so nervous and anxious that it is no wonder learning retention failed to occur. The researcher wanted a solution and wanted to help students learn to the best of their ability without fear or anxiety.

As a graduate student, the researcher alternated between the desired areas of focus, but concluded she wanted to teach. As a nurse, she teaches, but teaching others is not hugely incorporated into nursing curricula. The researcher focused on education because it was the area, she knew the least about, yet was trying to educate the future nurses of the world. The researcher has spent considerable time being a student, and did so with a family, a full-time job and multiple jobs for over a decade. This fact resulted in a huge amount of empathy for her students, leading to better understanding about the students and caring about them as whole people. The researcher inherently wants students to learn and be the best nurses and people they can possibly be.



From a theoretical standpoint, the researcher believes learning is individualized; it is truly difficult to meet the learning needs of all students using a single method or theoretical background. The researcher's personal belief is that designing curricula well involves using multiple theories and views of thinking to educate a larger portion of learners. It is important to note that there are no standardized methods to teach psychomotor skills and a large gap in the literature exists.

### **Protection of Human Subjects**

The principal investigator obtained protection of human subjects approval for this study from the university institutional review board policies and procedures for an exempt study prior to beginning the study (see Appendix C).

### **Limitations**

Several limitations are noted within this study. First, the data were not paired during pre- and post-survey data collection, collection times were varied, and collection was obtained solely from volunteers. This created a challenge and only generalized statements about levels of self-efficacy could be made because there was not a direct comparison to analyze. Secondly, the qualitative data were not paired with the quantitative data; therefore, the data were analyzed separately. Furthermore, there is a significant gap in the literature regarding the use of videography as a means for teaching psychomotor skills; therefore, the comparison in the literature review is limited. A tally was not done, but there are a significant number of studies done in countries other than the U.S. and may be with a different level or type of nursing student. In addition, because the study was voluntary, this could have led to only students who enjoyed SDS participating in the interviewing, therefore leading to largely positive remarks and data about the strategy.

## **Summary**

This chapter described the methodology used for this exploratory study, which included quantitative and qualitative data collection. The quantitative data were collected using a pre- and post-survey, and the data were not paired. The qualitative data were collected using Carspecken's (1996) critical qualitative framework and included observations and interviews. Instruments used for data collection were described along with statistical analysis.

Chapter IV discusses the results and findings from this exploratory design study and answers the study research questions.

## CHAPTER IV

### RESULTS/FINDINGS

The purposes of this exploratory study were to better understand how nursing students learn, the way they participate in self-directed learning, and to examine their levels of self-efficacy. This chapter presents the qualitative findings from a critical approach and the quantitative results using pre- and post-survey results. The chapter presents the findings/results of this research and provides answers to each of the following research questions:

1. How does the implementation of SDS teaching strategies impact nursing students' self-efficacy?
2. What is the relationship between SDS and self-efficacy?
3. How do the students experience SDS?

For quantitative data, the following hypotheses were tested:

1. Null-  $\mu \text{ male} \leq \mu \text{ female}$ ; Alternative-  $\mu \text{ male} > \mu \text{ female}$
2. Null-  $\mu \text{ work in healthcare} \leq \mu \text{ not work in healthcare}$ ; Alternative-  $\mu \text{ work in healthcare} > \mu \text{ do not work in healthcare}$
3. Null-  $\mu \text{ of groups 1-5 are equal}$ ; Alternative  $\mu \text{ groups are not equal 1-5}$ .

#### **Participants**

Participants were volunteers, solicited by the investigator via email (see Appendix D). The demographic data for the nursing fundamental skills (B260) course population is shown in Table 3. The only demographic data collected for each volunteer was ethnicity, gender, and employment in health care or not.

## **Results/Descriptive Statistics**

This section discusses the quantitative data. The Nursing Student Appraisal Tool (TNSAT; see Appendix E) was used to measure student self-efficacy. The pre-test was administered in October 2016 and the post-test in December 2016 at the end of the fall semester. Fifty-seven students completed the pre-test and 37 students completed the post-test. In the pre-test data for the sample ( $n = 37$ ,  $M = 35$ ,  $SD = 7.71$ ), it is important to note that the sample size was 57 and that SPSS does not calculate responses with missing data. In the post-test data for the sample ( $n = 26$ ,  $M = 55$ ,  $SD = 5.02$ ), the original sample size was 37. Table 4 presents the data for each question answered on TNSAP and includes the means and standard deviations for each individual question answered on the tool for both pre- and post-tests.

Table 4

*Descriptive Statistics*

Question	<i>N</i>		Minimum		Maximum		<i>M</i>		<i>SD</i>	
	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>
Appropriately administer a subcutaneous injection	56	37	1	2	3	3	1.04	2.89	.267	.315
Correctly suction a patient's tracheostomy	57	36	1	1	3	3	1.07	2.42	.320	.732
Appropriately educate a patient on medications	51	35	1	1	3	3	1.39	2.69	.635	.530
Appropriately perform the skills necessary to care for a patient	47	32	1	2	3	3	1.55	2.84	.746	.369

Table continues

Question	<i>N</i>		Minimum		Maximum		<i>M</i>		<i>SD</i>	
	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>
Accurately assess a patient's oxygenation level	51	37	1	2	3	3	2.45	2.92	.808	.277
Correctly complete a head-to-toe assessment	56	36	1	2	3	3	1.84	2.97	.968	.167
Accurately document care given to a patient	55	36	1	1	3	3	1.84	2.78	.788	.591
Appropriately interview a patient about their current health status	54	36	1	1	3	3	2.39	2.83	.811	.447
Accurately monitor a patient's vital signs	51	37	1	2	3	3	2.73	2.95	.532	.229

Table continues

Question	<i>N</i>		Minimum		Maximum		<i>M</i>		<i>SD</i>	
	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>
Accurately assess a patient's bladder	57	34	1	1	3	3	1.25	2.50	.544	.707
Accurately identify a patient using two patient identifiers	55	37	1	3	3	3	2.93	3.00	.378	.000
Accurately assess a patient's blood glucose level	55	36	1	2	3	3	1.56	2.94	.788	.232
Appropriately communicate to develop a therapeutic nurse–client relationship	52	37	1	1	3	3	2.38	2.86	.771	.419
Provide accurate information to physician about patient's condition	55	36	1	1	3	3	1.80	2.72	.755	.615

Table continues

Question	<i>N</i>		Minimum		Maximum		<i>M</i>		<i>SD</i>	
	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>
Appropriately communicate assessment findings	51	37	1	1	3	3	2.20	2.81	.825	.569
Correctly administer an IVPB medication	57	35	1	1	2	3	1.05	2.89	.225	.404
Accurately document findings from a patient assessment	53	36	1	1	3	3	2.04	2.86	.831	.487
Appropriately assess a patient's peripheral IV	57	36	1	1	3	3	1.09	2.86	.342	.424
Respond appropriately to a patient code situation	56	34	1	1	3	3	1.20	1.91	.519	.900

Table continues



Question	<i>N</i>		Minimum		Maximum		<i>M</i>		<i>SD</i>	
	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>	Pre <sup>a</sup>	Post <sup>b</sup>
Appropriately care for a patient's PICC line dressing	57	36	1	1	3	3	1.04	2.83	.265	.561

*Note.* Valid *N* (listwise) October Pre-test = 37. Valid *N* (listwise) December Post-test = 6.

<sup>a</sup>Pre-Test conducted October 2016. <sup>b</sup>Post-Test conducted December 2016.

The overall means across all 20 questions increased from pre- to post-survey. While the assumption and expectation were that the means would increase over time, it is interesting to note that all areas increased. The data was not paired, so comparison by student is not a possibility. Further, it is important to note that when SPSS calculated overall means for each group, it did not include all the items because missing items were not scored. Even with the missing data being excluded the means increased over time after implementation of the SDS learning strategy.

An independent *t* test was performed to compare the overall means for males and females, as well as for those students who worked in health care and those students who did not work in health care. The data demonstrated that there was not a significant difference in self-efficacy in relation to gender. October: Null-  $\mu \text{ male} \leq \mu \text{ female}$ ; Alternative-  $\mu \text{ male} > \mu \text{ female}$ . The self-efficacy level of males ( $M = 35.28, SD 6.42$ ) and the self-efficacy of females ( $M = 34.93, SD 8.08$ ) were not significantly different ( $t = .107, p > 0.05$ ). The 95% confidence interval for the difference in means ranged from -6.312 to 7.017. Using a *p* value of 0.05, data demonstrates that there was not a significant difference between the self-efficacy levels of male and females in the October group ( $p = 0.26, n = 7 \text{ male}, n = 30 \text{ female}$ ). December: Null-  $\mu \text{ male} \leq \mu \text{ female}$ ; Alternative-  $\mu \text{ male} > \mu \text{ female}$ . The self-efficacy level of males ( $M = 54.75, SD 7.27$ ) and the self-efficacy of females ( $M = 55.63, SD 4.72$ ) were not significantly different ( $t = -.319, p > 0.05$ ). The 95% confidence interval for the difference in means range from -6.624 to 4.85. Using a *p* value of 0.05, data demonstrates that there was not a significant difference between the self-efficacy levels of male and females in the December group ( $p = 0.28, n = 4 \text{ male}, n = 22 \text{ female}$ ). (See Appendix I for the combined data table.)

Because there was not a difference in gender, it allowed for direct comparison of self-efficacy without having to discuss the data separately. It is an interesting aspect of the learning of the students as well, meaning they were all entry-level novice students and all were learning the material in a similar manner and potentially learning to determine capability of psychomotor skills in a similar fashion.

An independent  $t$  test was completed to determine if there was a difference between the means of those students who worked in health care versus the students who did not. The  $t$  test also was completed separately for each group (October and December). The second hypothesis tested was as follows: December- Null-  $\mu$  work in healthcare  $\leq \mu$  not work in healthcare; Alternative-  $\mu$  work in healthcare  $> \mu$  do not work in healthcare. The self-efficacy level of those who work in healthcare ( $n = 7$ ,  $M = 50.0$ ,  $SD 6.27$ ) and the self-efficacy of those who do not work in healthcare ( $n = 18$ ,  $M = 57.72$ ,  $SD 2.32$ ) was significantly different ( $t = -4.593$ ,  $p > 0.05$ ). The 95% confidence interval for the difference in means range from -11.19 to -4.244. Using a  $p$  value of 0.05, data demonstrate that there a significant difference between the self-efficacy levels of those who work versus those who do not work in healthcare ( $p < 0.0001$ ); therefore, the null hypothesis can be rejected and can conclude that the variance in the non-working students' self-efficacy levels were higher in those students who did work in healthcare for the December group. It is important to note that students who don't work may have more time to study and focus on learning skills.

Finally, the researcher performed a one-way ANOVA to determine if there was a difference in the means when compared with ethnicity. ANOVA assumptions include normal distribution, robust sample size  $>30$ , homogeneity of variance and independently sampled dependent measure. The hypothesis = null-  $\mu$  of groups 1–5 are equal and the alternative  $\mu$  groups of 1–5 are not equal. With a  $p$  value of 0.448, the ANOVA demonstrates that there is not

a significant difference between the ethnicity groups.

### **Qualitative Data**

This section presents the qualitative findings of this exploratory study including observations and interviews. Direct observation of a subset of the learners and their faculty provided insight into the way students prepare, seek guidance, and practice. It also demonstrated the relationship that existed between faculty and the learner along with a complete understanding of the supplies required and used and the learning environment. Appendix B provides photos and a diagram of the lab for better understanding of the space utilization. Understanding the environment in which the students learn provides greater insight into the way in which the data correlates, as well as helping to provide answers to the study questions.

### **Data Analysis Strategy**

The first step of data analysis included the researcher observing students and faculty in the learning environment then conducting interviews and having the recordings transcribed. All data were uploaded into NVivo for coding purposes. The researcher originally began all the low-level coding in NVivo but then found that using side-by-side Microsoft Word documents was a much easier way (Carspecken, 1996). The researcher chose low-level codes across each interview then labeled the codes by page number and line number. The researcher used the same process for the first three interviews then looked for similarities and differences across the remaining interviews and assigned low-level codes as appropriate. The researcher used NVivo to check for similarities using text search queries.

To gain a better understanding of all the codes, the principal investigator used a thematic analysis approach. Themes were chosen based on the most frequently used codes across all 14 interviews. The analysis resulted in seven overarching themes from both observation and

interview. Next, each interview was reviewed again looking specifically for details regarding these identified themes. The researcher collected data from each of the 14 interviews using sticky notes. As the researcher processed each interview code, all seven themes were written on a large piece of drawing paper mounted on the wall. Quotes that were chosen were written on sticky notes and added to the paper on the wall under the corresponding theme. This clustering of codes, information, and quotes helped the researcher make sense of the amount of data for each theme and organized and processed through each of the interviews. The researcher then reviewed each of the 14 interviews seven times each to cover each theme. The repetitive reviewing also helped find certain insights that may have been missed upon initial analysis using NVivo or Word documents. For purposes of identification, the researcher also assigned a number from 1 to 14 to each interview so that the interviews could be coded across each theme and reference made to the correct interview each time. A key was made of the numbers for reference. Lastly, the researcher began to analyze findings, one theme at a time. As the review was completed, the information was added to the findings. Once the review was completed, the sticky notes on the wall of themes were removed until all themes had been completed. The researcher followed this process until all themes were complete and all sticky notes were removed.

### **Observation**

Through observation, the researcher gained further understanding of the learning environment and the behaviors of both learners and their faculty. The pilot study had been completed in a similar fashion; however, for this study only one observation of a portion of a 3-hour class was observed, recorded, and transcribed. It is important to note that the section of students observed by the researcher included most of the students who had volunteered for the personal interviews for this study. Objectives for the class on the observation day were

developed by the course leader and included lab topics: IV insertion, IVPB, blood administration, tube feedings, and TPN. Students were required to:

- Describe how to measure and record fluid intake and output.
  - Demonstrate how to locate IV fluid intake on the Alaris pump.
  - Demonstrate how to clear the Alaris pump.
- Explain how to change intravenous solutions and tubing and discontinue an infusion.
  - Perform set-up of primary fluid and start an infusion via Alaris pump.
  - Perform set-up of secondary IVPB and infusing IVPB via Alaris pump.
- Describe potential complications of intravenous therapy and what to do if complications occur.
- Discuss the procedure for initiating a blood transfusion.
- Discuss transfusion reactions and interventions to manage a transfusion reaction.
- Describe the procedure for starting peripheral IV and obtaining blood draws.
  - Perform peripheral IV start.
  - Perform obtaining blood specimen.

Appendix J shows an example teaching plan that includes how students and faculty used lab time during observation by the researcher.

The learning space was busy with 30 students and 3 faculty in attendance at any given time (see Appendix B for photos and diagrams of the learning space). Faculty lectured sometimes with all students seated at the round and rectangular tables. At other times, students

were supervised as they practiced skill activities away from the tables and chairs. Depending on the type of learning occurring, passive versus active, the sound levels in the room changed dramatically. This resulted in the quality of the recording varying, making it difficult for the researcher to transcribe occasionally. The researcher observed some students diligently practicing and others practicing very little, raising the question, “how much practice is enough?” Overall, students appeared to enjoy learning the content but more so when they were participating in active learning versus passive learning strategies. The researcher observed a hierarchical relationship among faculty and students, which was expected. During the observation, the students frequently asked faculty questions for clarification of the content.

During periods of active learning, the faculty observed the students and offered guidance and correction as needed. The students were encouraged to work in pairs or groups during the practice time. One student role-played being the nurse and while the other student role-played the patient, then alternated. Multiple types of learning strategies were employed during class time. Students participated in passive lecture-style learning, active practice, peer collaboration, and open discussion. The students appeared to be fully engaged and active participants in all aspects of learning, and they demonstrated enjoyment in doing so. The students actively provided faculty with answers to questions, and they also asked many questions for clarification of material and how to do skills. During observation, the faculty and the students demonstrated a collaborative and positive working and learning relationship.

### **Interviews**

In preparation for the interview portion of the study, the researcher developed a student interview protocol for questions (see Appendix F). During each interview, the researcher asked specific open-ended questions but allowed the students to speak freely and guide or contribute to

the conversation based on their perspectives. The researcher also probed for further information and asked for clarification as needed. The heart of the data from this study stems from the interviews, which included the students' opinions about how they experienced learning, how or if they retained knowledge of the material taught, and their ability to adequately determine their capabilities through self-evaluation.

## **Findings**

This section presents the findings according to themes threaded throughout the data from the 14 interviews and one observation. The researcher then relates themes back to the three research questions: (a) How does the implementation of SDS teaching strategies impact nursing students' self-efficacy? (b) What is the relationship between SDS and self-efficacy? and (c) How do the students experience SDS?

Seven themes emerged from the data analysis: (a) self-efficacy, (b) joy of learning, (c) repetition, (d) anxiety, (e) confidence, (f) peer review, and (g) learning.

Each theme helps to provide answers to the three research questions.

### **Self-Efficacy**

Self-efficacy is defined as people's beliefs about their capabilities to perform any given task at certain levels (Bandura, 1977a, 1977b). Our belief in our own ability plays a role in how we think, how we act, and how we feel about our place in the world. People with higher levels of efficacy are better prepared to take on challenges and accomplish them (Bandura, 1977a, 1977b). The importance of having self-efficacy as a nursing student stems from the fact that nursing programs are rigorous and involve high levels of critical thinking. Nursing students must have the ability to identify those skills they can perform safely and those skills they are not quite ready



to perform unsupervised. Students also need this same ability as they transition into nursing practice as new graduates.

As noted in Chapter II's literature review, the important factor of self-efficacy is the ability to evaluate performance abilities. For example, this interviewee (I1) stated,

So, I feel like that's—[the SDS is] a good learning style and I feel like I could go into a room and be able to, you know, insert a Foley into a patient, or start an IV piggyback, or just with the information I've had and been able to teach, or help people out, and been able to do [the skill] myself.

In this example, the student not only stated the importance of wanting to be able to function autonomously but also included insight into the desire to help others simultaneously.

Similarly, interviewee (I2) remarked,

Just being able to ensure myself that I'm not gonna go into a room and make a fool out of myself.... When I'm talking to a patient. It's super important to me. I want to make sure that I know what I'm talking about, I want to make sure that I know that you know what I'm talking about instead of just, yeah, ok, this is what she's gonna do, I want you—I want to make sure that you know, this is what's happening.

Interestingly, this student described the desire to be successful, but referred to the self-doubt that creeps in when thinking about fear of not doing a good job. Both criteria co-exist. In this instance, the fear in a positive manner pushes the student to set higher expectations of self.

Interviewee (I3) discussed using knowledge from upperclassman and how that helped: All the higher semesters tell us and everything, and I have a friend that is one semester above me, and she's told me that so, yeah, I knew. Cause she told an instance of last semester one of—her clinical partner straight up told one of the nurses, "I don't feel

comfortable doing this,” when she got an opportunity, and I said, I don’t want to be in that situation at all. If I get the opportunity, I want to be able to do it so I wanna know that I’m going to be able to do [the skill] right.

SCT states that students who believe they will perform well, will, and people who have self-doubt are less likely to succeed in their performance (Bandura, 1977a, 1978). The student (I13) provides a great example of the importance in belief and positive self-talk that lie within SCT (Bandura, 1989).

Interviewee (I4) discussed active versus passive learning and how that influenced their levels of self-efficacy, “I think [active learning helped] because there’s one thing to read it out of the book, and it’s another thing to actually do it.” Interviewee (I6) stated, “I think [active learning helped], it made me realize I can do it.” Similarly, interviewee (I7) remarked, “I probably feel more competent because I’ve worked in the hospital for about two years now and I’ve had to actually do those skills.” Interviewee (I8) referred to another theme within the analysis of repetition as being an integral part to level of efficacy increasing and stated, “I mean, anytime you do something more you’re going to feel more comfortable with [the task].”

Interviewee (I9) discussed increased levels of efficacy but also recognized the need for continued supervision, “I definitely don’t feel ready to take on patients alone or anything, but, yeah, I feel like I’m prepared to start putting some of these skills into practice.” The importance of being able to assess ability and have the understanding that “yes, I can do this” or “no, I can’t,” illustrates an important self-assessment ability that can contribute to reduction in error within nursing practice.

Interviewee (I10) provided a detailed explanation of confidence, competence, and self-efficacy level as shown in three separate quotes.

[Self-confidence] definitely did increase, and, again, I mean, it just kind of goes along with you go—you come into the semester not knowing how to do any of these skills and you're like, I'm supposed to cath someone? I'm sticking a tube in someone's [laughs] private area?

I do feel confident that the technique that we were taught that I have an understanding of that, and that, I am confident that I would be able to complete that properly. So, my competency is, I think, pretty much up to par.

And, I think, if you do have any doubt of [successful performance], you can go back and watch the video and there's your self-efficacy of, I can see that I can do this, I'm aware that I can do this, I was taught the skill, I know the skill, I know how to follow procedure, of course, any clinical setting or hospital, they might do it just slightly differently, and from what I've been told, your kit's gonna—the way things are set up now, you're going to open your kit and there's going to be, like, a 1, 2, 3, 4, 5, it's going to guide you the correct way to do it. So, you know how to maintain sterility, you should be competent to be able to complete that task.

This student's discussion provides an excellent example of the importance of assessing self-efficacy and having confidence and competence. It relates to the novice learner at first feeling worried then becoming more comfortable with time and practice. The dialogue captured much richer information than a score or a number could display.

Interestingly, interviewee (I11), a student with a prior degree, discussed how that impacted their levels of self-efficacy increasing,

Yeah, I do [believe self-efficacy is increasing], and I think it's really because of my past. I mean, I'm a trained actress. And so, I've been in film and theater my whole, basically

my whole life. So, [active learning] allowed me a sense of—it allowed me to learn a new skill set within a structural setting in which I’m very familiar.

Interviewee (I12) discussed an in-depth rationale as to how [the SDS] helped increase efficacy,

It gives me, I feel like it gives me the opportunity to see myself and see my mistakes?

And not feel behind or inferior to other people. It gives me the power that, oh, recognize mistakes, so I will not do it again.”

Assimilation of prior experiences enabled this student to gain comfort with the way they were learning new skills. It also is interesting to note that this student was not only in a new learning environment, but they also were changing careers after many years.

Interviewee (I13) described what helped to increase self-efficacy the most: “It’s definitely been the check offs in assessment and then, the videos, and having more practical evaluations of skills and fundamentals.” And lastly, interviewee (I14) explained that

But, again, with the repetitiveness and the practice, [skill performance] just becomes more natural. I mean, I’m sure once I have a real patient, it’s gonna become a little intimidating again? But, because I’m kind of familiarized with it, it won’t be so bad.

### **Joy of Learning**

An interesting finding in the data was students’ discussion of being excited, happy, and loving the skills that they were learning. There was a sense of “I really like doing the skills and I am finding joy in learning.”

Interviewee (I2), in response to the question, “What would you change about the self-directed simulation assignments,” stated,

I really wouldn't change anything? I guess, I wish we had more videos to do rather than just the four. I feel like a lot of people might disagree with me on that, but I really enjoy shooting the videos. It makes me excited even though sometimes I have to get up super early and come in before class, I don't mind it because I'm like, this is what I'm gonna do for the rest of my life.

Additionally, when describing what it means to be a nurse the student expressed,

So, I really enjoy what I'm doing so far. I love it, I love talking to my mom about it and my family members. I'm like, look at this video I did in class [laughs] so, I feel like I'm just super excited for it. And it just means, like, even if something bad were to happen, I can reassure myself, I did the best that I could for this patient, I made sure that they were comfortable the whole time, and things happen, and I can't control everything but at the end of the day, I couldn't have done anymore. And that's what I always want to be able to tell myself at the end of each shift.

The description this student gives provides an in-depth awareness of what it feels like to really enjoy being a nurse, but it comes with an autonomous responsibility to do good, to be honest, and have the ability to admit error when at times only you and the patient could be present.

Nurses during every shift are required to assess and evaluate self and the patient repetitively to produce good outcomes. It goes without saying that nursing is not an innate ability you are born with; it is learned, it is desired, it must be sought after. A student's ability to determine self-efficacy encompasses a complete understanding of scope of practice; however, self-efficacy does not include caring about the tasks the nurse is doing or even finding joy in

each day. SDS allowed this student to find joy, to demonstrate competence and self-evaluation to herself and her family.

During observation, the students appeared to enjoy what they were doing, and many were smiling and laughing at times. Overall, students seemed excited to be there to learn. They were asking and answering many questions. The faculty were receptive to the students, and faculty and students worked collaboratively. The students were self-directed, and the faculty encouraged and allowed students to decide how to best use the time they had for practice.

Interviewee (I17) described how being able to work with classmates for the SDS activity created a fun experience for learning the skills as compared to completing a return demonstration in front of an instructor. Interviewee (I13), stated,

Just because this was a new experience for me, doing video assessments so it was nice to get that under my belt, get good feedback, and I enjoyed, kind of, trying to put together a, sort of, video product.... I've been one of the ones who records the videos earliest, so, a fair number of my fellow classmates say, oh [student's name], I always watch your videos cause I want to get a feel for how I should do mine, and that's like, wow, cool, alright.

The joy of learning theme stood out for several reasons; nursing is a difficult profession, to say the least. To hear multiple students, discuss the profession in a positive manner was uplifting, to hear their joyful comments and overall excitement about what they were learning speaks favorably about their career choice and also their desire to learn skills and learn them to the best of their ability.

## **Repetition**

One of the most frequent topics discussed throughout the interviews was repetition. It is very well documented that repetition increases learning in students, beginning all the way back to pre-school; however, while this is a common and foundational learning strategy across education, in the student nursing world, there is a little more to it. What if students are not practicing correctly? In a situation where a skill is practiced incorrectly, repetition as a strategy would prove to be bad. SDS requires the use of video, which creates a self-check to the skill being demonstrated. The student not only has to demonstrate competence in the skill, but also review the work and evaluate it along with peers and faculty. The added ability to review the skill performance encourages the student's ability to evaluate self and others. The practice is repetitive, and the evaluation is repetitive, so a dual style of learning occurs.

Interviewee (I7) stated,

You're able to re-do [the video] as many times as you wanted and I felt like after I did it so many times, I had a better—I remembered how to do the skill more. Cause I had to do [the recording] more often. And then also watching yourself do [the skill] is uncomfortable but it's good to watch yourself and be like, "oh I need to do that better" or "I need to speak up" or, "you know, I should have said this," "I should've said that." So, yeah those are the—I don't know, comparing between like the regular check off and then the video.

The student further described, "I'm a person that has to do something over and over and over again to be able to get it, as you can tell from—my partner and are similar, we like to do it over and over."

When asked if SDS promoted practicing more or at a higher level in interview 11, the student (I11) remarked,

And I think, also, because there's so many different things that we're learning that kind of go on top of each other? It's helping to reinforce skills we've previously learned before. For example, sterile gloving, I mean that's something we learned week one or week two and then we keep demonstrating that throughout the weeks and it just kind of helps—that repetition helps, in terms of memorizing. So, but no, to answer your question, I think because if it's recording—because of the recording aspect, you pay more attention to what you're doing and then you practice [the skill] more intently because you have to submit a recording [laughs] of you doing it, so, both.

Learning reinforcement, more practice, and being attentive was promoted with the use of SDS as this example demonstrates.

Repetition and peer review in many ways flow into one another in terms of themes, but repetition of practice was the focus of this theme. Students spoke of how self-directed simulation either encouraged or even required more practice to competently complete the skill. The following statements speak to the student's (I1) description of repetition.

I just feel like, you know, if [the skill performance] is more repetitive, if I did [the skill] more repetitive it would stick more in my head, like, the steps that—cause, I felt it—the instruction, you know, the checklist, if I just remembered the checklist and it, you know, repeat [the steps] in my head as I was learning [the skills], it was easier for me just to learn it more versus at a higher level, these skills, I think.

I learned [the skill] repetitive before I did it and so, having me do [the skill] over and over and over again sticks in my brain and that way when I will do it for real, I think



it'll just click. It's almost like, I don't know, maybe riding a bike? I guess. But, once you learn it, and you're very comfortable at it, and then you—when you get into the clinical setting with a real patient, I think it's that much easier to recall [the skill procedure] versus fumbling through it and trying to learn [the skill] in the setting, if that makes sense.

Interview (I2) stated,

I like to practice a ton the day that we learn the skill and even the day that we do the video, we'll practice one time through and then re-shoot it. Sometimes, we do have to stop the video if something goofy happens or I just draw a blank, which is great for me and I really enjoy using the VoiceThread because I can always go back through and watch it and make sure, like, this is what I did right, I can do better on this one, or this one is gonna break it and I'm gonna have to redo it. So, that's what I like about it.

And student (I12) described,

I feel like learning, overall, if you just repeat, and repeat, and repeat, and repeat, and repeat, you will get in that point that you know what you're talking about.

Repetition of the skill performance was recognized as a strategy that helped students learn and demonstrate skills competency.

## **Anxiety**

Merriam-Webster defines anxiety as:

an abnormal and overwhelming sense of apprehension and fear often marked by physical signs (such as tension, sweating, and increased pulse rate), by doubt concerning the reality and nature of the threat, and by self-doubt about one's capacity to cope with it.

(n.d., *anxiety*)

Students spoke frequently of anxiety in their interviews and gave a variety of explanations and rationales as to why they felt this way. In response to the question, “What are you nervous about?” student (I1) stated that,

I think just messing up, you know. Because it—I think in the end, you want to make sure you are doing [the skill] right because this is what you are doing once, we go into clinical setting, we are gonna have to have the confidence to do this on our own.

In describing experiences with filming the required skills, the student stated, “I know I was nervous; I know my partner was nervous about what we were supposed to do, the steps and you know completing the tasks.” In response to a clarification question regarding having to redo or refilm a skill because of error, and in a direct comparison with return demonstration, student (I3) explained,

This—video process is way less stressful. I think its way more rewarding in a way that we get to see exactly where we messed up and where you guys are seeing that we did, because, I mean, in like a one-on-one situation, we’re very nervous, we tense up, we don’t remember exactly what we said, what we did, because, you know, we’re so stressed out, in that moment, we don’t remember everything but in the video we can literally see where you guys are saying, not just where you say after what we do.

In discussing the amount of practice involved, a student (I5) commented, “Um yeah, [having to record the skill] helped me practice more, number one, and it made me more comfortable because it’s not like everyone is seeing as I’m doing [the skill].” When reflecting on the semester, student (I6) commented that as the semester went on, she became more nervous about doing the skills because she is a perfectionist. She commented, “So, if I mess up at all, I

feel like the teacher thinks I'm dumb, and I'm not going to be a good nurse, and I'm going to fail and all this." Student (I6) also stated that "VoiceThread takes some of the pressure off."

The students frequently experienced anxiety when performing skills; however, most students felt that self-directed simulation allowed for beneficial self-review after the performance, which helped them understand any errors they made. Students also stated that filming was overall less stressful in comparison to return demonstration with faculty.

Nursing students are required to demonstrate competency of skills and that, in and of itself, creates a level of anxiety in students. One of the original goals of the SDS activity was to reduce student anxiety and, therefore, increase retention of material. The relationship between increased self-efficacy and self-directed simulation can be explained by the phenomenon of reduction in anxiety and increased self-efficacy. Most students felt a decreased level of anxiety when performing self-directed simulation as compared to the previous method of return demonstration. It is important to note that while students felt they were less anxious, many still had some levels of anxiety remaining because basic pressure to succeed and fear of failure. For example, interviewee (I2) spoke freely about comparing the SDS strategy to return demonstrations,

It makes me nervous when people are watching me (i.e., faculty), but when I am doing with a peer we are on the same level. So I can't say "I'm better than you" or "you are better than me" because this is our first time doing this and I feel less pressure.

Interviewee (I4) described how working with a peer helped to alleviate pressure: "There wasn't any pressure cause there wasn't a professor or an instructor in the room so we were both on the same level."

During the observation, part of the learning time was a lecture/demonstration type of learning. The students were very interactive. Several students mentioned anxiety and fear about the content they were learning. For example, one student stated, “Yeah, but I’m afraid I’m not going to be able to find the vein,” and “I get shaky doing some of the check-offs so I’m like, really nervous.”

Despite increased levels of anxiety regarding successful performance in skill competency, students recognized the importance of skill mastery to their future success as a practicing nurse. The SDS learning strategy demonstrated decreased student anxiety and, therefore, contributed to more successful learning.

### **Confidence**

The theme of confidence was brought up frequently in the interviews. Students discussed feeling both confident and not confident and spoke of ways they worked through their struggles as they were learning new skills. Confidence is defined as “a feeling or consciousness of one’s powers or of reliance on one’s circumstance” or “faith or belief that one will act in a right, proper, or effective way” (Merriam-Webster, n.d., *confidence*). Students who had higher levels of confidence also felt that they were efficacious.

In explaining experiences with learning skills over the full semester, student (I1) stated, “I feel like it’s a lot easier, I have more confidence in, ok well this is how I’m going to record this.” Interviewee (I2) described how she felt good about herself when completing skills and explained that being successful at the skills allowed her to experience less self-doubt about her abilities. In particular, she stated that she is confident enough to perform the skills when clinical in the hospital setting starts. In response to the question, “Did SDS help to develop self-efficacy, confidence, and competence?” interviewee (I4) remarked,

I think it did because there's one thing to read [about the skill] out of a book, and it's another thing to actually do it, but until I actually do those skills on a real person, I'm not gonna be and even when I am doing [the skill], even if I've done it 100 times, I know I'm never gonna be completely confident because the one time you make a mistake, someone gets a UTI, which turns into sepsis, and kills them. So, I don't think I'll ever be 100% confident cause then I'll get lazy.

In response to the question, "Did SDS help to develop self-efficacy, confidence and competence?" student (I5) remarked,

It helped a lot for me because sometimes, I'm the kind of person, I don't, maybe if I'm in the class I wouldn't say anything, I wouldn't want to talk or do anything, but it makes you come out.... So, it makes me feel, I will say it prepares me for the next stage, that's how I'll put it. It helps.

In response when asked if self-directed simulation helped them develop self-efficacy, confidence and competence, student (I6) remarked, "It just gave me that confidence I needed to know that I can do it, and I can be a good nurse, because I doubt myself a lot at first." This, and statements like it, led to the investigator to conclude that SDS had a positive impact on confidence.

Nursing students encounter very stringent criteria academically to even be admitted into their nursing programs. Even a student with a 4.0 G.P.A. who is an excellent test taker may be unable to demonstrate performance and competence of nursing skills. Nursing students are required to take learned theories and apply them to practice and performance of psychomotor skills. It is not simply the mere method by which a skill should be completed, it is understanding

why the skill is being done, what body system the skill affects, what assessments physically correspond to the skill, and what technique is part of the skill competency.

In the relationship between self-efficacy and SDS, confidence plays a role in the students' ability to perform the skill successfully. After students complete the assignment and receive feedback from peers and faculty, most students felt that their confidence increased. For example, interviewee (I11), when asked, "What did you gain from using self-directed simulation?" the student stated,

I have a confidence issue and, like, my background's in theater and so, my confidence issue's always been a problem. And, so, it's not necessarily understanding material, or understanding the process, or the why behind it, but it's actually having enough confidence that I can do it, and do it appropriately, and do it well. And, I think just because being in this program, at my age now, this is so important for me that my lack of confidence along with my anxiety, these videos actually help relieve that for me cause I'm actually seeing myself do them and do them well. So, it's...and I'm a visual learner, I'm an auditory learner, so actually seeing my videos is really helpful for me.

And it really goes along with my previous training, and my education, and my past career, I mean it's...so, it's helpful for me to actually be able to perform these skill sets and the training in combination with my past experience in theater, [laughs] and as an actress, it just helps me retain and learn. And, when I'm watching myself and I do it well, it also boosts my confidence that, ok, yeah, I can actually do this.

For this student, SDS helped to boost confidence. Confidence differs from self-efficacy, but it does play an integral part to understanding the students' beliefs about their abilities when performing psychomotor nursing skills.

Another student (I13) described what was most helpful regarding using the SDS strategy, Getting the—somewhat getting a feel of pressure while I was doing the videos because I had to feel comfortable enough with the skill, and then go into a room, run through a video, do it in one take, remember everything, just, sort of, have that feeling of, alright, I'm on the spot, I've got to perform. I've got to do this skill right. So, I liked having that feel of pressure and then getting the good feedback, sort of knowing, alright, I did that well. I feel like I could do that in the field, sure.

In this example, SDS created a level of anxiety but, in turn, increased the student's confidence and ability to evaluate their skill abilities.

There was a positive dialogue between the students and faculty throughout the observation time. There were no indications of inequalities or decreased access to faculty. In this setting there were 3 faculty and 30 students; per the state nursing guidelines, this is the required faculty to student ratio (Indiana State Board of Nursing, 2014). Encouraging words from the faculty were given in a positively reinforcing manner. For example, faculty stated, "There you go, you got it!" "You are not limited!" "Don't hesitate to call me." Students reported increased levels of confidence from the support of their faculty and the implementation of the SDS strategy.

## **Peer Review**

SDS activities encourage students to work in pairs or groups to demonstrate their ability to perform skills correctly and competently. Because the skills were video recorded, students could critique each other's work. This created a unique learning opportunity for all students to participate in peer review. Peer review included students watching other students perform skills or by watching playback of the videos and offering critique. Interviewee (I2) stated,

I most definitely feel like it's important that you have somebody else watch you do [complete the skill]. Whether it's a classmate or your instructor. Just so you can get tips and pointers. And, a lot of the times you'll feel like you're doing something correctly and you're not, or it's something that you can be doing better to improve something. So, I feel like it's really important just to, like, get a second opinion and as long as you take constructive criticism well, then you should go ahead and take that extra step just to make sure.

Additionally, in response to the question, "Do you catch the error or does someone else?" The student responded,

It really—sometimes, it could go either way. So, I'd be like, in the middle of doing something and just stop the recording, I messed up. And that was a good for me to know, like, this is what I messed up so I can go back and redo it. But, other times, I would be— or somebody would be filming me, and they'd just give me a look, and they're like, [student's name], and I'm like, oh, what did I do this time? And then, they could let me know. Well, this is what you did and you should be doing this. And then, we could bounce back and forth off of each other. Usually we... if we got it right on the... or not, if we got it right, on the first time when we go through, we'd run the video through the whole time and we wouldn't stop. And then, when we re-watched it, I would be able to look and see, oh, I did this wrong. I need to redo it better next time and I could make... I could vocalize that to my partner so that she knows to look for that when I'm recording it again, so that if I missed it, she can just, say stop, you did it again. So, I think that helped out a ton.



The student further described a situation when both students felt confident, but upon playback they noticed an issue.

The first time, I ran through the whole time and we were super excited. We both ended up getting through the first time actually, and we're like, oh, this is so great. And I'm watching the video and, I was like, we have to redo it. And she was like, why? It looks great. And I was like, no. We waved over the PICC line to dry it before we put it on, which contaminates the sterile field, so we had to go through it and redo it and the second time it was fine.

The value of peer review, which is encompassed within the SDS activity, creates students who can critique and self-evaluate. The strategy is designed for skill practice and competency, but within that framework, the students also begin to practice evaluative measures that are necessary to build and increase self-efficacy.

Interviewee (I6) described peer review and what they found beneficial:

I think the peer review, just, like, even peer review from other people towards me? Because it's helped me picked up on things that I wouldn't have picked up on myself. Because you, kind of, have that blind spot on yourself that you never notice about yourself but that other people can notice? So, having other people peer review me, helped me to pick up on things that I didn't really realize I was doing wrong? But then, watching other people helped me realize things that they were doing wrong that I didn't want to do myself.

This example further explains how practicing not only the skill but practicing evaluation of self and others gives the student a higher level of knowledge and awareness of self-performance and peer performance.

Interviewee (I3), in response to being asked, “What was the most helpful thing about self-directed simulation regarding your learning?” replied, “The feedback process from peers and others and being able to see your process and what they said about it.”

The following is a small portion with interviewee I4. It provides a detailed recollection of the peer review process.

I (Interviewer): Ok. So kind of explain to me how you worked with your peers? Did you work with the same peer? And kind of just walk me through the steps you guys took to get the video done and upload?

R (I4 Respondent): I have been working with the same peer the entire time. I would usually take first and beforehand we would kind of walk—we would walk through it using the checklist together, make sure that we were identifying all the points. If I noticed that she missed something or if she noticed that I missed something, we would make some kind of indication to help remind each other.

I: So, you reminded each other, and you stopped filming or you kept going?

R: We would stop filming and redo it, sometimes we would just keep going.

I: And how long—how do you feel that helped you being—critiquing one another? Do you feel that helped you?

R: Yeah, because I was paying attention to what she was doing to make sure she wasn't missing anything and then it was reminding me not to miss things as well.

Peer review encompasses the observational aspect of SCT. The students watch one another in person, and they also repeat the observation as they watch themselves and one another on the recording. As the previous dialogues demonstrate, several students spoke about the observational aspect of the process being beneficial. Continued and repetitive observation ensued

as a product of SDS, it was not a requirement or an objective. The following examples provide further evidence.

Another thing was, I keep coming back to this but, sterility. When I would practice in class or practice before the video? I would practice sterility but then when I would watch [the recording], I would see what like—I would see how reaching over would affect [sterility] and things. Or, when I would watch other people's videos, like, I would see them reach over and I'd be like, oh my gosh. I know they didn't realize that because reaching over is so normal to do? Like just, oh, reach, grab [an object]. But I would then catch [the error] and think to myself, that's something I never want to do. So, watching the videos helped me to learn from other people's mistakes and, like, any—if I made any mistakes. (I6)

We would—well, like I said, we would come earlier cause we knew we liked to get it right [laughs] we both provided, like—we would catch each other if somebody—if my partner forgot something, I would be like, you forgot to use sterile gloves, or you did that wrong, or whatever, I'd be like, stop [laughs] and then she would do the same for me. And she would—she wasn't afraid to say like, oh, you forgot this, we need to re-do it again, I'm like, ok, good. Cause you don't want to go through the whole video and then realize you forgot to do something crucial, so. But yeah, we worked well. (I7)

Well, we'd break up our videos so that they don't have to be long but we probably only mess up, like, hm, I'd have to re-film something, like, twice? Each, maybe? If it's like, oh, I accidentally reached over my sterile field, so we'd redo that.

I (Interviewer): So, who caught who? Did you catch yourself? And this is probably hard to remember, did your partner catch you or did you catch it yourself?

R (I8 Respondent): [laughs] It happens both ways. Sometimes, we'll do it and we'll just look up and be like, uh [laughs]

I: Right.

R: You can just see it in their eyes, they're like—and then you have to stop the video, and you're like, ok [laughs]

I: Yeah.

R: But, other times, you don't want to interrupt them, and then you wait, and then you stop it, and you're like, ok, you did this wrong. So, it just depends.

I: What was the most helpful thing about the assignment for you—the assignments for you?

R: Well, I guess, it's kind of like, I guess, it's kind of like a sport? You play football, you get recorded, you go back, you watch and see what you did.

I: Mmhm.

R: And then—and I actually never really thought about that until right now.  
[laughs]

I: That's a great analogy.

R: And then, you know, you do your skill, then you go back and you watch yourself from the outside doing it, and you're like, oh. (I8)

Yeah, as a result of having to do that, I found that my partners and I practiced together prior to filming. So, what I have done is, you know, typically I practice at home, practice at home, but there's no one there to catch me, you know, I can do [the skill] 100 times the wrong way and if there's not one of my classmates there to tell me, oh wait a minute, you're not doing that right.... And, also, if you're

catching the little mistakes that they're doing along the way and you stop it, and tell them, hey, you did that wrong, you need to start over and do it, you know, tell them why, then, I think it's just kind of more effective co-teaching with one another to get the skill correct. (I10)

A large amount of data included the theme of peer review. Students stated multiple times and in many ways that the peer review process was a positive part of their experience with self-directed learning.

## **Learning**

There are two themes that encompass *learning*; however, really, all themes could technically fall into subcategories under learning. In asking the question, "Tell me about your experiences with working with your peer to complete the assignments," the researcher wanted to understand how students experience self-directed learning. Individual philosophy and comments about what helped the students learn are described in the following statements:

I'm more of a hands-on learner, I need to see it, I need to hear it, and then I can go and do it. I think it's like a see one, do one, teach one.

I learn by repetitive taskings and also with being in with a lab partner, I feel like it's see one, do one, teach one. (I1)

In response to being asked what was helpful for their learning, interviewee (I3) responded, "being able to see your process and what they said about it." This student (I4) said, "No one's born with an innate knowledge of nursing, you have to learn it."

You can read how to do the skill. I, honestly, I mean, I went through maybe, like, the crucial rationales in the skills book, but actually going through the process and the steps, there's no way I'm going to remember all of that, so. And the only way that I'm actually

going to do know how to do it is doing it. So, quickly jumping into the skill and just doing it helped the most. (I7)

But, of course, it's kind of like, oh gosh, you can critique every second and slowmo down, you know, what we're learning. But, as the semester has passed, I feel that it has become a more effective learning tool for us? Because, you know, before you're just, kind of, nervous and doing your in-person check-off, skills check-off with the instructor, and you can't even really see what you've done wrong and you know, at the end, she would let you know, yes, you passed but you need to do this and you can't even go back to reflect on, did my?—obviously, it was different last semester than this semester but, oh, my glove brushed my shirt or, you know, whatever, so, I like that aspect now that you have the opportunity to review it, see what you've done, not only before submission, but after, just to kind of be like, oh wow, it's been a few weeks since I did that, let me just kind of go over those steps again and see how I did [the skill]. And also, be able to see some of your classmates if they've shared as well, so, I think my feelings have kind of swapped on the VoiceThread thing where I was resistant at first and now I like it.

When a skill is introduced, it's something completely foreign to us because for the majority of us, unless they're already working as a CNA or something like that, these are something that we've never done before? So, you're not comfortable with [the skill], you don't know about it, you don't know to do [the skill]. So, given several practice runs and by being able to be critiqued by your classmates while filming, you become more familiar with the procedure and competent that you would be able to perform that skill in a clinical setting, comfortably. (I10)

Interviewee (I12) stated that “because grades, I’m done with them, I’ve been working so hard to get into the program, I get in, now I have to focus on learning more than the grades, even though grades are important.”

The previous student quotes about learning provide a means to understanding the importance of creating student-centered approaches. Students described what worked well for them regarding learning new skills. More importantly, direct dialogue allowed for a deeper understanding without assumptions. A grade, a score, or even a GPA cannot, in fact, fully encompass all the factors that are part of learning. Words are powerful expressions of understanding.

### **Summary**

In Chapter IV, the researcher presented the demographics of the participants along with the quantitative and qualitative data analysis. The results were presented based on the identified seven themes along with the three quantitative hypotheses. Data were presented based on statistical tests run along with corresponding tables. Analysis determined that there was not a significant difference between the self-efficacy of males and females and that ethnicity did not incur a significant difference across self-efficacy. When comparing students who work in health care versus students who do not, in the December group the levels of self-efficacy were higher in students who did not work. The seven themes were used to present the data and answer the research questions. The findings described the themes and the data to support the themes. Further discussion on the research questions in relation to the conceptual framework and the research questions will be addressed in Chapter V.

## **Implementation of Self-Directed Strategies and its Impact on Self-Efficacy**

Research question one focused on how the implementation of SDS strategies impact nursing students' self-efficacy. Of the 14 students interviewed, each student expressed that their levels of self-efficacy had increased because of using SDS. When asked if they felt their level of self-efficacy had increased, the students provided a variety of answers and explanations; therefore, this chapter included all of them to provide a complete picture.

While the element that helped each student individually may have varied, all students expressed an increase in self-efficacy. The researcher's assumption was that the increased level of self-efficacy stemmed from the repetitive nature of the strategy along with the ability for the students to self-evaluate and to offer and receive peer evaluation. Students became knowledgeable of the way a skill or procedure should and should not be done. They also began to recognize that there may be more than one correct way to complete the same skill. The researcher deemed this phenomena *development of professional practice*. Students must be placed in situations in which they can autonomously determine what implementation of best practice and evidence looks like so that they can incorporate the evidence into their professional practice as they develop from novice to expert.

## **Relationship Between SDS and Self-Efficacy**

Research question two focused on the relationship between SDS and self-efficacy. The SDS strategy is designed to empower students to create, observe, review, and competently perform a skill alone, in pairs, or in a group. As a result of the multiple layers built within the learning activity, students have a more significant learning experience. The themes that contributed insight into question two included anxiety, confidence, joy of learning, peer review, and repetition. The section that follows addresses each individually and provides examples.



Many researcher observations and student statements provided answers to this question within the data. Examples of the themes that contributed included anxiety, confidence, joy of learning, peer review, and repetition. It is important to say that learners are individuals and each individual experiences learning differently. Second, other factors about students also can contribute to their level of self-efficacy, not just one course with a required teaching strategy. The data demonstrated that use of the SDS strategy positively impacted students' self-efficacy. The surprising finding within the data, and one that was not anticipated, was the students' enjoyment in their work. This finding will be further discussed in Chapter V.

### **How Do Students Experience SDS?**

Research question three was included for the researcher to further understand how the students experience SDS. All seven themes provided explanation of this question. Overall, students experienced levels of anxiety, but they also valued peer review and repetition. The students expressed increased levels of confidence because of participating in SDS. The students collectively felt that they were learning skills to the best of their ability.

## CHAPTER V

### DISCUSSION AND CONCLUSION

This study acknowledged the rich traditions in the nursing profession and the growth of evidenced-based practice both in nursing education and in clinical arenas; however, as much evolution has occurred, nursing fundamental skills continue to be taught in much the same way albeit by using new literature and equipment. Instruction for novice student nurses relies primarily on a medical model by Halstead: see one, do one, teach one (Kotsis & Chung, 2013). To reduce student anxiety, increase self-efficacy, and improve skill competency, the researcher developed the SDS teaching strategy. The previous chapters introduced the problem, reported the literature, and discussed the data analysis for the SDS.

Chapter V summarizes the research study and discusses the findings, including the theoretical information for stage five and the research questions in relation to the conceptual framework. It concludes by discussing implications and recommendations for nursing education. The purpose of the chapter is to provide insight into the findings relative to past research and recommend further advancements in educational research regarding teaching psychomotor nursing skills.

#### **Summary**

The purpose of this study was to understand the relationship between students' levels of self-efficacy in the performance of psychomotor nursing skills and the teaching strategies employed and to test the effectiveness of the SDS strategy on nursing student self-efficacy. Psychomotor nursing skills are foundational educational skills taught in every nursing program and yet little research has been conducted to determine best practice in terms of nursing education.

The SDS strategy was developed in 2013 and implemented at that time. A pilot study was completed in 2015, and the current research study began in 2016. From this work, the researcher concludes that implementation of SDS decreased anxiety in students and encouraged self-directed learning. The use of simulation in practice and development increased student self-efficacy. SDS can be effective at teaching crucial foundational skills of nursing. SDS combines multiple theoretical models including the core learning principles of andragogy (Knowles et al., 1998), SCT (Bandura, 1977a, 1978, 1989, 1997), and the nursing education simulation framework (Jeffries, 2007).

Despite the increased demands and changes in healthcare delivery systems and nursing education over time, many nursing faculty are not prepared to implement new technologies into nursing curricula effectively. Additionally, students who have a background in more passive styles of learning have difficulty adapting to new methods of educational delivery in the beginning of higher education experience. Implementation of SDS strategies require faculty and student training and orientation. In the beginning of implementation for the SDS significant troubleshooting occurred to understand the use of technology and to eliminate stressors. SDS helps to address the learning needs of students and provides a means for a more significant style of learning when incorporated into a course effectively.

This exploratory study addressed three research questions. The first question was, “How does the implementation of SDS teaching strategies impact nursing students’ self-efficacy?” The results of this question demonstrated that SDS helps to increase student self-efficacy. Means on all 20 post-survey questions increased and all 14 students who were interviewed stated that they felt their self-efficacy had increased.

The second question was, “What is the relationship between SDS and self-efficacy?” The data suggested that implementing SDS helped the student’s self-efficacy to increase; however, that data do not consider the students’ preexisting self-efficacy. The data specifically addressed self-efficacy in relation to psychomotor nursing skills. The relationship between SDS and self-efficacy can be described as a partnership in which both partners carry equal weight regarding learning effects. A student who is efficacious as a learner is already more likely to be self-directed and, therefore, in turn may be more successful at SDS with new content (Stump et al., 2012).

The third question was, “How do the students experience SDS?” In private interviews with the investigator, students described what it was like dealing with technology issues and how they overcame them. They also largely spoke about how they participated in SDS. The strategy allows for creativity and variation in some of its aspects such as practice times, the number of people on a team, how students practice, how much they practice, and how students set up their skills scenario are just a few examples of items that are self-directed for the students. Upon interview, students were very open to describing what worked well for them and how it impacted their learning of psychomotor skills.

The researcher completed a literature review that included anxiety in nursing students, self-efficacy in nursing students, andragogy in nursing, psychomotor skills in nursing, technology use in teaching psychomotor nursing skills, and simulation in nursing. The literature presented a gap in technology use to teach psychomotor skills. Each study reviewed recommended suggestions for improvement in teaching psychomotor nursing skills and further suggested a need for additional research to demonstrate best practice in teaching of psychomotor nursing skills (Brydges et al., 2009; DeBourgh & Prion, 2017; Love et al., 1989; Watts et al.,

2009, Yoo et al., 2010). Since development of the SDS strategy in 2013, DeBourgh and Prion (2017) completed a study that closely relates to SDS. The study used self-directed video validation to teach psychomotor nursing skills and the data also suggested that use of video strategies to teach psychomotor skills was effective. The strategy is similar to SDS but with several variations. Furthermore, the data demonstrated increased student confidence and collaboration (DeBourgh & Prion, 2017).

The methodology for this study was exploratory in nature and incorporated qualitative and quantitative data collection. For qualitative data, observations were completed and after an interview protocol (see Appendix F) was developed, interviews were completed. The qualitative data was transcribed and analyzed using Carspecken's qualitative framework (Carspecken, 1996). For the quantitative analysis, a pre- and post-survey using REDCap (<https://redcap.uits.iu.edu/>) after tool adaptation was completed. Data was analyzed using IBM SPSS. The results of the findings from quantitative and qualitative data collection showed that implementation of SDD helped to increase students' levels of self-efficacy. (See Table 4.)

## **Discussion**

This study was defended during the COVID-19 pandemic of 2020. What became apparent to all of society during this period was the importance of being able to educate and learn from home and even work from home. Incorporation of technology into curricula became a means of survival for all K–12 education and higher education, including programs of nursing, across the world. The face-to-face learning environment was transformed in a matter of weeks into a distance format. Students, and faculty, had to adapt quickly to the change in learning environment. SDS enabled students to complete their psychomotor skill competencies in their homes, using the tools that they had, together with their own self-direction and imagination. For

example, students demonstrated the ability to sterilely insert a Foley catheter using dolls and a photo of a urethra. Using SDS, students were able to continue their skill practice and video their psychomotor skill competencies all from a home environment rather than in a skills lab.

Reflectively, the importance of SDS became even more apparent during this unpredictable time in the world and in education. Not only did the students have to adapt, but so did the faculty, along with all of health care and society.

The profession of nursing practice is constantly changing and evolving with advancements in health care or public health crises that occur. School of nursing curricula and faculty also evolve with those changes, advances, and crises, but the evolution typically occurs after the fact. Incorporation of technology and new teaching strategies are effective but can be very time consuming upon the faculty that develop and evaluate the curricula. Not only does curricula have to stay on top of changes in health care, but they also must take into consideration the learner, the demand for nursing professionals, accreditation standards, and the health of society.

Schools of nursing have a special challenge: they must stay up-to-date with a multitude of changes that occur rapidly and concurrently with teaching students to become nurses. In addition, schools are charged with ensuring that faculty prepare well trained nurses who can move into clinical practice quickly and efficiently with the ability to practice safely. Nursing is unlike many professions in the respect that information constantly advances and changes. Additionally, there is a shortage of nurses and nursing faculty across the United States (Institute of Medicine, 2011). While these shortages vary from state to state, they are still present. These shortages within the nursing profession create increased demands on schools of nursing, clinical partners, and the multitude of areas that need nurses to provide care to patients.

As we look forward, schools of nursing are training students not only to perform duties of a profession but to care for human beings. There is a unique challenge that occurs when it comes to helping people in what often can be life or death situations. Nurses must be knowledgeable, safe practitioners who are empathetic, effective communicators, technology savvy, flexible, and capable of performing at high levels within stressful and trying circumstances. Teaching and training students to become nurses is a responsibility and a necessity; it requires incorporation of many modes of educational theory and teaching strategies to do so effectively.

The theme of anxiety was part of the original reasoning for the desire to develop new strategies to teach psychomotor nursing skills. It also should be noted that some of the themes that emerged in this study were emotional ones, namely, anxiety and empathy. The discussion that follows uses the first-person point of view when discussing emotional components because emotion unintentionally played a huge part of this study.

While, yes, I was aware of the vast amount of literature supporting the ill effects that anxiety produces, it was actually observation and conversations with my learners that led to the desire to put new strategies on the table and to begin working and testing them concurrently. Often, our learners are overlooked when faculty design curricula. In teaching fundamental skills, I knew I was seeing student anxiety and that what students were saying about being anxious was fact—it was currently present. Furthermore, the phenomenon of anxiety had been researched repeatedly. Anxiety has ill effects on learning, this we know (Ball & Hussey, 2020; Bell, 1991a; Chernomas & Shapiro, 2013; Melo et al., 2010; Quinn & Peters, 2017; Sun et al., 2016; Vannaja, 2005; Wang et al., 2019; Wedgeworth, 2016).

Empathy is a key attribute of the nursing profession. I found myself remembering my educational experiences as a student. I specifically remember being nervous and anxious as a

student and dropping a glass ampule on the floor and breaking it—glass going everywhere during a psychomotor skill checkoff. I was so embarrassed. I felt dumb. I felt inferior. When I began seeing these same behaviors in my students, I wanted to make it better. I wanted to implement strategies to decrease their anxiety, to increase their learning, and to empower them to become strong nurses.

### **Discussion Research Question 1**

The first research question was, “How does the implementation of SDS strategies impact nursing students’ self-efficacy?” It is important when implementing new and innovative strategies, that effectiveness is tested. This helps to determine not only effectiveness of the developed strategy but also demonstrates if the strategy helped to improve learning for the student. To measure self-efficacy, this research study included a well-validated tool adapted to the level of the learners in this study. The tool was adapted with permission from Stump et al. (2012; see Appendix A, Figure A4). The Nursing Student Appraisal Tool (see Appendix E) is a 20-question Likert-type survey that students completed online or using a smart phone. Participation was completely voluntary. The researcher inputted study data into the database REDCap (<https://redcap.uits.iu.edu/>). The 20 questions focused on fundamental psychomotor nursing skills—some taught in a previous semester and some being taught in the concurrent semester of data collection. While simulation strategies, self-efficacy, SCT, and andragogy are all widely studied, psychomotor skills in relation to those theories and incorporation of technologies into the curriculum regarding psychomotor skills has been rarely and limitedly researched (Bandura, 1977a, 1977b, 1978, 1989, 1997; Jeffries, 2005, 2007; Knowles, 1980; Knowles et al., 1998).



The findings from the survey and the qualitative interviews demonstrated that student self-efficacy increased across the board (see Table 4) from October 2016 (pre-test) to December 2016 (post-test). Some would argue that it would be a normal finding over the course of the semester for student efficacy to increase, which in some respects is a fact; however, including the qualitative data resulted in a much richer and detailed account of students' experiences and learning. The quantitative and qualitative analysis both indicated increased self-efficacy with use of SDS.

Bandura (2006, as cited in Stump et al., 2012) reported multiple studies (e.g., Pajares & Urdan, 2006; Schunk & Zimmerman, 1997) that suggested that when presented with a task, students "will exert maximal effort and will persist despite failure if they believe they are capable" (Stump et al., 2012, p. 149). Karabacak et al. (2013) further suggested that students with higher self-efficacy can overcome obstacles at a greater rate than those with lower levels of self-efficacy. Additionally, it is important for efficacy to be measured accurately because in the instance of inaccurate measurement adverse patient outcomes can occur (Stump et al., 2012). Not only is it important for instructors to teach students to perform skills competently, it also is important that students then can self-evaluate their capabilities.

Andragogy postulates that teachers should be more facilitative. Facilitator-teachers should trust students to guide their own learning, they should value students' contributions to their learning, and they should seek to understand and motivate their learners (Knowles et al., 1998). On the first day of class, as a newly admitted nursing student, if students are asked, "why do you want to be a nurse?", the majority of students say a variation of the following: to help others, to do good, to serve. I have asked this question of my students and it also was one of the

interview questions in the qualitative portion of this study, and the same variety of answers held true in the interviews. For example, the student (I1) stated,

Well, I know that it's so cliché, but I like to—I want to serve. So, for me, serving's been a way of life, I'm in the military, I've served for 22 years, I feel like it's the way that I continue to serve after I get out of the military, and to help people, and just utilize my skills in a better way.

The desire to *do good* is the first step in becoming a nurse. The relevance it plays in research question one is that to do anything well, most of the time motivational factors play a role in that success (Knowles et al., 1998).

Nursing students are highly motivated, they are competitive, and they must have these qualities to gain admission into a nursing program. It is not uncommon that many nursing students have a 4.0 GPA. If you recall the historical introduction to nursing presented in Chapter I, nursing schools are highly competitive, and thousands of students are turned away because of lack of capacity and faculty with which to teach them. Based on this fact, students' levels of self-efficacy are high when it relates to rote memorization of facts such as bones and muscles and organs. But after students learn these scientific facts and gain admittance to the nursing program, the act of rote memorization is no longer a focus of their learning—they now must act, apply, synthesize, and evaluate. For novice nursing students, the concept of application is new, along with much of the theory that they need to apply. Giving students the context in which to learn application may be the most important part of their nursing education. Without the context in which to practice, students return to rote memorization. SDS provides students the context with which to apply current and previous knowledge, and additionally provides them with a means to safely practice, review, and self-evaluate repetitively.

As the data suggest, implementing SDS helped the students' self-efficacy to increase; however, that data do not account for the students' preexisting self-efficacy. The data specifically addressed self-efficacy in relation to psychomotor nursing skills. The relationship between SDS and self-efficacy can be described as a partnership in which both partners carry equal weight regarding learning effects. Students who are efficacious as learners are already more likely to be self-directed and, therefore, may be more successful at SDS with new content. According to SCT, there are several factors that should be addressed. First, the best way to determine student self-efficacy is to ask them (Townsend & Scanlan, 2011). On the study's pre- and post-surveys, students rated their self-efficacy on all 20 questions. Self-efficacy and self-directed learning pose a unique and symbiotic relationship that can influence one another mutually (Chen et al., 2019; Knowles et al., 1998; Lee & Mao, 2016; Robb, 2016; Yoo et al., 2010; Zhang et al., 2018).

## **Discussion of Research Question 2**

The second research question was, "What is the relationship between SDS and self-efficacy?" During interviews, the researcher asked students if SDS helped to improve confidence and self-efficacy. What became clear is that students may not necessarily understand the difference or possess the ability to ascertain the relationship between the two. Students tended to clump the two together. There is a distinct difference between confidence and self-efficacy. "Confidence refers to one's beliefs of strength, but does not specify what the certainty is about. Self-efficacy refers to belief in one's power to produce given levels of attainment" (Bandura, 1997, p. 382). According to students in this study, they felt SDS helped to increase their self-efficacy and confidence, and the quantitative results support this. In future studies, it would be important to continue to educate students about terminology and to adapt the

interview protocol to clarify this finding. Confidence is one characteristic of those possessing high levels of self-efficacy. It is important to note the distinction between confidence and self-efficacy and to understand the relationship between the two in terms of self-efficacy development. The terminology is not interchangeable.

Bandura et al. (1986) argued that, during performance achievements (see Figure 3), the outcomes people expect depend heavily on their self-confidence that they can perform the skill. Bandura (1997) specifically looked at guided skill perfection within the context of SCT. “In perfecting skills, people need informative feedback about how they are doing” (Bandura, 1997, p. 443). Bandura further explained that a common issue in learning any skill is that people do not have the ability to observe their own behavior. Using video rectifies this issue and emphasizes the need to provide corrective feedback in a manner to improve self-confidence (Bandura, 1997).

### **Discussion of Research Question 3**

The third research question was, “How do the students experience SDS?” The themes, described in Chapter IV, that came to the forefront were self-efficacy, joy of learning, repetition, anxiety, confidence, peer review, and learning. Early in the implementation of SDS, technology troubleshooting was required because of issues that occurred when implementing and using a new technology; however, students easily overcame these issues. Students worked in pairs or groups. This fact, along with using the technology, created a collaborative effect with both the students’ practice as well as their use of the technology.

### **Other Themes and the SDS**

A surprising theme that emerged from this research question included the theme of *joy of learning*. This theme was not an original assumption nor was it an intention of the study design, but the data arose from asking, “How did you experience SDS?” In hindsight, however, this

theme may be one of the most crucial pieces of data. Joy was observed and joy was stated multiple times throughout the data. Both the literature review and the discussion of the theory of andragogy demonstrate that motivational forces help to influence and produce student learning outcomes. The concept of planning and intending to create learning experiences that students enjoy is not always in the forefront of curricula development.

The data bring to light that motivational factors could be one of the key concepts needed in the development of creating, implementing, and testing any educational strategy (Knowles et al., 1998). While this could be one explanation for the theme of joy, there is an underlying sense that what was observed was not truly just motivational forces of learning. It appears the joy stems from students processing through stages of professional development and beginning to experience emotional responses to feeling they found their niche in the nursing profession. It appears they were starting to feel joy while performing skills as they developed their professional practice as a student nurse. It also is true that one of the things student nurses enjoy doing the most in the beginning of their nursing education is skills. It is during this phase of their education that they develop a sense of “yes, I am going to be good at this” or “no, I do not enjoy or like this at all.” While much literature supports development of nursing professional practice, to have a true understanding of what that looks like or when that specifically emerges in the form of an emotional response is unclear.

One of the most mentioned themes was *repetition*. Students were asked to describe the amount of time they practiced each skill—some students practiced a lot and some not as much. Students felt that in some ways SDS enforced the importance of practice and some students discussed how their own perfectionism was a factor in increasing the amount of time they spent practicing. Repetition in learning is well researched; based on this fact, this finding was expected

and was also part of the theoretical reasoning for design of the SDS strategy. Educational philosophy such as see one, do one, teach one by Halstead is just one example (Kotsis & Chung, 2013). Another ancient proverb that has been stated and used for many years, “practice makes perfect,” also applies.

Students found the peer review process to be an important factor in SDS. They enjoyed watching others’ videos and doing so often helped them in terms of creating their own. Students, in some instances, learned what to do as well as what not to do by watching and critiquing others’ videos. Students felt that the peer review process helped them to achieve their goals, resulting in not having to resubmit the skill assignment because of not competently performing the skill.

The simulation framework largely focuses on collaboration of learners and faculty in performing, reflecting, and debriefing simulated learning experiences. The result of this collaboration produces a learning environment in which the students and the faculty give and receive positive feedback creating a safe learning environment in which to learn (Jeffries, 2007). In the same respect, SDS provides students a means to collaborate with peers and faculty to work toward the goal of skill mastery.

According to Bandura, peer relationships are where children “broaden and particularize knowledge of their capabilities” (1997, p. 173). While this statement refers to observation of children, the same holds true in peer relationships as they age. Additionally, it is important to note that self-efficacy is promoted in peers who have mutual interests (Bandura, 1997). Peer review, therefore, can help to increase efficacy in nursing students.

Interviewee (I4) stated, “No one's born with an innate knowledge of nursing, you have to learn it.” Learning psychomotor skills is at first considered foreign to nursing students. Students

have, in most cases, never completed the skills they are learning. The skills knowledge and competency are new, required, and foundational knowledge needed by a nurse. The importance of not only being able to perform a skill but also having the theoretical and medical knowledge to understand why the skill is necessary is what sets the nurse apart from others who may perform such skills. Scientific evidence of the rationale behind skills and the best practice to perform those skills are imperative. The literature has not determined what is best practice in teaching psychomotor nursing skills. It is needed and is a gap in the literature that has ramifications on all of nursing practice.

Students felt that SDS helped them to learn the skills in a better way than traditional methods such as return demonstration. The students enjoyed active learning, and most students stated that they are active learners. Andragogy promotes active and self-directed learning (Knowles et al., 1998). The simulation framework developed, from a constructivist approach, promotes active learning and context (Jeffries, 2007). Finally, Bandura promotes active learning, modeling, and human agency (Bandura, 1977a, 1977b, 1989, 1997; Bandura et al., 1986).

### **Implications**

In the world of nursing education, reform and change is inevitable and necessary. Neither the need to graduate highly competent student nurses nor advancements in health care will stop or slow. Faculty development and educational research is a crucial need as we work toward the future of the nursing profession.

The SDS strategy is one means to help meet the goal of graduating highly competent nurses into practice. It also helps to effectively create strong self-directed learners who are efficacious. Implementing new strategies and technologies into nursing education curricula are

imperative and research to support the practices is needed to determine best practice. In this instance, the need is in psychomotor nursing skills education.

SDS can be a tool that faculty use in teaching psychomotor nursing skills. It cannot be assumed that faculty have needed knowledge to implement such strategies and faculty development would also be a part of SDS implementation. Further, incorporation of technology and new strategies require student facilitation. The assumption that all students possess the knowledge to use all technologies correctly is false; therefore, teaching strategies must factor in student development as well. This study provides a framework for implementation and for future research studies to determine best practice in teaching psychomotor nursing skills.

### **Recommendations**

The purpose of this study was to implement and test SDS to teach psychomotor nursing skills in a fundamentals nursing course. Continued research on teaching psychomotor skills is needed to determine best practice in nursing education. Recommendations developed directly from the data of this study would include further studies to help determine which strategies help to inform best practice of teaching psychomotor nursing skills. Implementation of SDS with a control group and a more robust sample size could be one method. Training of faculty would be a necessary item in terms of implementation. Studies should implore a mixed methods approach based on the richness of qualitative data and the importance of including the learner in such developments within curricula. Additionally, having the ability to collect self-efficacy data in the beginning of a nursing program, throughout the program, and at the program conclusion would provide longitudinal data to determine if any effects had a lasting impact on nursing students.

Another recommendation for future research to consider is the tools used in this study. The Nursing Student Appraisal Tool (see Appendix E) was adapted from well-validated tool



(The Nursing Student Self Efficacy Scale; Stump et al., 2012); however, further use could demonstrate continued reliability and validity. Based on the literature reviewed for this study, this was the best tool available to measure self-efficacy in relation to psychomotor nursing skills (Stump et al., 2012). The interview protocol (see Appendix F) could be used also, being sure to adapt the self-efficacy questions to be stand alone. It also would be important to specifically define self-efficacy for student understanding.

### **Conclusion**

The findings from this study provide insight into potential best practice recommendations for teaching psychomotor nursing skills in a fundamentals of nursing course throughout nursing education curriculum. Currently such studies and best practice recommendations are lacking and or antiquated. The findings revealed that implementation of SDS learning strategies is one means to help increase student self-efficacy and is an effective way to evaluate competency in fundamentals of nursing skills. It also uniquely brought to light the importance of finding joy in educational activities and using multiple educational theories to support learning. Despite any limitations in the study, the research provided new evidence to support the need for best practice in teaching psychomotor nursing skills and a strategy design in which to do so.

## APPENDIX A

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#### Figure A1

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Albert Bandura  
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- Bandura, 1978, figure 1. The Self System in Reciprocal Determinism

If this needs to be handled in a different manner, please let me know.

Thank You, Kristen Mattox

*Note.* Permission to use figures from *Self-efficacy: Toward a unified theory of behavioral change* (1977a, [Figure 1, p. 195] and [Figure 3, p. 193]) and *The self system in reciprocal determinism* Bandura (1978, Figure 2, p. 345).

## Figure A2

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**Instructor name** Barbara Dennis

**Expected presentation date**

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available at law or in equity, but in no event to a payment of less than three times the Rightsholder's ordinary license price for the most closely analogous licensable use plus Rightsholder's and/or CCC's costs and expenses incurred in collecting such payment.

**8. Miscellaneous.**

- 8.1.** User acknowledges that CCC may, from time to time, make changes or additions to the Service or to these terms and conditions, and CCC reserves the right to send notice to the User by electronic mail or otherwise for the purposes of notifying User of such changes or additions; provided that any such changes or additions shall not apply to permissions already secured and paid for.
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v 1.1

*Note.* Permission to use Figure 4 from *The adult learner: The definitive classic in adult education and human resource development* (5<sup>th</sup> ed.), by M. S. Knowles, E. F. Holton, and R. A. Swanson, 1998).

## Figure A3

### *Permission to Use Jeffries*

From: "RLP - Book Permissions <[permissions@lww.com](mailto:permissions@lww.com)>" <[permissions@lww.com](mailto:permissions@lww.com)>  
Date: June 24, 2020 at 16:27:05 EDT  
To: "Mattox, Kristen L." <[mattoxk@iu.edu](mailto:mattoxk@iu.edu)>  
Subject: Re: [External] RE: Jeffries, Pam Permissions Book Request [ ref:\_00Dd0dixc\_5003w10cj77:ref ]

Thank you Kristen.

Your request to use Figure 3.1: The Nursing Education Simulation Framework from Jeffries: Simulation in Nursing Education 2e in your thesis Self Directed Simulation: Examining Self-Efficacy in Nursing Students Using Innovative Video Strategies for Indiana University is granted for both print and e-formats. Please note that we do not allow posting of our content on commercial or social media sites such as Facebook, YouTube, or Proquest.

I've attached a copy of our Terms and Conditions. Please consider those, and this email your grant of permission.

Thank you.

Caren

Caren Erlichman  
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*Note.* Permission to use Jeffries' Simulation Framework from *A Framework for designing, implementing and evaluation: Simulation used a teaching strategies in nursing*, by P. R. Jeffries, 2005.

## Figure A4

### *Permission to Use The Nursing Student Self-Efficacy Scale*

Glenda S Stump  
To: Needler, Kristen L.  
RE: Self Efficacy Scale

Hi Kristen,

Yes, you may adapt the tool for lower level students. In any reports or publications, you can just cite the original source and note that it was modified. If you modify, more evidence would be needed to support reliability & validity, but that shouldn't be a problem.

In my scale analysis, the communication items were really better suited to lower level students - this made sense because the items were related to basic communication skills which were taught during the first semester of the nursing program for the sample I used. The other items provided more information for more advanced students.

Hope that is helpful. Good luck with your study!

All the Best,  
Glenda

From: Needler, Kristen L. [[kneedler@iu.edu](mailto:kneedler@iu.edu)]  
Sent: Monday, November 16, 2015 10:09 AM  
To: Glenda S Stump  
Subject: Re: Self Efficacy Scale

Glenda,  
Happy Monday,

I am curious if you would allow adaptations of the tool for lower level students? Thank you,  
Kristen

Kristen Needler MSN, RN, ~~CNE~~Clinical Assistant Professor  
Indiana University School of Nursing  
1111 Middle Drive NUW418  
Indianapolis, Indiana 46202  
812-416-6111 cell  
317-278-6051 office  
*Respect. Responsibility. Trust. Dialogue.*  
*A Legacy of Leadership: 1914-2014*

*Note.* Permission to use and adapt The Nursing Student Self-Efficacy Scale by G. S. Stump, J.

Husman and S. K. Brem, 2012.



## APPENDIX B

### SCHOOL OF NURSING'S SIMULATION CENTER

**Figure B1**

*Skills Lab*



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**Figure B2**

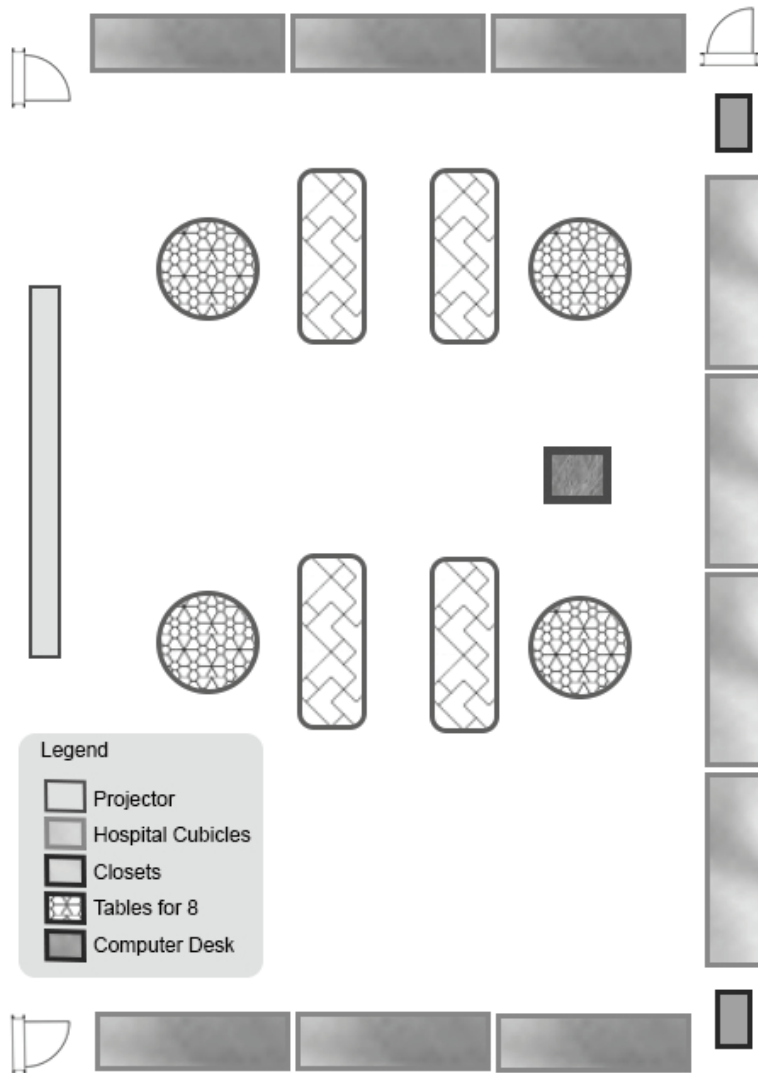
*Simulated Hospital Room*



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**Figure B3**

*Skills Learning Lab Diagram*



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## APPENDIX C

### IRB PROTECTION OF HUMAN SUBJECTS



#### INDIANA UNIVERSITY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH  
Office of Research Compliance

To: Kristen Needler, Nursing

**From:** [signature]

Human Subjects Office

Office of Research Compliance – Indiana University

**Date:** July 28, 2016

**RE:** NOTICE OF EXEMPTION - NEW PROTOCOL

Protocol Title: SELF-DIRECTED SIMULATION: EXAMINING SELF-EFFICACY IN NURSING STUDENTS USING INNOVATIVE VIDEO STRATEGIES

Study #: 1607456106

Funding Agency/Sponsor: None

Status: Exemption Granted | Exempt

**Study Approval Date:** July 28, 2016

---

The Indiana University Institutional Review Board (IRB) EXE000001 | Exempt recently reviewed the above-referenced protocol. In compliance with (as applicable) 45 CFR 46.109 (d) and IU Standard Operating Procedures (SOPs) for Research Involving Human Subjects, this letter serves as written notification of the IRB's determination.

Under 45 CFR 46.101(b) and the SOPs, as applicable, the study is accepted as Exempt (2) Category 2:

Surveys/Interviews/Standardized Educational Tests/Observation of Public Behavior Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior if: i) information obtained is recorded in such a manner that human subjects cannot be identified, directly or through identifiers linked to the subjects; or ii) any disclosure of the human subjects responses outside the research would not reasonably

place the subjects at risk of criminal or civil liability or be damaging to the subjects financial standing, employability or reputation, with the following determinations:

Acceptance of this study is based on your agreement to abide by the policies and procedures of the Indiana University Human Research Protection Program and does not replace any other approvals that may be required. Relevant policies and procedures governing Human Subjects Research can be found at: [http://researchcompliance.iu.edu/hso/hs\\_guidance.html](http://researchcompliance.iu.edu/hso/hs_guidance.html).

The Exempt determination is valid indefinitely. Substantive changes to approved exempt research must be requested and approved prior to their initiation. Investigators may request proposed changes by submitting an amendment through the KC IRB system. The changes are reviewed to ensure that they do not affect the exempt status of the research. Please check with the Human Subjects Office to determine if any additional review may be needed.

You should retain a copy of this letter and all associated approved study documents for your records. Please refer to the assigned study number and exact study title in future correspondence with our office. Additional information is available on our website at <http://researchcompliance.iu.edu/hso/index.html>. If your source of funding changes, you must submit an amendment to update your study documents immediately.

If you have any questions or require further information, please contact the Human Subjects Office via email at [irb@iu.edu](mailto:irb@iu.edu) or by phone at 317-274-8289 (Indianapolis) or 812-856-4242 (Bloomington).

You are invited, as part of ORA's ongoing program of quality improvement, to **participate in a short survey** to assess your experience and satisfaction with the IRB related to this approval. We estimate it will take you approximately **5 minutes to complete the survey**. The survey is housed on a Microsoft SharePoint secure site that requires CAS authentication. This survey is being administered by REEP; please contact us at [reep@iu.edu](mailto:reep@iu.edu) if you have any questions or require additional information. Simply click on the link below, or copy and paste the entire URL into your browser to access the survey: [https://www.sharepoint.iu.edu/sites/iuora/survey/Lists/Compliance/IRB\\_Survey/NewForm.aspx/enclosures](https://www.sharepoint.iu.edu/sites/iuora/survey/Lists/Compliance/IRB_Survey/NewForm.aspx/enclosures)

## APPENDIX D

### STUDENT PARTICIPANT RECRUITING EMAIL

Hello,

This semester I will be collecting data for my dissertation. The study information is included below in full detail; however, to simplify I wanted to give you the list of things I will be asking volunteers to do.

**Step 1.** Complete a pre-test of self efficacy survey at this link: <https://redcap.uits.iu.edu/surveys/?s=4M9KFJ4A8H> This can be done starting today and does not mean you have to participate in the interview. It would be great if all of you can complete the survey it is 23 questions in length and should only take about 5 minutes.

**Step 2.** Set up a time to participate in an interview about VoiceThread, videos and the B260 course. Maximum of 10-15 students. If you are interested in this aspect of the study, please email me ASAP.

**Step 3.** Observations of students will be conducted per lab schedule.

**Step 4.** Complete a post test of self-efficacy; link will be sent at a later date.

I really appreciate your willingness to help with the study and with improvement of the B260 course.

IRB STUDY # 1607456106

#### INDIANA UNIVERSITY STUDY INFORMATION SHEET FOR SELF-DIRECTED SIMULATION: EXAMINING SELF-EFFICACY IN NURSING STUDENTS USING INNOVATIVE VIDEO STRATEGIES

You are invited to participate in a research study of how implementation of self-directed videos helps to promote competency in fundamental nursing skills using videography and voice thread technology. You were selected as a possible subject because you are a sophomore level nursing student. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by: Kristen Needler MSN, RN, CNE

Indiana University School of Nursing.

#### STUDY PURPOSE:

The purpose of this study is to better understand how nursing students learn, the manner in which they participate in self-directed learning, and their levels of self-efficacy. I intend to look for ways in which technology influences not only learning of psychomotor skills, but also levels of self-efficacy as a result of using the technology based strategy within the curriculum.

#### PROCEDURES FOR THE STUDY:

If you agree to be in the study, you will do the following things:

Students will participate in a one-on-one interview with the principal investigator and will also complete a one page survey. The interview will help determine the benefits using technology to complete psychomotor skills in the B260 course, along with students' levels of self-efficacy after performing. From a critical view, observations will be conducted with the students while using the VoiceThread technology. Observations will be arranged with faculty

of the course along with the course leader. Times will be scheduled based on clinical lab times and permission from the faculty.

The teaching strategy used in this research will be videography with the use of a PC, MAC, Tablet, iPad, or smartphone in which the student is given brief objectives and prior educational demonstration of the skill and is required to provide a playback of the skill incorporating all required objectives. Videos will then be uploaded to VoiceThread for faculty and or classmates to peer review. Each student is responsible for uploading a total of six videos.

#### CONFIDENTIALITY

Efforts will be made to keep your personal information confidential. We cannot guarantee absolute confidentiality. Your personal information may be disclosed if required by law. Your identity will be held in confidence in reports in which the study may be published “and databases in which results may be stored.” If tape recordings or videotapes are made, the principal investigator will be the only person with access. Videos may be used for education purposes but if so, you will be notified. Videos will be destroyed after all data collection is complete.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the study investigator and his/her research associates, the Indiana University Institutional Review Board or its designees, and (as allowed by law) state or federal agencies, specifically the Office for Human Research Protections (OHRP) the National Institutes of Health (NIH) [for research funded or supported by NIH], etc., who may need to access your medical and/or research records.

#### PAYMENT

You will not receive payment for taking part in this study.

#### CONTACTS FOR QUESTIONS OR PROBLEMS

For questions about the study, contact the researcher [Kristen Needler] at [ ].

For questions about your rights as a research participant or to discuss problems, complaints or concerns about a research study, or to obtain information, or offer input, contact the IU Human Subjects Office at (317) 278-3458 or (800) 696-2949.

#### VOLUNTARY NATURE OF STUDY

Taking part in this study is voluntary. You may choose not to take part or may leave the study at any time. Leaving the study will not result in any penalty or loss of benefits to which you are entitled. Your decision whether or not to participate in this study will not affect your current or future relations with IU School of Nursing.

## APPENDIX E

### NURSING STUDENT APPRAISAL TOOL

Please indicate how confident you feel in your *ability* to accurately perform the following activities. If you have not yet had instruction on a particular skill, please respond to the item based on your current level of knowledge:

**Please answer the following questions:**

1. What is your ethnicity? Asian Pacific, African, Latino, Islander, American, Caucasian, Hispanic, Other
2. Do you currently or have you ever worked in a healthcare setting. Yes , No
  - a. If yes, what position do you or did you hold? (e.g., nursing assistant, patient care technician, etc.)
3. What is your gender?

**I am confident that I can:**

*Not      Moderately      Completely*

*Confident      Confident      Confident*

*0      1      2      3      4*

1. Accurately assess PICC line of a patient.
2. Appropriately care for a patient's PICC line dressing.
3. Appropriately communicate assessment findings.
4. Provide accurate information to the physician about a patient's condition.
5. Accurately assess a patient's bladder.
6. Appropriately communicate to develop a therapeutic nurse–client relationship.
7. Accurately assess a patient's blood glucose level.
8. Appropriately interview a patient about his/her current health status.
9. Accurately monitor a patient's vital signs.
10. Accurately identify a patient using two-patient identifiers.
11. Respond appropriately to a patient code situation.
12. Appropriately assess a patient's peripheral IV.
13. Correctly administer an IVPB medication.
14. Accurately document findings from a patient assessment.
15. Appropriately discuss nursing procedures with a patient.
16. Accurately document care given to a patient.

17. Appropriately administer a subcutaneous injection.
18. Correctly complete a head-to-toe assessment.
19. Correctly suction a patient's tracheostomy.
20. Accurately assess a patient's oxygenation level.
21. Appropriately educate a patient on medications.
22. Appropriately perform the skills necessary to care for a patient.

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## APPENDIX F

### STUDENT INTERVIEW PROTOCOL

**Topic Domain:** Psychomotor nursing skill knowledge and competency and use of VoiceThread and videography.

**Memory Scan:** Begin with the start of the semester when you were new to the class and the use of videography and VoiceThread and tell me the things you remember from each instance of using the technology to the present day. We will do this for about 5 minutes. Just recall all the experiences you can, beginning with the earliest ones.

**Lead-off Questions:** Tell me about your experiences with the VoiceThread assignments this semester.

**Covert Categories of Interest:** Did you have troubleshooting problems with the VoiceThread technology? Do you feel that the assignment encouraged greater levels of practice of the psychomotor skill? Or how much did you practice for each skill. What experiences did you gain from the VoiceThread assignment?


#### **Possible Follow-Up Questions:**

1. Tell me about your experiences with learning each of the psychomotor skills.
2. Tell me about your experiences with using the objectives to complete the assignment.
3. Tell me about your experiences with working with your peer to complete the assignments.
4. I am interested in how you felt after completing the assignment.
5. How many times do you think you redid the video for this assignment and why?
6. What was the most helpful thing about the assignment for your learning?
7. Do you feel that the assignment engaged you in significant learning?
8. If you could change anything about the assignment what would it be?
9. If you could change anything about the organization of the lab practice time what would it be?
10. Explain how much time you are practicing and tell me how you go about preparing for the assignment.
11. What does it mean to you to be a nurse?
12. How did the video assignment help you develop your professional practice or identity?

13. Self-efficacy is your ability to state that you can confidently and competently complete a skill. Describe how you feel about your self-efficacy regarding the skills you have been learning. Describe how using technology helped facilitate feeling competent and confident at performing your nursing skills.

## APPENDIX G

### CERTIFICATE OF COPYRIGHT FOR THE SDS

 This Certificate issued under the seal of the Copyright Office in accordance with title 17, *United States Code*, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

*Maria A. Pallante*  
Register of Copyrights, United States of America

**Registration Number**  
TXu 1-889-234

**Effective date of registration:**  
November 5, 2013

---

**Title** \_\_\_\_\_  
Title of Work: Self-Directed Simulation

**Completion/Publication** \_\_\_\_\_  
Year of Completion: 2013

**Author** \_\_\_\_\_  
■ **Author:** Kristen Leigh Needler  
**Author Created:** text, editing  
**Citizen of:** United States  
**Year Born:** 1975

**Copyright claimant** \_\_\_\_\_  
**Copyright Claimant:** Kristen Leigh Needler  
152 Steven's Drive, Seymour, IN, 47274, United States

**Rights and Permissions** \_\_\_\_\_  
**Name:** Kristen Leigh Needler  
**Email:** klnedler@icloud.com **Telephone:** 812-416-6111  
**Address:** 152 Steven's Drive  
Seymour, IN 47274 United States

**Certification** \_\_\_\_\_  
**Name:** Kristen Leigh Needler  
**Date:** November 5, 2013

---

Page 1 of 1

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## APPENDIX H

### SKILLS CHECKLISTS

**Figure H1**

#### *Central Venous Catheter Sterile Dressing Change*

##### CENTRAL VENOUS CATHETER STERILE DRESSING CHANGE

Student's Name: \_\_\_\_\_ Date \_\_\_\_\_

S = Satisfactory

U = Unsatisfactory

<b>PROCEDURE -- Checklist:</b>	<b>S</b>	<b>U</b>	<b>Comments</b>
Check Policy for PICC dressing change policy			
Gather equipment: central line dressing kit and additional mask for the patient			
**Perform AIDET and safety checks Provide patient education on need for dressing change(sterile and need for keeping still)			
Place mask on patient or have him turn their head away from site			
**Perform hand hygiene. Open central line dressing kit and put on mask			
** Assess Patient identity and allergies			
With clean gloves, remove old dressing from the catheter site pulling dressing toward insertion site Use alcohol to loosen dressing if necessary			
Remove and discard gloves and old dressing			
Perform hand hygiene. Don sterile gloves using proper technique			
Assess site for line related complications including discoloration, edema, localized swelling exudate, and warmth.			
**Using Choraprep R prep scrub vigorously back and forth for a minimum of 30 seconds. Removing any debris or blood			
Apply skin prep (unless patient is allergic to skin prep) to the outer edges of the sterile area and allow to dry			
Apply sterile transparent dressing located in the kit. Document date, time, and initial the label located in kit and apply to the outside of the dressing			
Discard kit and perform hand hygiene			
Document the procedure in the computer including the patient response and site assessment			

\*\*Denotes critical criteria from competency.

*Note.* Developed and approved for curriculum use by the school faculty governance and used with permission.

## Figure H2

### Foley Catheter

#### FOLEY CATHETER

Student's Name: \_\_\_\_\_ Date \_\_\_\_\_  
S = Satisfactory U = Unsatisfactory

PROCEDURE -- Checklist:	S	U	Comments
**1. Review orders for Foley catheter insertion			
**2. Perform hand <u>hygiene</u> ***			
**3. Identify patient with two patient identifiers.			
**4. Perform ADIET			
5. Close cubicle curtains and windows			
**6. Assess the patient for the following *** (wearing clean gloves) Time of last urination Level of awareness, ability to follow directions Mobility and physical limitations Distended bladder Perineum for erythema, drainage			
7. Wash peri- area with soap and water or with wet wipes			
8. Ask about latex, <u>iodine</u> or shellfish allergies			
9. Raise bed to comfortable working position			
10. Place patient in comfortable position and properly drape			
11. Open Foley kit using sterile technique			
12. Fix Foley kit's outer wrap into a trash bag			
13. Remove sterile drape and drape correctly (shiny side down toward the mattress)			
14. Apply sterile gloves***			
15. Using sterile <u>technique</u> , set up tray *** Place fenestrated drape over <u>genitalia</u> (this is optional). Remove forceps and set aside anywhere on the sterile field Pour Betadine over cotton balls Put lubricant into tray Place tray close to patient Attach pre-filled syringe to port			
16. Lubricate tip of Foley catheter (soap for lab only)			
17. Spread the labia using non-dominant hand (leave this hand in the place during the procedure ***			
18. Using forceps, clean perineum from front to back on females and on the glans on males. Always use forceps Drop contaminated cotton balls into trash bag from 3 inches above it. <u>Do not</u> reach into the trash bag			
19. Insert Foley catheter, while encouraging patient to take a deep breath Advance catheter until urine flows (2-3 inches for females and 7-9 for males *** Advance catheter one-two more inches after the urine begins to flow ***			
20. Inject water from syringe into balloon port			
21. Gently anchor catheter in place by pulling back on the Foley catheter			
22. Remove gloves			
23. Secure catheter bag to the frame of the bed			
24. Secure catheter to thigh			
25. apply clean gloves and clean area and then preposition patient to a comfortable position			
26. Wash hands after removing gloves***			
27. Document procedure, patient's response, and urine assessment data***			

\*\*Denotes critical criteria from competency

*Note.* Developed and approved for curriculum use by the school faculty governance and used with permission.

**Figure H3**

*Administering Intravenous Medications by Piggyback*

ADMINISTERING INTRAVENOUS MEDICATIONS BY PIGGYBACK

Student's Name: \_\_\_\_\_

S = Satisfactory U = Unsatisfactory

PROCEDURE -- Checklist:	S	U	Comments:
**1. AIDET and safety checks			
**2. Check accuracy and completeness of each medication administration record (MAR). Check client's name and medication name, dosage, route, and time for administration.			
3. Prepare medication: Be sure to compare the label of the medication with the MAR two times.			
4. Assess compatibility of drug with existing intravenous (IV) solution.			
5. Collect information necessary to administer medication safely.			
**6. Identify client using at least two client identifiers.			
7. Perform hand hygiene.			
8. Assess IV insertion site for infiltration or phlebitis. Assess patency of client's existing IV infusion line.			
9. Assess for pain by using the 1-10 pain scale.			
10. Assess client's understanding of purpose of medication therapy.			
11. Explain the purpose of medication and side effects to client, and explain that medication is to be give through existing IV line. Encourage client to report symptoms of discomfort at site.			
12. Assess client's history of medication allergies in EHR.			
13. Assemble medication and supplies at bedside. Prepare client by informing client that medication will be given through IV equipment.			
14. Administer Secondary IV infusion (IVPB): Connect secondary infusion tubing to medication bag. Allow solution to fill tubing by opening regulator (roller) flow clamp. a. Once tubing is full, close clamp and cap end of tubing.			
b. Hang piggyback medication bag above level of primary fluid bag (use hook to lower main bag). c. Needless system: Wipe off needless port, and insert tip of piggyback infusion tubing. d. Connect tubing of piggyback infusion to appropriate connector on primary infusion line. e. During infusion, periodically check infusion rate and condition of IV site. f. After medication has infused, check flow rate on pump on primary infusion. Regulate main infusion line to desired rate, if necessary.			
15. Leave IV piggyback bag and tubing in place for future use, or discard in appropriate containers.			
16. Observe client for signs of adverse reactions.			
**17. Educate the client on the purpose and side effects of medication.			
18. Record medication, dose, route, and time administered on MAR, record volume of fluid in medication bag on intake and output form.			
19. Additional Information: Make sure that you view your video prior to submission and that the sound is working and that the IV pump including the numbers are visible.			

\*\*Denotes critical criteria from competency

*Note.* Developed and approved for curriculum use by the school faculty governance and used with permission.



**Figure H4**

*Preparing and Administering Subcutaneous Injections*

**PREPARING AND ADMINISTERING SUBCUTANEOUS INJECTIONS**

Student's Name: \_\_\_\_\_ Date \_\_\_\_\_  
 S = Satisfactory U = Unsatisfactory

<b>PROCEDURE -- Checklist:</b>	<b>S</b>	<b>U</b>	<b>Comments</b>
**Check administration record (MAR) for medication to be administered. Check patient's name and medication name, dosage, route, and time for administration			
**Assess patient's history of allergies			
Assemble supplies			
Prepare medication. Be sure to compare the label of the medication with the MAR two times while preparing the medication. Check date of expiration for medication vials. <ul style="list-style-type: none"> <li>• Wipe off top of insulin vial with alcohol swabs</li> <li>• Inject air, equal to the dose of insulin to be withdrawn, into insulin vial</li> <li>• Withdraw the correct dose into the syringe</li> <li>• Remove the syringe after carefully removing air bubbles in the syringe</li> <li>• Hold syringe at eye level to ensure correct volume and absence of air bubbles</li> <li>• Show another nurse the syringe to verify correct dose was prepared</li> <li>• Recap needle using the scoop method</li> </ul>			
Dispose of soiled supplies. Return vial to pyxis			
Take medication to patient. Perform hand hygiene			
Close curtain for privacy			
Identify patient using at least two patient identifiers			
**Perform AIDET and safety checks <ul style="list-style-type: none"> <li>• Explain injection may cause a slight burning or may sting</li> <li>• Educate client about humalog</li> <li>• Blood sugar this am was 250</li> <li>• Dose of injection per sliding scale is 8 units SQ</li> <li>• Demonstrate the ability to draw up the insulin from the vial.</li> </ul>			
**Select appropriate injection site. Inspect skin surface over site for bruises, inflammation, or edema.			
Assist client to comfortable position.			
Cleanse site with an antiseptic swab.			
For average-size client, spread skin tightly across injection site, or pinch skin with non-dominant hand.			
Inject needle quickly and firmly at 45 to 90 degree angle. Then release skin, if pinched.			
For obese client, pinch skin at site and inject needle at 90-degree angle below tissue fold.			
Inject medication slowly.			
Apply gentle pressure. Do not massage site. Apply bandage if needed.			
Discard uncapped needle or needle enclosed in safety shield and attached syringe into puncture-proof and leak-proof receptacle.			
Remove disposable gloves, and perform hand hygiene.			
**Chart medication dose, route, site, time, and date given on MAR immediately after giving medication per agency policy.			

\*\*Denotes critical criteria from competency

*Note.* Developed and approved for curriculum use by the school faculty governance and used with permission.

# APPENDIX I

## COMBINED DATA TABLE

### Independent Samples *t* Test

Work in healthcare OCT	<i>n</i>	<i>Mean</i>	<i>SD</i>	Std error mean	
Yes	11	34.0000	9.53939	2.87623	
No	26	35.4231	6.97523	1.36796	
Work in healthcare OCT	<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	
Equal variances assumed	2.988	.093	-.508	35	
Not assumed			-.447	14.734	
Work in healthcare OCT	Sig, (2-tailed)	Mean Difference	Std. Error Difference	95% CI lower	95% CI upper
Equal variances assumed	.615	-1.42308	2.80350	-7.11449	4.26833
Not assumed	.662	-1.42308	3.18497	-8.22236	5.37621
Work in healthcare DEC	<i>n</i>	<i>Mean</i>	<i>SD</i>	Std error mean	
Yes	7	50.0000	6.27163	2.37045	
No	18	57.7222	2.32140	.54716	
Work in healthcare DEC	<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	
Equal variances assumed	23.045	.000	-.4.593	323	
Not assumed			-3.174	6.650	
Work in healthcare DEC	Sig, (2-tailed)	Mean Difference	Std. Error Difference	95% CI lower	95% CI upper
Equal variances assumed	.000	-7.72222	1.68113	-11.19990	-4.24455
Not assumed	.017	-7.72222	2.43278	-13.53684	-1.90761
Gender OCT	<i>n</i>	<i>Mean</i>	<i>SD</i>	Std error mean	
Yes	7	35.2857	6.42169	2.4217	
No	30	34.9333	8.08120	1.47542	
Gender OCT	<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	
Equal variances assumed	1.311	.260	-.107	35	
Not assumed			-.124	10.944	
Gender OCT	Sig, (2-tailed)	Mean Difference	Std. Error Difference	95% CI lower	95% CI upper
Equal variances assumed	.915	.35238	3.28319	-6.31284	7.01760
Not assumed	.904	.35238	2.84043	-5.90324	6.60800
Gender DEC	<i>n</i>	<i>Mean</i>	<i>SD</i>	Std error mean	
Yes	4	54.7500	7.27438	3.63719	
No	22	55.6364	4.72627	1.00764	
Gender DEC	<i>F</i>	<i>Sig.</i>	<i>t</i>	<i>df</i>	
Equal variances assumed	1.195	.285	-.319	24	
Not assumed			-.235	3.475	
Gender DEC	Sig, (2-tailed)	Mean Difference	Std. Error Difference	95% CI lower	95% CI upper
Equal variances assumed	.753	-.88636	2.78013	-6.6242	4.85153
Not assumed	.827	-.88636	3.77419	-12.0197	10.24697



## Descriptive Statistics

OCT	<i>n</i>	Min	Max	Mean	SD
Total	37	22.00	49.00	35.0000	7.71362
Valid <i>n</i>	37				
DEC	<i>n</i>	Min	Max	Mean	SD
Total	26	43.00	60.00	55.5000	5.02195
Valid <i>n</i>	26				

## ANOVA Ethnicity

	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Between Groups	533.012	4	133.253	.941	.448
Within Groups	54	54	141.652		
Total	58				

## Start Date = December 2016 Table 1.

Descriptive Statistics					
	<i>N</i>	Minimum	Maximum	Mean	SD
Appropriately administer a subcutaneous injection.	37	2	3	2.89	.315
Correctly suction a patient's tracheostomy.	36	1	3	2.42	.732
Appropriately educate a patient on medications.	35	1	3	2.69	.530
Appropriately perform the skills necessary to care for a patient.	32	2	3	2.84	.369
Accurately assess a patient's oxygenation level.	37	2	3	2.92	.277
Correctly complete a head to toe assessment.	36	2	3	2.97	.167
Accurately document care given to a patient.	36	1	3	2.78	.591
Appropriately interview a patient about his/her current health status.	36	1	3	2.83	.447
Accurately monitor a patient's vital signs.	37	2	3	2.95	.229
Accurately assess a patient's bladder.	34	1	3	2.50	.707
Accurately identify a patient using two patient identifiers.	37	3	3	3.00	.000
Accurately assess a patient's blood glucose level.	36	2	3	2.94	.232
Appropriately communicate to develop a therapeutic nurse-client relationship.	37	1	3	2.86	.419
Provide accurate information to the physician about a patient's condition.	36	1	3	2.72	.615
Appropriately communicate assessment findings.	37	1	3	2.81	.569

Correctly administer an IVPB medication.	35	1	3	2.89	.404
Accurately document findings from a patient assessment.	36	1	3	2.86	.487
Appropriately assess a patient's peripheral IV.	36	1	3	2.86	.424
Respond appropriately to a patient code situation.	34	1	3	1.91	.900
Appropriately care for a patient's PICC line dressing.	36	1	3	2.83	.561
Valid N (listwise)	26				

**Start Date = October 2016 Table 2.**

Descriptive Statistics					
	<i>N</i>	Minimum	Maximum	<i>Mean</i>	<i>SD</i>
Appropriately administer a subcutaneous injection.	56	1	3	1.04	.267
Correctly suction a patient's tracheostomy.	57	1	3	1.07	.320
Appropriately educate a patient on medications.	51	1	3	1.39	.635
Appropriately perform the skills necessary to care for a patient.	47	1	3	1.55	.746
Accurately assess a patient's oxygenation level.	51	1	3	2.45	.808
Correctly complete a head to toe assessment.	56	1	3	1.84	.968
Accurately document care given to a patient.	55	1	3	1.84	.788
Appropriately interview a patient about his/her current health status.	54	1	3	2.39	.811
Accurately monitor a patient's vital signs.	51	1	3	2.73	.532
Accurately assess a patient's bladder.	57	1	3	1.25	.544
Accurately identify a patient using two patient identifiers.	55	1	3	2.93	.378
Accurately assess a patient's blood glucose level.	55	1	3	1.56	.788
Appropriately communicate to develop a therapeutic nurse-client relationship.	52	1	3	2.38	.771
Provide accurate information to the physician about a patient's condition.	55	1	3	1.80	.755
Appropriately communicate assessment findings.	51	1	3	2.20	.825
Correctly administer an IVPB medication.	57	1	2	1.05	.225
Accurately document findings from a patient assessment.	53	1	3	2.04	.831
Appropriately assess a patient's peripheral IV.	57	1	3	1.09	.342
Respond appropriately to a patient code situation.	56	1	3	1.20	.519

Appropriately care for a patient's PICC line dressing.	57	1	3	1.04	.265
Valid N (listwise)	37				

## APPENDIX J

### B260 FACULTY TEACHING PLAN

Time	Topic	Time		Activities
40 min	<b>Group A</b> <ul style="list-style-type: none"> <li>• IVPB (20 min)</li> <li>• Tube feeding pumps (5 min)</li> <li>• Feeding via nasogastric tube (5 min)</li> <li>• Blood Administration (5 min)</li> <li>• Review of lines and dressing changes (5 min)</li> </ul>	30 min	<b>Group B</b> <ul style="list-style-type: none"> <li>• IV insertion (15 min)</li> <li>• Phlebotomy (15 min)</li> </ul>	Faculty demonstration of equipment and procedures  <b>For IVPB</b> Demonstrate hanging a primary solution, a secondary IVPB (including back priming) and attaching the line to the client.  <b>During IV insertion</b> Discuss how students will need to test the patency of the line prior to attaching the tubing for administration of a medication (They will be doing this during Learning in Action).  Demonstrate the use of a NS flush and how to properly sanitize the tip of the IV tubing attached to the client.
35 min	All skill practice	45 min	All skill practice	
30 min	<b>Group A</b> <ul style="list-style-type: none"> <li>• IV insertion (15 min)</li> <li>• Phlebotomy (15 min)</li> </ul>	40 min	<b>Group B</b> <ul style="list-style-type: none"> <li>• IVPB (20 min)</li> <li>• Tube feeding pumps (5 min)</li> <li>• Feeding via nasogastric tube (5 min)</li> <li>• Blood Administration (5 min)</li> <li>• Review of lines and dressing changes (5 min)</li> </ul>	Faculty demonstration of equipment and procedures  <b>For IVPB</b> Demonstrate hanging a primary solution, a secondary IVPB (including back priming) and attaching the line to the client.  <b>During IV insertion</b> Discuss how students will need to test the patency of the line prior to attaching the tubing for administration of a medication (they will be

				doing this during Learning in Action).  Demonstrate the use of a NS flush and how to properly sanitize the tip of the IV tubing attached to the client.
45 min	All skill practice	35 min	All skill practice	
10 min	Break			Students and faculty will determine organization of breaks.
Only if extra time	Learning in action: Client care in the nursing laboratory.	1. Break students into groups of 4 Roles include: Patient, family, nurse, recorder Recorder will take observational notes only.  2. Faculty will give report to students as a group.  3. Students will then be assigned a cubicle to provide care for patient.  4. Skills to be performed  Assessment and Vital signs Programming IV pump to run a primary line with NS and a secondary IVPB infusion of Vancomycin at 125ml/hr.  5. Instructions to the student: General Survey and safety check Use of AIDET Start with vitals and assessment Use report information to begin care of client. Provide care Document in Cerner (will not be able to document medication – how do we want to handle this?)  6. Debrief Questions: To the Nurse: How did you feel while taking care of this patient? Describe how you organized a plan of care for this patient Describe your: Head to toe assessment Vital signs Assessment findings  To the group: What did the nurses do well? Explain what measures were taken by the nurses to ensure safe patient care.  To the family member: Did the nurses tend to your needs?		

		<p>How did the nurses demonstrate therapeutic communication?</p> <p>To the group: What is the primary nursing diagnosis for this patient?</p>
5 min	Clean-up	
10 min	Reflective Practice	<p>5 min for each student to write a reflection using Schön's model.</p> <p><b>Step 1:</b> Choose an incident. This could be something that you experienced in a placement or a component of your academic skills, which you feel has not been resolved or that you were not happy with the outcome.</p> <p><b>Step 2:</b> Think about what the situation was like before your intervention and what it was like afterwards. If this was a positive experience that went well – write down what made the situation effective. If you are not happy with the experience, note what action you took and then what action you would have preferred to have done.</p> <p><b>Step 3:</b> Consider the thinking process that you used to bridge the gap between the “before and after.” For example, what were you thinking about in relation to your knowing-in-action and why it wasn't working well in the new situation? What should you have actually been thinking?</p> <p><b>Step 4:</b> Summarize the whole situation. What are the key points from your reflection-on- action? What have you learned that developed your knowing-in-action? What would you do different?</p> <p>10 min for overall group sharing</p>
5 min	Housekeeping	<p>Up next week: Clinical Orientation and Skills Review Lab. Field any student questions</p>

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- Zimmerman, B. J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, 29(3), 663–676.



## CURRICULUM VITAE

**NAME:** Mattox, Kristen Leigh

### EDUCATION

	<u>Place</u>	<u>Degree</u>	<u>Date Awarded</u>
GRADUATE	Indiana University School of Education Bloomington, IN	PhD	2020
	Indiana University School of Nursing Indianapolis, IN	MSN	2010
UNDERGRADUATE	Indiana University School of Nursing New Albany, IN	BSN	2006

### APPOINTMENTS (inclusive dates)

<u>Place</u>	<u>Title/Rank</u>	<u>Dates</u>
Indiana University	Adjunct Lecturer School of Nursing Indianapolis, IN	January 2019 to Present
Indiana University	Clinical Assistant Professor School of Nursing Indianapolis, IN	December 2013 to January 2019
IU Health, Methodist	Staff Nurse Hospital Indianapolis, IN	September 2015 to Present
Indiana University	Clinical Assistant Professor School of Nursing Columbus, IN	August 2010 to December 2013
Columbus Regional	Registered Nurse Hospital Columbus, IN	September 2003 to September 2015
Ivy Tech Community	Nursing Faculty College Columbus, IN	August 2008 to August 2010
Indiana University	Adjunct Faculty School of Nursing	August 2007 to January 2008

Columbus, IN

### **LICENSURE, CERTIFICATION, SPECIALTY BOARD STATUS**

Registered Nurse, Indiana

American Heart Association, BLS

Certified Nurse Educator, CNE

### **PROFESSIONAL ORGANIZATIONS**

Sigma Theta Tau, Alpha Chapter	Member	2010 to Present
National League of Nursing	Member	2008 to Present
Pi Lambda Theta	Member	2013 to Present
Midwest Nursing Research Society	Member	2014 to Present
Indiana University Alumni Association	Member	2006 to Present

### **PROFESSIONAL HONORS AND AWARDS**

#### **SERVICE**

<b>Award Name</b>	<b>Granted By</b>	<b>Date Awarded</b>
C. W. Coons Distinguished Service Award	IUPUC	April 2012

### **PROFESSIONAL DEVELOPMENT**

<b>Course/Workshop Title</b>	<b>Provider</b>	<b>Date</b>
NLN Summit 2018	Conference	September 2018
CIRCAS Curriculum and Instruction symposium attendee and panel participant	Indiana University Bloomington, IN	February 2016
International Service Learning	Webinar	February 2016
Experiential Learning Inside and Outside the Classroom	IU Kokomo	January 2016
VoiceThread Mobile	Webinar	December 2015
William M. Plater Institute on the Future of Learning Excellence in Higher Education: Teaching and Learning Unscripted	IUPUI Indianapolis, IN	November 2015
Professional Nurse Educator Conference (PNEG)	IUPUI Indianapolis, IN	October 2015
Taking the Classroom from Good to Great	Webinar	August 2015

Using VoiceThread for Large Courses and MOOCs	Webinar	August 2015
It's Never too Early: Focus on Professional Standards and Competencies to Teach Beginning Students to "Think Like a Nurse"	Webinar	May 2015
Tips for Helping you with Student Engagement and Retention in your Fundamentals Course	Webinar	March 2015
Elsevier Faculty Development Conference	Scottsdale, AZ	January 2015
Canvas Training	Indiana University School of Nursing	December 2014
Shadow Health Virtual Patient Program	Indiana University School of Nursing	December 2014
Shadow Health: Fall National	Webinar	November 2014
BCOG Conference	Indianapolis, IN	November 2014
EPIC Training	St. Francis Hospital Indianapolis, IN	November 2014
FACET Retreat	IUPUI Indianapolis, IN	May 2014
Critical Thinking and Test Item Writing	University of Indianapolis	May 2014
STTI Research conference	Indianapolis, IN	April 2014
Mastering the NCLEX-RN Exam	Webinar	February 2014
A Conversational Approach to Feedback	Webinar	February 2014
Tips for Teacher Effectiveness	Hesser College Manchester, NH	February 2013
Outreach on Heparin	USP	February 2013
NLN Education Summit	Anaheim, CA	September 2012
SimChart Pilot	Elsevier	December 2011
Faculty Colloquium (Tom Reddick)	Webinar	November 2011

EHR in Nursing Education	Lippincott	October 2011
Health Engagement (Patty Hollingsworth)	Webinar	October 2011
Implementing Digital Textbooks	Elsevier	September 2011
E-text Initiative (Nik Osbourne)	Webinar	September 2011
SIM Institute	IUPUI Indianapolis	August 2011
Integrating EBP in Curriculum (Bernadette Mazurek Melnyk)	Webinar	February 2011
PUL #3 Seminar	Indiana University	November 2010
Florence Nightingale Her Life, Her Work, Her Legacy	IUPUI Indianapolis, IN	November 2010
Cultivating Preceptors	AACN	November 2010
AACN Test Development (Mary McDonald)	Webinar	October 2010
Transforming Nursing Education	ILN	October 2010
PUL #2 Seminar	Indiana University Columbus, IN	October 2010
PUL #1 Seminar	Indiana University Columbus, IN	September 2010
Curriculum Development	Indiana University Columbus, IN	August 2010

## TEACHING

### UNDERGRADUATE

<u>Course No.</u>	<u>Title</u>	<u>Format</u>	<u>Role</u>	<u>Term</u>	<u>No. Students</u>
B404	Informatics	Online	Lecturer	Sp 2020	29
B260	Fundamental	Practicum	Instructor	Sp 2020	10
B404	Informatics	Online	Lecturer	Fall 2019	28
B260	Fundamental	Practicum	Instructor	Fall 2019	10
B404	Informatics	Online	Lecturer	Sp 2019	28
B260	Fundamental	Practicum	Instructor	Sp 2019	10
B260	Fundamental	Lecture	Lecturer	Fall 2018	38
B260	Fundamental	Practicum	Instructor	Fall 2018	08
B260	Fundamental	Lecture	Lecturer	Fall 2018	39
B260	Fundamental	Lecture	Lecturer	Su 2018	28

A100	Drug Dosage	Online	Lecturer	Fall 2017	29
B260	Fundamental	Lecture	Lecturer	Fall 2017	40
B260	Fundamental	Practicum	Lecturer	Fall 2017	10
B260	Fundamental	Lecture	Lecturer	Su 2017	28
B444	Nursing Intensive	Practicum	Instructor	Su 2017	10
A100	Drug Dosage	Online	Lecturer	Sp 2017	29
B260	Fundamental	Lecture	Lecturer	Sp 2017	43
B260	Fundamental	Practicum	Lecturer	Sp 2017	10
A100	Drug Dosage	Online	Lecturer	Fall 2016	35
B444	Transitions	Practicum	Instructor	Fall 2016	10
B260	Fundamental	Lecture	Lecturer	Fall 2016	48
B260	Fundamental	Practicum	Instructor	Fall 2016	10
B444	Nursing Intensive	Practicum	Instructor	Su 2016	10
H398	Honors Topics	Practicum	Instructor	Su 2016	02
A100	Drug Dosage	Online	Lecturer	Sp 2016	28
B260	Fundamental	Lecture	Lecturer	Sp 2016	38
B260	Fundamental	Lecture	Lecturer	Sp 2016	46
B260	Fundamental	Lecture	Lecturer	Fall 2015	48
B260	Fundamental	Practicum	Instructor	Fall 2015	10
H371	Adaptive Proc.	Practicum	Instructor	Su 2015	10
H355	Data Analysis	Online	Lecturer	Su 2015	18
B260	Fundamental	Lecture	Lecturer	Sp 2014	47
B260	Fundamental	Practicum	Instructor	Sp 2014	10
B404	Informatics	Online	Lecturer	Su 2014	10
B404	Informatics	Online	Lecturer	Su 2014	7
B404	Informatics	Online	Lecturer	Su 2014	5
B404	Informatics	Online	Lecturer	Su 2014	2
B260	Fundamental	Lecture	Instructor	Fall 2014	29
B260	Fundamental	Practicum	Lecturer	Fall 2014	10
B404	Informatics	Online	Lecturer	Fall 2013	22
B245	Assessment	Practicum	Instructor	Fall 2013	10
B244	Assessment	Lecture	Lecturer	Fall 2013	20
B404	Informatics	Online	Lecturer	Sp 2013	8
B249	Science	Practicum	Instructor	Sp 2013	20
B248	Science	Lecture	Lecturer	Sp 2013	20
B404	Informatics	Online	Lecturer	Fall 2012	19
B245	Assessment	Practicum	Instructor	Fall 2012	20
B244	Assessment	Lecture	Lecturer	Fall 2012	20
S485	Growth	Online	Lecturer	Su 2012	9
B244	Assessment	Online	Lecturer	Su 2012	28
B404	Informatics	Online	Lecturer	Sp 2012	30
B249	Science	Practicum	Instructor	Sp 2012	20
B248	Science	Lecture	Lecturer	Sp 2012	20
B104	Power Up	Hybrid	Mentor	Fall 2011	39
B244	Assessment	Lecture	Lecturer	Fall 2011	20
B245	Assessment	Practicum	Instructor	Fall 2011	20

B104	Power Up	Hybrid	Lecturer	Fall 2011	07
B104	Power Up	Hybrid	Lecturer	Su 2011	06
S485	Prof. Growth	Hybrid	Lecturer	Su 2011	16
B104	Power Up	Hybrid	Lecturer	Sp 2011	36
B104	Power Up	Hybrid	Mentor	Sp 2011	16
B233	Health & Well	Lecture	Lecturer	Sp 2011	20
B249	Science	Lab	Lecturer	Sp 2011	10
B104	Power Up	Lecture	Lecturer	Fall 2010	55
B244	Assessment	Lecture	Lecturer	Fall 2010	20
B245	Assessment	Lab	Lecturer	Fall 2010	20
NURS 202	Nursing Care of the Complex Family	Lecture	Lecturer	S2010	60
NURS 203	Nursing Care of the Complex Family Clinical	Practicum	Instructor	S2010	10
NURS 200	Complex Medical Surgical Nursing for the ASN	Lecture	Lecturer	Sp 2010	60
NURS 201	Complex Medical Surgical Nursing for the ASN Clinical	Practicum	Instructor	Sp 2010	10
NURS 103	Medical Surgical Nursing I Lab	Lab	Instructor	Sp 2010	20
NURS 201	Complex Medical Surgical Nursing for the ASN	Lecture	Lecturer	Fall 2009	60
NURS 103	Med Surg 3	Practicum	Instructor	Fall 2009	10
	Medical Surgical Nursing I Lab	Lab	Instructor	Fall 2009	20
NURS 111	Medical Surgical Nursing II Clinical	Practicum	Instructor	S 2009	10
NURS 120		Lecture	Lecturer	S 2009	20
NURS 101	Fundamentals of Nursing Lab	Lab	Instructor	Sp 2009	20
NURS 103	Medical Surgical Nursing I Lab	Lab	Instructor	Sp 2009	20
NURS 105	Medical Surgical Nursing I Clinical	Practicum	Instructor	Sp 2009	10
NURS 201	Complex Medical Surgical Nursing for the ASN	Practicum	Instructor	Sp 2009	10
NURS 101	Fundamentals of Nursing Lab	Lab	Instructor	Fall 2008	20
NURS 103	Medical Surgical Nursing I Lab	Lab	Instructor	Fall 2008	20

NURS 105	Medical Surgical Nursing I Clinical	Practicum	Instructor	Fall 2008	10
NURS 201	Complex Medical Surgical Nursing for the ASN	Practicum	Instructor	Fall 2008	10

## **TEACHING ADMINISTRATION AND CURRICULUM DEVELOPMENT**

### **Doctorate of Educational Philosophy Graduate Courses, Indiana University Bloomington**

<u>Course No.</u>	<u>Title</u>	<u>Term</u>
EDUC G901	Advanced Research	Spring 2020
EDUC G901	Advanced Research	Fall 2020
EDUC G901	Advanced Research	Spring 2019
EDUC G901	Advanced Research	Fall 2019
EDUC G901	Advanced Research	Spring 2018
EDUC G901	Advanced Research	Fall 2018
EDUC G901	Advanced Research	Spring 2017
EDUC G901	Advanced Research	Fall 2017
EDUC G901	Advanced Research	Fall 2016
EDUC J799	Doctoral Thesis	Spring 2016
EDUC J705	Seminar Inquiry in Curriculum and Instruction	Fall 2015
EUDC J799	Doctoral Thesis	Fall 2015
EDUC J650	Independent Study	Summer 2015
EDUC Y613	Critical Qualitative Inquiry II	Spring 2015
EDUC Y500	Computer Lab for educational inquiry	Spring 2015
EDUC J795	Dissertation Proposal Prep	Spring 2015
EDUC Y612	Critical Qualitative Inquiry	Fall 2014
EDUC J650	Independent Study in Curriculum	Spring 2014
EDUC P540	Learning and Cognition	Spring 2014
EDUC J692	Physiology and Pathophysiology of Learning	Summer 2014
EDUC J700	Teaching in Teacher Education	Fall 2013
EDUC J602	Intro to Curriculum Studies Part I	Fall 2013 and Spring 2014
EDUC J605	Independent Study	Fall 2013
EDUC R685	Topical Sem. Emerging Learning Technologies	Spring 2013
EDUC J762	Topical Sem. Sem/Curriculum & Instruc	Fall 2012
EDUC Y611	Qualitative Inquiry in Education	Fall 2012
EDUC Y500	Comp Lab for Educ Inquiry	Summer 2012
EDUC Y520	Strategies for Educ Inquiry	Summer 2012
EDUC J500	Instruction in the Context of Curriculum	Spring 2012

## **PATIENT CARE/CLINICAL SERVICE**

IU Health, Methodist	Staff Nurse	September 2015 to Present
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## SERVICE

### UNIVERSITY SERVICE

Student Professional Development Day	Member	Sp 2011 to 2013
Core Council of Nursing Faculty Affairs	Member	Fall 2011 to 2013
IUSON Adult Health Department	Member	Fall 2010 to 2013
Core Council of Nursing Faculty	Member	Fall 2010 to 2013
Core BSN Curriculum Committee	Member	Fall 2010 to 2013

### DEPARTMENT

B260 Course Leader	Course leader	Sp 2014 to 2019
Faculty Mentor	Mentor	Fall 2011 to 2013
Simulation Lab	Coordinator	Fall 2011 to 2013
Synergy Faculty Workgroup	Organizer	Fall 2011 to 2013
BSN Mentoring Program	Mentor	Fall 2010 to 2012
Course Leader B404, K492, S485	Leader	Fall 2012 to 2013

### SCHOOL

Advisory Board IU School of Nursing at Indiana University, Columbus, IN	Member	Fall 2010 to 2013
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### CAMPUS

APG Committee	Member	Fall 2018 to 2019
BSN Student Affairs	Member	Fall 2016 to 2019
Undergraduate Curriculum Committee	Member	Fall 2015 to 2017
Faculty Affairs Committee	Member	Fall 2011 to 2013
Information Technology Advisory Committee	Member	Fall 2010 to 2013
Healthy Campus Taskforce	Member	Fall 2010 to 2013

## PRESENTATIONS

Flinders, D., McCormack, S., & Needler, K. L. (2016, February 26). *A method to our madness: A panel on methodological choices and problem solving* [Panel Discussion]. CIRCAS Curriculum and Instruction Research and Creative Activity Symposium, Indiana University Bloomington, IN.

Needler, K. L. (2015, January 3). *Self-Directed simulation: Student Directed videos to demonstrate competency in performance of psychomotor skills creates a culture of high quality, safe, educated, reflective, and autonomous professional nursing practice* [Poster]. Elsevier Faculty Development Conference, Scottsdale, AZ.

Needler, K. L. (2013, April 4). *The use of high-fidelity simulation in psychiatric and mental health nursing clinical education* [Podium]. EC Moore Symposium, Indianapolis, IN.

Needler, K. L. (2013, February 28). *Simulation @ IUPUC* [Podium]. EI-AHEC Sim Users Meeting, Indiana University, Columbus, IN.