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Telehealth Standardized Patient Simulations and Nurse Practitioner Students' Self-Confidence and Satisfaction Levels

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**Telehealth Standardized Patient Simulations and Nurse Practitioner Students' Self-
Confidence and Satisfaction Levels**

Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Nursing Practice at Messiah University

By

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July, 2023

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Graduation: 2023/August

Acknowledgements

Thank you to the people who have made this project possible, Dr. Kristi Barbato, Dr. Kristen Slabaugh, Dr. Kim Fenstermacher, Dr. Anna Gale, and Dr. Nancy Woods. The mentorship and hard work each of you invested into my project is very much appreciated. Dr. Barbato, thank you for introducing this project to me, serving as my chair, attending all of the “sim meetings” I arranged, reviewing my paper even at inconvenient times, and being a shoulder to lean on. Dr. Slabaugh, thank you for allowing me to further myself as a student, nurse, and follower of Christ through our adventures in Zambia, Africa. It was amazing to watch you simultaneously serve as a professor, leader, nurse practitioner, colleague, and friend to myself and 22 nursing students. I also want to thank my friend and mentor, Dr. Melissa Snyder for developing me as an educator, simulationist, and future nurse practitioner. I cannot put into words how much you have done for me, but please know how incredibly appreciative I am. Thank you to my parents, Dr. Louann and Bob Zinsmeister, for always wanting me to better myself so that I can better serve others. Thank you to Erin, Rob, and Alice Zinsmeister for being my cheerleaders. Thank you to my friend, confidant, and support system, Rebekkah Stanko for being my partner throughout this process. Thank you to my friends, Marti Derr, Sally Stern, Shirley McCormick, Julianna Frederick, Njameh Baxley, and Jordan Betts for your support. Thank you to Tess Schafer, Kelly Snyder, and Amelia Montgomery for participating in my project. Lastly, but most notably, thank you to my husband, Bryan, for being there for me in every situation. I will never be able to fully express my appreciation for your constant patience, kindness, support, and encouragement throughout my educational and professional career. I absolutely could not have done this without you.

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Abstract

Background: Telehealth accounts for 22.9% of primary care visits, increasing healthcare accessibility and affordability. Nurse practitioners (NPs) have noted technological and patient interaction-based differences between telehealth and in-person patient encounters. Healthcare organizations expect newly graduated NPs to use telehealth upon graduation. **Problem:** Integration of formalized, telehealth-focused education in NP programs is lacking, decreasing telehealth preparation and use among new graduate NPs. **Methods:** A quality improvement project was conducted. Participants were a convenience sample of Doctor of Nursing Practice/Family Nurse Practitioner students enrolled in an advanced NP pediatrics course at a private, liberal arts university in central Pennsylvania. The National League for Nursing Student Satisfaction and Self-Confidence in Learning © (NLN SCLS) instrument was used to collect data. **Intervention:** Two telehealth standardized patient (SP) simulations were integrated into the 6th and 12th weeks of a 16-week advanced NP pediatrics course. **Results:** Project limitations prevented analysis of statistical and clinical significance. However, findings were consistent with current literature. Participants' NLN SCLS © instrument scores demonstrated high levels of confidence and satisfaction after each simulation. Following the second simulation, participants reported an increased likelihood to use telehealth after graduation. **Conclusion:** The telehealth SP simulations were positive learning experiences for participants. Thus, the project site intends to continue use of the intervention, providing the framework for longitudinal data collection measuring site-specific effects of telehealth SP simulation integration.

Keywords: online nurse practitioner simulation, formative telehealth simulation, telehealth standardized patient simulation, self-confidence, and satisfaction

Telehealth Standardized Patient Simulations and Nurse Practitioner Students' Self-Confidence and Satisfaction Levels

Background

Telehealth is a rapidly expanding healthcare delivery format (Demeke et al., 2021; Upper Midwest Telehealth Resource Center, 2020) that emerged in the 1960s as a way to increase care access for underserved communities (American Recovery and Reinvestment Act, 2009; Health Resources and Services Administration [HRSA], 2016). Telehealth use by patients, advanced practice providers (APPs), and physicians, as well as the insurance coverage allocated to telehealth services, experienced unprecedented expansion in response to the COVID-19 pandemic (Gajarawala & Pelkowski, 2021; Koonin et al., 2020). From January 2019 to March 2020, telehealth usage increased by an estimated 154% (Koonin et al., 2020), with telehealth-based patient encounters increasing from 1% to as high as 80% of all primary care visits from March 2020 to April 2020 (Karimi et al., 2022). Despite the dramatic differences in pandemic-related healthcare delivery, 98% of patients who used telehealth during the COVID-19 pandemic indicated that they planned to continue telehealth use after the pandemic (Predmore et al., 2021). Telehealth usage rates continue to exceed prepandemic levels (Karimi et al., 2022). In May 2022, 22.9% of primary visits were delivered via telehealth and approximately 5.4% of all medical claims were billed as telehealth visits nationally (Fair Health, 2022).

Physicians and APPs noted differences in telehealth-based patient encounters with relation to technology use, physical assessments, and communication skills (Gajarawala & Pelkowski, 2021; Koonin et al., 2020; Rutledge et al., 2017). A specific telehealth challenge for nurse practitioners (NPs) involved conveying caring, a hallmark of the profession, to patients when in a virtual environment (Schweickert & Rutledge, 2020). Healthcare organizations expect

NP students to engage in caring telehealth-based patient encounters immediately upon entering advanced clinical practice (Arends et al., 2021), necessitating telehealth preparation before graduation (Demeke et al., 2021).

Problem Statement

NP curricula lack telehealth-focused educational initiatives developed in alignment with best practice standards (Rutledge et al., 2017), hindering NP students' telehealth preparation (Gartz & O'Rourke, 2021). According to Cassidy et al. (2021), less than one-third of 266 NP programs in the United States included telehealth-focused education within curricula. However, 77% of NP faculty indicated that NP education should include telehealth content. Discomfort using telehealth among NP students correlated with reluctance to engage in telehealth-based patient encounters in advanced practice (Rutledge et al., 2017), potentially compromising patient care quality and continuing healthcare disparities among underserved communities (Arends et al., 2021; HRSA, 2016; Rutledge et al., 2017). Telehealth readiness and likelihood of use increased when telehealth-focused simulation-based learning (SBL) improved NP students' confidence and satisfaction levels (Arends et al., 2021). Although 98% of North American NP programs integrated SBL into curricula, these SBLs typically lacked a telehealth focus (Rutledge et al., 2017).

Needs Assessment

Messiah University (MU), which operates an online Doctor of Nursing Practice/Family Nurse Practitioner (DNP/FNP) program, served as the DNP project site. MU DNP/FNP faculty members' experiential and educational preparation to develop and deliver telehealth-based content to NP students varies (MU, 2022b). Thus, DNP/FNP didactic and simulation telehealth-based educational initiatives are sporadically placed throughout the curriculum, not developed

based on best evidence, and lack telehealth-focused learning objectives (K. Barbato & K. Slabaugh, personal communication, June 3, 2022). These gaps could compromise DNP/FNP students' ability to engage in telehealth-based patient encounters but may be addressed through implementation of telehealth standardized patient (SP) simulations aligned with best practices.

A strength of the project site was the preexisting relationship between the DNP/FNP faculty members, and the project leader, which promoted collaboration and the creation of an evidence-based, structured, telehealth-focused teaching modality in an advanced NP pediatrics course. A lack of technology skills among students and faculty represented a potential threat. The strengths, weaknesses, opportunities, and threats (SWOT) analysis (Appendix A) and root cause analysis (RCA; Appendix B) contain additional details.

Aim, Objectives, Purpose Statement

The overarching aim of this DNP project was to improve NP students' preparation for telehealth-based patient encounters. The project objectives include the following:

- During the 16-week intervention period, 90% of eligible participants will complete the National League for Nursing Student Satisfaction and Self-Confidence in Learning © (NLN SCLS) instrument after each simulation.
- At the completion of the 16-week intervention period, participants will demonstrate a 10% increase in *Satisfaction with Current Learning* scores.
- At the completion of the 16-week intervention period, participants will demonstrate a 10% increase in *Self-confidence in Learning* scores.

The purpose of this project was to implement a QI project using two telehealth standardized patient (SP) simulations to increase NP students' self-confidence and satisfaction levels when engaging in telehealth-based patient encounters.

Review of Literature

The following population, intervention, comparison, outcome (PICO) question guided the literature review: Among students enrolled in an NP program, does the initiation of one or more telehealth SP simulations increase student self-confidence and satisfaction levels when compared to students who did not participate in one or more telehealth SP simulations?

From June 2022–January 2023, an exhaustive literature review of the following databases occurred: CINAHL Complete, Medline, ERIC, Cochrane Library, and Google Scholar. Search terms and phrases included *online nurse practitioner simulation*, *formative telehealth simulation*, *telehealth standardized patient simulation*, *self-confidence*, and *satisfaction*. The project leader identified 629 unique articles for screening (Appendix C) and eliminated 589 articles based on the exclusion criteria: unpublished works, a lack of relevance to the PICO question based on the intervention or population, and summative simulation. Of the forty articles retrieved, 10 met the inclusion criteria, which included being written in English, published in peer-reviewed journals within the last seven years, and formatted with synchronous, formative SP telehealth simulations in master’s or doctoral NP programs. The Johns Hopkins Evidence-Based Practice (JHNEBP) appraisal tools were used to appraise the evidence, revealing five Level II, quasi-experimental studies, one Level II, mixed-methods study, one Level III, qualitative study, and three Level V articles, which included an integrative review, a case report, and a QI project (Dang et al., 2022). All 10 articles received either Quality A (high quality) or Quality B (good quality) ratings (Dang et al., 2022). The individual evidence summary tool (Appendix D) contains additional information.

Themes

Theme 1: Meaningful Learning Experiences

Findings from all 10 articles indicated telehealth SP simulations increased NP students' access to meaningful learning experiences, prepared them to provide care to various patient populations, and increased their opportunities for interprofessional and intraprofessional education (Arends et al., 2021; Berta et al., 2022; Coburn et al., 2021; Emerson et al., 2021; Gartz & O'Rourke, 2021; Knight & Prettyman, 2020; LaManna et al., 2021; Posey et al., 2020; Robinson-Reilly et al., 2020; Wesemann et al., 2021). Specifically, enhanced comfort in delivering telehealth-based care increased NP students' likelihood to use telehealth after graduation (Arends et al., 2021; Coburn et al., 2021; Emerson et al., 2021; Gartz & O'Rourke, 2021; Knight & Prettyman, 2020; LaManna et al., 2021; Posey et al., 2020; Robinson-Reilly et al., 2020). Additionally, educators' use of telehealth SP simulations increased NP students' access to interactive learning experiences without requiring on-campus participation (Berta et al., 2022; Gartz & O'Rourke, 2021; Robinson-Reilly et al., 2020; Wesemann et al., 2021).

Theme 2: Benefits Beyond Telehealth

Telehealth SP simulations increased NP students' readiness to provide care in both virtual and face-to-face encounters (Arends et al., 2021; Gartz & O'Rourke, 2021). NP students reported applying the diagnostic reasoning skills and autonomous advanced clinical decision-making used within the telehealth-based SP simulations to both telehealth and in-person encounters (Berta et al., 2022; Coburn et al., 2021; Knight & Prettyman, 2020; Posey et al., 2020; Robinson-Reilly et al., 2020). Knowledge transfer from telehealth-based simulations into other clinical situations demonstrates the value of SBL in improving NP students' practice readiness (Arends et al., 2021; Coburn et al., 2021; Gartz & O'Rourke, 2021).

Theme 3: Lack of Standardization

The nine NP programs within the reviewed literature used different formats for integrating telehealth SP simulations into NP curricula. Variation existed regarding who filled the SP role, and the number of courses with telehealth SP simulations (Coburn et al., 2021; Emerson et al., 2021; Knight & Prettyman, 2020; LaManna et al., 2021; Posey et al., 2021; Robinson-Reilly et al., 2020). Programs also used various simulation evaluation methods. Five programs relied on faculty-developed Likert scales (Arends et al., 2021; Berta et al., 2022; Emerson et al., 2020; Knight & Prettyman, 2020; Wesemann et al., 2021), and three programs adopted standardized tools specific to nursing education: the Simulation Effectiveness Tool-Modified (Coburn et al., 2021; LaManna et al., 2021; Leighton et al., 2015) and the National League for Nursing Student Satisfaction and Self-Confidence and in Learning (NLN SCLS) © instrument (Berta et al., 2022; NLN, 2005). The different formats used to implement telehealth SP simulations into NP programs represent a limitation to NP curricular integration (Gartz & O'Rourke, 2021).

Summary of Findings

The telehealth and non-telehealth learning outcomes achieved via SBL necessitate the integration of high-quality, standardized telehealth SP simulations into NP curricula (Appendix E). Through telehealth SP simulations, NP students can apply diagnostic reasoning skills and advanced clinical decision-making within safe, controlled clinical scenarios, which provides increased preparation and confidence for advanced clinical practice. Variance in simulation integration methods among NP programs may be inevitable due to curricular differences; however, the lack of standardization in NP SBL development and evaluation tools are evidence

gaps. Consistent use of standardized simulation evaluation tools may provide more robust evidence to support integration efforts.

Theoretical Model

Kolb's (1984) experiential learning theory (ELT) was the theoretical model used to underpin this DNP project (Appendix F). Evidence supports Kolb's ELT as a simulation-applicable theory (Lavoie, 2018). The model contains four phases (Kolb, 1984), which correlate with the phases that took place during the intervention (Appendix G). Learners achieved concrete experience during the first SBL (Sim1) as they saw, heard, and felt the simulation scenario events (Kolb, 1984). Reflective learning took place during the debrief when learners answered scenario-specific Socratic questions. Abstract conceptualization occurred during the debrief and NLN SCLS © instrument completion by stimulating thought processes that derived new meaning from the simulation (Kolb, 1984). Knowledge transfer from Sim1 to the second SBL (Sim 2) ensued with active experimentation (Kolb, 1984). Repetition of the four phases, which is inherent to Kolb's model, occurred during Sim2, allowing for continued learning through a new clinical experience (Kolb, 1984).

Translation Model

The Johns Hopkins Evidence-Based Practice (JHEBP) model for nurses and healthcare providers is a process used to transform inquiry into practice improvement by applying three linear phases, practice question, evidence, and translation (PET process), while simultaneously reflecting on learning and practice (Dang et al., 2022; Appendix H). Each PET process phase contains steps that guide evidence translation. The DNP project team identified a process gap in NP teaching strategies regarding use of formative telehealth SP simulations, which prompted PICO question development, literature review and appraisal, and synthesis of best evidence

(Dang et al., 2022). Fit, acceptability, and feasibility were confirmed as the intervention is compatible with organizational workflow, reasonable, and doable (Dang et al., 2022). The project leader developed translation and implementation action plans, performed site analysis, and established an outcomes measurement plan. Results and future practice recommendations will be disseminated to stakeholders and other nursing professionals (Dang et al., 2022).

Methodology

Participants

A convenience sample of NP students enrolled in MU's DNP/FNP program were recruited using an information script (Appendix I). Inclusion criteria included enrollment in an advanced NP pediatrics course, Advanced Family Nursing Practice of Children and Adolescents (NURS 707). NP students repeating NURS 707 were excluded.

Project constraints included small class sizes, lack of control over the number of participating students, and challenges coordinating participant and project schedules. The project leader worked with the course coordinator to support participant recruitment and provide advance notice of scheduled synchronous meetings and simulations. The project leader also aligned SBL activities with weekly NURS 707 instructional time requirements, avoiding simulation-associated time burdens from influencing participants' NLN SCLS © instrument responses.

Setting

The online DNP/FNP program at MU, a small, private, liberal arts university located in central Pennsylvania served as the setting (MU, 2022a). The intervention was implemented in NURS 707, a didactic course taught concurrently with a 90 hour clinical course, NURS 708: Advanced Family Nursing Practice of Children and Adolescents Practicum (Barbato, 2021; MU,

2022b). All students enrolled in NURS 707 and NURS 708 have taken a prerequisite pediatric assessment course, during which they completed one summative telehealth SP simulation (MU, 2022b).

Project facilitators included the DNP project leader, an experienced simulation educator and the NURS 707 course coordinator, a DNP/FNP with experience in pediatrics. The NURS 707 course coordinator has not received educational preparation on teaching telehealth or on SBL (K. Barbato, personal communication, September 1, 2022). Time and budget-related restrictions hindered the course coordinator from gaining additional SBL knowledge. Limited graduate-level simulation support was available as the nursing simulation educator and coordinator are contracted to work with the on-campus Bachelor of Science in Nursing (BSN) program. As a certified nurse educator with specialized simulation knowledge and experience, the project leader addressed barriers related to time and simulation resources by developing the SBL scenarios and didactic prework learning activities with course coordinator input.

Tool

A demographics survey (Appendix J) was used to collect information on the participants' characteristics. The NLN SCLS © instrument (Appendix K) was used to measure the outcomes of this DNP project (NLN, 2005). This 13-item instrument contains two sections: *Satisfaction with Current Learning* (5 items), and *Self-confidence in Learning* (8 items; NLN, 2005). Each item within each section is scored using a 1 (“strongly disagree”) to 5 (“strongly agree”) 5-point Likert scale. Higher scores indicate higher levels of confidence and satisfaction (NLN, 2005). Total survey scores can range from 13–65 points, with the *Satisfaction with Current Learning* section ranging from 5–25 points and the *Self-confidence in Learning* section ranging from 8–40 points (NLN, 2005).

The NLN SCLS © instrument is a valid and reliable tool with a Cronbach's alpha of 0.94 for the *Satisfaction with Current Learning* section and 0.87 for the *Self-confidence in Learning* section (NLN, n.d.). Ten content experts established instrument content validity during development and testing (Adamson et al., 2013; Kardong-Edgren et al., 2010). There is no charge to use the NLN SCLS © instrument and permission is not required when citations and copyright notices are used appropriately (NLN, 2022). The DNP project leader received permission from the NLN (Appendix L) to modify items 2 and 7 by replacing the phrase "medical surgical curriculum" with the phrase "nurse practitioner curriculum" (Appendix M). Instrument modifications may impact validity and reliability.

Intervention

The project intervention included two different formative telehealth SP simulation scenarios delivered synchronously via Zoom. A non-nursing undergraduate MU student was the SP for both simulations. Based on the Association of Standardized Patient Educators best practices, the project leader prepared the SP for their role via one-on-one meetings and pilot testing (Lewis et al., 2017). The project leader, course coordinator, and SP conducted simulation scenario pilot testing using sample students prior to NURS 707 student participation for Sim1 and Sim2 to establish intervention fidelity. A MU DNP/FNP student who previously completed NURS 707 (Sim1 pilot test) and an MU DNP/FNP adjunct professor (Sim2 pilot test) were the sample students. The project leader structured the simulations in alignment with the Healthcare Simulation Standards of Best Practice™ for Simulation Design (Watts et al., 2021), which includes the following elements: prework, prebriefing, scenario engagement, SP feedback, and debriefing (Appendix N). Intervention fidelity was further established by using the same prebriefing script and SP for both simulations.

Prior to Sim1, a project leader-developed, ungraded, telehealth learning module was included in the prework and delivered asynchronously via MU's online learning management system. Each participant independently engaged in the simulations, both of which involved a pediatric telehealth visit in which the SP played a teenager being seen for a chief complaint of "rash." Sim1 occurred during the 6th week of the course and the SP portrayed a patient with a common, benign skin rash (tinea corporis). Sim2 occurred during the 12th course week and the SP portrayed a patient with a rare, but serious skin rash (Stevens-Johnson syndrome). The simulation scenarios, which involved completing a history, review of systems, physical exam, and plan of care, were not timed but were not permitted to exceed 20 minutes. After each simulation, the SP provided feedback to participants and the project leader facilitated debriefing sessions using the Debriefing with Good Judgment structure (Appendix O; Rudolph et al., 2007). A process map is in Appendix P.

Data Collection

Participants completed the demographics survey and the NLN SCLS © instrument-modified via Qualtrics immediately following Sim1. Demographic survey data included the following: age, race, gender, highest level of education, years of experience in non-advanced practice nursing (non-APN), telehealth experience, and prior pediatric experience. Immediately after Sim2, participants completed the NLN SCLS © instrument-modified again and one additional question about likelihood to use telehealth in advanced clinical practice via Qualtrics.

Cost Analysis

Increased use of telehealth by NPs resulting from telehealth-focused education prior to graduation produces several cost benefits. Telehealth eliminates the need for patients and providers to travel to in-office visits and is cost-effective for insurance companies based on

decreased overhead, yielding approximately \$70 in savings per episodic visit (Ashwood et al., 2017). Providing telehealth simulation experiences to NP students may decrease orientation time and costs for post-graduation employers (Hartsell & Noecker, 2020). For each day that new NP orientation is decreased, an organization saves approximately \$500 in pay for a non-profitable NP and \$500–\$1,600 in preceptor fees (Hartsell & Noecker, 2020).

Project implementation saved time for faculty as the project leader developed the simulations. Project site costs were negligible as implementation took place online during regular business hours. The project leader used a one-time scholarship award to fund the SP's hourly rate and project startup costs during implementation. The project leader estimated that the simulations will continue as originally developed for 2–3 years. Because the average cost of a computer is \$1,200 (Pratt, 2023) and the cost of hiring SPs is \$304, requiring SPs to own a webcam-enabled computer that can operate Zoom creates a cost avoidance of \$582 if the simulations are continued for 2 years, and a cost avoidance of \$288 if the simulations are continued for 3 years (Appendix Q).

Telehealth simulations are time and cost-effective for NP programs, students, and faculty as there are fewer facility and travel costs (Gartz & O'Rourke, 2021). Implementing this project is cost-effective as the costs incurred by MU to conduct two telehealth SP simulations are arguably less than the benefits these simulations will provide to DNP/FNP students, MU, future employers, and patients.

Timeline

In November 2022, the DNP project proposal was approved, and MU Institutional Review Board (IRB) exemption was granted (Appendix R). Project implementation and data collection took place from January to April 2023, followed by data analysis from May to July

2023. Dissemination will begin in August 2023 with the final project defense. A Gantt chart with project milestones noted by gold stars is in Appendix S.

Ethics and Human Subject Protection

The project leader completed the National Institute of Health (NIH) Human Subject Training (Appendix T), and MU IRB exemption was obtained prior to initiating the DNP project. The Family Educational Rights and Privacy Act (FERPA), which mandates confidentiality for student information, allowed for participant protection (FERPA, 1974). As such, the NURS 707 course coordinator obtained verbal permission from all participants to allow the project leader to facilitate the simulations. The project leader and course coordinator adhered to the International Nursing Association of Clinical Simulation and Learning best practices by maintaining the confidentiality of participants' simulation scenarios (Bowler et al., 2021). Additionally, the SBL activities were not video or audio recorded and all collected participant data was deidentified.

This DNP project presented no risks to participants beyond those already inherent in DNP/FNP curricula. All participants, including the SP, were older than 18 years of age. Only the project leader can access the data, which is all electronic and stored in a password-protected Qualtrics account and on a password-protected computer in a locked office. Per IRB requirements, data will be destroyed via file deletion from Qualtrics and the computer hard drive after 3 years.

Results

Analysis and Evaluation

Statistical analysis began with codebook development, data entry into SPSS Statistics (Version 29.0), and setting the level of statistical significance at .05. No outliers or missing data were identified. The sample consisted of four white, female advanced practice NP students,

without prior pediatric or telehealth experience (Table 1). Participants' ages ranged from 22 to 48 years and half of the participants ($n = 2$) had exactly 3 years of previous nursing experience. The majority of participants held Bachelor of Science in Nursing degrees (75%, $n = 3$).

Table 1

Sample Demographics Descriptive Statistics

Characteristic	Frequency	Measure of Central Tendency			Measure of Variability	
	%(<i>n</i>)	<i>M</i>	<i>MDN</i>	Mode	<i>SD</i>	Range
Age in years		30.8	26.5		11.8	22 – 48
Non-AP nursing experience in years		9.75	5	3	11.0	3 – 26
Gender				Female		
Male	0(0)					
Female	100(4)					
Race				White		
Non-white	0(0)					
White	100(4)					
Highest education		Bachelor's		Bachelor's		Bachelor's – Master's
Bachelor's	75(3)					
Masters	25(1)					
Pediatrics experience		None		No	0%(0)	
Yes	0(0)					
No	100(4)					
Telehealth experience		None		No	0%	(0)
Yes	0(0)					
No	100(4)					

Note. $N = 4$

Average difference scores for change in the NLN SCLS © instrument-modified total score, *Satisfaction with Current Learning* score, and *Self-confidence in Learning* score from Sim1 to Sim2 were calculated. None of the average difference scores were skewed, however assumptions of normality for the dependent samples *t*-test were violated as the average *Satisfaction with Current Learning* and average total difference scores were leptokurtic (4.0 for both) and the average *Self-confidence in Learning* difference score was platykurtic (-6.0).

Assumptions for the non-parametric equivalent test, the Wilcoxon signed-rank test, were also violated as the sample size ($N = 4$) did not meet the minimum requirement of 5 participants, and survey scores after Sim1 and Sim2 contained several ties (Dransfield et al., n.d.). Comparison of project outcomes to data from the literature via a one sample t -test could not be performed because the project data were not normally distributed, and the population mean was unknown. The Cronbach's alpha for the total NLN SCLS © instrument-modified was 0.49 in Sim1 and 0.24 in Sim2 indicating the findings lacked internal consistency reliability. Thus, final analysis consisted of descriptive statistics only.

For both Sim1 and Sim2, high average scores were demonstrated for each of the 13 individual items listed in the NLN SCLS © instrument-modified (Appendix U). Individual item scores ranged from 3.5 to 5.0, with all items except item 13 averaging 4.5 or higher (92.3%, $n = 12$). The high individual item scores resulted in minimal change in difference scores. Participants' average individual item scores for the NLN SCLS © instrument-modified decreased by 0.02 points from Sim1 ($M = 4.77$, $SD = .14$) to Sim2 ($M = 4.75$, $SD = .12$). However, average overall survey scores increased by 0.5 points from Sim1 ($M = 60$, $SD = 1.83$) to Sim2 ($M = 60.5$, $SD = 1.5$). Average individual scores for items within the *Satisfaction with Current Learning* section increased by 0.05 points from Sim1 ($M = 4.90$, $SD = 0.12$) to Sim2 ($M = 4.95$, $SD = 0.10$). Average individual scores for items within the *Self-confidence in Learning* section decreased by 0.06 points from Sim1 ($M = 4.69$, $SD = 0.16$) to Sim2 ($M = 4.63$, $SD = 0.18$). Scores are further described in Table 2. Statistical and clinical significance could not be determined as the data violated assumptions for both parametric and non-parametric analysis. It is notable that all participants (100%, $N = 4$) responded "strongly agree" to an additional survey question received after Sim2 regarding their likelihood to use telehealth in advanced practice after graduation.

Table 2

Comparison of NLN SCLS © Instrument-modified Individual and Total Scores

NLN SCL © Instrument Scores	Sim 1			Sim 2			Difference Score
	<i>M(SD)</i>	<i>MDN</i>	Range	<i>M(SD)</i>	<i>MDN</i>	Range	
Individual items							
<i>Satisfaction with current learning section</i>	4.90(0.12)	4.90	4 – 5 ^a	4.95(0.10)	5.00	4 – 5 ^a	0.05
<i>Self-confidence in learning section</i>	4.69(0.16)	4.69	3 – 5 ^a	4.63(0.18)	4.69	3 – 5 ^a	-0.06
Entire instrument	4.77(0.14)	4.77	3 – 5 ^a	4.75(0.12)	4.77	3 – 5 ^a	-0.02
Total survey							
<i>Satisfaction with current learning section</i>	24.50(0.58)	24.50	24 – 25 ^b	24.75(0.50)	24.50	24 – 25 ^b	0.25
<i>Self-confidence in learning section</i>	37.50(1.29)	37.50	36 – 39 ^c	36.00(1.41)	37.50	35 – 38 ^c	-1.50
Entire instrument	60.00(1.83)	62.00	60 – 64 ^d	60.50(1.50)	62.00	60 – 63 ^d	0.50

^a Possible range is 1 – 5

^b Possible range is 5 – 25

^c Possible range is 8 – 40

^d Possible range is 13 – 65

Discussion

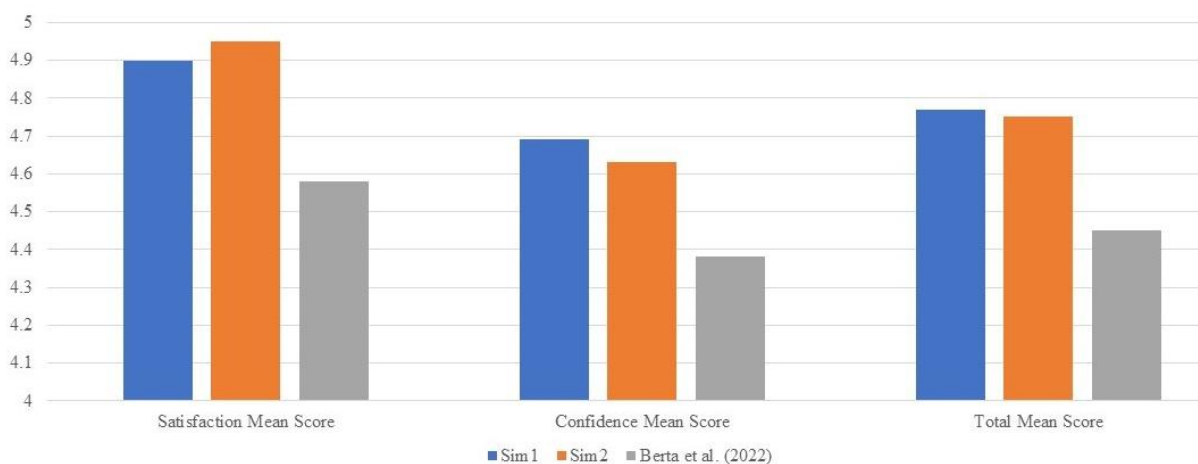
The survey completion rate following both Sim1 and Sim2 was 100% ($N = 4$), exceeding the objective of 90% completion. However, the objectives regarding increased *Self-confidence in Learning* and *Satisfaction with Current Learning* scores were not met as participants' high individual average item scores after both simulations resulted in minimal difference between Sim1 to Sim2 scores. The average *Satisfaction in Current Learning* scores increased by 1.0% ($M = 4.9$ to $M = 4.95$) and the average *Self-confidence in Learning* scores decreased by 0.4% ($M =$

4.69 to $M = 4.63$). Participants' high confidence and satisfaction scores after both simulations indicated that the simulations were positive learning experiences. The high satisfaction scores are meaningful as learning satisfaction positively correlates with likelihood to integrate learning into practice after graduation (Rutledge et al., 2017). Increased likelihood to use telehealth in advanced practice following telehealth SBL engagement highlights the importance of telehealth SBL in NP curricula.

Descriptive statistical findings from this DNP project were compared to the descriptive data obtained from a pilot study conducted by Berta et al. (2022) in which the NLN SCLS © instrument was also used. The *Satisfaction with Current Learning* mean scores, *Self-confidence in Learning* mean scores, and total mean scores for Sim1, Sim2 and Berta et al.'s (2022) pilot study were each within 0.37 points of one another (Figure 1); thus, the scores produced from this DNP project were descriptively consistent with findings from the current literature.

Figure 1:

NLN SCLS © Instrument Score Comparison between DNP Project and Berta et al.(2022)



Limitations

Project findings demonstrated insufficient internal consistency reliability ($\alpha = 0.49$; $\alpha = 0.24$). Additionally, the posttest-only design presented a threat to internal validity. The sample

size ($N = 4$) and similarities between Sim1 and Sim2 scores, which may have resulted from extreme response bias (Liu et al., 2017), violated assumptions for inferential statistical analysis, preventing the project leader from determining statistical and clinical significance and making site-specific recommendations. Furthermore, the sample was not reflective of students in the MU DNP/FNP program as participants were younger and had less non-APN experience ($Mdn = 26.5$ years; $Mdn = 5$ years, respectively) than the DNP/FNP student population ($Mdn = 31$ years; $Mdn = 9$ years, respectively).

Implications of Findings

The course coordinator intends to use the simulations during the 2023–2024 academic year (K. Barbato, personal communication, March 22, 2023), which will allow for ongoing data collection via a pretest-posttest design. The inherent off-campus telehealth SBL structure aligns with MU's online DNP/FNP program format, supporting sustainment through scheduling flexibility and travel avoidance (Gartz & O'Rourke, 2021). Furthermore, educating MU DNP/FNP students on telehealth-based care delivery better prepares them for telehealth use in practice while simultaneously fostering diagnostic reasoning skills for virtual and in-person environments (Robinson-Reilly et al., 2020; Rutledge et al., 2017). Integration of SP simulations across the curriculum can further enhance students' diagnostic reasoning skills and increase their preparation to provide safe, high-quality care that is both accessible and affordable. The benefits of this preparation can lead to positive patient outcomes and enhanced readiness that is noticed by future employers (Rutledge et al., 2017).

Continued simulation integration into NP curricula increases the likelihood that SBL will count toward the minimum clinical hour requirement established by academic accrediting bodies (Jeffries et al., 2019; National Organization of Nurse Practitioner Faculties [NONPF], 2021).

Telehealth SP simulations in NP curricula have the potential to address the shortage of clinical faculty and sites and lessen the clinical restrictions placed on NP students (Jeffries et al., 2019) via the provision of innovative learning strategies within standardized, safe environments (Jeffries et al., 2019; NONPF, 2021). Further research on the correlation between telehealth education in NP curricula and newly graduated NPs' telehealth use is warranted.

Significance to Advanced Practice Nursing

The continued growth of both telehealth and the NP profession indicates that NPs are well-positioned to provide high-quality, affordable, and accessible care to various populations (Arends et al., 2021; Gartz & O'Rourke, 2021; Robinson-Reilly et al., 2020). Increasing patients' access to care may decrease healthcare disparities among rural, urban, frontier, and gerontological populations, improving patient outcomes. Additionally, preparing NP students to use telehealth may help alleviate the impact of the physician shortage by increasing the ability for patients to be seen in a timely manner for chronic, acute, preventive, and specialty care services (Arends et al., 2021; Berta et al., 2022; Cassiday et al., 2021; Gartz & O'Rourke, 2021; LaManna et al., 2021; Rutledge & Gustin, 2021). Using telehealth-based care creates new pathways for interprofessional and intraprofessional communication and collaboration, promoting continuity of care (Knight & Prettyman, 2021; Robinson-Reilly; Wesemann et al., 2021)

Conclusion

Structured telehealth-focused educational preparation in NP curricula is lacking. NPs have noted differences in the way care is delivered via telehealth when compared to face-to-face encounters. When provided with telehealth-based SP SBL, MU DNP/FNP students reported high levels of satisfaction and confidence as well as an increased likelihood to use telehealth in

advanced clinical practice. Although the absence of inferential statistics limited project site recommendations, inclusion of telehealth SBL within NP programs is supported by evidence included in the literature review. Continued data collection at the project site will allow for the formulation of site-specific recommendations. Further research investigating telehealth SP simulation use in NP curricula and the longitudinal impact of SP simulations on telehealth preparedness and use after graduation are recommended.

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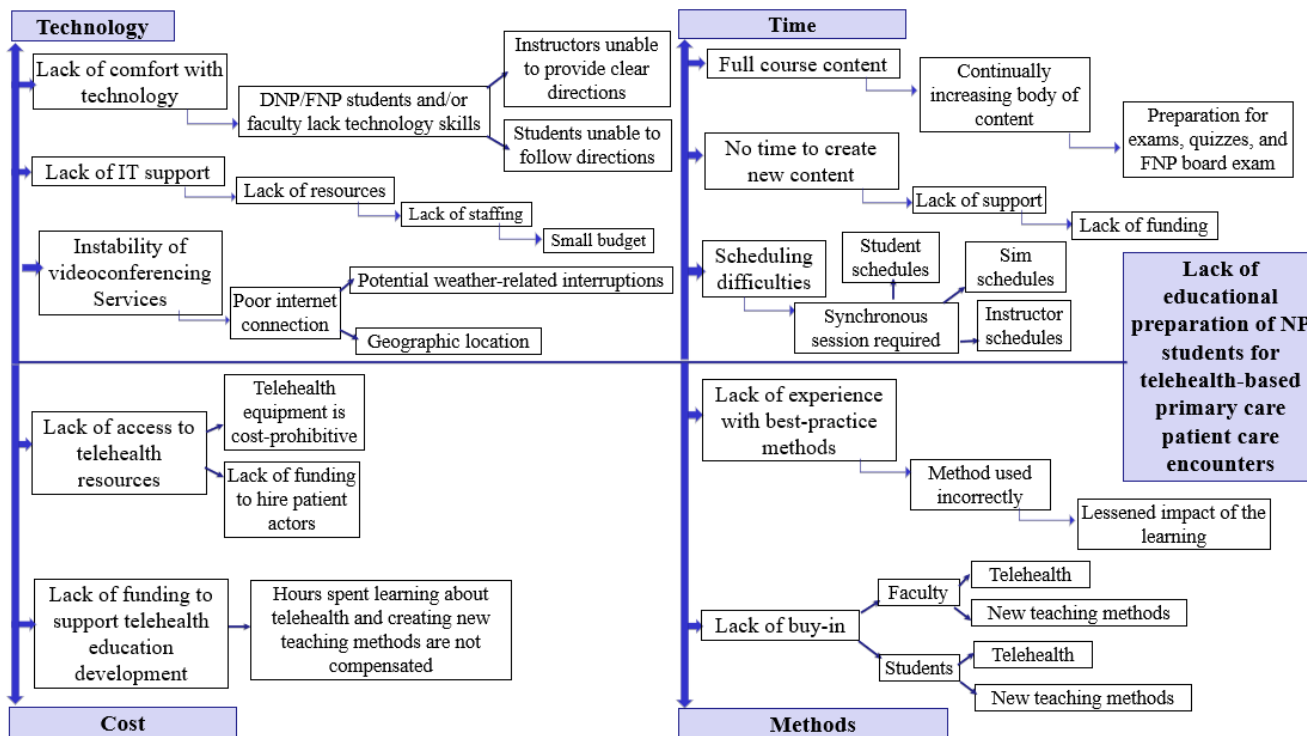
Appendix A

SWOT Analysis

	<i>Helpful</i>	<i>Harmful</i>
<i>Internal Factors</i>	<p>Strengths</p> <ul style="list-style-type: none"> • Full-time DNP/FNP faculty members support the use of telehealth-based educational initiatives, such as a SP simulation. • Students will have had some experience with telehealth prior to the implementation of the telehealth-based initiative. • Existing faculty have experience in developing and facilitating SBL activities. • Existing faculty have a pre-existing working relationship with the project leader. • Simulation space at the project site is not required to implement the telehealth-based educational initiative. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Some DNP/FNP faculty members may not be willing to engage in a telehealth-based educational initiative. • DNP/FNP faculty members may not have time to learn about best practice methods in teaching telehealth. • If courses are not taught by the same faculty member each year, it could impact the meaningfulness of the telehealth-based educational initiative. • There may be potential financial constraints related to using telehealth education. • The use of synchronous, standardized telehealth educational initiatives may present scheduling difficulties as the DNP/FNP program is delivered in an asynchronous, online format.
<i>External Factors</i>	<p>Opportunities</p> <ul style="list-style-type: none"> • Telehealth-based education may allow for interprofessional collaboration. • MU is actively seeking ways to engage in increased interprofessional education. • The use of telehealth-based education based on best practice may better prepare them for future telehealth experiences. 	<p>Threats</p> <ul style="list-style-type: none"> • DNP/FNP faculty members may lack technological skills necessary for telehealth. • DNP/FNP students may lack the technological expertise necessary to engage in a telehealth experience. • Reliance on technology and an online videoconferencing platform may make the telehealth experience susceptible to connection issues. • The telehealth educational initiative may not be counted toward the minimum number of clinical hours (NONPF, 2021)

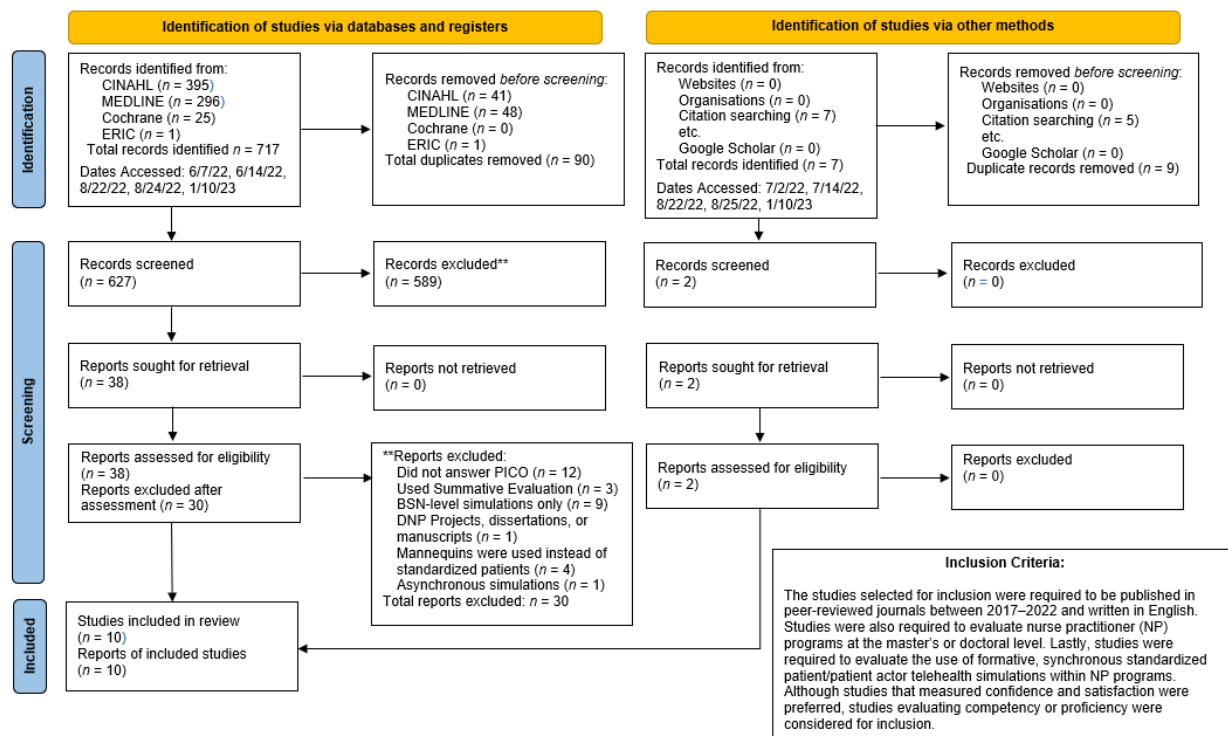
Appendix B

Root Cause Analysis Fishbone Diagram



Appendix C

PRISMA Table



Appendix D

Individual Evidence Summary Tool

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
1	<p>Authors: Arends, R., Gibson, N., Marckstadt, S., Britson, V., Nissen, M. K., & Voss, J.</p> <p>Publication Source: <i>Journal of the American Association of Nurse Practitioners</i></p> <p>Database Source: CINAHL (citation searching)</p> <p>Date: 2021</p>	<p>Evidence type: Quantitative</p> <p>Specific Research Design: Pretest-posttest, quality improvement (QI) project design</p>	<p>Purpose: To determine if integrating multimodal telehealth-based educational initiatives into the curriculum of a family nurse practitioner (FNP) program better prepared students to engage in telehealth-based patient encounters.</p> <p>Methods:</p> <ul style="list-style-type: none"> • Telehealth learning competencies were established by an advisory 	<p>Sample Type: Convenience sample</p> <p>Size: 171 FNP students</p> <ul style="list-style-type: none"> • 156 female and 15 male • 100 participants had previous telehealth experience • 60 participants reported having a disadvantaged academic 	<p>The integration of a multi-modal, systematic, telehealth curriculum in which early courses contained preparatory didactic content that prepared participants for formative non-SP and SP simulations in later courses. The curriculum also included reflective assignments after the simulations.</p>	<p>A faculty-developed Likert scale survey, with scores ranging from 1 (very unprepared) to 4 (very prepared) was used for students to self-evaluate their knowledge and skill level for each of the 22 telehealth learning competencies that were established by the advisory committee. This survey was administered before and after the integration of the telehealth curriculum.</p>	<p>Results/Findings:</p> <ul style="list-style-type: none"> • After using a Wilcoxon-matched pairs signed rank test, each of the 22 competencies demonstrated a statistically significant increase in FNP student confidence and readiness for practice via telehealth when compared with the pretest results. • The significance level for each competency item on the Likert scale self-assessment was set at $p < .05$. Each item achieved $p = .000$. • Of the 171 participants, 95 (62%) stated that they were interested in working in a rural area after graduation, and 82 (53%) stated that they 	<p>Strengths:</p> <ul style="list-style-type: none"> • Researchers established what is known and not known about the topic via the background section in which they referenced valid and reliable sources from peer-reviewed journals that were collected from within five years of the publication of this study. • The researchers used multiple sources of information to identify how the study will address gaps in knowledge. As such, national organizations, such as The 	V, A

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
			<p>board consisting of key stakeholders, including providers who work in urban and rural settings, NP nursing faculty members, and healthcare regulators, leaders, and administrators</p> <ul style="list-style-type: none"> • The telehealth learning competencies were used to create the instrument, the learning outcomes, and the telehealth learning initiatives. • The telehealth- 	<p>c background</p> <p>Setting: Midwestern land-grant university with two campuses</p>			<p>had a more positive opinion of practicing in a rural area via using telehealth.</p> <ul style="list-style-type: none"> • According to the researchers, the study results confirmed the importance of including telehealth curricular competencies and associated telehealth learning activities into NP education to allow for better preparation for clinical practice as telehealth-based healthcare delivery continues to grow <p>Recommendations for Practice:</p> <ul style="list-style-type: none"> • Establishment of evidence-based competencies for integrating telehealth-based education into curricula. • A safe, consequence-free environment in which to practice 	<p>American Academy of Ambulatory Care Nursing and The National Organization of Nurse Practitioner Faculties (NONPF) were referenced. Additionally, peer-reviewed evidence written within the last five years and key stakeholders were also referenced. The gaps in knowledge then helped to formulate the creation of telehealth-focused curricular competencies.</p> <ul style="list-style-type: none"> • The study clearly presented the purpose, data collection methods, data collection results, 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
			<p>based educational initiatives included a multi-modal approach of didactic content, case studies, and telehealth-based standardized patient (SP) simulations, and non-SP telehealth simulations. All SP simulations were formative evaluations of student performance.</p> <ul style="list-style-type: none"> The SP telehealth simulations used the following formats: students were paired with classmates 				<p>telehealth skills should be established, with one common method being that of formative SP telehealth simulation.</p>	<p>and the recommendations for practice .</p> <ul style="list-style-type: none"> The advisory board helped to inform the development of the simulation and the instrument. Study limitations were discussed, and it was noted that validity and reliability of the instrument had not been established. The sample was representative of the demographics within the university. A table of the sample demographics was included and was consistent with the narrative information about the sample. Face validity of the instrument was established 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
			<p>and the classmate played the role of the patient in a rural area; nurse practitioner (NP) faculty member were paired with students to portray a telehealth experience in a one-on-one format; faculty members acted as SPs for a student and a specialty provider, who was played by a faculty member, joined the telehealth call.</p>					<p>via the advisory board.</p> <ul style="list-style-type: none"> • The instrument survey had a 100% response rate • The results of the study were presented clearly in narrative and table format and demonstrated increased confidence and satisfaction with relation to telehealth-based patient care, were statistically significant. • The narrative results of the statistical and non-statistical data were consistent with the results listed within the numeric/tables. • Researchers provided examples of student feedback. • The Plan-Do- 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/ Limitations	Evidence Level & Quality Rating
								<p>Study-Act method was used as the framework for this QI project.</p> <p>Limitations:</p> <ul style="list-style-type: none"> • A convenience sample was used, which may negatively impact generalizability. • A power analysis to determine the sample size was not performed. • Validity and reliability of the survey instrument were not established via testing. Thus, a Cronbach's alpha was not included. • The use of a pretest-posttest design may impact posttest results. • Interrater reliability among the faculty members was not addressed. • The researchers 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/ Limitations	Evidence Level & Quality Rating
								<p>did not address how results may have been impacted by 100 participants having prior telehealth experience.</p> <ul style="list-style-type: none"> • It was unclear if participants' survey answers were collected anonymously, which may influence participant responses. • Since the instrument required students to self-report their knowledge and skill level related to telehealth in a pretest-posttest format, reactivity may have occurred as students may have answered in a way that they believed would be considered favorable by their 	

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								instructors.	
2	<p>Authors: Berta, M., Burt, L., Carlucci, M., & Corbridge, S.</p> <p>Publication Source: <i>Journal of Nursing Education</i></p> <p>Database: CINAHL</p> <p>Date 2022</p>	<p>Evidence type: Mixed-Methods</p> <p>Specific Research Design: <i>Quantitative</i></p> <p>Pretest-posttest, exploratory, pilot study</p> <p>Qualitative: Phenomenological</p>	<p>Purpose: To determine if integrating a breaking bad news (BBN) telehealth simulation better prepared acute care and primary care adult-gerontology NP students to discuss challenging healthcare topics with patients and families via synchronous videoconferencing.</p> <p>Methods:</p> <ul style="list-style-type: none"> • A breaking bad news (BBN) telehealth simulation was developed in alignment with nursing 	<p>Sample Type: Convenience</p> <p>Sample Size: 23AGAC NP students; 10 AGPCNP students</p> <p>Sample Demographics:</p> <ul style="list-style-type: none"> • Average clinical experience of 5.5 years • 90.9% female • 60.6% Caucasian] • 72.7% have a bachelor's degree 	<p>Quantitative: The integration of one formative, multi-site BBN telehealth SP simulation within AGACNP and AGPCNP curricula at two universities.</p> <p>Qualitative: n/a</p>	<p>Quantitative:</p> <ul style="list-style-type: none"> • A 7-point Likert scale where participants rated their perceived comfort in BBN via telehealth was given pre and post-intervention. Descriptions of the Likert scale scores and who developed the instrument were not included. • The NLN SCLS © instrument was used as a post-intervention evaluation tool. The instrument includes two sections: a five-item 	<p>Quantitative:</p> <ul style="list-style-type: none"> • After using a repeated-measures <i>t</i>-test, the 7-item BBN preparedness Likert scale survey demonstrated statistically significant differences in participants' self-perceived level of preparation to BBN via telehealth when pre-intervention scores were compared to post-intervention scores, with $t(32) = 4.68, p < .0001$. Pre-simulation, average preparedness scores were $M = 3.55, SD = 1.44$. Post-simulation, average preparedness scores were $M = 5.24, SD = 1.30$. • The NLN SCLS (c) post-intervention survey results demonstrated a mean score of 4.45 ($SD = 0.41$). For the <i>Satisfaction with Current Learning</i> 	<p>Quantitative</p> <p>Strengths:</p> <ul style="list-style-type: none"> • The purpose of the study was clearly presented, and data collection methods and results were clearly presented and described. • Researchers established what is known and not known about the topic via the background section in which they referenced valid and reliable sources from peer-reviewed journals. • The small sample size was not a limitation as this study was a pilot. • The simulation intervention was developed based on best practice standards from 	II, B

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			<p>simulation best practice recommendations, which included pilot testing.</p> <ul style="list-style-type: none"> • Simulation preparation included readings on the Setting, Perception, Invitation, Knowledge, Emotions with empathy, Summarizing and Strategizing (SPIKES) protocol and the role of NPs in BBN. • A demographic survey and a 7-item Likert scale survey evaluating participant perceived preparation 	<p>as the highest educational level.</p> <ul style="list-style-type: none"> • Clinical backgrounds included critical care, general medical-surgical, neurology, emergency department, trauma, and primary care <p>Setting: The Doctor of Nursing Practice Adult-Gerontology acute care and</p>		<p>section entitled <i>Satisfaction with Current Learning</i>, and an eight-item section entitled, <i>Self-confidence in Learning</i>. Each individual item within both sections of the instrument is scored based on a five-point Likert scale, with a score of one indicating strongly disagree, and a score of five indicating strongly agree.</p> <p>Qualitative: One reviewer evaluated the transcripts</p>	<p>section, $M = 4.58$ ($SD = 0.47$), and, for the <i>Self-confidence in Learning</i> section, $M = 4.38$ ($SD = 0.44$), indicating that participants moderately agreed with feelings of satisfaction and confidence after the simulation activities, but also believed that the simulation covered necessary content, developed necessary skills, and that beneficial resources were used by instructors.</p> <p>Qualitative</p> <ul style="list-style-type: none"> • Participants perceived the simulation as a beneficial experience. • Two themes were identified: <ul style="list-style-type: none"> • Valuable Simulation Processes- Participants believed that the prework was necessary in 	<p>INACSL and the content of the simulation was aligned with the American Association of Colleges of Nursing <i>Essentials: Core Competencies for Nursing Professional Education</i>.</p> <ul style="list-style-type: none"> • Participants were from two universities in two different NP specialties that are located in two different regions of the United States (Northeast and Mid-west), which may have a positive impact on generalizability. • The NLN SCLS © has a Cronbach's alpha of .94 within the <i>Satisfaction with Current Learning</i> 	

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			<p>to break bad news via telehealth was administered before the simulation.</p> <ul style="list-style-type: none"> An Adult-Gerontology acute care and primary care NP (AGACNP) scenario and a AGPCNP scenario were developed. Participants were provided with a pre-brief and a written report based on their specialty-specific scenario, after which, they individually engaged in the 	<p>primary care tracks at two urban schools of nursing in different parts of the United States (Northeast and Midwest)</p>		<p>compiled for the qualitative portion of the study.</p>	<p>preparing to interact with the family member in the simulation.</p> <ul style="list-style-type: none"> Multifaceted learning application to future NP practice- By participating in the simulation, participants felt more prepared to engage and connect with patients and families via telehealth once they enter clinical practice. <p>Recommendations for Practice:</p> <ul style="list-style-type: none"> SP simulation is an effective method in preparing NP students to use telehealth to communicate with patients and families. It is likely that the presence and use of telehealth will experience 	<p>section and a Cronbach's alpha of .87 in the <i>Confidence in Learning</i> section.</p> <ul style="list-style-type: none"> The survey response rate was 82.5% Limitations of the study were discussed. <p>Limitations</p> <ul style="list-style-type: none"> A convenience sample was used, which may impact generalizability. It was not explicitly stated how many participants were from each University. Having an unequal number of participants from each specialty may impact results. A Cronbach's alpha was not provided for the 	

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			<p>simulation.</p> <ul style="list-style-type: none"> • Participants received feedback from the SP, engaged in faculty-guided debriefing, completed two post-simulation surveys and completed a reflection exercise after the simulation. • Quantitative survey data from both AGACNP and AGPCNP participants were combined in data analysis. • Qualitative data was derived was compiled 				<p>continued growth.</p> <ul style="list-style-type: none"> • Using telehealth SP simulations can better prepare NP students for their future roles within advanced practice, indicating the need for to use them with greater frequency within NP programs. 	<p>7-item Likert scale on self-perceptions of preparedness to BBN to family members.</p> <ul style="list-style-type: none"> • A description of what each score within the 7-item Likert scale on self-perceptions of preparedness to BBN was not provided. • Descriptions of how the 7-item Likert scale on self-perceptions of preparedness to BBN was developed and who created it were not included. • A visual example of the 7-item Likert scale was not included. • Validity of the NLN SCLS © instrument was not addressed. • It was not stated if the survey 	

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								<p>responses were collected anonymously, which may have influenced participants' self-reported responses. Thus, reactivity may have occurred.</p> <ul style="list-style-type: none"> • Data results were only provided in narrative format. • The use of a pretest-posttest design can negatively impact results due to participant knowledge of survey questions. <p>Qualitative Strengths</p> <ul style="list-style-type: none"> • All four of the authors of the study are doctorally prepared nurse practitioners, two of which have DNP degrees, and two of which 	

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								<p>have PhD degrees. Additionally, one of the authors is a fellow of the following organizations: American Association of Nurse Practitioners, American College of Chest Physicians, and the American Academy of Nursing. This information indicates that the authors are adequately prepared to have performed this research.</p> <ul style="list-style-type: none"> • IRB approval was obtained from both institutions. • The participants each signed an informed consent prior to being interviewed. • The participants 	

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								<p>were fully informed about the purpose of the study.</p> <ul style="list-style-type: none"> • Participant data was deidentified. • The purpose of the study is clearly identified. • It was stated that bracketing occurred to prevent bias during data collection. <p><i>Sampling</i></p> <ul style="list-style-type: none"> • The demographics of the sample were listed. • The participants had knowledge about the topic that the researchers were studying. <p><i>Data Collection</i></p> <ul style="list-style-type: none"> • Data saturation was achieved. <p><i>Data analysis</i></p> <ul style="list-style-type: none"> • Direct quotes 	

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								<p>from participants were included and also supported the identified themes.</p> <p><u>Credibility</u></p> <ul style="list-style-type: none"> • The study purpose was clearly defined. • Triangulation was achieved via correlation with survey data. <p><u>Fittingness</u></p> <ul style="list-style-type: none"> • The researcher provided several direct quotes collected from the data to support the themes as well as the conclusions. <p><u>Transferability</u></p> <ul style="list-style-type: none"> • Sampling was adequate as evidenced by the achievement of data saturation/ • Data were obtained from 	

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								<p>participants at two universities, which may increase transferability.</p> <p><u>Congruency:</u></p> <ul style="list-style-type: none"> • Discussion and conclusions were congruent with the purpose of the study. • Conclusions were based on data collection. <p><u>Limitations</u></p> <p><u>Confirmability/Audibility</u></p> <ul style="list-style-type: none"> • The process by which collection, interpretation, coding, and analysis of the data was not discussed. • It was not explicitly stated who transcribed the interviews. Therefore, it is unclear if bias 	

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								<p>occurred.</p> <ul style="list-style-type: none"> • The data was only presented in narrative format. <p><i>Credibility</i></p> <ul style="list-style-type: none"> • It was not made clear if each phase of data analysis was evaluated by additional researchers and content experts. • The authors of the study indicate that only one researcher reviewed the transcripts, which may have prevented triangulation as well as accuracy of statements. • Justification for this type of study was not provided <p>Overall Mixed-Methods:</p>	

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								<p>Strengths</p> <ul style="list-style-type: none"> The mixed methods research question was relevant to both the quantitative and qualitative portions of the study. <p>Limitations:</p> <ul style="list-style-type: none"> Although called a mixed methods study, more emphasis was placed on the quantitative results 	
3	<p>Authors: Coburn, C. V., Spence, S. LaCagnina, L., Becklenberg, A., Wands, L. M., & Haynes-Ferere, A.</p> <p>Publication Source:</p>	<p>Evidence type: Quantitative</p> <p>Specific Research Design Posttest only, quasi-experimental pilot study</p>	<p>Purpose: To create a high-fidelity and meaningful learning experience for Master of Science-Family Nurse Practitioner (MSN-FNP) and Bachelor of Science (BSN)</p>	<p>Sample Type: Convenience</p> <p>Size: 26 BSN students and 5 MSN-FNP students</p> <p>Setting:</p>	A formative unfolding case study using telehealth and standardized patients was implemented. Preparatory materials were provided for both MSN-FNP and BSN, however, only BSN students were provided	The Simulation Evaluation Tool- Modified (SET-M), was used. The SET-M is a valid and reliable tool that evaluates simulation effectiveness. The SET-M tool was modified by the authors and also included open-	<p>Results/Findings:</p> <ul style="list-style-type: none"> Student responses within the SET-M evaluation tool indicated satisfaction with the simulation learning experience as well as increased confidence with relation to communication and collaboration. Per the results of the study, the MSN students more consistently 	<p>Strengths:</p> <ul style="list-style-type: none"> The purpose of the study was clearly presented, and data collection methods and results are clearly described. The researchers identified how the study will address gaps in knowledge. Since this was a 	II, B

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	<p><i>Journal of Nursing Education</i></p> <p>Database Source: CINAHL</p> <p>Date: 2021</p>		<p>students through the use of three different simulation scenarios.</p> <p>Methods:</p> <ul style="list-style-type: none"> • A needs assessment was performed and curricular and course objectives were created for both MSN-FNP and BSN students. • The simulation was created as an unfolding case study where BSN and MSN-FNP students collaborated to care for patients. 	A school of nursing within a private university	with didactic telehealth preparation.	<p>ended questions that were developed by nursing faculty.</p> <ul style="list-style-type: none"> • The adapted SET-M tool contained 13 questions that required students to rank their satisfaction with the organization of the simulation, the helpfulness of the debriefing, and their comfort level with relation to assessment, prioritization, communication, and plan of care interventions. The ranking system ranged from strongly agree to strongly 	<p>answered that they experienced increased confidence after the simulation experience.</p> <ul style="list-style-type: none"> • 80% of MSN-FNP and BSN students responded strongly agree or agree to statements related to simulation effectiveness and satisfaction. • MSN-FNP student responses were more consistent in the rankings listed than the BSN students, with 11 of 13 responses for the telehealth simulation listed as strongly agree. • Three of five MSN students rated the urgent care simulation with a score of strongly agree or agree for each of the 13 survey statements. • The free-text comments indicated that MSN-FNP 	<p>pilot study, the small sample size is not a limitation.</p> <ul style="list-style-type: none"> • MSN students had a 100% survey response rate. BSN students also had a survey response rate of greater than 25%. • The validity of the SET-M evaluation tool was discussed. • Direct quotes from the surveys were included in the description of the results. • Data was provided that correlated with the narrative version of the results. • The tables that were presented were consistent with the narrative of the table content. 	

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			<ul style="list-style-type: none"> • BSN students connected with a patient via Zoom. • The MSN-FNP students provided diagnostic testing orders and treatment options when asked for input by the BSN students. • A debrief followed the simulation. • The students were asked to complete the SET-M evaluation form as well as several faculty-developed open-ended questions. 			disagree.	<p>students recognized the importance of being introduced to telehealth prior to graduation.</p> <ul style="list-style-type: none"> • It was noted that the fidelity level of a telehealth-based simulation experience may have an impact on the ability of the simulation to produce a meaningful learning experience. <p>Recommendations for Practice:</p> <ul style="list-style-type: none"> • Include high fidelity telehealth-based simulations for students at the advanced practice levels as well as at the BSN levels. 	<p>Limitations:</p> <ul style="list-style-type: none"> • The researchers do not clearly identify what is known and not known about the problem and a literature review was not included. • A convenience sample was used, which may impact generalizability. • A Cronbach's alpha was not provided for the SET-M evaluation tool despite the tool having established validity and reliability. • The researchers made adaptations to the SET-M tool, which may impact the tool's validity and reliability. • It was unclear if survey 	

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								<p>responses were collected anonymously, which may have influenced participants' self-reported responses. Thus, reactivity may have occurred.</p> <ul style="list-style-type: none"> The COVID-19 pandemic was the impetus for the creation of this simulation, which may have impacted the participants' responses. 	
4	<p>Authors: Emerson, M. R., Buchanan, L., & Golden, A.</p> <p>Publication Source: <i>Nurse Educator</i></p> <p>Database Source:</p>	<p>Evidence Type: Quantitative</p> <p>Specific Research Design Pretest-posttest, quasi-experimental pilot</p>	<p>Purpose: To determine if there was a change in telehealth readiness scores after two separate groups psychiatric mental health NP (PMHNP) students, FNP students, and</p>	<p>Sample type: Convenience</p> <p>Size: <i>Sim #1</i> 11 participants: 4 NP students (specialty not</p>	<p>A three-phase telehealth educational program was implemented, with the first two phases preparing participants for the third phase in which they engaged in two formative telehealth-</p>	<p>Simulation #1:</p> <ul style="list-style-type: none"> A faculty-developed 11-item survey with a 1-5 Likert scale, where "1" indicates "strongly disagree" and "5" indicates "strongly agree" was used for the 	<p>Results/Findings</p> <ul style="list-style-type: none"> After the first simulation, mean scores ranged from 4.75 to 5 of the 11 items within the survey. After the first simulation, 100% of the participants in simulation #1 selected either "strongly agree" or "agree" for all 11 	<p>Strengths</p> <ul style="list-style-type: none"> The researchers identified the purpose of the study and what is known and not known about telehealth education in NP programs. The researchers also identified how the study will address 	II, B

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	Medline Year: 2020	study design	<p>adult gerontological NP (AGNP) students were provided with two different telehealth-based simulation scenarios.</p> <p>Methods:</p> <ul style="list-style-type: none"> • NP students were asked to participate in the SP telehealth simulation, which was an additional, formative, voluntary learning experience. • Key stakeholders provided input to NP faculty members with relation to the learning experience. • Students were 	<p>specified), 2 PMHNP students, 1 FNP student, and 1 AGNP student</p> <p><i>Sim #2:</i> 7 NP participant s: 1 PMHNP student; 6 FNP students</p> <p>Setting: A university with several NP programs located within the United States.</p>	<p>based SP simulations. Both simulation scenarios were mental health based, with the topic centering on a patient with alcoholism.</p>	<p>first simulation.</p> <p>Simulation #2:</p> <ul style="list-style-type: none"> • An updated version of the faculty-developed 11-item survey with a 1-5 Likert scale, where “1” indicates “strongly disagree” and “5” indicates “strongly agree” was used for the second simulation. Six of the 11 items of the survey were modified. • The Confidence and Readiness Ruler, which is a standardized tool, was used in a pretest-posttest 	<p>items on the survey questions on the evaluation.</p> <ul style="list-style-type: none"> • After the second simulation, mean scores on the modified 11 item survey ranged from 3.86 to 4.57. • The Confidence and Readiness Rule was given to students before and after the simulation. A Mann-Whitney U test was used to determine the pretest-posttest difference in readiness and confidence scores. The change in confidence score was statistically significant ($p = .017$). The change in readiness score was also statistically significant ($p = .016$). • Participants also reported that practicing telehealth with SPs was similar to using telehealth in the clinical setting. 	<p>knowledge gaps.</p> <ul style="list-style-type: none"> • The telehealth SP simulation experience was developed in alignment with the NONPF competencies and the International Nursing Association for Clinical Simulation and Learning (INACSL) Standards of Best Practice. • The NP faculty members ensured that the experience was high-fidelity, and thus, content experts were involved to help create the simulation. • A new sample of participants was used for the second simulation. Thus, although 	

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			<p>provided with simulation prework.</p> <ul style="list-style-type: none"> • For the simulation, each student conducted an assessment of an SP via telehealth. A faculty member was positioned off-camera, but in the room with the SP. • The SP and faculty member provided feedback. • A group debriefing session was held. • The students were asked to evaluate the simulation experience. The results of the evaluations 			format.	<ul style="list-style-type: none"> • Participants reported increased knowledge on scope of practice of NPs in other specialties. • Participants reported that the telehealth SP simulation allowed them to better understand the differences between in-person patient encounters and electronic patient encounter. • Participants acknowledged the importance of using telehealth to provide care to rural communities. • Participants stated that they believed that the telehealth SP simulation better prepared them for clinical practice. <p>Recommendations for Practice:</p> <ul style="list-style-type: none"> • NP programs should consider including telehealth educational initiatives to better 	<p>experimental attrition occurred as the second simulation had four less participants than the first, mortality did not occur.</p> <ul style="list-style-type: none"> • The sample included a variety of NP specialties. • Since this was a pilot study, the small sample size is not a limitation. • NP faculty members involved key stakeholders in the development of the evaluation tool. • The lack of reliability and validity of the 11 item Likert scales that were used was noted by the researchers within the limitations 	

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			<p>from the first simulation were used to modify the second simulation.</p> <ul style="list-style-type: none"> The simulation process was repeated for the second simulation with slight modifications. 				<p>prepare students for practice with relation to telehealth patient care and telehealth technology.</p> <ul style="list-style-type: none"> If using telehealth SP simulation, scenarios should be created to fit the NP specialty. NP programs who include telehealth-based simulations should use the most high-fidelity simulation experience, with one such method being the use of SPs. 	<p>section.</p> <ul style="list-style-type: none"> 36% of the participants from the first simulation completed the 11-item Likert scale survey. 100% of participants from simulation #2 completed the 11-item Likert scale survey and the Confidence and Readiness ruler. The 11-item Likert scale results for both simulations were included as links within the study. The Confidence and Readiness Ruler demonstrated a statistically significant increase in participant readiness and confidence in providing patient 	

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								<p>care via telehealth.</p> <ul style="list-style-type: none"> The statistical data derived from the 11-item Likert scales used in simulation #1 and simulation #2 indicated student confidence and satisfaction with relation to their knowledge of telehealth. The narrative content was consistent with the numeric content presented within the linked tables for the 11-item Likert scales. <p>Limitations</p> <ul style="list-style-type: none"> A review of literature was not included within the study. However, 11 of the 16 sources referenced within 	

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								<p>the study were published within five years from the study's publication.</p> <ul style="list-style-type: none"> • The geographic location of this university within the United States was not specified. • Participants' open-ended responses were only evaluated in the second simulation. • The use of a convenience sample may impact generalizability. • There were unequal numbers of participants from each NP specialty within both simulations. • There were less participants in the second simulation compared to the first simulation. 	

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								<ul style="list-style-type: none"> • Validity and reliability testing was not performed on the 11-item Likert scale. • Six of the 11 items on the Likert scale were modified between simulation #1 and simulation #2. • Validity and reliability of the Confidence and Readiness Ruler has not been established in relation to NP education but does have validity and reliability in other contexts. • A visual example of the Confidence and Readiness ruler was not provided. • The researchers performed the 	

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								<p>study in 2020; however, specific dates are not provided. Thus, it is unclear if COVID-19 pandemic may have impacted the results.</p> <ul style="list-style-type: none"> The use of a pretest-posttest design can sometimes impact post-test results as the participants are aware of the questions they will be asked. 	
5	<p>Authors: Gartz, J. & O'Rourke, J.</p> <p>Publication Source: <i>Journal of the American Association of Nurse Practitioners</i></p>	<p>Evidence type: Integrative review</p> <p>Specific Research Design: Research and non-research studies</p>	<p>Purpose: This study synthesized the most up-to-date literature on how NP programs integrated telehealth education into curricula. This study also synthesized</p>	<p>Sample type: Quantitative, qualitative, and non-research studies written in English</p> <p>Size: 15 studies</p>	n/a	n/a	<p>Results:</p> <ul style="list-style-type: none"> 14 of the 15 studies included didactic telehealth content, 13 of the studies implemented simulation-based learning for telehealth education, 2 studies included projects, and 4 of the studies included clinical experiences. 	<p>Strengths:</p> <ul style="list-style-type: none"> The study clearly states the subject matter that will be reviewed. The researchers discussed what is known and not known about the topic. The literature review is up-to-date, with all of the 	V, A

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	<p>Database Source: Medline</p> <p>Date: 2021</p>	were included	<p>the effectiveness of the various formats of telehealth integration in increasing student confidence, competence, and preparedness for using telehealth after graduation.</p> <p>Methods:</p> <ul style="list-style-type: none"> Using the framework established by Whittemore and Knafl, the authors searched two databases, PubMed and Cumulative Index to Nursing and Allied Health Literature 	<p>Setting: Graduate NP programs at various universities</p>			<ul style="list-style-type: none"> One of the 15 studies used didactic content only, but the authors of this study also stated that a multi-modal approach is best. Nine of the 15 studies used a multi-modal method (didactic plus simulation) to implement telehealth education into the curriculum, which resulted in increased student competence, knowledge, and comfort with the use of telehealth. SP-based telehealth simulation using videoconferencing was the most common method used. Several studies allowed students to use telehealth equipment, such as a Bluetooth-enabled stethoscopes. One study included a follow-up of the students after 	<p>studies included in the integrative review being published in the last five years from when the integrative review was published in 2021.</p> <ul style="list-style-type: none"> The authors of the study identified gaps in the literature, as the lack of research on telehealth integration into NP programs led to the inclusion of non-research studies within this integrative review. The author made several recommendations for future practice, with each recommendation acknowledging the value of including 	

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			<p>(CINAHL) in October 2019 to find peer-reviewed studies that were written in English.</p> <ul style="list-style-type: none"> The search terms used were as follows: “telemedicine,” “telehealth,” “ehealth,” “mhealth,” “mobile health,” and “graduate education” and “nursing education.” Based on the search terms used within these two databases, a total of 469 articles were identified. Of those 469 articles, 38 articles met 				<p>graduation regarding the integration of telehealth into their day-to-day practice. These results reflected the value of the integration of telehealth into NP curriculum.</p> <p>Findings:</p> <ul style="list-style-type: none"> Combining didactic content with experiential learning better educates the students on how to engage in telehealth patient encounters. Students had more positive attitudes toward the use of telehealth after engaging with it in an educational context. The use of SP telehealth-based simulation was particularly useful for NP programs that are delivered online or via a hybrid format. The integration of telehealth improves student comfort with 	<p>telehealth education into NP curricula.</p> <ul style="list-style-type: none"> The search results were provided in narrative and table format. Although a single author performed the study, the author kept many notes and a second reviewer evaluated for inconsistencies. The studies included in the integrative review were published between 2016 and 2019, indicating that the COVID-19 pandemic did not influence the results of the study. Despite the growth of telehealth, it was noted that studies of telehealth 	

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			<p>the inclusion and screening criteria.</p> <ul style="list-style-type: none"> Any articles reviewing undergraduate nursing programs were excluded. A total of 15 articles were identified and included within the integrative review. 				<p>telehealth and willingness to work with rural areas post-graduation.</p> <p>Recommendations for Practice:</p> <ul style="list-style-type: none"> Didactic telehealth content should be coupled with experiential learning, such as simulation and clinical experience. The most ideal telehealth education is a combination of didactic content, project content, clinical content, and simulation content on telehealth. However, if a university is unable to integrate all four methods of telehealth education, the second-best option is to use a combination of didactic, projects, and simulation. Additional telehealth education should also be provided to NP 	<p>education within NP programs did not fully prepare students to have competency in using telehealth.</p> <p>Limitations:</p> <ul style="list-style-type: none"> The researchers chose to include both research and non-research studies due to the low number of research studies found. A single researcher performed the integrative review; however, this was self-reported in the limitations section, and, as noted in the strengths section, the researcher's notes and findings were evaluated by a second reviewer. Since qualitative, quantitative, and 	

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							<p>faculty members.</p> <ul style="list-style-type: none"> • Further rigorous, robust, research on the use of telehealth-based educational initiatives is required. 	<p>non-research studies were used, the outcomes of interest varied.</p> <ul style="list-style-type: none"> • The research studies typically included small sample sizes. 	
6	<p>Author: Knight, E. P., & Prettyman, A. V.</p> <p>Publication Source: <i>Journal of Nursing Education</i></p> <p>Database Source: CINAHL</p> <p>Date: 2020</p>	<p>Evidence Type: Quantitative</p> <p>Specific Research Design: Posttest only, quasi-experimental pilot study</p>	<p>Purpose: To increase proficiency and confidence in using telehealth and engaging in intraprofessional communication via the integration of a simulation-based educational activity focused on telehealth for both NP and prelicensure BSN students.</p> <p>Methods:</p> <ul style="list-style-type: none"> • An educational 	<p>Sample type: Convenience</p> <p>Size 19 NP (BSN-to-DNP) students who were enrolled in their first clinical management course & 10 prelicensure BSN students completing their final</p>	A formative SP, telehealth-based simulation was implemented where BSN students and NP students collaborated while caring for a patient via a telehealth encounter	<p>Instrument Completed by Participants: A faculty-developed five-point Likert scale survey that was based on the Technology Acceptance Model to determine technology usefulness and usability as well as self-determined technology proficiency. Within the Likert scale, a score of 5 indicated “strongly</p>	<p>Results/Findings: NP student results (n=19)</p> <ul style="list-style-type: none"> • All 19 students indicated that the telehealth software was usable. • 89% reported that telehealth software was useful and over 90% reported that the technology allowed them to use skills required for advanced practice. • Almost all participants stated that the simulation increased their confidence with and preparation to use telehealth technology. • 100% of participants reported positive opinions on 	<p>Strengths:</p> <ul style="list-style-type: none"> • The researchers clearly identify the purpose of the study and identify what is known and not known about the topic. • Gaps in the literature are addressed and identified. • Study limitations were addressed. • Conclusions were based on results. A structured model was used to implement the simulation. • Stakeholders were involved in 	II, B

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			<p>model was created and learning needs were identified by BSN faculty and DNP faculty.</p> <ul style="list-style-type: none"> An SP telehealth simulation was created by the nursing faculty, the simulation lab staff, and information technology staff. The simulation scenario for the BSN students followed an objective structured clinical examination (OSCE) model that 	<p>semester of study</p> <p>Setting: A college of nursing at a public university in the southwestern United States. The BSN-to-DNP program at this university consists of four NP specialties</p>		<p>agree” and a score of 1 indicated “strongly disagree.” This survey also included open-ended questions asking students to share any other comments about the simulation experience. Themes were developed from participants’ responses to these open-ended questions.</p> <p>Instruments Completed by Faculty: A faculty-developed evaluation of clinical proficiency was also used during the simulation scenario for both the</p>	<p>intraprofessional collaboration.</p> <p>BSN Participant Results (n=10)</p> <ul style="list-style-type: none"> Over 75% of the students believed that the software had good usability. 100% believed that telehealth software was useful. Over 90% of students responded that technology allowed them to demonstrate skills appropriate with their level of education. 80% stated that the simulation increased their feelings of confidence and comfort with telehealth technology. 100% believed that the simulation better prepared them to use telehealth in the future. 100% reported positive opinions on intraprofessional 	<p>the development of this study.</p> <ul style="list-style-type: none"> Since this was a pilot study, the small sample size is not a limitation. Response rates to surveys was greater than 25% for both BSN and DNP students. The data collection methods are clearly described, but a numeric version of the data was not provided. Results were supported by the data collected. <p>Limitations:</p> <ul style="list-style-type: none"> A table version of the data was not provided. Although a small sample size is not a limitation of a pilot study the results should still be evaluated 	

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			<p>is used in the DNP program at the university.</p> <ul style="list-style-type: none"> In this model, the SP and the student learner interact in an on-campus setting and a faculty member observes. For the DNP students, the simulation occurred remotely, with the SP and BSN student being on-campus and the NP student videoconferencing into the 			<p>prelicensure BSN students and the DNP students</p>	<p>collaboration.</p> <p>Themes Derived from NP and BSN Students' Responses to the Open-Ended</p> <ul style="list-style-type: none"> Theme 1: The students valued being exposed to telehealth prior to graduation. Theme 2: The students understood how the telehealth-based learning experiences may apply to their future clinical practice. Theme 3: The students valued having immediate instructor feedback. Theme 4: The students believed that additionally prebrief information regarding their roles within the learning experience would be beneficial. <p>Recommendations for practice:</p> <ul style="list-style-type: none"> Increased integration of telehealth 	<p>with caution.</p> <ul style="list-style-type: none"> The use of a convenience sample may negatively impact generalizability. The type of NP programs (FNP, PMHNP, etc) in which NP students were enrolled was not discussed. The demographic data of the participants was not included for BSN or NP students, which may negatively impact generalizability of the results. Incentives, such as clinical hours, volunteer hours, or extra credit, were offered to eligible students to encourage participation. Validity and reliability were 	

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			<p>simulation via Zoom.</p> <ul style="list-style-type: none"> The simulation lasted 30 minutes and had three phases, with the first phase being the BSN student's interaction with the SP, the second phase being the BSN students videoconferencing the NP student, and the third phase being the NP student interacting with the SP. After the simulation ended, a feedback session was held where 				<p>education into NP and BSN curriculum.</p> <ul style="list-style-type: none"> Replication of the study. Simulation scenarios should be made more complex. 	<p>not established for either tool.</p> <ul style="list-style-type: none"> Interrater reliability was not established among faculty when using the faculty-developed tool to evaluate students. Samples of the instruments used were not provided. Quantitative data from faculty evaluations of students was not collected, indicating a lack of rigor in assessing proficiency. It was unclear if participant survey responses were collected anonymously, which may have led to reactivity and participants answering in a way that they believed faculty 	

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			the SP gave feedback to the BSN student and the NP student. Then a feedback session was held with the faculty who had a checklist to assess for proficiency. A debrief session was not held, but students were given the opportunity to ask questions.					members would find favorable.	
7	Authors: LaManna, J. B., Eckhoof, D. O., & Anderson, M. Publication Source:	Evidence Type: Mixed-methods; however, this piece of evidence only	Purpose: • To attain students' perspectives on the effectiveness of a gerontological primary	Sample Type: Convenience Size: 33 NP students enrolled in	A multi-modal telehealth experience involving the introduction of telehealth via didactic content, followed by a	• Simulation Effectiveness Evaluation Tool-Modified (SET-M). The SET-M evaluation tool uses a 19	Results/Findings: <i>Descriptive Survey Results</i> • 54% of participants were between 26 and 30 years of age • 57.6% of participants were White.	Strengths: • The purpose of the study was identified. • The researchers identified what is known and not known about the topic. The	II, A

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	<p><i>Journal of Nursing Education</i></p> <p>Database Source: CINAHL</p> <p>Year: 2021</p>	<p>provides the quantitative information</p> <p>Specific Research Design: Posttest only, quasi-experimental pilot study</p>	<p>care telehealth standardized patient simulation in preparing students for practice.</p> <ul style="list-style-type: none"> • To evaluate the fidelity of the simulation. • To evaluate the usability of the telehealth technology. <p>Methods:</p> <ul style="list-style-type: none"> • Students completed an online telehealth lesson. Additional simulation information was provided during the prebrief, which preceded the 	<p>a DNP program and taking an advanced practice gerontological course with minimal academic telehealth experience</p> <p>Setting: A large, public university in Southeastern America</p>	<p>high-fidelity standardized patient simulation using a telehealth robot.</p>	<p>item Likert scale that is divided into three sections, pre-brief, scenario, and debrief. The Likert scale is set from one to three, with a score of 1 meaning that the student does not agree and 3 indicating that the student strongly agrees. There is also a fourth section where students can write additional feedback about the simulation.</p> <ul style="list-style-type: none"> • The University of Central Florida College of Medicine 	<ul style="list-style-type: none"> • 72.7% of participants had less than two years of previous experience with gerontological nursing at any practice level • 30.3% of participants had previous telehealth experience. <p>SET-M Results</p> <ul style="list-style-type: none"> • Mean scores ranged from 2.37 to 3.0, with the highest mean scores coming from the debriefing section of the survey ($M = 2.91$ to 3.0; no SD was reported). The lowest mean score from all of the items came from the question that asked how the simulation benefited the students' knowledge of pathophysiology ($M = 2.42$; $SD = 0.61$) and medications ($M = 2.37$; $SD = 0.60$). 	<p>majority of the sources referenced within the literature review were published within five years of LaManna et al. (2021).</p> <ul style="list-style-type: none"> • Gaps in the literature were identified. • The small sample size is not a limitation as this study was a pilot. • The simulation was developed in accordance with the American Telemedicine Association (ATA) and the International Nursing Association of Clinical Simulation and Learning (INACSL) best practice guidelines • The National League for 	

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			<p>simulation and included time to practice using the telehealth equipment.</p> <ul style="list-style-type: none"> The simulation was developed by primary care NP faculty and the SPs were provided with preparation for the sim from the SP trainer employed by the simulation center at the university Students interacted with SPs and embedded participants (Eps) via telehealth robots, 			<p>Evaluation of Simulation-Graduate Program Tool: This tool uses a 5 point Likert scale within a 17-item survey, with a score of 1 indicating strongly disagree and a score of 5 indicating strongly agree. The Likert scale also includes an option for not applicable as well.</p> <ul style="list-style-type: none"> System Usability Scale (SUS) by Brooke (1996) contains two evaluative sections, usability and learnability. The scale 	<p>Evaluation of Simulation- Graduate Program Tool</p> <ul style="list-style-type: none"> Mean scores ranged from 4.30-4.79, with the highest mean score of 4.79 ($SD = 0.74$) resulting from the item on realism. The lowest mean score ($M = 4.30$; $SD = 0.80$) was on the item asking about preparedness for the simulation <p>System Usability Scale (SUS)</p> <ul style="list-style-type: none"> A mean score of 77.66 was determined for the SUS ($SD = 10.10$). <p>Recommendations for Practice</p> <ul style="list-style-type: none"> Increased fidelity of telehealth-based SP simulations should be used to enhance the learning experience. This can be accomplished via creating realistic environments for both 	<p>Nursing Jeffries Simulation Theory was used as the theoretical framework for the development and implementation of the simulation</p> <ul style="list-style-type: none"> An evidence-based multimodal method was used to implement the intervention. The course instructor was blinded to student selection and participation in the study, which may have helped to control bias. As such, reactivity may have been less prominent within this study despite the use of a survey in which students self-reported answers. Two of the instruments used 	

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			<p>which are mobile objects attached to a monitor. The monitor allows the student and the SP to interact via video and audio. The students were able to move the robots around the SPs' rooms via a laptop that was provided to them by the simulation center staff.</p> <ul style="list-style-type: none"> • During each encounter, the SPs acted out patient symptoms and Eps played the role of patient 			<p>uses a 5-point Likert scale within a 10-item survey, with eight questions evaluating usability and two questions evaluating learnability. Within the Likert scale, a score of 1 indicates that the student strongly disagreed and a score of 5 indicated that the student strongly agreed.</p>	<p>patients and providers. Additionally, providing supplemental training after initial training to SPs and EPs on how to portray a condition or situation as well as how to structure their environment to promote realism. Pilot testing should also be used to identify and modify issues prior to the simulation taking place.</p> <ul style="list-style-type: none"> • Debriefing should include the content expert and the simulation expert to enhance learning when formative evaluation is used for simulation. • Summative simulation using competency assessments are recommended. 	<p>within the study, the SET-M and the SUS scale were valid and reliable The four parts of the SET-M tool have Cronbach's alphas scores ranging from .833 to .913 and an internal consistency and reliability score of .936.</p> <ul style="list-style-type: none"> • Study limitations were addressed. • Conclusions were based on results. <p>Limitations</p> <ul style="list-style-type: none"> • The study took place after the onset of COVID-19, indicating that the results could be impacted by history. • Although a small sample size is not a limitation within a pilot 	

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			<p>family members.</p> <ul style="list-style-type: none"> • The students were grouped into pairs and each one independently interacted with the SPs and EPs during the patient encounter. • After both students had experienced the encounter, the paired NP students developed a plan of care in a collaborative format. • Following the simulation experience, the students completed three surveys as well as a 					<p>study, results should be interpreted with caution.</p> <ul style="list-style-type: none"> • Key stakeholders were not involved in the development of the simulation. • A convenience sample may limit generalizability. • The SUS scale was stated to be valid and reliable; however, statistical data to support this statement was not provided (Sauro, 2011). • Examples of the surveys used or links to the surveys were not included. Thus, it was unable to be determined if the statistical data correlated with the narrative data. 	

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			<p>survey that asked demographic information.</p> <ul style="list-style-type: none"> Data were analyzed via the calculation of descriptive statistics for each item of each of the three surveys. Additionally, for the SUS tool, the mean and standard deviation were also calculated. 					<ul style="list-style-type: none"> It is unclear how many of the participants completed the surveys, which may impact the generalizability of the results. 	
8	<p>Authors: Posey, L., Pintz, C., Zhou, Q., Lewis, K., & Slaven-Lee, P.</p> <p>Publication Source:</p>	<p>Evidence type: Qualitative</p> <p>Specific Research Design Phenomenological</p>	<p>Purpose: To explore students' perceptions of the development of their advanced practice skills after a</p>	<p>Sample type: Convenience</p> <p>Size: 18 NP students in various</p>	n/a	Two evaluators independently evaluated the verbatim transcripts, coded the data, and created themes	<p>Results/Findings</p> <ul style="list-style-type: none"> Students perceived that the SP encounters contributed to improving their confidence in providing patient care via telehealth. Students perceived 	<p>Strengths:</p> <ul style="list-style-type: none"> Although the study was published in 2020, the month of publication was January of 2020, indicating that results were not influenced by 	III, A

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	<p><i>Journal of Nursing Regulation</i></p> <p>Database Source: CINAHL</p> <p>Year: 2020</p>		<p>telehealth SP simulation as compared to a face-to-face SP simulation.</p> <p>Methods:</p> <ul style="list-style-type: none"> • A basic/fundamental qualitative descriptive design was used to help strengthen descriptive validity. • After students participated in a telehealth SP simulation, and a face-to-face SP encounter, a research assistant conducted telephone interviews via a semi-structured interview. 	<p>NP specialties</p> <p>Sample demographics:</p> <ul style="list-style-type: none"> • 16 FNP students • 2 AGNP students • 44% were white, 22% Asian, 11% black, 6% two or more races, and 17% unknown. • All participants were female. • Non-advanced practice nursing experien 		<p>Two additional reviewers and one expert also reviewed the data and themes independently</p>	<p>that there was value in implementing SP simulation within NP education.</p> <ul style="list-style-type: none"> • Three themes emerged from the study, which are as follows: <ol style="list-style-type: none"> 1) Ability to transfer concepts from face-to-face encounters to telehealth encounters. 2) Lack of familiarity with telehealth education and patient encounters. 3) The value of using formative SP simulation for NP competency development and practice. <p>Recommendations for Practice</p> <ul style="list-style-type: none"> • Additional education 	<p>the pandemic.</p> <ul style="list-style-type: none"> • The purpose of the study is clearly identified. • The participants had knowledge about the topic that researchers were studying as the sample had been derived from the 41 NP students included in the descriptive, non-experimental, quantitative pilot study by Posey et al. (2018), which was the precursor to this qualitative study. • The demographics of the sample were listed, which included years of nursing experience, race, and NP specialty being studied. • The researchers list a justification for their research 	

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			<p>The interviews were also recorded. The length of the interviews ranged from 11 to 32 minutes.</p> <ul style="list-style-type: none"> • Thematic analysis was used to evaluate verbatim transcripts using a systematic approach where two independent researchers reviewed the data and identified topics of interest, which were then coded. This analytic process continued until the researchers 	<p>ce ranged from 1.5 to 30.</p> <ul style="list-style-type: none"> • Only one of the 18 students had prior experience using telehealth. <p>Setting: Telephone interviews</p>			<p>is needed to better prepare students for telehealth encounters. So, augmenting clinical experiences to integrate telehealth may be beneficial.</p> <ul style="list-style-type: none"> • Additional research on the topic of telehealth simulation education within NP programs are needed. 	<p>design by stating that they wanted to make the results more straightforward and less subjective.</p> <ul style="list-style-type: none"> • Informed consent was obtained for each participant. <p><i>Credibility</i></p> <ul style="list-style-type: none"> • Every phase of data analysis was evaluated additional researchers and content experts. • Multiple observers were involved in the study, allowing for triangulation. As such, a research assistant performed the interviews and three researchers and two content experts also reviewed the data for accuracy. 	

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			<p>identified that data saturation had been achieved.</p> <ul style="list-style-type: none"> • From these transcripts, three themes were identified and agreed upon by the researchers. • A document that organized the data and themes was created. • A third independent researcher reviewed the data and themes to ensure accuracy. • Two content experts then reviewed the data, which led to several minor 					<p><i>Confirmability/Audibility</i></p> <ul style="list-style-type: none"> • The researchers followed a systematic process in the collection, interpretation, coding, and analysis of the data, which was described in the methods section of the study and led to the three themes. The researchers also provided their reasoning behind their systematic process as well. <p><i>Fittingness</i></p> <ul style="list-style-type: none"> • The researcher provided seven direct quotes collected from the data to support the themes as well as the conclusions. • The researchers kept notes during interpretation of 	

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			modifications.					<p>the data.</p> <p><i>Transferability:</i></p> <ul style="list-style-type: none"> • Sampling was adequate as data saturation was achieved. <p><i>Congruency:</i></p> <ul style="list-style-type: none"> • Direct quotes were included from the data, which support the research question, the data collection methods, and the interpretation of results. • Discussion and conclusions were congruent with the purpose and objectives and were supported by the literature. • Conclusions were based on data collection. <p>Limitations:</p> <ul style="list-style-type: none"> • It was not explicitly stated if bracketing 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
								<p>occurred during data evaluation.</p> <ul style="list-style-type: none"> • It was not explicitly stated who transcribed the interviews. Therefore, it is unclear if bias occurred. • Recognition of bias was not explicitly stated within the study. • The study did not include visual aids to describe data. 	
9	<p>Authors: Robinson-Reilly, M., Irwin, P., Coutts, R., & Slattery, N.</p> <p>Publication Source: <i>The Nurse Practitioner</i></p> <p>Database Source: CINAHL</p>	<p>Evidence Type: Non-research</p> <p>Specific Research Design: Case Report</p>	<p>Purpose: To provide a description of the integration of a standardized patient telehealth simulation into an NP program.</p> <p>Methods:</p> <ul style="list-style-type: none"> • A telehealth educational initiative 	<p>Sample Type: Convenience</p> <p>Size: 20 NP students</p> <ul style="list-style-type: none"> • Predominantly female • Ages ranged between 26 and 48 years 	Telehealth SP simulations	n/a	<p>Results/Findings:</p> <ul style="list-style-type: none"> • Students believed that the experience was worthwhile in that they were able to practice using telehealth in a consequence-free environment, gain experience in telehealth encounters and telehealth technology and also in that they were able to observe their peers. • The use of telehealth 	<p>Strengths:</p> <ul style="list-style-type: none"> • The case report clearly stated the purpose of the study, current gaps in knowledge, and the way this study addressed the gaps. • The inclusion of the telehealth simulation met the Australian Nursing and Midwifery 	V, A

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
	Date: 2020		<p>was integrated into a five day on-campus course after a needs assessment was performed and learning objectives were created.</p> <ul style="list-style-type: none"> • Students interacted with SPs via telehealth. • Participants worked together during the simulations, with some serving as observers and some serving as providers during the simulation experience. • After the simulations, 	<p>Setting: An online NP program at a large university in eastern Australia</p>			<p>simulation positively impacted students' abilities to develop diagnostic reasoning skills and advanced practice knowledge while also increasing engagement in a way that students find meaningful, thus indicating satisfaction.</p> <ul style="list-style-type: none"> • Students reported that the telehealth-based simulation had a positive impact on confidence satisfaction with relation to skills such as interprofessional communication, diagnostic reasoning, technology usage. <p>Recommendations for practice:</p> <ul style="list-style-type: none"> • Inclusion of SP telehealth simulations to better prepare students for practice, increase student engagement, increase confidence in diagnostic 	<p>Accreditation Standards.</p> <ul style="list-style-type: none"> • The study was published in March of 2020, indicating that the study was not impacted by the COVID-19 pandemic. • The students included in the sample were from many different areas of the country, with the most distant participant living 1,500 miles away from the University. This diversity in physical location from which participants live may increase the generalizability of the findings. • Recommendations were clearly stated and based on best evidence. <p>Limitations:</p>	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
			the participants engaged in a group debrief with faculty.				<p>reasoning, and improve student satisfaction with relation to the types of learning modalities that are used.</p> <ul style="list-style-type: none"> • Further investigation into the use of telehealth-based SP simulations with NP programs was listed as being necessary to provide support for the inclusion of telehealth-based SP simulation in NP education. 	<ul style="list-style-type: none"> • The study took place in Australia, which may impact generalizability to NP programs in the United States. However, the common chronic conditions covered in the simulation scenarios were consistent with the chronic conditions that are commonly present in the United States. • Some participants encountered technical difficulties with relation to the quality of the telehealth connection, which may have impacted their perceptions of the value of the simulations. 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
								<ul style="list-style-type: none"> • A convenience sample was used which may impact generalizability. • Limited demographic data about the sample was provided. 	
10	<p>Authors: Wesemann, D., Posey, K., & Wilson, C</p> <p>Publication Source: <i>Clinical Simulation in Nursing</i></p> <p>Database Source: CINAHL (Citation Searching)</p> <p>Date: 2021</p>	<p>Evidence type: Quantitative</p> <p>Specific Research Design: Posttest only, quasi-experimental, pilot study</p>	<p>Purpose: To evaluate FNP and PMHNP students' knowledge, skills, and clinical abilities via an intraprofessional telehealth SP simulation across two universities.</p> <p>Methods:</p> <ul style="list-style-type: none"> • A formative telehealth SP simulation was developed by faculty from three different 	<p>Sample type: Convenience</p> <p>Size: 6 NP students enrolled in either a BSN-to-DNP-FNP and students enrolled PMHNP program.</p> <ul style="list-style-type: none"> • all were female • None had prior telehealth 	A multi-site intraprofessional, formative SP telehealth simulation	<p>Two surveys were used. Both surveys were developed by the NP faculty.</p> <ul style="list-style-type: none"> • The first survey used a combination of open-ended questions and questions linked to a 7 point Likert scale. A score of 1 indicated extremely easy, extremely believable, or strongly disagree depending on the question. 	<p>Results/Findings</p> <p><i>Likert Scale Survey Results/Findings</i></p> <ul style="list-style-type: none"> • Based on students' self-reported survey responses, it was noted that participants identified that it was relatively easy to transfer their scope of practice knowledge during in-patient encounters to the telehealth setting. • 83% of students reported learning something new about the NP role with relation to the scope of practice NPs have depending on their specialty. • Participants 	<p>Strengths:</p> <ul style="list-style-type: none"> • This study was conducted prior to the onset of COVID-19, so the results were not impacted by the onset of the pandemic. • The faculty members followed the INACSL Standards of Best Practice when creating the simulation, which can help to produce a higher quality simulation and a more meaningful learning experience. • The inclusion of 	II, B

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
			<p>universities.</p> <ul style="list-style-type: none"> Information about the scenario was provided to the students a week prior to the simulation. FNP and PMHNP students were paired. The patient encounter occurred via Zoom lasted 20 minutes and was immediately followed by a debrief. Students received two post-simulation anonymous surveys via Qualtrics. The students also completed a self-reflection. 	<p>experience previous</p> <p>Setting: Two universities with NP programs.</p> <p>For the simulation, a telehealth environment via Zoom was used</p>		<p>A score of 7 indicated extremely difficult, extremely unbelievable, or strongly disagree depending on the question.</p> <ul style="list-style-type: none"> The second survey asked open-ended questions related to the NP role and scope of practice 	<p>considered the simulation to be an enjoyable experience.</p> <ul style="list-style-type: none"> Participants stated that the simulation was believable. Mean scores of the items on the Likert scale ranged from 1.5 to 3.17 (n = 6). <p>Open-ended Survey Question Themes</p> <ul style="list-style-type: none"> Theme #1: Participants were aware that they needed to further develop their ability to provide care via telehealth. Theme #2: Participants noted the significance of intraprofessional collaboration with relation to telehealth. <p>Recommendations for Practice:</p> <ul style="list-style-type: none"> Inclusion of intraprofessional SP telehealth simulations into NP programs to 	<p>faculty from multiple universities and two different NP specialties may have allowed for diversity in perspectives.</p> <ul style="list-style-type: none"> This pilot study followed a conceptual framework of Roy's Adaption Model. Informed consent was obtained from the participants. The researchers clearly described the purpose of the study, what is known and not known about the study, gaps in knowledge, and data collection procedures. Since this was a pilot study, the small sample size is not a limitation. The survey had a 100% participant response rate 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/Limitations	Evidence Level & Quality Rating
							<p>better prepare students for telehealth patient encounters as well as intraprofessional collaboration.</p>	<ul style="list-style-type: none"> • Both statistical and narrative data were collected via two surveys. • The two surveys were pictured within the study • The surveys were both anonymous, which controlled for reactive effects • The narrative data was consistent with the numeric data. • The themes derived from the open-ended questions were developed via consensus between all faculty members for all universities involved in the study. • The themes were supported via the inclusion of example responses from participants using direct quotes. to the open-ended 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/ Limitations	Evidence Level & Quality Rating
								<p>questions were included.</p> <p>Limitations:</p> <ul style="list-style-type: none"> • Although a small sample size is not necessarily a weakness of a pilot study, results should be interpreted with caution. • The study lacked a literature review. However, six of the nine sources that were referenced were published within five years of the study. • The study lacked a limitations section. • A convenience sample was used, which may impact generalizability • Instrument validity and reliability was not established or discussed; thus, a Cronbach's alpha 	

Article #	Author, Publication Source, & Date (alphabetical order)	Evidence Type & Specific Research Design	Purpose & Methods	Sample Type, Size, Setting	Intervention	Instruments (include psychometrics)	Results/Findings & Recommendations for practice	Strengths/ Limitations	Evidence Level & Quality Rating
								<p>was not included.</p> <ul style="list-style-type: none"> • Aside from the faculty included in the study, no outside sources were consulted to re-confirm the themes derived from the open-ended questions that were included in the survey 	

Appendix E

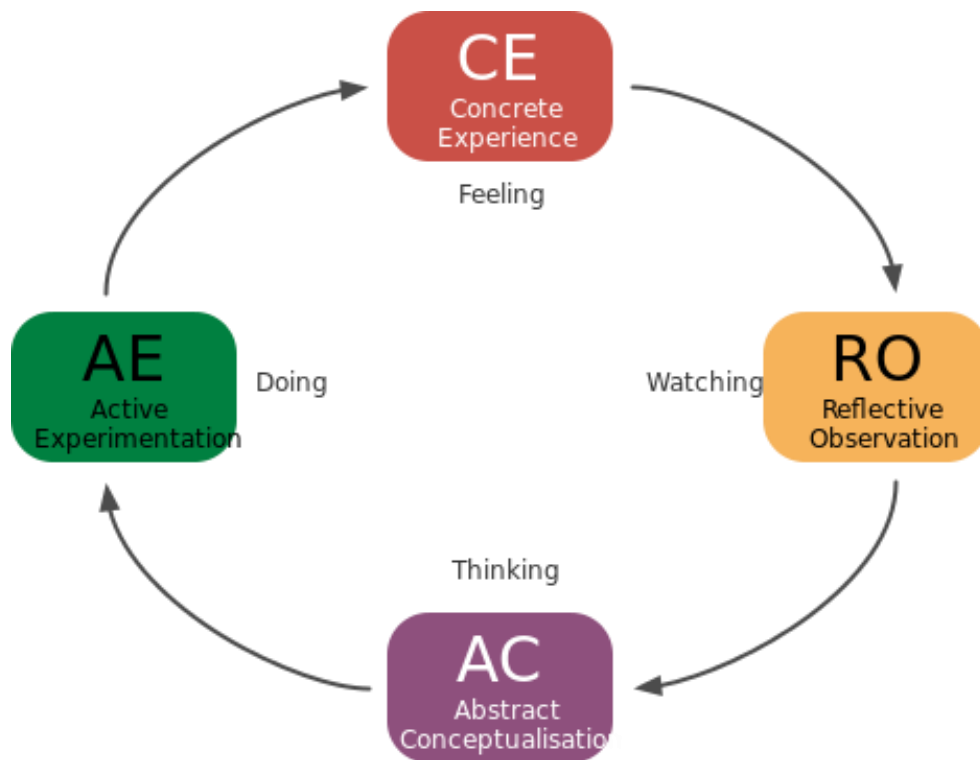
Intervention Table

Article/Author	Intervention	Outcome A: Increased Confidence	Outcome B: Increased Satisfaction	Outcome C: Application to Clinical Practice Readiness/Willingness to use Telehealth
Article: #1 Authors: Arends et al. (2021)	A multi-modal telehealth curriculum, which included didactic content, case studies, formative non-SP telehealth simulations, and formative SP telehealth simulations.	Participants experience improved confidence in their ability to engage in telehealth-based patient encounters.		Participants indicated that they would be more likely to use telehealth in their future practice as NPs. Participants experience improved readiness to use telehealth in clinical practice.
Article #2 Authors Berta et al. (2022)	One formative telehealth SP simulation was provided but had two scenario options depending on the type of NP program. One scenario was for acute care adult gerontology NP students and the other scenario was for primary care adult-gerontology NP students.	NP students reported moderately increased confidence in learning after the simulation experience	NP students reported moderately increased satisfaction in learning levels after the simulation experience	Students recognized the applicability of the simulation to clinical practice and appreciated the ability to gain telehealth experience prior to graduation.
Article #3 Authors: Coburn et al. (2021)	An unfolding case study, which involved the use of SP-based formative telehealth simulations.	NP students reported increased confidence after the simulation experience.	All participants reported satisfaction with the simulation learning experience.	NP students recognize the value of engaging in telehealth prior to graduation to allow for better preparation for clinical practice.
Article #4 Authors: Emerson et al. (2020)	Two formative telehealth SP simulations were held. Both scenarios were mental-health based, with the topic centering on a patient with alcoholism .	The use of telehealth educational initiatives may increase knowledge and better prepare students to care for communities that rely on telehealth to receive		Participants recognized the importance of engaging in intraprofessional relationships via telehealth.

Article/Author	Intervention	Outcome A: Increased Confidence	Outcome B: Increased Satisfaction	Outcome C: Application to Clinical Practice Readiness/Willingness to use Telehealth
		healthcare, demonstrating increased confidence		The use of SP telehealth simulations created a high-fidelity experience that better prepared participants for clinical practice.
Article #6 Knight & Prettyman (2020)	A formative SP, telehealth-based simulation was implemented where BSN students and NP students collaborated while caring for a patient via a telehealth encounter.	Almost all participants (NP and BSN) reported that the use of a telehealth SP simulation allowed them to have increased confidence and comfort with relation to using telehealth in clinical practice.	NP students reported being able to practice advanced practice skills, such as assessment, diagnostic reasoning, and follow-up management via the telehealth SP simulation, indicating satisfaction with learning.	
Article #7 LaManna et al. (2021)	The integration of a multi-modal telehealth experience involving the integration of didactic content and a timed, high-fidelity simulation where students interacted SPs and EPs via a telehealth robot.	Formative telehealth SP simulations help to increase telehealth confidence when used within a course as an assignment	High-fidelity telehealth-based SP simulations enhance student satisfaction with the simulation experience. This increased satisfaction may result from students having less difficulty transferring realistic simulations into real clinical experiences.	Demonstrating competence via summative simulation methods after formative simulations may increase readiness for practice.
Article #9 Robinson-Reilly et al. (2020)	The integration of formative telehealth SP simulations into an NP curriculum.		Participants were satisfied with the learning achieved via the SP telehealth simulations.	Telehealth-based SP simulations better prepared students to use telehealth in clinical practice while simultaneously developing students' diagnostic reasoning skills and advanced practice knowledge.
Article #10 Wesemann et al. (2021)	A multi-site intraprofessional, formative, SP telehealth simulation		The SP telehealth simulation was enjoyable said provided good practice for the clinical setting, thus indicating satisfaction with learning.	The telehealth SP simulations allowed for transfer of knowledge from in-patient encounters to telehealth patient encounters. Additionally, participants identified the need to improve telehealth skills.

Appendix F

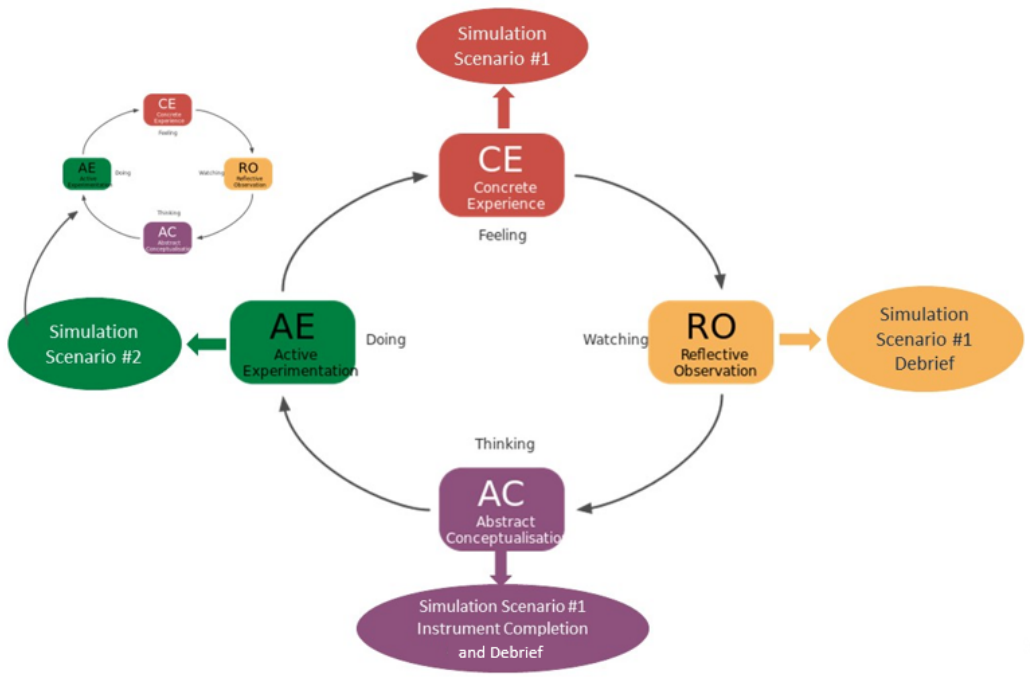
Kolb's Experiential Learning Theory Model



Adapted from *The Experiential Learning Model* by D. Kolb and R. Fry, 1975, as cited in Izhaki, 2013(https://www.researchgate.net/publication/238759143_Toward_an_Applied_Theory_of_Experiential_Learning). 2013 by Creative Commons Attribution 3.0 License.

Appendix G

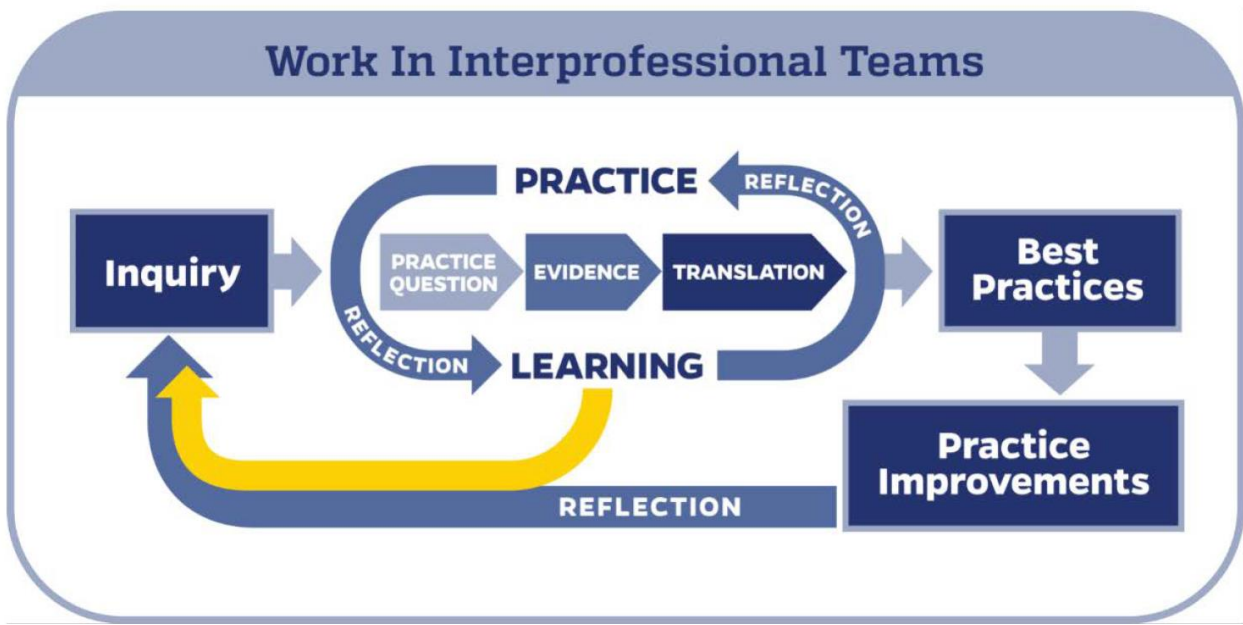
Theoretical Model and DNP Project Relationship



Note. Student-developed model based on information derived from Kolb (1984) and *The Experiential Learning Model* by D. Kolb and R. Fry, 1975, as cited in Izhaki, 2013(https://www.researchgate.net/publication/238759143_Toward_an_Applied_Theory_of_Experiential_Learning). 2013 by Creative Commons Attribution 3.0 License.

Appendix H

Johns Hopkins Evidence-Based Practice Model for Nurses and Healthcare Providers



From Johns Hopkins Evidence-Based Practice Model for Nurses and Healthcare Professionals, by D. Dang, S. Dearholt, K. Bisset, J. Ascenzi, and M. Whalen, 2022 by Sigma Theta Tau International. Reprinted with permission.

Appendix I

Information Script

Hello, my name is Kristin Shaub, and I am a student in the Doctor of Nursing Practice/Family Nurse Practitioner (DNP/FNP) program at Messiah University. I am here to speak with you about participating in my DNP project. The purpose of my DNP project is to improve nurse practitioner students' preparation to use telehealth.

During this course, a telehealth education module and two telehealth patient actor simulations will be used to provide information and experiences focused on telehealth. The telehealth module and the simulations are not graded. Participation in this DNP project requires completion of three short surveys. After the first simulation, a demographics survey and the National League for Nursing Student Satisfaction and Self-confidence in Learning © (SCLS) instrument- modified survey will be sent to you electronically through Qualtrics. After the second simulation, the NLN SCLS © instrument-modified will be sent to you electronically through Qualtrics. Each survey should take no more than five minutes to complete. Responses to all three surveys are anonymous. Participation is voluntary and you can withdrawal at any time. There is no penalty for not participating. The results of each of the surveys will be kept confidential.

This project has no known risks and fits with MU's DNP/FNP curriculum as it complements your clinical-based learning experiences. It also supports MU's work toward inclusivity as telehealth increases access to care for individuals, families, and communities. If you would like more information about the project, you can contact me at kz1166@messiah.edu or via phone at 717-877-5898. Thank you for your time.

Appendix J

Demographics Survey

Demographic Variable	Values	Level of Measurement
Age	Age in years	Interval
Race	Asian Black Hispanic, Pacific-Islander White Other	Nominal
Gender	Male Female Non-binary Other	Nominal
Highest level of education received	Bachelor's degree Master's degree Doctoral degree	Ordinal
Years of experience in non-advanced practice nursing	Experience in Years	Interval
Telehealth experience aside from classes and/or clinical experiences required for graduation from a prelicensure program or nurse practitioner program*	Yes No	Nominal
Pediatric experience aside from classes and/or clinical experiences required for graduation from a prelicensure program or nurse practitioner program*	Yes No	Nominal

*For the purposes of this DNP project, a prelicensure program is defined as an entry-level nursing degree program, which may include associate, baccalaureate, and diploma programs.

Appendix K

NLN Student Satisfaction and Self-Confidence in Learning © Instrument

Student Satisfaction and Self-Confidence in Learning

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

Mark:

- 1 = STRONGLY DISAGREE with the statement
- 2 = DISAGREE with the statement
- 3 = UNDECIDED - you neither agree or disagree with the statement
- 4 = AGREE with the statement
- 5 = STRONGLY AGREE with the statement

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

Appendix L

NLN Student Satisfaction and Self-Confidence in Learning © Instrument Modification

Permission Letter

Dear Kristin,

Thank you for your inquiry. We are pleased that you have decided to use one or more of the NLN's simulation instruments for your research. NLN's instruments are available for researchers and students to download from the NLN website here <https://www.nln.org/news/research-statistics/professional-development-programsresearchtools-and-instruments/descriptions-of-available-instruments-096bb15c-7836-6c70-9642-ff00005f0421>

Before using the instruments, we ask that you please review the caveats that accompany permission for use of NLN's research instruments here, especially around modifying the instruments here (scroll to bottom of page): <https://www.nln.org/news/copyright-permissions>

We do allow modifications to our instruments, but as noted in the caveats for using the instruments, please understand that:

- Modifications to a survey/instrument may affect the reliability and/or validity of results. Any modifications made to a survey/instrument are the sole responsibility of the researcher.
- When published or printed, any research findings produced using an NLN survey/instrument must be properly cited. If the content of the NLN survey/instrument was modified in any way, this must also be clearly indicated in the text, footnotes and endnotes of all materials where findings are published or printed.

The NLN will allow you to publish findings based on the survey data, but we will not give you permission to publish the surveys verbatim in a manuscript or in a published dissertation. When you are ready to publish your findings, please send a separate request to this Copyright Permission inbox (copyrightpermission@nln.org) and we will send you a permission letter for the publisher of the specific journal, if required.

Regards, NLN Copyright Permissions

Appendix M

NLN Student Satisfaction and Self-Confidence in Learning © Instrument-Modified

Student Satisfaction and Self-Confidence in Learning Scale

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

Mark:

- 1 = STRONGLY DISAGREE with the statement
- 2 = DISAGREE with the statement
- 3 = UNDECIDED - you neither agree or disagree with the statement
- 4 = AGREE with the statement
- 5 = STRONGLY AGREE with the statement

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

Note. Student-developed modifications are highlighted in yellow.

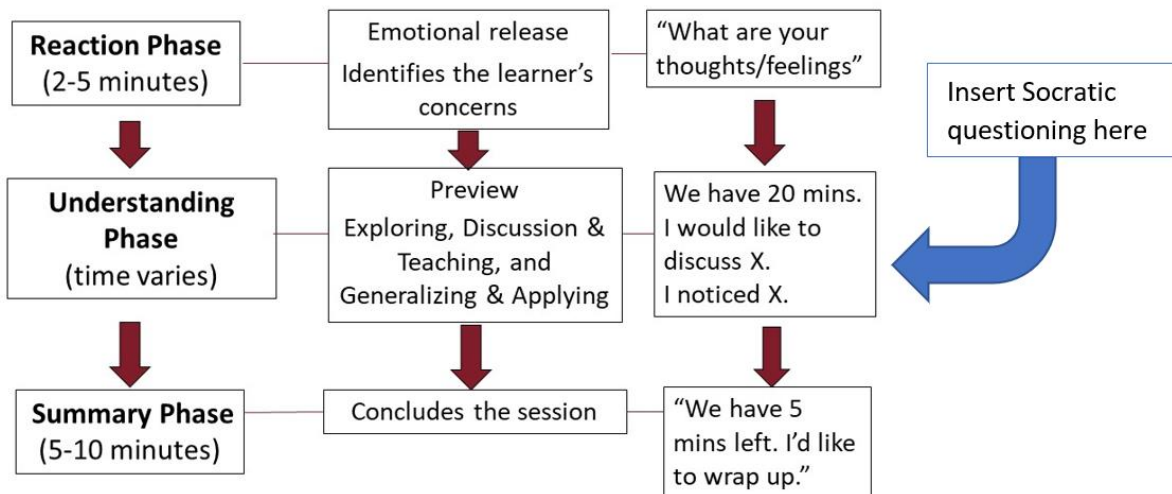
Appendix N

Definitions of Simulation Intervention Elements

- 1) Debriefing- A learner-led and facilitator-guided reflective conversation that is delivered in a structured manner with the ultimate goal of deepening learning and allowing for transfer of knowledge (Molloy et al., 2021).
- 2) Facilitator- A person who has received preparation to run a structured SBL activity via guidance and support of learners during the pre-brief, simulation scenario, and debrief (Molloy et al., 2021)
- 3) SP feedback- A conversation led by the SP that provides the learner with information to allow for performance improvement (Molloy et al., 2021).
- 4) Pework- Teaching modalities that are to be completed by the learners prior to engaging in a SBL activity or activities.
- 5) Prebriefing- A short introduction to a simulation scenario that is provided immediately preceding the SBL (Molloy et al., 2021).
- 6) Simulation educator- A person who uses simulation as an evidence-based teaching-learning strategy to better prepare healthcare professionals for clinical practice (Terminology & Concepts Working Group, 2020).
- 7) Scenario- A simulation-based patient case that meets pre-determined learning objectives (Molloy et al., 2021).

Appendix O

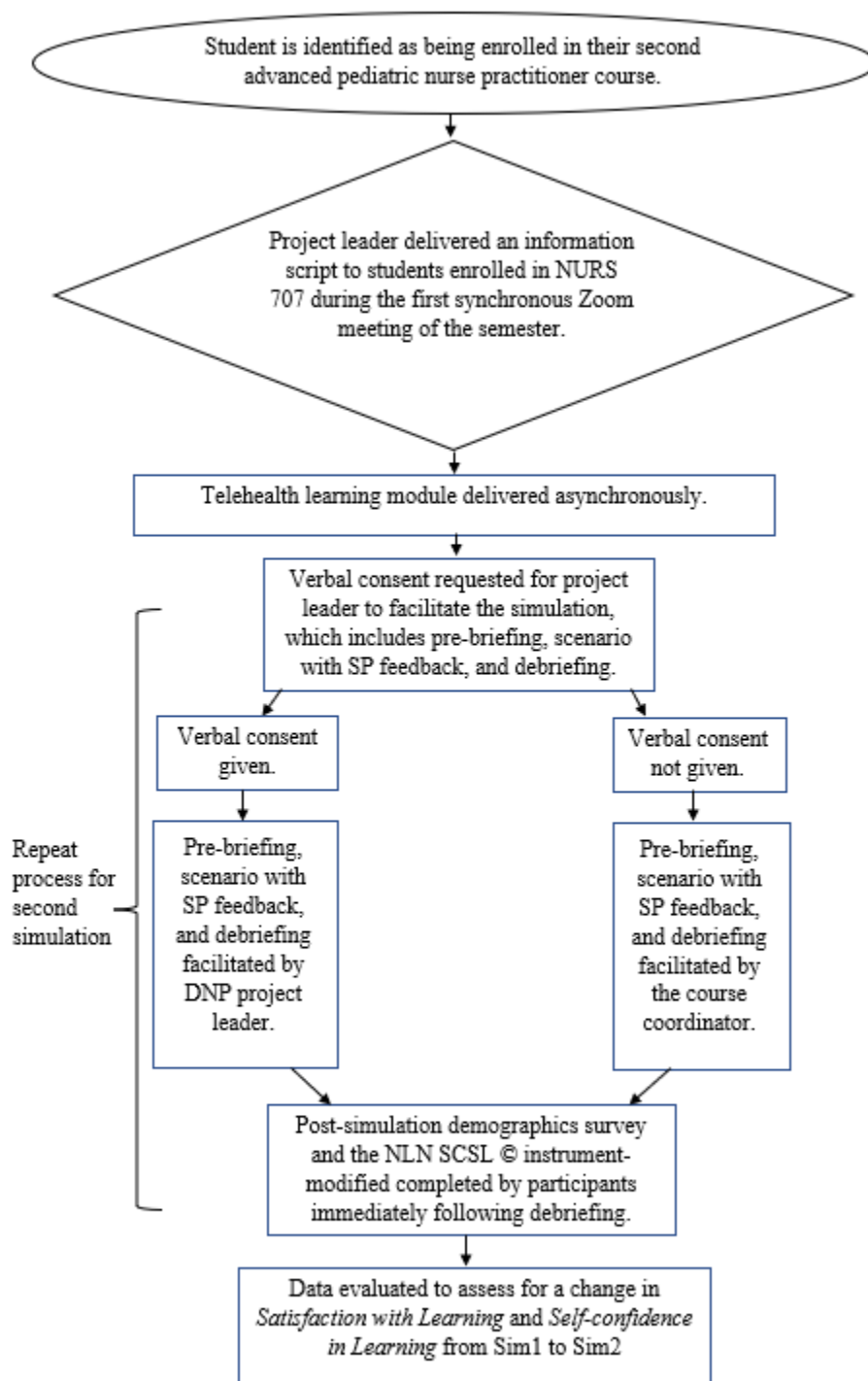
Debriefing with Good Judgment Visual Aid



Note. Student-developed model based on information derived from Palaganas et al. (2016) and Rudolph et al. (2007).

Appendix P

Process Map



Note. The demographics survey was not redistributed after Sim2.

Appendix Q

Budget Table

Project Expenses (Over 4 Months)		
Salaries/Wages		
	Monthly	Total
• Standardized Patients	\$76.00 (\$19/hr)	\$304.00
• Site Mentor	\$6,700.00*	\$0.00 (no additional time requirement)
• Project Leader	\$0.00 (Time donated by project leader)	\$0.00
• Administrative Support	\$3,600.00*	\$0.00 (no additional time requirement)
Total Salary Costs		\$304.00
Startup Costs		
	One-Time Costs	Total
• Copier use at site (student rate)	\$0.05 x 50 copies (black & white)	\$2.50**
• Microsoft Office 365	\$69.99/year	\$69.99**
• Pens/pencils	\$10.00	\$10.00**
• Telehealth Simulation Scenarios	\$0.00	\$0.00 (Free with permission from authors)
Total Startup Costs		\$82.49**
Capital Costs		
	Monthly	Total
Hardware: Microphone & webcam-enabled computers	\$3,600.00 (\$1,200 x 3) (one-time expense)	\$0.00 (Donated by project leader, project mentor, & SP)
Equipment:		
• Zoom Pro Account	\$12.42	\$49.68 (actual cost \$0.00, available at site)
• Qualtrics	\$125	\$625 (actual cost \$0.00, available at site)
• Microsoft Business Email & OneDrive)	\$22	\$110 (actual cost \$0.00, available at site)
• Canvas	\$22.50/user/year (one-time expense)	\$180 (actual cost \$0.00, available at site)
Other: Moulage supplies	\$30.00 (one-time expense)	\$0.00**
Total Capital Costs		\$964.68 (actual cost \$0.00)
Operational Costs		
	Monthly	Total
• Electricity	\$0.00	\$0.00
• Heat	\$0.00	\$0.00
• Internet	\$0.00	\$0.00
• Office space	\$0.00	\$0.00
Total Project Expenses		\$1,351.17-\$1,047.17 = \$304
Program Revenue		
	Monthly	Total
• N/A	N/A	\$0
Total Project Revenue		\$0
Cost Avoidance Items		
	Sum of Highlighted Item(s)	Total
• Hardware: \$1,200 (one time cost)	\$1,200.00 (SP computer)	\$1,200.00
Less Expenses	Estimated Simulation Use = 2-3 years	2 years: -\$304 x 2= 608 3 years: -\$304 x 3 = \$912
Total Project Benefit/Loss		2 years: \$592 3 years: \$288

*Actual paid or median full-time salary for the same position in the US

**Donated by project leader or available via project site (Messiah University)

Appendix R
IRB Exemption

Quality Improvement Verified - IRB ID: 2022-023

IRB Administrator <noreply@axiommentor.com>

Thu 11/10/2022 10:37 AM

To: Shaub, Kristin <kz1166@messiah.edu>

CAUTION: This email originated outside of Messiah University

Messiah University IRB

QI Protocol Notification

To: Kristin Shaub

From: Jennifer Thomson, IRB Chair

Subject: Protocol #2022-023

Date: 11/10/2022

The protocol **2022-023. Telehealth Standardized Patient Simulations and Nurse Practitioner Students' Confidence and Satisfaction Levels** has been verified by the Messiah University Institutional Review Board as a **Quality Improvement Project**, and accordingly does not meet the definition of "research" at to 45CFR46.102(d). Your protocol is thus exempt from IRB review.

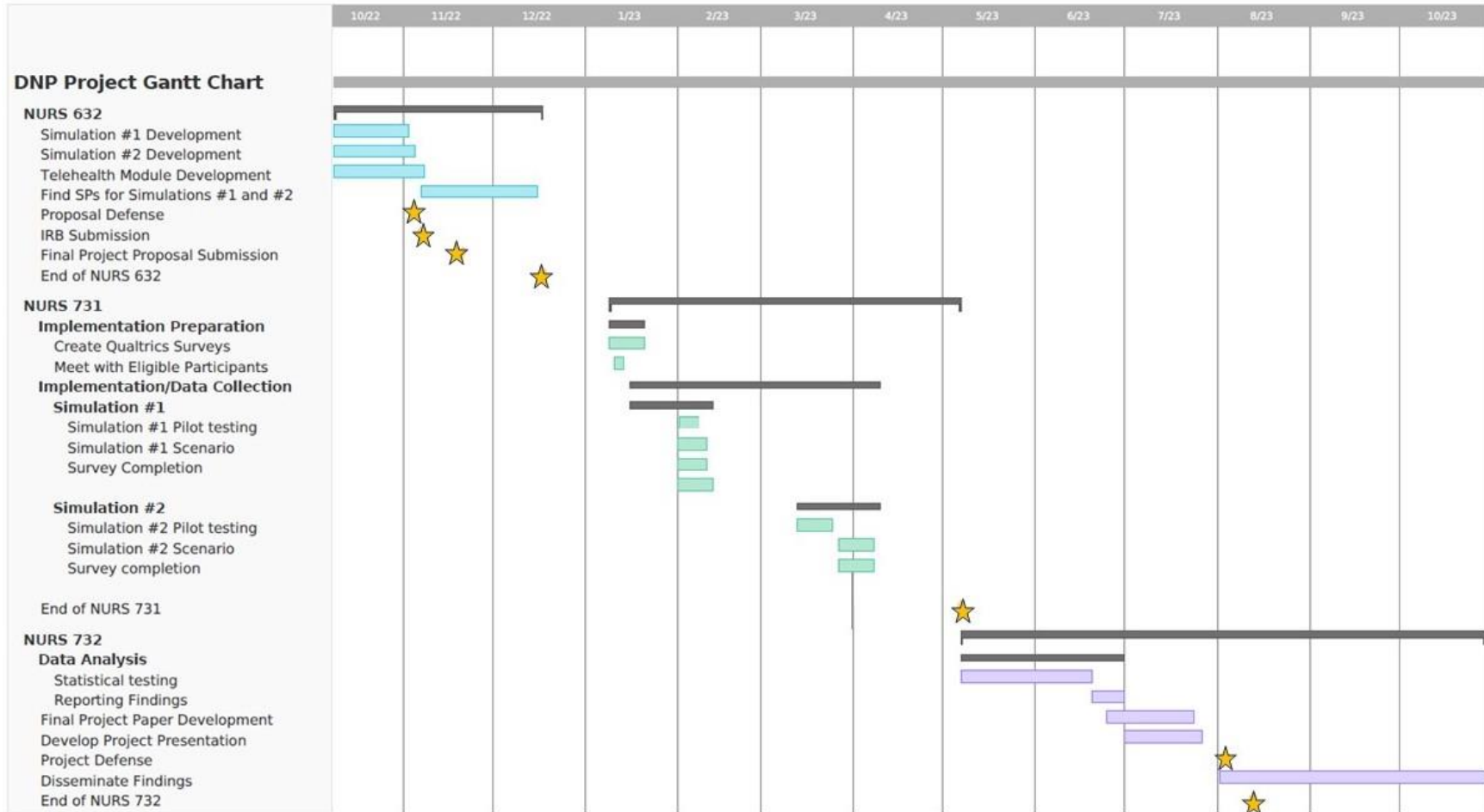
Please note that changes to your protocol may affect its exempt status. Please contact me directly to discuss any changes you may contemplate.

Thanks,

Jennifer Thomson,
IRB Chair
jthomson@messiah.edu

Appendix S

Gantt Chart



Note. Gold stars indicate project milestones.

Appendix T


NIH Quiz

Messiah IRB
NIH Quiz Completion

ClassMarker 

HumanSubjectsTrainingModulesQuiz

Points: 21 / 21
Percentage: 100%
Duration: 01:18:11
Date started: Thu 15 Sep '22 15:47
Date finished: Thu 15 Sep '22 17:05

 Displaying incorrect or partially incorrect questions only.

[all questions](#)

0 incorrect

Appendix U

NLN SCLS © Instrument-modified Survey Results

			3	4	5	<i>M(SD)</i>
			UD	A	SA	
			%(n)	%(n)	%(n)	
Satisfaction Sub-Scale	1. Teaching methods helpful & effective.	Sim1			100%(4)	5(0)
		Sim2			100%(4)	5(0)
	2. Simulation preparation promoted learning in NP curriculum.	Sim1		25%(1)	75%(3)	4.75(0.5)
		Sim2			100%(4)	5(0)
	3. Enjoyed how instructor taught simulation.	Sim1			100%(4)	5(0)
		Sim2			100%(4)	5(0)
4. Teaching materials motivating, helped learning.	Sim1		25%(1)	75%(3)	4.75(0.5)	
	Sim2		25%(1)	75%(3)	4.75(0.5)	
5. Teaching methods suitable to learning style.	Sim1			100%(4)	5(0)	
	Sim2			100%(4)	5(0)	
Self-Confidence Sub-Scale	6. Confidence in mastering content of simulation.	Sim1		25%(1)	75%(3)	4.75(0.5)
		Sim2		50%(2)	50%(2)	4.5(0.58)
	7. Confidence in content necessary for mastery of NP curriculum.	Sim1			100%(4)	5(0)
		Sim2			100%(4)	5(0)
	8. Confidence in skill and knowledge from simulation to perform in clinical setting.	Sim1		25%(1)	75%(3)	4.75(0.5)
		Sim2		25%(1)	75%(3)	4.75(0.5)
	9. Instructors used helpful resources to teach simulation.	Sim1			100%(4)	5(0)
		Sim2			100%(4)	5(0)
	10. My responsibility as student to learn from simulation.	Sim1			100%(4)	5(0)
		Sim2		50%(2)	50%(2)	4.5(0.58)
	11. Know how to get help with concepts in simulation.	Sim1		25%(1)	75%(3)	4.75(0.5)
		Sim2			100%(4)	5(0)
	12. Know how to use simulation to learn critical skills.	Sim1		25%(1)	75%(3)	4.75(0.5)
Sim2			25%(1)	75%(3)	4.75(0.5)	
13. It is my instructor's responsibility to identify content to learn.	Sim1	50%(2)	50%(2)		3.5(0.58)	
	Sim2	50%(2)	50%(2)		3.5(0.58)	

Note. No participants reported scores of 1 or 2. Therefore, the NLN SCLS © instrument-modified

descriptives table includes results for scores 3–5.