

Deliberate Practice of Basic Life Support Skills: Improving Self-Efficacy in First-Year Nursing Students

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Abstract

Background: First-year nursing students often struggle to retain Basic Life Support (BLS) skills, which may compromise clinical performance during emergencies. Deliberate practice (DP) is a proven instructional approach that enhances skill mastery and self-efficacy. This study evaluated whether DP of BLS skills improves general self-efficacy among prelicensure Bachelor of Science in Nursing (BSN) students.

Methods: This quasi-experimental study used a one-group pretest–posttest design. Forty first-year BSN students participated in four weekly 15-minute deliberate BLS practice sessions in the skills laboratory. General Self-Efficacy Scale (GSES) scores were measured before and after the intervention. A paired samples t-test assessed the difference in pre- and post-intervention scores.

Results: There was a statistically significant improvement in GSES scores following the intervention. The mean GSES score increased from 24.7 (SD = 3.63) to 37.2 (SD = 2.58), $t(39) = 19.8$, $p < .001$, indicating that deliberate BLS practice positively influenced student self-efficacy.

Conclusions: Deliberate practice of BLS skills in a nursing skills lab significantly enhanced students' self-efficacy. This strategy may bridge the gap between certification and real-world clinical readiness.

Keywords: self-efficacy; nursing education; deliberate practice; basic life support; skill retention

1. Introduction

High-quality cardiopulmonary resuscitation (CPR), performed in accordance with American Heart Association (AHA) guidelines, improves survival outcomes following cardiac arrest (Méndez-Martínez et al., 2019). Despite millions of healthcare providers completing resuscitation training each year, CPR performance remains inconsistent (Curran et al., 2012). Skill decay occurs rapidly, with studies showing that basic life support (BLS) competencies begin to decline within three months of training (Cheng et al., 2018; Knipe et al., 2020).

This problem is particularly concerning for nursing students, who are expected to deliver safe and effective care in emergencies but often lack opportunities to refresh or apply BLS skills in practice. Traditional biennial recertification is insufficient to maintain competence (Cheng et al., 2018). Thus, innovative educational strategies are needed to reinforce learning and build confidence in emergency response.

Deliberate Practice and BLS

Deliberate practice (DP) is a structured approach to skill development that emphasizes focused, repetitive practice with feedback and error correction (Ericsson et al., 1993). In nursing education, DP has been shown to improve psychomotor skill retention and self-efficacy (Oermann et al., 2011; Bathish et al., 2018). When incorporated into BLS training, DP allows students to repeatedly perform core tasks—such as compressions, ventilations, and AED use—until mastery is achieved, thereby reducing skill decay.

Self-Efficacy in Nursing Education

Bandura's (1977) self-efficacy theory provides the framework for this project. Self-efficacy refers to an individual's belief in their ability to successfully perform a task. Mastery experiences, in particular, are the most powerful source of self-efficacy, influencing motivation, persistence, and skill application. In resuscitation education, higher self-efficacy has been associated with improved performance and confidence in responding to cardiac emergencies (Curran et al., 2012;

Ferla et al., 2009).

Despite the importance of BLS in nursing education, students often fail to retain or apply these skills effectively. Poor CPR quality represents a preventable harm that compromises patient safety (Merchant et al., 2020). Current teaching models, reliant on infrequent certification, do not provide sufficient reinforcement. Evidence suggests that repeated DP may strengthen both competence and confidence, but little is known about its impact on first-year prelicensure BSN students' self-efficacy. The purpose of this study was to evaluate whether deliberate practice of BLS skills improves General Self-Efficacy Scale (GSES) scores in first-year BSN students enrolled in a fundamentals of nursing course. Although previous studies have explored deliberate practice in simulation and continuing education, few have examined its direct effect on perceived self-efficacy among prelicensure nursing students. This study builds upon Bandura's (1977) theory by linking mastery experiences from repeated BLS sessions to measurable gains in confidence. Contextualizing deliberate practice within early nursing education provides practical relevance, as self-efficacy influences clinical decision-making, psychomotor retention, and readiness for emergency care.

Significance

Competence in BLS is essential for safe entry-to-practice nursing and foundational to emergency patient care. Integrating DP into prelicensure curricula may enhance clinical preparedness, support transition to practice, and ultimately improve patient outcomes. By linking deliberate practice to self-efficacy, this project addresses a critical gap in nursing education and offers evidence for a scalable, low-resource strategy that can be adopted widely.

2. Methods

This study examined the impact of deliberate practice (DP) of basic life support (BLS) skills on the self-efficacy of first-year prelicensure BSN students enrolled in a fundamentals of nursing course. The practice-based research question was: Does the introduction of DP of BLS skills impact the General Self-Efficacy Scale (GSES) scores of BSN students enrolled in a fundamentals of nursing class? The independent variable was DP of BLS skills, and the dependent variable was the GSES score. The intervention aimed to improve students' perceived general self-efficacy, with the goal of supporting clinical readiness during acute hospital codes (Curran et al., 2012).

This study was approved by the Institutional Review Board (IRB) and the project site. Recruitment was conducted via flyers (Appendix C) and email invitations (Appendix E). All participants were informed of the study's purpose, procedures, and voluntary nature prior to participation. Participation was voluntary and had no impact on course grades or progression in the program. To minimize potential coercion, a proxy faculty member—who was not involved in course grading—facilitated the consent process and managed all surveys and data collection. The proxy administered surveys, facilitated sessions, and collected data to minimize coercion and protect students' anonymity (Cleary et al., 2014).

The GSES (Appendix B), a validated 10-item self-report tool (Schwarzer & Jerusalem, 1995), was used to measure outcomes. Scores range from 10 to 40, with higher scores indicating stronger self-efficacy. Reported Cronbach's alpha values range from .85 to .90, confirming reliability (Weinman et al., 1995).

Design

The study used a quantitative quasi-experimental one-group pretest–posttest design (Moran et al., 2020). This design allowed for assessment of changes in self-efficacy before (O1) and after (O2) the DP intervention (X) (Cranmer, 2018; Tappen, 2016). Over four weeks, participants engaged in weekly DP sessions integrated into scheduled lab hours.

Strengths and Limitations of the Design

The one-group pretest–posttest design is cost-effective, feasible, and simple to implement, making it appropriate for early-stage educational interventions (Cranmer, 2018; Tappen, 2016). However, limitations include the absence of a control group, potential threats to internal validity, and limited generalizability due to sample size (Creswell & Creswell, 2018).

Rationale for Design Choice

This design was selected because creating a control group or randomizing students was not feasible or ethical. Despite limitations, the design allowed meaningful evaluation of whether repeated DP sessions improved self-efficacy in first-year nursing students.

Sampling and Setting

The study took place at a public university that offers both prelicensure BSN and RN-to-BSN tracks accredited by CCNE and approved by the Board of Registered Nursing. Previous studies confirm that BLS skills decay within three months of training without reinforcement (Cheng et al., 2018; Knipe et al., 2020).

A convenience sample of first-year BSN students enrolled in the fundamentals course was recruited. Inclusion criteria were enrollment in the first semester and current BLS certification. Exclusion criteria included students not in the BSN program, those outside the first semester, or unmatched pretest/posttest data. G*Power analysis supported a minimum sample size of 50; 40 matched pairs were ultimately included. Demographic variables such as age, gender, and healthcare experience were analyzed to explore possible influences on self-efficacy, as prior exposure and maturity can shape confidence in clinical performance.

Instrumentation

The GSES was used to measure perceived self-efficacy before and after the intervention. This validated tool consists of 10 items rated on a 4-point Likert scale (1 = not at all true, 4 = exactly true), with total scores ranging from 10 to 40. Higher scores indicate greater self-efficacy (Schwarzer & Jerusalem, 1995). The GSES has demonstrated high internal consistency and validity in health education research. In this study, reliability testing of the GSES produced a Cronbach's α of .87, confirming high internal consistency within this sample. The scale has been normed across diverse health education contexts and demonstrated stable psychometric properties (Schwarzer & Jerusalem, 1995).

Data Collection and Procedure

The faculty proxy, who was not involved in course grading or evaluation, managed data collection to minimize coercion and response bias. The faculty proxy was given instructions (Appendix F) to ensure consistency in conducting all data collection. Students were instructed to create unique identifiers to maintain anonymity (appendix G). Data were stored securely, with signed consent forms kept separate from survey responses. Data from pretest and posttest surveys were entered into Excel, coded, and imported into SPSS for analysis.

Each student completed:

1. Pretest: GSES survey before the first DP session.
2. Intervention: Four weekly 15-minute DP sessions focused on BLS skills (responsiveness, pulse check, compressions, rescue breaths, and AED use). Sessions were guided by an American Heart Association (AHA) psychomotor checklist and included coaching, cueing, and corrective feedback. Sessions ended when the student demonstrated mastery, no errors occurred, or 15 minutes elapsed.
3. Posttest: GSES survey immediately following the fourth session.

Data Analysis Methods

Demographic data were collected during the pretest phase. Descriptive statistics were used to summarize age, gender, ethnicity, prior healthcare experience, and previous CPR practice. Frequencies and percentages were reported for categorical variables, while measures of central tendency (mean, median, and mode) were used for continuous variables (Doherty & Skalsky, 2021). Prior healthcare experience and CPR practice were included because they have been identified as potential confounding variables in similar studies of deliberate practice (Oermann et al., 2011).

Change Variable

To determine the effectiveness of the intervention, a change variable was created by subtracting pretest scores from posttest scores (Cranmer, 2018). Normality of the change variable was assessed using SPSS through both graphical (histogram, Q-Q plot, box plot) and statistical methods (Kolmogorov-Smirnov test, skewness, kurtosis, trimmed mean). A nonsignificant Kolmogorov-Smirnov result (Sig. > .05), similar values between the mean and 5% trimmed mean, skewness and kurtosis values near zero, and absence of outliers all supported the assumption of normality (Pallant, 2020; Tabachnick & Fidell, 2018; Doherty & Skalsky, 2021).

Inferential Analysis

Because assumptions of normality were met, a paired samples t-test was used to compare pretest and posttest GSES scores. This parametric test is appropriate for matched pairs measured at two time points (Pallant, 2020; Doherty & Skalsky, 2021). The test produced descriptive statistics (mean, SD), the t statistic, degrees of freedom, p value, and 95% confidence intervals. A p value < .05 was considered statistically significant. Effect size (eta squared) was calculated to determine the magnitude of the intervention's impact (Kim & Mallory, 2016). Additional statistical checks were conducted to ensure model validity. Collinearity diagnostics indicated no multicollinearity concerns (Tolerance > 0.2; VIF < 2.0). Effect size (Cohen's d = 3.13) was calculated using the pooled standard deviation, indicating a large practical effect of the intervention on self-efficacy.

Data Management

Data organization followed strict confidentiality protocols. Participants generated unique identifiers to ensure anonymity. Signed consent forms and demographic/pretest/posttest data were stored in separate locked boxes. Only the proxy had access to consent forms, while the researcher accessed de-identified data. Surveys and checklists were manually entered into Excel, coded, and imported into SPSS for analysis. Coding included demographic variables (e.g., gender, age, ethnicity, healthcare experience, prior CPR practice) and GSES scores. Higher GSES scores reflected greater perceived self-efficacy (Schwarzer & Jerusalem, 1995). Electronic files, including the codebook and SPSS outputs, were stored on a password-protected device accessible only to the researcher. Data will be retained securely for five years before being destroyed (Tappen, 2016).

3. Results

This study implemented deliberate practice (DP) of BLS skills with first-year prelicensure BSN students to examine whether repeated sessions would improve their General Self-Efficacy Scale (GSES) scores. Assessing self-efficacy is a critical aspect of nursing education (Tsao et al., 2022). In resuscitation, accurate measures of self-efficacy can predict students' ability to respond effectively during a code (Curran et al., 2012). Strong self-efficacy not only supports students' willingness to take on challenging tasks (Ferla et al., 2009) but is also reinforced through recent practice and effective debriefing (Curran et al., 2012). This section presents the findings of the project and interprets their significance. The results provide nurse educators with evidence to address the BLS skill-retention gap among nursing students and to strengthen clinical preparedness across healthcare education.

Summary of Methods and Procedures

IRB approvals for this project were obtained (Appendices J and K) and permission to conduct the study at the project site was granted by the Department of Nursing program director (Appendix I). Permission to use the General Self-Efficacy Scale (GSES) was obtained from the instrument's original authors, as shown in Appendix H. This project used a quantitative quasi-experimental, one-group pretest–posttest design to evaluate the effect of deliberate practice (DP) of BLS skills on nursing students' self-efficacy (Moran et al., 2020).

A nonprobability convenience sampling method was used to recruit first-year BSN students at a state university (Creswell & Guetterman, 2019). G*Power analysis was applied to determine the sample size needed for statistical significance. Recruitment occurred through flyers and email invitations. A proxy faculty member facilitated data collection, including obtaining informed consent, distributing demographic surveys (Appendix A), and administering the General Self-Efficacy Scale (GSES) pre- and posttests.

The GSES pretest was administered before the first DP session. Students then completed four weekly DP sessions in the skills laboratory. Each session lasted approximately 15 minutes and included one-on-one coaching, cueing, and feedback while students practiced BLS skills guided by an American Heart Association (AHA) psychomotor checklist (Appendix D). At the end of the fourth session, the GSES posttest was administered.

Data matching was conducted using unique identifiers. Of 46 pretest and 45 posttest responses, 40 matched pairs were included in the final analysis. Data were entered into Excel, coded, and then imported into SPSS for analysis.

A paired samples t-test was used to compare pre- and post-intervention GSES scores. Normality was assessed using a change variable (posttest score – pretest score). Results of the Kolmogorov-Smirnov test indicated no violation of normality (Sig. = 0.134). The mean (12.48) and 5% trimmed mean (12.33) were similar, and skewness (0.537) and kurtosis (–0.133) values were within the acceptable range of ± 1 . These findings support the assumption of normality. Tables 1 and 2 display the tests of normality.

Table 1. Tests of Normality

Change Variable	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Change Variable	.122	40	.134	.965	40	.248

Note. A nonsignificant Kolmogorov-Smirnov test result (Sig. > .05) indicates that the data are normally distributed. In this study, the Sig. value was 0.134, confirming that the assumption of normality was not violated (Doherty & Skalsky, 2021).

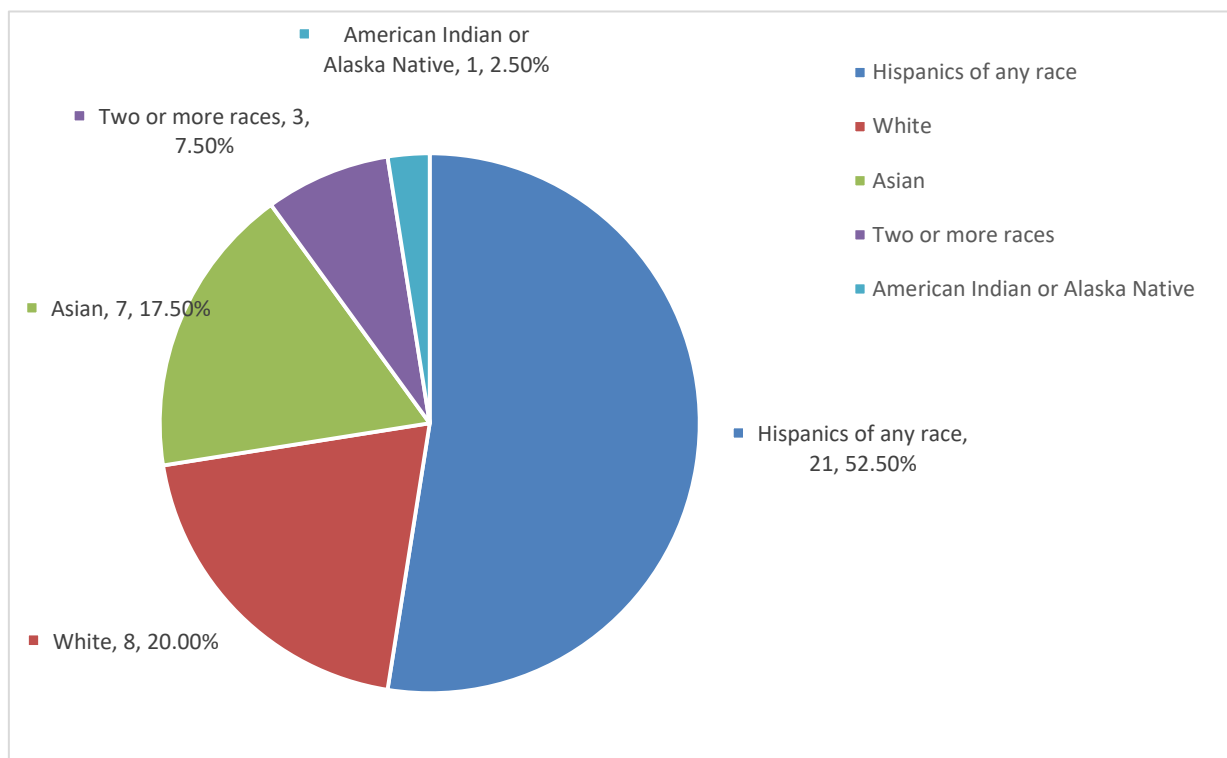
Table 2. Descriptives

		Statistic	Std. Error
Change Variable	Mean	12.48	.630
	95% Confidence Interval for Mean (Lower Bound)	11.20	
	95% Confidence Interval for Mean (Upper Bound)	13.75	
	5% Trimmed Mean	12.33	
	Median	12.00	
	Variance	15.897	
	Std. Deviation	3.987	
	Minimum	6	
	Maximum	22	
	Range	16	
	Interquartile Range	5	
	Skewness	.537	.374
	Kurtosis	-.133	.733

Note. The descriptives for the change variable (difference between pretest and posttest GSES scores, $N = 40$) demonstrate that the mean (12.48) and 5% trimmed mean (12.33) were nearly identical, supporting normality. Skewness (0.537) and kurtosis (-0.133) also fell within the acceptable ± 1 range. These results confirm that the assumptions for using a parametric test were met, justifying the use of a paired samples t-test (Doherty & Skalsky, 2021).

Summary of Sample Characteristics

Of the 46 eligible students, 40 completed both surveys, resulting in an 87% participation rate. Demographic variables collected included age, gender, ethnicity, healthcare work experience, and prior CPR practice. These variables were selected to describe the sample and account for potential confounding factors, as prior work experience and CPR practice may influence outcomes (Oermann et al., 2011). Gender, a standard demographic measure, was also included (Doherty & Skalsky, 2021). The demographic characteristics of participants are summarized in Figures 1-3, and normality plots are shown in Figures 4-6 (see Appendices L, M and N)



Note. $N = 40$. Most participants identified as Hispanic ($n = 21$, 52.5%), followed by Caucasian ($n = 8$, 20%), Asian ($n = 7$, 17.5%), two or more races ($n = 3$, 7.5%), and American Indian or Alaska Native ($n = 1$, 2.5%).

Figure 1. Pie Chart Depicting the Race of Participants



Figure 2. Experience in Health Care



Note. N = 40. Half of the participants reported prior healthcare experience (n = 20, 50%), and half reported none (n = 20, 50%).

Figure 3. CPR Practice

Note. CPR practice frequency may influence confidence levels; this variable was analyzed to contextualize differences in baseline self-efficacy.

Major Findings

This section presents the key results in relation to the study's purpose and practice-based question: Does deliberate practice (DP) of BLS skills impact the GSES scores of first-year nursing students enrolled in a fundamentals of nursing class? The evaluative outcome predicted that DP would have a statistically significant effect on GSES scores. Because the change variable met assumptions of normality, a paired samples t-test was conducted. Results demonstrated a significant increase in GSES scores from pre-intervention (M = 24.7, SD = 3.63) to post-intervention (M = 37.2, SD = 2.58), $t(40) = 19.8$, $p < .001$ (two-tailed). The mean increase of 12.5 points (95% CI [11.2, 13.8]) confirms that repeated DP sessions significantly enhanced students' self-efficacy. These findings support the evaluative outcome and provide evidence that deliberate practice is an effective method for improving self-efficacy in BLS skills among first-year nursing students. The paired samples t-test results are displayed in Tables 3 and 4.

Table 3. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Total Pre GSES	24.73	40	3.630	.574
	Total Post GSES	37.20	40	2.584	.409

Note. N = 40. Pre-intervention GSES scores (M = 24.7, SD = 3.63) increased to post-intervention scores (M = 37.2, SD = 2.58).

Table 4. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Total Pre GSES – Total Post GSES	-12.475	3.987	.630	-13.750	-11.200	-19.789	39	.000

Note. This table shows a significant increase in post-intervention GSES scores ($p < .001$), supporting the hypothesis that deliberate practice improves nursing students' perceived self-efficacy.

4. Discussion

This study evaluated the impact of deliberate practice (DP) of BLS skills on the self-efficacy of first-year prelicensure BSN students. Findings demonstrated a statistically significant improvement in General Self-Efficacy Scale (GSES) scores after four weeks of repeated DP sessions, indicating that DP effectively enhanced students' confidence and perceived readiness.

Half of the participants reported prior healthcare experience, and most (75%) had not practiced BLS outside of the classroom. These factors may have influenced outcomes, as prior research shows that clinical experience and recent practice can shape self-efficacy (Oermann et al., 2011; Curran et al., 2012; Halm & Crespo, 2018; Knipe et al., 2020; Charlier et al., 2020; Bathish et al., 2018; Chase et al., 2001). The results of this project are consistent with these findings, further supporting the relationship between DP, prior exposure, and confidence.

DP sessions were seamlessly integrated into the fundamentals of nursing course, which combines theory, skills laboratory, and clinical components. Each student participated in four 15-minute weekly sessions, guided by a proxy instructor who provided coaching and immediate feedback. This structure required minimal disruption to the curriculum, highlighting DP's feasibility in undergraduate nursing education.

5. Implications for Nursing Practice

The American Heart Association underscores the importance of high-quality BLS training in improving survival from cardiac arrest. Despite mandatory BLS certification, many students struggle to apply skills in practice (Dick-Smith et al., 2020). DP offers a structured, evidence-based method to bridge this gap. These results suggest that integrating deliberate practice into nursing curricula may enhance students' confidence and readiness for emergency response.

Embedding DP into curricula gives students repeated, hands-on opportunities to refine psychomotor skills and build confidence. Previous studies similarly report that DP improves BLS performance, retention, and clinical readiness (Dick-Smith et al., 2020; Requena-Mullor et al., 2021; Tsao et al., 2022). Future research should explore how sustained or scaled-up DP models influence BLS competency and inform best-practice guidelines in nursing education.

Notably, increased self-efficacy has implications beyond training. Low confidence among new graduates has been linked to burnout and attrition (George et al., 2017; Grightmire, 2009), whereas high self-efficacy is associated with competence in BLS and better patient outcomes (Jiang et al., 2022). By fostering resilience and confidence, DP may help ease the transition from student to professional nurse.

6. Limitations and Future Directions

This study has limitations. It was conducted at a single institution using a convenience sample, limiting generalizability. The absence of a control group prevents definitive attribution of results solely to the intervention. Outcomes relied on self-reported self-efficacy rather than direct measures of BLS performance. Finally, limited debriefing time—typically five minutes—may have reduced opportunities for reflective learning, which is essential for skill mastery (Doherty & Skalsky, 2021).

Despite these limitations, the project demonstrated strengths, including low resource requirements, time efficiency, and scalability. BLS skills can be practiced effectively in short intervals using manikins, making DP highly adaptable across settings.

Future studies should employ randomized controlled designs across multiple institutions to enhance generalizability. Incorporating objective performance measures (e.g., manikin-based feedback, checklists, simulation scenarios) would provide a more comprehensive assessment of competence. Longitudinal research is also needed to determine whether gains in self-efficacy are sustained over time and translate to improved clinical performance. Examining different delivery models—such as peer-led DP, virtual modules, or varied session frequency—may further optimize outcomes. Because self-efficacy was measured through self-report, results may be subject to response bias or social desirability effects. Future studies should include objective performance assessments to validate perceived confidence.

7. Conclusions and Contributions to Nursing

The findings demonstrated a statistically significant increase in GSES scores after four weeks of deliberate BLS practice ($p < .001$, $d = 3.13$). This result supports the hypothesis that structured, repetitive skill sessions enhance first-year nursing students' perceived self-efficacy. The conclusion aligns with Bandura's (1977) framework, where mastery experiences strengthen confidence and competence in performing clinical tasks.

8. Recommendations

Based on these findings, several recommendations emerge for nursing education and practice:

- Incorporate objective feedback: Move beyond subjective instructor assessment by integrating CPR feedback devices, such as voice advisory manikins. Adoption of the AHA's Resuscitation Quality Improvement (RQI) program may enhance training consistency (Jiang et al., 2022; Finn et al., 2015; Cheng et al., 2020).
- Broaden outcomes measured: Future research should assess behavioral and clinical outcomes, including judgment and decision-making, in addition to self-efficacy (Duvivier et al., 2011).
- Expand research to students: Most studies on DP focus on practicing nurses (Cheng et al., 2018; Curran et al., 2012; Merchant et al., 2020). Further investigation with prelicensure nursing students is needed to address gaps in literature.

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Authors' contributions

Dr. Sheryll Go conceptualized and designed the study, obtained IRB approval, coordinated the intervention, performed data analysis, and drafted the manuscript. She also reviewed and approved the final version of the article. No other individuals met the criteria for authorship.

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Competing interests

The author declares no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Written informed consent was obtained from all participants prior to data collection.

Ethics approval

This study was approved by the Institutional Review Board of the American Sentinel College of Nursing & Health Sciences at Post University, with additional authorization from the Department of Nursing at the project site.

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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Appendix A

Demographic Survey

Unique Identifier: _____

Write your “unique identifier” using the first three letters of your mother's first name and the four digits that correspond to her birthday. For example: Amanda, DOB October 2nd. Unique ID will be AMA-1002

1. What is your gender?

- A. Male
- B. Female
- C. Prefer not to answer

2. What age range do you fall under?

- A. 18-25 years
- B. 26-30 years
- C. 31-35 years
- D. 36-40 years
- E. 41 and older

3. What is your ethnicity?

- A. Hispanics of any race
- B. American Indian or Alaska Native
- C. Asian
- D. Black or African American
- E. Native Hawaiian or Other Pacific Islander
- F. White
- G. Two or more races
- H. Prefer not to identify

4. Do you have any previous work experience in healthcare?

- A. No
B. Yes

5. Have you done any BLS practice since your BLS certification/recertification?

- A. No
B. Yes

Appendix B**General Self-Efficacy Scale (GSES)**

Unique Identifier: _____

Please rate your perceived self-efficacy in dealing with a patient in need of basic life support.

	Not at all true	Hardly true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough	☐	☐	☐	☐
2. If someone opposes me, I can find the means and ways to get what I want.	☐	☐	☐	☐
3. It is easy for me to stick to my aims and accomplish my goals.	☐	☐	☐	☐
4. I am confident that I could deal efficiently with unexpected events.	☐	☐	☐	☐
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	☐	☐	☐	☐
6. I can solve most problems if I invest the necessary effort.	☐	☐	☐	☐
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	☐	☐	☐	☐
8. When I am confronted with a problem, I can usually find several solutions.	☐	☐	☐	☐
9. If I am in trouble, I can usually think of a solution	☐	☐	☐	☐
10. I can usually handle whatever comes my way.	☐	☐	☐	☐

Appendix C

Recruitment Flyer

Calling All First Year BSN Students!



Wanna contribute to the future of nursing education?



**How about a free opportunity
to master your BLS skills with one-on-one coaching?**

If you answered **YES** to any of these questions, and you are currently 18 years or older, you are invited to be a part of a research study.

Participate in a Research Study using Deliberate Practice of BLS Skills

This is what you would do if you chose to participate:

1. Let your Clinical Instructor know that you are interested in volunteering for the research study.
2. Show up during your regularly **scheduled** skills lab sessions prior to clinical. You will:
 - a) Sign an electronic consent form to participate in the study
 - b) Complete a short demographic survey
3. Participate in a 10-minute deliberate practice session during skills lab hours. You will have a total of four skills lab days prior to coming to clinical, so you will be completing a total of four 10-minute deliberate practice of BLS skills.
4. Complete a General Self-Efficacy Scale (GSE) survey twice: once before the start of BLS Skills practice and again after the last deliberate practice session.
5. **That's it. All you have to do is show up during your regularly scheduled skills lab hours!**

There is nothing you need to do to prepare ahead of time for the pretest.
This project has received an IRB approval from the Department of Nursing.

Appendix D

Basic Life Support Psychomotor Skills Checklist

Please write your Unique Participant ID at the back of this checklist.

Deliberate Practice sessions. Check one:

- ☐ Week 1
- ☐ Week 2
- ☐ Week 3
- ☐ Week 4

Assessment and Activation

- ☐ Checks responsiveness
- ☐ Shouts for help/Activates emergency response system/Sends for AED
- ☐ Checks breathing
- ☐ Checks pulse

Cycle 1 of CPR (30:2) *CPR feedback devices are required for accuracy

Adult Compressions

- ☐ Performs high-quality compressions*:
 - Hand placement on lower half of sternum
 - 30 compressions in no less than 15 and no more than 18 seconds
 - Compresses at least 2 inches (5 cm)
 - Complete recoil after each compression

Adult Breaths

- ☐ Gives 2 breaths with a barrier device:
 - Each breath given over 1 second
 - Visible chest rise with each breath
 - Resumes compressions in less than 10 seconds

Cycle 2 of CPR (repeats steps in Cycle 1) Only check box if step is successfully performed

- ☐ Compressions
- ☐ Breaths
- ☐ Resumes compressions in less than 10 seconds

AED (follows prompts of AED)

- ☐ Powers on AED
- ☐ Correctly attaches pads
- ☐ Clears for analysis
- ☐ Clears to safely deliver a shock
- ☐ Safely delivers a shock

Resumes Compressions

- ☐ Ensures compressions are resumed immediately after shock delivery
 - Student directs instructor to resume compressions or
 - Second student resumes compressions

Length of time of deliberate practice session (minutes) _____

Did participant reach mastery of BLS skill with no errors being made?

☐ Yes ☐ No

Appendix E

Recruitment Email from Proxy

From: Proxy

To: First year BSN nursing students taking the Fundamentals of Nursing course

Subject: Upcoming opportunity to participate

Hello!

You recently received a flyer in your student mailbox.

Participation in this research study gives you free one-on-one extra help to master a critically important clinical skill.

If you want to participate, please let your Fundamentals of Nursing Clinical instructor know.

All Deliberate Practice sessions of BLS Skills will be done during your regular Skills Lab hours.

Appendix F

Instructions for Proxy

Securing the Informed Consent

- Please review the Informed Consent to interested nursing students and collect the signed informed consents from those who wish to participate.
- Please explain that participation in the study is strictly voluntary; that they will have the option to opt out of the study at any time without penalty, and that participation in the project will not affect their course grades, nor earn them any extra credit from participating in the study.

Demographic Survey

- Kindly remind the students to complete the Demographic Survey after signing the consent form, using their unique identifier.

General Self-Efficacy Scale (GSES) Survey

- Prior to starting the first Deliberate Practice of BLS skills session, please ask the participants to complete the General Self-Efficacy Scale (GSES) survey.

Deliberate Practice of BLS Skills Session

1. Inform the participant: "Now we will use a deliberate practice session where you can practice your BLS Skills until you master it. When you master it, you will feel like you don't need to think through each of the steps anymore, and you won't be making any mistakes."
2. "You may take up to 15 minutes for this practice session and I will be continuously cueing and coaching your every move during the skill."
3. After mastery is achieved, tell the participant: "It's very important that you complete all FOUR sessions of Deliberate Practice of BLS Skills in four weeks. You will be given another GSES survey at the end of your last deliberate practice. Thank you very much for participating."

Appendix G

Instructions for Participants

How to create your unique identifier:

You will use the first two letters of your mother's first name, followed by the last four digits of your mother's birth date.

For example, if your mother's name is Amanda, and her birthday is on October 2nd, your unique identifier will be **AMA-1002**.

You will use this identifier in completing the surveys for this study. You will be given a packet consisting of:

- A consent form
- Demographic survey
- General Self-Efficacy survey (pretest to be completed before Week 1)
- General Self-Efficacy survey (posttest to be completed after Week 4)

Deliberate Practice Sessions will be done once a week, for a total of 4 weeks.

Each session should last about 15 minutes long.

All Deliberate Practice Sessions of BLS Skills will be done in the campus skills lab, during your regularly scheduled skills lab hours.

Appendix H

Permission to use the General Self-Efficacy Survey

Freie Universität Berlin, Gesundheitspsychologie (PF 10),
Habelschwerdter Allee 45, 14195 Berlin, Germany



Fachbereich Erziehungs-
wissenschaft und Psychologie
- Gesundheitspsychologie -

Professor Dr. Ralf Schwarzer
Habelschwerdter Allee 45
14195 Berlin, Germany

Fax: +49 30 838 55634
health@zedat.fu-berlin.de
www.fu-berlin.de/gesund

Permission granted

to use the General Self-Efficacy Scale for non-commercial research and development purposes. The scale may be shortened and/or modified to meet the particular requirements of the research context.

<http://userpage.fu-berlin.de/~health/selfscal.htm>

You may print an unlimited number of copies on paper for distribution to research participants. Or the scale may be used in online survey research if the user group is limited to certified users who enter the website with a password.

There is no permission to publish the scale in the Internet, or to print it in publications (except 1 sample item).

The source needs to be cited, the URL mentioned above as well as the book publication:

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp.35-37). Windsor, UK: NFER-NELSON.

Professor Dr. Ralf Schwarzer
www.ralfschwarzer.de

Appendix I

Site Approval (Anonymized)

April 22, 2022

Dear [REDACTED],

I'm currently working on finishing my Capstone Project from the Doctor of Nursing Program in Educational Leadership at [REDACTED]. My project is about the impact of deliberate practice of basic life support (BLS) skills on the general self-efficacy of first year pre-licensure BSN students. The focus of this research is to determine if deliberate practice of BLS skills will impact the students' perceived self-efficacy. I am requesting your approval to recruit pre-licensure first year BSN students to participate in this study.

First year nursing students can participate by completing two survey instruments: a socio-demographic tool and a pretest/posttest General Self-Efficacy Scale (GSES) survey by Schwarzer & Jerusalem (1995). Additionally, the students will be asked to participate in four deliberate practice skills sessions, where they will be reviewing and practicing their BLS skills with the primary researcher. The students' GSES scores will be measured before and after the introduction of deliberate practice. These scores will be entered into a database to determine if deliberate practice of BLS skills will impact the students' perceived self-efficacy.

The demographic survey and the GSES surveys will be administered online. Each survey will take approximately 5 minutes to complete. The primary researcher will secure the students' consent to participate in the study. In addition, a unique identifier will be generated for each participant. Electronic files such as the spreadsheet, codebook, and SPSS data sets and outputs will be stored in a password protected external data storage device accessible only to the researcher. Data will be kept securely for 5 years following completion of the study. After 5 years, all paper and electronic data will be physically destroyed.

I look forward to your approval to recruit first year BSN students for my research study, on the condition of IRB approval from the [REDACTED].

Sincerely,

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] *BN*

Approved by: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] ang
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Appendix J

IRB Approval (Anonymized)

October 24, 2022

[REDACTED] INSTITUTIONAL REVIEW BOARD

Administrative/Exempt Review

Determination Status: Determined Exempt

IRB-FY2022-302

Prof. [REDACTED] CNS - Nursing

Dear Prof. [REDACTED]:

Your application to use human subjects, titled "The Impact of Deliberate Practice of CPR skills on the General Self-Efficacy Scale Scores of First Year Nursing Students" has been reviewed and determined exempt by the Chair of the Institutional Review Board (IRB) of [REDACTED]. An exempt determination means your study had met the federal requirements for exempt status under 45 CFR 46.104. The [REDACTED] IRB has weighed the risks and benefits of the study to ensure the protection of human participants.

This approval notice does not replace any departmental or additional campus approvals which may be required including access to [REDACTED] campus facilities and affiliate campuses. Investigators should consider the changing COVID-19 circumstances based on current CDC, California Department of Public Health, and campus guidance and submit appropriate protocol modifications to the IRB as needed. [REDACTED] campus and affiliate health screenings should be completed for all campus human research related activities. Human research activities conducted at off-campus sites should follow CDC, California Department of Public Health, and local guidance. See [REDACTED]'s COVID-19 Prevention Plan for more information regarding campus requirements.

You are required to notify the IRB of the following as mandated by the Office of Human Research Protections (OHRP) federal regulations 45 CFR 46 and [REDACTED] IRB policy. The forms (modification, renewal, unanticipated/adverse event, study closure) are located in the [REDACTED] IRB System with instructions provided on the IRB Applications, Forms, and Submission webpage. Failure to notify the IRB of the following requirements may result in disciplinary action. The [REDACTED] IRB system will notify you when your protocol is due for renewal. Ensure you file your protocol renewal and continuing review form through the [REDACTED] IRB system to keep your protocol current and active unless you have completed your study.

- Ensure your CITI Human Subjects Training is kept up-to-date and current throughout the study.
- Submit a protocol modification (change) if any changes (no matter how minor) are proposed in your study for review and approval by the IRB before being implemented in your study.
- Notify the IRB within 5 days of any unanticipated or adverse events experienced by subjects during your research.
- Submit a study closure through the [REDACTED] IRB submission system once your study has ended.

If you have any questions regarding the IRB decision, please contact [REDACTED], the Research Compliance Officer. Mr. [REDACTED]

[REDACTED] can be reached by phone at [REDACTED], or by email [REDACTED]. Please include your application approval number IRB-FY2022-302 in all correspondence. Any complaints you receive from participants and/or others related to your research may be directed to [REDACTED].

Best of luck with your research.

Sincerely,

[REDACTED]

[REDACTED], Ph.D., IRB Chair [REDACTED] Institutional Review Board

Appendix K

IRB Approval from University (Anonymized)

July 1, 2022

Sheryll Go

DNP Student

[REDACTED]

Re: The Impact of Deliberate Practice of BLS Skills on the General Self-Efficacy Scale scores of first year nursing students

Dear [REDACTED],

On July 1, the Institutional Review Board (IRB) of [REDACTED] University has approved the above-referenced submission and has deemed it as an expedited study. The contingencies have been addressed, and the IRB approves the protocol. Work on this project may begin. This approval is for a period of one year from the dates of this letter and will require continual approval if the extends beyond one year. If you make changes to the protocol during the period of this approval, you must a revised protocol to the [REDACTED] IRB for approval before implementing the changes.

If you have any questions regarding the IRB's decision, please contact me through [REDACTED]

Sincerely,

[REDACTED]
[REDACTED]
[REDACTED]

University

Appendix L

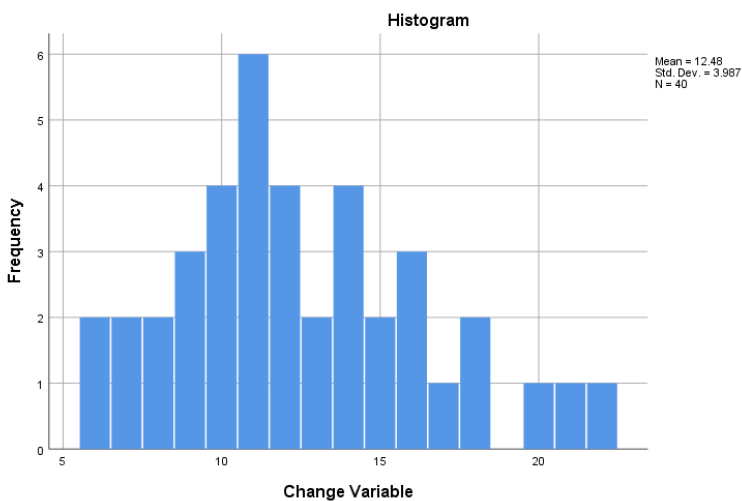


Figure 5. Histogram

Note. The histogram displays a bell-shaped distribution with the curve peaked at the center and tapering at both ends, indicating that the change variable was reasonably normally distributed (Doherty & Skalsky, 2020).

Appendix M

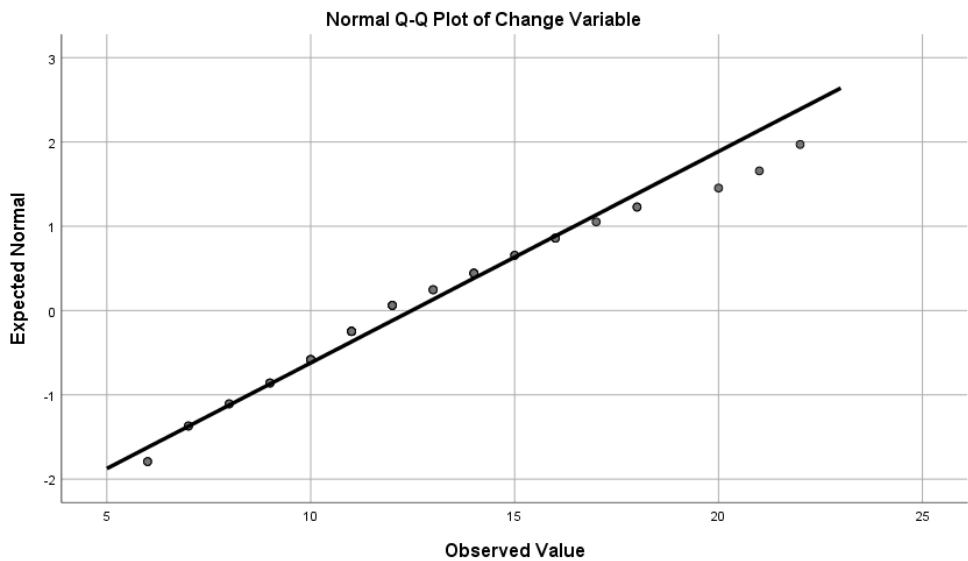


Figure 6. Normal Q-Q Plot of Change Variable

Note. The Q-Q plot shows data points aligning closely with the expected line, indicating that the change variable followed a normal distribution and supporting the findings from the histogram.

Appendix N

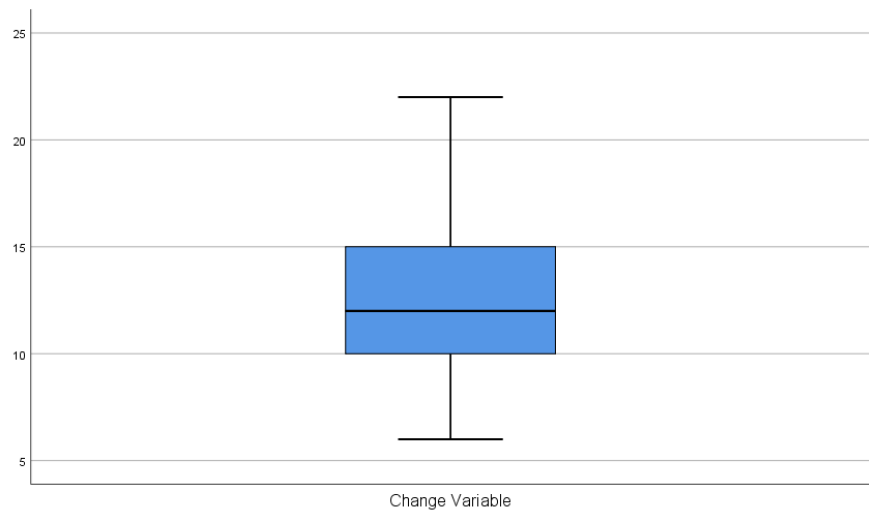


Figure 7: Box Plot of Change Variable

Note. The box plot shows a centered median line, symmetrical whiskers, and no significant outliers, indicating that the change variable was normally distributed (Doherty & Skalsky, 2021; Pallant, 2020).