9-23-2025

Active Learning and NCLEX-RN Pass Rate on First Attempt in BSN and ADN Programs

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
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Walden University
2025

Abstract

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Dissertation Submitted in Partial Fulfillment

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Abstract

Failing the NCLEX-RN on the first attempt affects not only the students and their families but also nursing programs. To increase NCLEX-RN pass rates, nursing programs are shifting from traditional teaching to active learning in their aim to produce nursing graduates who will pass the NCLEX-RN exams on the first attempt. The purpose of this descriptive, correlational study, guided by theory of constructivism, was to determine if there is a relationship between faculty's use of active learning strategies (ALS) and nursing students' NCLEX-RN pass rates on the first attempt in bachelor of science in nursing (BSN) and associate degree in nursing (ADN) programs, and the difference in nursing students' NCLEX-RN pass rates in BSN programs compared to ADN programs and the use of ALS by faculty. Emails were sent to 7,519 nursing faculty from 219 nursing programs in seven West Coast states. A total of 341 responses were obtained. Data were analyzed using multiple linear regression and independent sample *t*-tests. The results revealed no meaningful relationship between faculty use of ALS and nursing students' NCLEX-RN pass rates on the first attempt in BSN and ADN programs. Further research is needed to develop an active learning inventory tool to investigate the relationship between active learning in the classroom and NCLEX-RN pass rates on the first attempt in BSN and ADN programs. The findings from this study assist in informing faculty about best practices in classroom instruction related to the use of active learning. Nursing faculty using best practices can be more effective in assisting students in passing the NCLEX-RN exam, which has potential implications for positive social change.

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Dedication

I dedicate this dissertation to my family for their undying love and support, my husband, Floredix, and my children, Leanna and Katrielle. Floredix has always been so patient with me, especially on days when all I did was sit glued to my computer. I often felt like quitting, but he made me believe in myself.

To Leanna, my eldest, thank you for your love and understanding. Your smile and the drink that you always brought for me whenever you came home, knowing that I was on my desk working on my dissertation, always made me smile. Thank you, my Baby, for making me feel good and inspiring me! To Katrielle, my youngest and sweet child, your words, "You can do it, Mom!" Always echoed in my ears and made me persevere.

Finally, thank you, Lord Jesus, for granting me wisdom, strength, and good health that, despite all the trials I encountered, I endured and finished this doctoral journey. To God be the glory!

Acknowledgments

I want to thank my dissertation chair, Dr. Leslie Hussey, for her guidance, patience, and support. Your nudges helped me progress in my dissertation work. Thank you for believing in me! I would also like to acknowledge my committee member, Dr Jill Sanko. Thank you for your feedback and guidance! Again, to both of you, I would not have completed this doctoral journey without your help. Thank you for not giving up on me! Last, to Ms. Denise Long, Walden's Senior Editor, thank you for your assistance and expertise!

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Chapter 1: Introduction to the Study

Introduction

The U.S. Bureau of Labor Statistics (BLS, 2021) projected that the need for registered nurses (RNs) will rise 9% from 2020 to 2030. RNs account for 7 of the 30 fastest-growing occupations in the United States. The BLS projects 175,900 RN job openings yearly until 2029 because of the retiring baby boomers and nurses leaving the workforce (2020). One way to increase the number of nurses entering the nursing profession is to increase the number of nursing graduates passing the National Council Licensure Exam for Registered Nurses (NCLEX-RN). However, the NCLEX-RN pass rate has declined since 2012 (National Council of State Boards of Nursing [NCSBN], 2016a). From 2012 to 2020, the yearly average of candidates who failed the NCLEX-RN on their first attempt was 22,441 (NCSBN, 2021a). To help address the nursing shortage, nursing schools, both the bachelor of science in nursing (BSN) and the associate degree in nursing (ADN) programs are challenged to graduate students who are likely to pass the NCLEX-RN exam, and programs must maintain an 80% NCLEX-RN first time pass rate (Commission on Collegiate Nursing Education, 2018; NCSBN, 2018). Questions on the NCLEX-RN exams are on the higher order of thinking (NCSBN, 2016b), and the NCLEX exam tests the students' critical thinking ability (NCSBN, 2017).

The National League for Nursing (NLN) Commission for Nursing Education Accreditation (CNEA), through its board of commissioners and committee members, expects nursing students to be competent in critical thinking to pass the NCLEX-RN exam (Kaddoura et al., 2017). Critical thinking is taught in nursing programs and is

defined as an active process of evaluating, analyzing, and synthesizing information obtained through communication, observation, experience, or reflection before adopting a belief or executing the next course of action (Alfaro-LeFevre, 2014). One way to assist nursing students in developing critical thinking while taking courses is to use active learning strategies (ALS) because ALS stimulates critical thinking (Styers et al., 2018; Rowe et al., 2015; Synder & Wiles, 2015). A study on the relationship of active learning to students' clinical decision-making and academic performance, such as GPA and student attrition, has been conducted (Bristol et al., 2018). However, little is known about the relationship between active learning and NCLEX-RN pass rates on the first attempt in the BSN and ADN programs. I examined any relationship between faculty use of ALS in the classroom and NCLEX-RN pass rates on the first attempt in BSN and ADN programs. This study will promote social change by informing faculty about active learning and its relationship to the NCLEX-RN pass rate. Active learning may help students learn better, pass the NCLEX-RN exam, and join the workforce, thus helping alleviate the nursing shortage.

I described my study's background, the problem statement, purpose, research questions, and hypotheses in Chapter 1. I also discussed the study's theoretical framework and its nature, the definitions, assumptions, scope and delimitations, limitations, and significance, and concluded with a summary.

Background

Instructors might find it tempting to default to the traditional lecture teaching style. Historically, the chalk-and-talk lecture is a popular teaching method in universities

before the advent of technology (Saini et al., 2015). Listening to chalk-and-talk lectures and PowerPoint presentations is a passive way of learning because the students sit while receiving information (Bristol et al., 2018). Hence, students may fail to apply information obtained from lectures to real-life situations (Kalmakis et al., 2010; Waldeck & Weimer, 2017). Students do not provide input with lectures, and students do not have the opportunity to process the necessary information (Gordy et al., 2018; Romeo, 2008; Serin, 2018).

Active learning consists of activities requiring students to actively participate in a designed learning environment facilitated by a teacher to stimulate critical thinking (Bonwell & Eison, 1991; Nelson, 2017; Simpson & Courtney, 2002). ALS include techniques such as case studies, role-playing, class debates, games, flipped classrooms, and classroom response systems or clickers, which stimulate critical thinking (Adkins, 2018). Many research studies focus on active learning (Bristol et al., 2018). Pekdogan and Kanak (2016) explored active learning in preschool education based on preschool teachers' reviews. When asked what should be considered a priority when creating an active learning classroom, most preschool teachers in the study pointed out a sizeable physical classroom. According to the preschool teachers, a large classroom creates curiosity among students, thus encouraging them to participate. They also cited drama, problem-solving, and brainstorming activities as examples of active learning activities. Gordy et al. (2018) also provided information on transforming traditional classrooms into active learning classrooms. Typical active learning classrooms are technology-rich classrooms with multiple flat-panel screens/projectors, movable tables and chairs, and

portable device-based technology that allow flexibility, connectivity, smooth interaction, and dynamic collaboration (Gordy et al., 2018). Students bring their own devices for technology-rich instructions. Hence, teachers and learners can co-create a collaborative learning environment. Gordy et al.'s (2018) study showed that the transformation to active learning classrooms yielded positive results, such as improved teaching in an enjoyable learning environment, increased student participation and engagement in class activities, more creative ideas, and improved student collaboration. Walker et al. (2018) compared two active learning techniques, clickers versus discussion groups, on the students' perception and school performance. According to Walker et al. (2018), a clicker is a personal electronic device that a student clicks to answer a teacher's question during class. At the same time, a group discussion is a collaborative learning technique implemented by teachers in the classroom. Students are provided with an opportunity to interact and discuss the material in small breakout groups (Walker et al., 2018). The results of Walker et al.'s study showed no difference between clickers and group discussions in the students' exam scores. However, most students favored using clickers in the classroom to keep them engaged (Walker et al., 2018). To investigate the contrast between active learning and lecture-style traditional classrooms, Dehghanzadeh and Jafaraghaee (2018) compared two groups of nursing students on critical thinking disposition (CTD) at the end of their musculoskeletal section of the medical-surgical course. CTD is a component of critical thinking wherein the individual has an internal desire for critical thinking. At the same time, critical thinking is an active process of evaluating, analyzing, and synthesizing information obtained through communication,

observation, experience, or reflection before adopting a belief or executing the next course of action (Ennis, 2015). In addition, Holman and Hanson (2016) conducted a study comparing the exam scores and course evaluations of two groups of students. One group was taught in a flipped classroom, while the other was taught in a lecture-style, traditional classroom. In a flipped classroom, students view prerecorded lectures or complete a preclass assignment to learn foundational concepts, so class time can be utilized for interactive learning, such as problem-solving and application activities that stimulate critical thinking. Using a flipped classroom improved students' exam scores and understanding of course materials and yielded positive course evaluation feedback from students (Bernard, 2015; Heijstra & Siguroardottir, 2018). Persinski (2015) investigated the impact of teacher efficacy and student engagement on the eleventh-grade state exam scores. The results revealed a positive relationship between student engagement and student achievement. Teacher efficacy was shown to have a significant correlation with student achievement. However, there was no correlation between teacher efficacy and student engagement.

Despite studies conducted on the relationship of active learning to student learning outcomes in nursing and various fields of education, limited studies exist on the relationship of active learning to NCLEX-RN. Understanding active learning may help students learn better, pass the NCLEX-RN exam, and join the workforce, thus alleviating the nursing shortage.

Problem Statement

In its 2003 report, *Health Professions* Education*: A Bridge to Quality,* the Institute of Medicine (IOM) examined the level of knowledge needed by healthcare professionals to ensure that patient's needs are met and safe quality nursing care is provided. The report showed that today's nursing students, particularly those in BSN and ADN programs, could not manage the complexity of patient illnesses to provide safe and effective patient care (Duphily, 2014). Although there are more graduates from ADN than from BSN nursing programs, BSN graduates performed better than ADN graduates in the NCLEX-RN exam (NCSBN, 2016b; Nabors, 2012). The 2003 report by IOM, now called the National Academy of Medicine (NAM), was followed by another report in 2011, *The Future of* Nursing: Leading Change, Advancing Health. Like the 2003 report, the 2011 report called for a change in nursing education to suit the demands of the complex healthcare system. The report reiterated the need to increase the number of BSN graduates by 80 % (National Academy of Sciences, 2023). In 2021, NAM released another report named, the Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity, which emphasized the role of nurses in decreasing health disparity and helping people live their healthiest lives. However, according to the said report, nurses can only perform these crucial roles if they come from a solidly built nursing education (NAS, 2023). This lack of adequate nursing skills and educational inadequacy is reflected in the declining NCLEX-RN pass rate on the first attempt. From 90.34% in 2012, 84.57% in 2016, 86.57% in 2020 to 79.90% in 2022, this latest drop in the NCLEX-RN pass rate

on first attempt is 10.4 percentage points below the 2012's pass rate (NCSBN, 2023a; NCSBN 2016a; Nabors, 2012).

The pass rate on the first attempt of the NCLEX-RN is a vital outcome measure used by state boards of registered nursing and other accrediting agencies to evaluate the effectiveness of a nursing program. Nursing schools that do not maintain an acceptable pass rate on the first attempt may lose accreditation status (Haas et al., 2003; DiBartolo & Seldomridge, 2008; Taylor et al., 2014). Hence, nursing schools and educators are challenged to graduate students who will pass the NCLEX-RN exam on the first attempt, and one of the essential predictors of passing the NCLEX-RN exam is critical thinking. A study by Kaddoura et al. (2017) revealed a statistically significant relationship between critical thinking and passing the NCLEX-RN. Both the entry and exit critical thinking scores of students, $p = 0.015$ and $p < .001$ were found to be significant predictors of NCLEX-RN pass rate on the first attempt. According to the NLN Commission for Nursing Education (CNE, 2016), every healthcare professional's critical thinking skills directly impact patient safety. Critical thinking skills help them make appropriate clinical judgments. Hence, NLN CNE expects nursing graduates to show competence in critical thinking on the NCLEX-RN exam (2016). Critical thinking is an essential skill in nursing schools that prepares nursing students for clinical practice (Kaya et al., 2017). It enables nursing students to make sound clinical decisions and manage complex patient problems, resulting in quality, safe patient care (Kaddoura et al., 2017). Therefore, nursing programs integrate critical thinking in the classroom and clinical settings to prepare nursing students for the NCLEX-RN exam.

There are two requirements to facilitate nursing students' critical thinking: (a) a student must be actively involved in the teaching-learning process, and (b) the teacher should facilitate critical thinking and logical reasoning instead of merely transferring information to students (Nelson, 2017). When implemented effectively, faculty-developed-active learning situations stimulate critical thinking in nursing students (Simpson & Courtney, 2002). Student engagement in active learning activities is crucial to learning. Active learning activities require that students actively participate in activities designed to reflect and prioritize their choice of patient care approaches (Bonwell & Eison, 1991; Bristol et al., 2018; Simpson & Courtney, 2002). Using an active learning approach, faculty design activities that require students to use higher-order levels of thinking, such as analysis, synthesis, and evaluation of information. Active learning teaches students how to problem-solve and think critically (Akinoglu et al., 2007; Bristol et al., 2019). While several studies were done on the relationship of active learning to nursing students' clinical decision-making (Mudd & Silbert-Flagg, 2016), satisfaction and school performance (Jafaraghaie et al., 2017), critical thinking (Njie-Carr et al., 2017), and GPA (Dehghanzadeh & Jafaraghaee, 2018), little is known on the relationship of the of active learning to the NCLEX-RN pass rate on the first attempt, and little is known about the difference of NCLEX pass rates on the first attempt between ADN and BSN programs and use of ALS.

Purpose

The purposes of this descriptive correlational study were to determine if there is (a) relationship between the use of ALS by faculty and nursing students' NCLEX-RN

pass rate on the first attempt in BSN programs, (b) a relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in ADN programs and (c) a difference in nursing students' NCELX-RN pass rates in BSN programs compared to ADN programs and the use of ALS by faculty.

Research Questions and Hypotheses

Research Question 1: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in BSN programs?

$H1_{0:}$ There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

$H1_{a}$: There is a relationship between the use of ALS in the classroom by Nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

Research Question 2: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in ADN programs?

$H2_{0:}$ There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCELX-RN pass rates on the first attempt in ADN programs.

$H2_a$: There is a relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in ADN programs.

Research Question 3: What is the difference in the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

$H3_0$: There is no difference in the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

$H3_1$: There is a difference in the use of ALS by ADN and BSN faculty and NCLEX-RN in BSN programs compared to ADN programs?

In the three research questions (RQs), the dependent variable is the NCLEX-RN pass rate; measured as a percentage score of students who passed. I extracted the data on the NCLEX-RN pass rate from schools that offer ADN and BSN from the state board of nursing databases in the West Coast region of the United States, in Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington. The independent variable in RQ 1 and RQ 2 is ALS, measured using a web-based questionnaire. Fifteen types of ALS are listed in the questionnaire, which are; class discussion, think-pair-share, learning cell, collaborative learning group, student debate, reaction to a video, small group discussion, class game, learning by teaching, gallery walk, brainstorming and buzz groups, case studies and problem-based learning, flipped classroom, gamification, and computer-based teaching and learning. Respondents were asked which ALS they use in the classroom. In RQ 3, the independent variables are the type of nursing program and use of ALS, both of which are categorical.

Theoretical Framework

Constructivism was the theoretical underpinning of my study. Constructivism is a learning theory from psychology introduced by Vygotsky and Piaget (Olusegun, 2015). Constructivism posits how people attain knowledge and learn and proposes that people construct knowledge and meaning from experiencing things and reflecting on these experiences. Whenever individuals encounter new information, they try to add it to their previous experience(s) by assimilating or accommodating. This process takes place either consciously or unconsciously according to Cleeremans (2014). Assimilating is integrating one's new experiences with old experiences and reflecting on what is relevant (Olusegun, 2015). Ultimately, new perceptions or ideas surface from assimilating. Accommodation is restructuring perceived things in the environment and the new experiences to fit into the information already in mind (Olusegun, 2015). Constructivists believe that "we are active creators of our knowledge" (Olusegun, 2015, p. 67). Learning that actually takes place is, therefore, an active experience rather than a passive one (Bonewell & Eison, 1991; Bristol et al, 2019; Olusegun, 2015). It is not merely a passive transfer of information from one to another. For example, students who sit in the class and listen to teachers are expected to memorize and recall answers on the exam. This process is passive and is not active, and students do not learn much (Carr et al., 2015). To be actively involved, students should be given tasks that are of a higher order of thinking for them to analyze, synthesize, and evaluate information. More details on constructivism are presented in Chapter 2.

Nature of the Study

A quantitative, nonexperimental, correlational design was used to explore the relationship between the use of ALS tactics and first time NCLEX pass rates. The variable ALS was explored restricted to its use in the classroom. Because the aim was to identify whether active learning influences the ADN and BSN students' NCLEX-RN pass rates differently depending on the degree type, I included these two degree types as independent variables. Data used in the study were primary and secondary types. Primary data consisted of a survey which I administered to elicit data about the use of ALS in the classroom from faculty teaching in the ADN and BSN programs. Secondary data were derived from students' NCLEX-RN pass rates which were archived from the state boards of nursing databases.

I used multiple regression analysis and independent *t* tests to analyze data. Multiple linear regression is used when the nature of a research question is relationships, the measurement of the dependent variable is interval or ratio, and there is a single independent variable group. It is used when the goal is to see if a set of independent variables predict the dependent variable (Gray & Grove, 2020). An independent *t* test is used when a researcher wants to examine differences between two independent groups. The participants in one group must be unrelated to or different from the participants in the second group (Gray & Grove, 2020).

Definitions

Active learning strategies (ALS): For this study, activities that promote active learning are considered to be, but are not limited to, class discussion, think-pair-share,

learning cell, collaborative learning, student debate, reaction to videos, small group discussion, class game, learning by teaching, gallery walk, buzz group and brainstorming, case studies and problem-based learning, flipped classroom, gamification, and computer-based learning (AlRuthia et al., 2019; Boctor, 2012).

Associate degree in nursing (ADN) program: Traditionally, a 2-year nursing program, although some nursing schools offer accelerated options. Prospective students must have a high school diploma or a general equivalency degree (GED) certificate for admission. Graduates from the ADN program can take the NCLEX-RN exam (Granger, 2020).

Bachelor of science in nursing (*BSN) program:* Traditionally a 4-year program, although some schools have accelerated programs for prospective students who are licensed vocational nurses, those with previous work experience in auxiliary healthcare, and those with degree in another field. A graduate of the BSN program is prepared to take the NCLEX-RN exam (Granger, 2020).

Brainstorming and buzz groups: Brainstorming is a technique used to solve a specific problem by collecting all group members' spontaneous thoughts or opinions. (Gogus, 2012; Srihandayani & Marlina, 2019). Meanwhile, a *buzz group* is a discussion technique where the instructor divides the class into smaller groups. Each group is given a topic or an issue to be discussed. The instructor assigns a team leader, a note taker, and a timekeeper for each group and sets the time limit for all groups. The instructor encourages every member of each group to participate so everyone can express their ideas. Midway through the discussion the instructor monitors the progress of each buzz

group by circulating among the groups. At the end of the buzz group discussion, the instructor links the discussion to the lesson content and gives a summary (Pangaribuan & Manik, 2017).

Case studies and problem-based learning: Case studies are a teaching modality where students are given real-life scenarios with problems to solve. They integrate whatever knowledge they learned from theory to solve the case scenarios. Mostly assigned as group work, students learn problem-solving and collaborative skills as they try to express their feelings and reason out with each other respectfully (Seshan et al., 2021).

Class discussion: A form of ALS applied mostly to clarify complex content. Students are given the opportunity to discuss the lesson content in pairs, in small groups, or in the entire class (Arizona State University, n.d.).

Class game: A valuable tool that enhances active learning in the classroom by improving student engagement and learning outcomes. Given specific rules for structure, the focus of the students is on playing and winning (Boston College, 2023).

Clicker: A personal electronic device that a student clicks to answer a question posed by the teacher during class time.

Collaborative learning group: Considered one of the most important strategies of active learning, collaborative learning group facilitates learning, increases the critical thinking skills of students, and improves the students' performance. In this activity, students participate and interact with each other in groups to develop their learning (Lee,

2014). They serve as learning resource for each other (Strebe, 2018). Examples are think-pair-share, write-pair-share, group discussion, and case study (Cornell University, 2023).

Computer-based teaching and learning: Using computers to fulfill all educational, instructional activities, and learning needs, such as self-paced quizzes, exercises, interactive simulations, and individual tests that provide immediate feedback to the students (Lau, 2014; Tosun et al., 2006).

Concept mapping: An ALS where students provide a graphic or pictorial arrangement of a specific subject matter in terms of relevant concepts, shown as shapes, and the interrelationships of concepts, shown as linking lines (Novak, 1998). Enables students to recognize how factors are connected in patient care and to anticipate problems (Harris & Gibbons, 2013).

Critical reflection: More demanding than mere reflection, critical reflection is an active, meticulous assessment of ideas and or assumptions that support an ongoing or transpired action. Learners in this activity become aware of the rationales supporting their actions, perceptions, and feelings (Mezirow, 1997 and Kember, 1999, as cited in Farahian et al., 2021).

Critical thinking: An active process of evaluating, analyzing, and synthesizing information obtained through communication, observation, experience, or reflection before adopting a belief or executing the next course of action (Alfaro-LeFevre, 2014).

Educational Game: An ALS to attract students' attention, and at the same time use to assess students' learning outcomes. It involves precise rules, and players compete using knowledge or skills (Baid & Lambert, 2010; Peddle, 2011).

Flipped classroom: A strategy where students view prerecorded lectures (Zainuddin et al., 2019) or complete a preclass assignment to learn foundational concepts. So, class time can be utilized for interactive learning, such as problem-solving and application activities that stimulate critical thinking (Bernard, 2015; Heijstra & Siguroardottir, 2018).

Gallery walk: A discussion technique that makes students actively engage by requiring them to walk and move around the room in groups. The instructor either posts quotations, questions, or posters on the walls at the different sections of the room, and in response, the groups write their comments or answers for the other groups to see. The group movements in the room or hall can be round-robin, clockwise and counterclockwise, or whatever the instructor prefers. At the end of the activity, the instructor summarizes the learning objectives of the activity (Carleton College, 2023).

Gamification: Considered another strategy of AL, gamification is all about playing games to involve the users in problem-solving. Games played have a structure that includes rules, point scoring, and competition with others (Johns Hopkins University, 2014). Gamification gives students the chance to experience the learning process in a playful way (University of California Berkeley, 2023).

Group discussion: A learning technique implemented by instructors in the classroom whereby students are provided an opportunity to interact and discuss the material in small breakout groups (Walker et al., 2018).

Learning by teaching: First introduced in German schools by Jean-Pol Martin in the 1980s, the learning-by-teaching strategy allows students to assume the teacher role by

teaching other students and collaborating with their co-learners. This strategy is believed to improve the learning of students who teach (Stollhans, 2016).

Learning cell: An ALS where two students take turns asking and answering questions about a reading material assigned to both students or the whole class by the instructor (Freire, 2014).

National Council Licensure Examination for Registered Nurses (NCLEX-RN): A licensure exam administered through computerized adaptive testing (NCSBN, 2014) a nursing graduate from a BSN or ADN program takes to be licensed to join the workforce. A graduate who passes the NCLEX-RN exam is designated as an RN. The NCLEX-RN aims to ascertain that nurses joining the workforce are safe and competent to practice nursing (NCSBN, 2017). The NCLEX-RN in this study is the exam before April 1, 2023, when the Next Generation NCLEX was launched (NCSBN, 2023a).

Pass rate on the first attempt: The percentage of BSN and ADN students who passed the NCLEX-RN exam on the first attempt (Kentucky Board of Nursing, 2021). The State Boards of Nursing and accreditation agencies also use the pass rate on the first attempt to evaluate a nursing program (Taylor et al., 2014).

Reaction to a video: Video-watching is a form of visual media that can engage students. However, if used passively, it has no added learning value. An example of passive use is asking students to watch a video without expecting students to engage in the content they watch. To engage students and enhance their learning, the following are examples of active use of the *reaction to a video* strategy: guided viewing of video, using video to encourage in-depth discussion, using video as a way to strengthen online

research skills and curation of information, and using video to trigger thinking (Griffith University, 2023).

Role-play: Students are provided with role descriptions and are asked to act out the scenario according to the objectives of the play. This activity actively involves students in the classroom and forces them to have a deeper understanding of the scenario or perspective (Mitchell et al., 2019).

Simulation or scenario-based learning: An activity where learners enact a real-life event in a given environment to meet the learning objectives the trainer sets. The activity requires learners to interact with people, computers, or other simulation equipment (Lioce et al., 2020). Simulation allows learners to practice skills and develop critical thinking without jeopardizing actual patients (Jeffries et al., 2016).

Small group discussion: One of the best strategies that can promote active learning in the classroom; small group discussion is a productive discussion that engages and enhances students' understanding. The teacher incorporates factors such as time, topic, class size, and type of classroom when implementing the *small group discussio*n technique to ensure a high-quality discussion (State University of New York Cortland, n.d.; Won, 2015).

Student debate: Implementing student debate in a classroom is a form of active learning. It stimulates interest, encourages active class participation, improves presentation, research, and the critical thinking skills of students. A compelling student debate consists of an opening statement, main arguments, rebuttal, class participation, and closing arguments (Peasah & Marshall, 2017).

Think-pair-share: A learning technique where the instructor's goal is for the students to be familiar with the material. Students are asked to answer an open-ended question individually. Each should think about the question and write the response in a minute or two. Afterward, students are asked to pair with a partner to discuss their responses. After the activity, the instructor reconvenes the class by calling students to share their responses (Duke University, 2023).

Assumptions

These were the assumptions of my study: (a) active learning is essential in the learning process; (b) active learning engages students, and nursing faculty see it as an essential component in the learning process; (c) active learning motivates students to think actively and reflect on their learning, so they become critical thinkers; and (d) participants will answer the survey questions honestly and utilize active learning in the classroom frequently for better student learning outcomes and eventually, increase NCLEX-RN pass rates.

Scope and Delimitations

My study was a quantitative descriptive correlational design. I investigated the relationship between the use of ALS in the classroom by faculty and nursing students' NCLEX-RN pass rate on the first attempt in the BSN and ADN programs and the difference in nursing students' NCELX-RN pass rates in BSN programs compared to ADN programs. I compared the NCLEX-RN pass rates of the two programs and the use of ALS by faculty because, despite NCSBN's (2016) and IOM's (Duphily, 2014) expectation that students in the BSN program perform better than the ADN, there are

ADN programs that have higher pass rates than BSN programs (California Board of Registered Nursing, 2020). This study did not include the prelicensure entry-level Master's degree students.

Another research design I considered was the experimental posttest-only control group design. However, the posttest-only control group design was not chosen because it did not align with my research questions.

The theory that guided my study is the theory of constructivism. Constructivists posit that students construct knowledge and meaning from experiencing things, reflecting on these experiences, and adding these to their previous experiences to form new meaning (Bada & Olusegun, 2015). According to the constructivists, learning is an active process (Mattar, 2018; Olusegun, 2013). The theory of constructivism guides this study because it aligns with active learning, the study's independent variable. Two other learning theories were considered but were not chosen for this study. First, the Behaviorism Learning Theory is learning through stimulus-respond associations. Behaviorists use reinforcement to modify behavior in the desired direction. Some types of learning that best explain this theory are recalling facts, defining, illustrating concepts, and associations. Learning is concerned with what learners do (Mattar, 2018; Bada & Olusegun, 2015; Ertmer & Newby, 2013). The second theory is cognitivism. In cognitivism, learning is concerned with what learners know and how they acquire it (Clark, 2018). Emphasis is on using feedback to guide and support accurate mental connections. Also, some key elements are the ways learners code, transform, store, retrieve information, and rehearse (Clark, 2018; Ertmer & Newby, 2013). The behaviorist

and the cognitivist share the same goal: to impart knowledge to students in the most efficient, effective manner possible. Unlike the constructivism theory, where learning creates meaning from experience, both the behaviorism and the cognitivism theories are seen by contemporary cognitive theorists as too objective. For example, if the teacher aims to teach the students that the world is real, the teacher will map the structure of the world to the learner. Amongst behaviorism, cognitivism, and constructivism, it is constructivism that stimulates critical thinking (Ertmer & Newby, 2013). Therefore, behaviorism and cognitivism theories are not appropriate for this study. The results of the study may be generalizable to the BSN and ADN students and all students in various disciplines.

Limitations

Data used in the study were primary and secondary types. I used a survey questionnaire administered online in this study. The ALS survey was administered to elicit data from the faculty teaching in the ADN and BSN programs. One possible limitation is the low response rate and delays in the response by the participants. However, reminders were sent when the survey was not received within the intended time frame. The survey was formatted so respondents can complete it using electronic devices such as smartphones and tablets. To maintain confidentiality and anonymity, I ensured that Qualtrics, the online platform I used to administer the survey was a secure site. The secondary data in this study were the NCLEX-RN pass rates that were extracted from the state board of nursing databases. Pass rates for each nursing program, ADN, and BSN are posted. According to Gray et al. (2020), secondary data collected previously for other

purposes, such as administrative databases, may be released to researchers for a study without an individual's subject's authorization or an IRB waiver.

Another possible limitation was the ALS questionnaire by AlRuthia et al. (2019) that I used to measure active learning in this study. Many strategies are considered active learning, and the tool may not be inclusive enough to capture all those ALS. In addition, Drew and Mackie (2011) argued that there needs to be more clarity in the meaning of active learning, and the definition of it frequently lacks robustness. Even though the concept of active learning relies on constructivism or is inspired by it, it captures a wide range of views (Markant et al., 2016) because constructivism is a theory of learning and not a theory of teaching. Constructivism, however, provides a guide for forming instructional strategies to enhance deep understanding (Wingschitl, 2002; Richardson, 2003).

Another limitation is that I was not able to match faculty to the program in which they teach except by the type of program (BSN or ADN).

Significance

These results of study are significant because nursing students, the primary stakeholders of nursing program learning outcomes, are negatively impacted if they do not pass the NCLEX-RN on the first attempt. Adverse effects may include embarrassment, anxiety, guilt, and delay in employment (Lewis et al., 2023; Roa et al., 2011). New graduates who fail the NCLEX-RN may lose their self-esteem and suffer social stigma, hindering future attempts to pass the NCLEX-RN (Roa et al., 2011). The

more attempts on the NCLEX-RN new graduates take, the lower their chance of passing (NCSBN, 2020).

New nursing graduates may also be affected financially. Failure to pass the NCLEX will prevent them from working as an RN. They will have to start making payments if they have a student loan. Additional other factors that may increase the financial burden for new graduates include the cost of additional application fees for retesting, NCLEX-RN review courses, and needing to purchase additional review materials (Lewis et al., 2023; Roa et al., 2011).

Other stakeholders affected by the NCLEX-RN failure on the first attempt are the nursing programs. First-time NCLEX-RN pass rates of nursing programs are outcome measures used by the Board of Nursing (BON) to determine if a nursing program meets nursing education standards (Spector et al., 2020). Each state and U.S. territory has a BON or nursing regulatory body (NCSBN, 2020), and most BONs use an 80% first-time NCLEX pass rate as the standard (NCSBN, 2019). Nursing programs with NCLEX-RN pass rates on the first attempt that do not meet the annual benchmark are initially placed on provisional status. In some states, nursing programs in provisional status are given 2 years to correct their deficiencies and improve their pass rate (Serembus, 2016). Otherwise, these nursing programs can lose accreditation and be closed by their respective BON (Lewis et al., 2023). On the other hand, these programs may also suffer financially. Because the public can view their NCLEX-RN pass rates on the BON website, students may choose not to enroll in their program because of its low pass rates (Lewis et al., 2023; Roa et al., 2011).

The healthcare system will also be affected when nursing graduates fail the NCLEX-RN because nursing graduates will be delayed in joining the workforce. According to the American Association of Colleges of Nursing (AACN), the BLS projects that the nation will need 203,700 new RNs yearly until 2026 (AACN, 2019). The increasing nursing shortage is due to the retiring Baby Boomers and patients' increasing healthcare needs (AACN, 2019). Hospitals may remain short-staffed because the new nursing graduates who fail the NCLEX-RN cannot join the workforce until they pass and receive their RN license. The short-staffing situation increases the stress level of RNs who are working and can affect job satisfaction (AACN, 2019). According to Roa et al. (2011), some nursing graduates work temporarily as staff nurses while waiting for their NCLEX-RN results. However, once they fail, a healthcare organization can only continue to hire them with their nursing license (Roa et al., 2011). With the nursing shortage and no one to replace the vacant posts, the nursing graduates leave, and staff nurses' workload increases. This increase in workload limits the time the nurses spend with their patients. Thus, affecting the quality of patient care (AACN, 2019). This study will promote positive social change by informing faculty about ALS and its relationship to the NCLEX-RN pass rate.

Summary

Understanding active learning and determining its relationship to the NCLEX-RN pass rate on the first attempt in the BSN and ADN programs will benefit nursing education. Active learning increases student engagement, improves retention, and stimulates critical thinking (Dehghanzadeh & Jafaraghaee, 2018; Jafaraghaie et al., 2017;

Njie-Carr et al., 2017; Mudd & Silbert-Flagg, 2016; Akinoglu et al., 2007; Simpson & Courtney, 2002). Although several studies were conducted on active learning involving various groups of students and disciplines (Gordy et al., 2018; Pekdogan & Kanak, 2016; Persinski, 2015), little research was done primarily focusing on active Learning and NCLEX-RN pass rates in the BSN and ADN programs. I investigated the relationship of active learning to NCLEX-RN pass rates on the first attempt in the BSN and ADN programs, the difference in nursing students' NCELX-RN pass rates in the BSN compared to the ADN programs, and the use of ALS by faculty.

In Chapter 2, I provide an extensive review of active learning and analysis and synthesis in the literature review.

Chapter 2: Literature Review

Introduction

Nurses are indispensable members of the healthcare system. They provide safe, quality patient care. The country has nearly 5.2 million RNs, making them the majority of healthcare professionals (AACN, 2022). However, the nursing shortage is still a pressing concern. The United States Registered Nurse Workforce Report Card and Shortage Forecast (as cited in AACN, 2022) projected that in 2030, the nursing shortage will spread across the country, and 30 states especially in the western region of the United States will be affected the most. According to the U.S. Census Bureau (2021), by 2034, the number of people age 65 and older is forecasted to be 77 million. This significant number of elderly will mean more nurses will be needed to care for a group often with chronic diseases and comorbidities; the need for increased geriatric care in the United States will be a significant concern to address. To address this as well as the current and projected the nursing shortage, more nurses are needed. However, to join the workforce, nursing graduates must pass the NCLEX-RN exam to be licensed (NCSBN, 2016a). From 2012 to 2020, the yearly average of candidates who failed the NCLEX-RN on their first attempt was 22,441 (NCSBN, 2021b). In the same year, NCSBN reported a declining national trend in the percentage of nurses passing the NCLEX-RN exam. From 90.3% in 2012, to 81.8% in 2014 and 87.1% in 2017.

Before the declining number of nursing graduates passing the NCLEX-RN exam, IOM had already reported that nursing students were unprepared to care for patients with complex needs. Therefore, IOM recommended that nursing education reinvent its nursing

school curriculum to produce more quality nursing graduates (IOM, 2011). The NLN CNEA expects nursing schools to teach students critical thinking because questions on the NCLEX-RN exam are developed to test the students' critical thinking ability (as cited in Kaddoura et al., 2017; NCSBN, 2017; Romeo, 2010). Critical thinking is an essential skill that equips nursing students for clinical practice. Critical thinking enables nursing students to make wise clinical decisions and manage patients' problems well, resulting in quality, safe patient care (Kaddoura et al., 2017). In the classroom, nursing instructors must employ ALS to stimulate critical thinking (Simpson & Courtney, 2002). Active learning is any activity that requires students to actively participate in a designed learning environment facilitated by a teacher meant to stimulate critical thinking (Bonwell & Eison, 1991; Nelson, 2017; Simpson & Courtney, 2002). Examples of these strategies that improve critical thinking are case studies, small group activities, concept mapping, and role-playing (Von Colln-Appling & Giuliano, 2017).

The purposes of this study are to determine if there is (a) a relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in BSN programs, (b) a relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in ADN programs and (c) a difference in nursing students' NCLEX-RN pass rates in BSN programs compared to ADN programs and the use of ALS by faculty.

In Chapter 2, I present the search strategies that I used to gather the literature, a review of the theoretical framework that served as the underpinning of this study, and a

comprehensive synthesis of the literature related to the key variables of this study. I end the chapter with a summary and conclusions.

Literature Search Strategy

The literature presented in this review are all peer-reviewed. The databases I used in the search were CINAHL Plus, DOAJ, ERIC, Education Source Combined Search, EBSCOhost, Open Library, Ovid Nursing Journal, ProQuest, SAGE Journals, and Google Scholar. Keywords included: *active learning, active learning strategy, learning techniques, flipped classroom, passive learning, NCLEX-RN success, NCLEX-RN pass rate, and nursing board exam* were used. Only current literature published between 2016-2023 were selected, except \seminal research which was included regardless of the year published.

Theoretical Foundation

The theoretical foundation was the theory of constructivism and its application to nursing education. Constructivism was believed to have originated during the time of Socrates, an ancient Greek philosopher who proposed that teachers and students should talk with each other and interpret and construct hidden knowledge by asking questions (Amineh & Asl, 2015). Constructivism has gained recognition through the works of Jean Piaget for cognitive constructivism and Lev Vygotsky for social constructivism in the early 1900s (Amineh & Asl; Kretchmar, 2018). Piaget's constructivist theory of learning started in the 1920s. Piaget first gave meaning to the word constructivism in his early writings that focused on how children construct ideas about time, space, numbers, and the world around them (Baker et al., 2007). This theory was chosen because it supports the

philosophical foundation of active learning, the predictor variable in this study. The theory of constructivism purported that learners learn best when they actively construct their own knowledge. Knowledge construction occurs when learners create their own meaning by relating the new experience or events presented to them to previously learned information or experiences (Clark, 2018; Ponticell, 2006). Figure 1 shows the constructivist model.

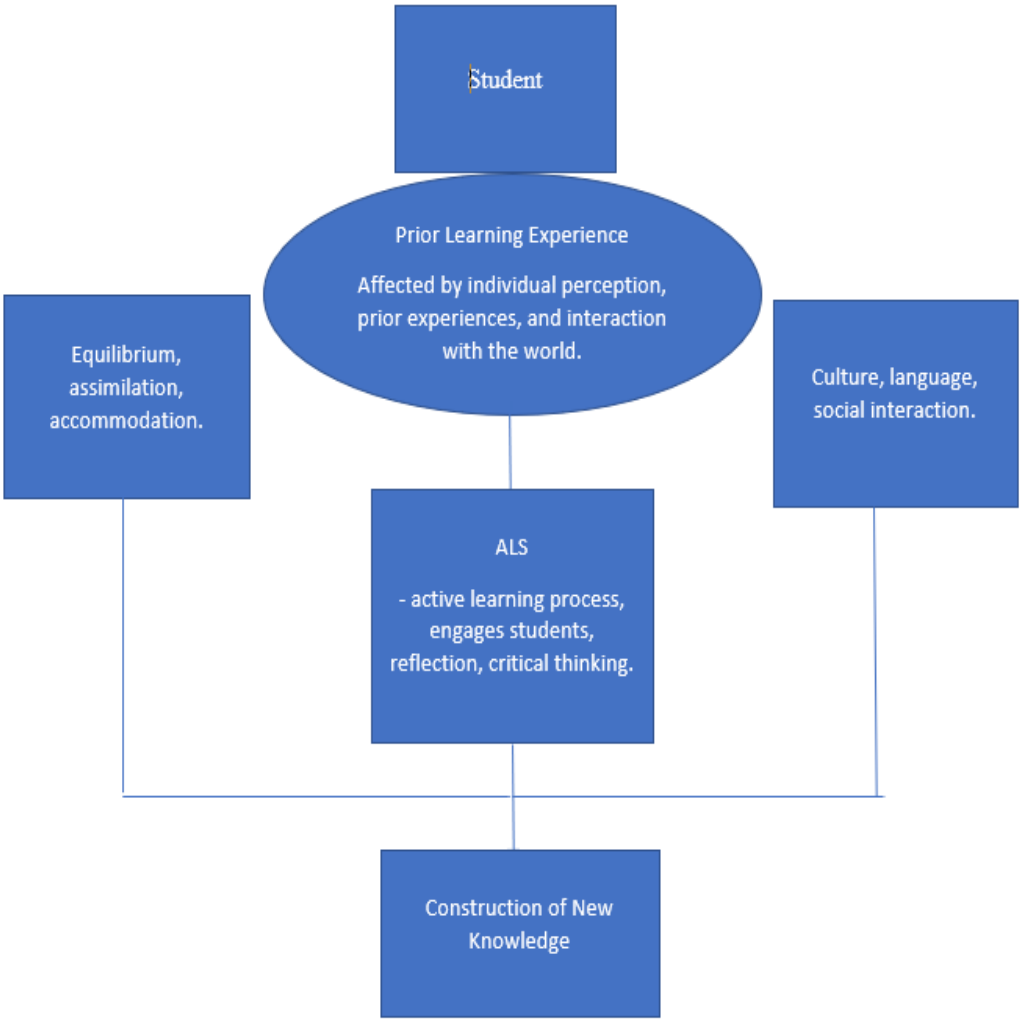
Constructivists believe that when individuals encounter new experiences, they construct their own knowledge based on prior learning experiences and existing knowledge. Prior knowledge and experiences provide a lens for how they see the world (Clark, 2018). Central in the constructivist model is the need for students to reflect on what and why they are doing, a process that parallels with active learning (Cattaneo, 2017). Students' knowledge construction is considered an active process (Mattar, 2019) in which students are engaged. Constructivists emphasize that for students to learn, students need to be actively engaged (Sharlanova, 2019; see also Baviskar et al., 2009; Clark, 2018; Petress, 2008; Ponticell, 2016; Proulx, 2006; Sharlanova, 2019).

Constructivism is a learner-centered model. In this model, the learning environment focuses on the learners, and the learning process is made active rather than not passive. The learners have more autonomy in the classroom and are involved in ALS. The role of the teacher is to facilitate the learning experience (Clark, 2018; Knowles et al., 2015; Mattar, 2018). Constructivists believe that learning involves active studying, problem-solving, enhancing ways to impart knowledge, stimulating learning

environment, enhancing the old knowledge, concentrating on building on personal experience, and encouraging critical thinking (Sharlanova, 2010; see Figure 1).

Figure 1

The Constructivist Model



From the work of Piaget and Vygotsky, several subsets of the theory of constructivism emerged (Matter, 2018), such as radical constructivism by Ernst von

Glasersfeld, contextual constructivism by Cobern, sociotransformative constructivism by Rodriguez (Baker et al., 2007), situated cognition by Jean Lave, experiential leaning by David Kolb, anchored learning by John Branford (Mattar, 2017), and others. However, Piaget's and Vygotsky's theories on constructivism are the most influential.

Constructivism, Cognitive Constructivism, and Social Constructivism

The theory of constructivism and Piaget's cognitive constructivism have many constructs that overlap. Both Piaget and the constructivists believe that for learning to occur, learners should construct their own knowledge (Clark, 2018). However, it was Piaget who postulated that learning is a cognitive process resulting from mental construction. This means learners fit new information with what they already know (Bada & Olusegun, 2015). Meanwhile, Vygotsky, in his theory of constructivism, emphasized social and cultural conditions for human learning. Many constructivists consider Piaget the father of cognitive constructivism, while Vygotsky is also the father of social constructivism (Baker et al., 2007). The following discussion will focus on Piaget's cognitive constructivism theory and Vygotsky's social constructivism theory.

Cognitive Constructivism

Central in cognitive constructivism are the concepts of (a) ages and stages, (b) theory of development, and (c) equilibrium, assimilation, and accommodation. According to Piaget (as cited in Amineh & Asl, 2015), children in different age groups (infants, toddlers, preschoolers, school-age children, and adolescents) have information they can and cannot understand. As children develop, their cognitive abilities develop as well. Meanwhile, the concepts of equilibrium, assimilation, and accommodation are also

essential in learning (Amineh & Asl, 2015). When learners are faced with new information or experiences that conflict with their prior knowledge, they seek balance by either assimilation or accommodation. Assimilation occurs when the new information fits into the learner's previous experience. The learner absorbs this new information or experience without conscious effort (Proulx, 2006). On the other hand, accommodation is when the new information contradicts the learner's prior knowledge or experience. Information or knowledge that does not fit the lenses through which learners see the world causes disequilibrium. The learner, therefore, adapts or accommodates by modifying their mental frame, the new information/experience, or both. According to Piaget, accommodation is a deliberate process, and it is only by accommodation that learning takes place (Piaget, 1976) because it leads to either a change in the learner's prior experience or a formation of a new one which is essential in the learning process. Therefore, teachers are encouraged to create disequilibrium for their students (Proulx, 2006).

There are two points of emphasis in cognitive constructivism. First, learning is considered an *active process* not only by Piaget but also by other constructivists. The active process implies not only being physically active but mentally active as well. Second, *prior knowledge* plays a vital role in the learning process. Learners' interpretation of new information is contingent upon what they already know (Proulx, 2006; Ponticell, 2006). Learners bring their experience to learning. Everything they experience in the classroom is interpreted based on what they already know. Teachers as facilitators can aid learning by using the learners' or students' prior knowledge to build a

new understanding. Simply, transmitting information to students through the traditional lecture-style presentation does not acknowledge learners as active participants (Ponticell, 2006; Kretchmar, 2018).

Social Constructivism

Vygotsky's social constructivism is not entirely different from Piaget's because the two theories do not compete but complete each other. In social constructivism, learning involves cognitive and social processes (Cobb, 1994; Kretchmar, 2018; Vygotsky, 1978). Central themes in social constructivism are *culture, language*, *social interaction, and the Zone of Proximal Development*. According to Vygotsky (1978/1997), these four concepts play essential roles in the learning process.

Culture, Language, and Social Interaction

Learners observe and learn from the behavior and attitude they see in their environment, and culture impacts their cognitive development. Therefore, their cognitive development differs across cultures. This is exemplified by how an individual learner problem-solves and thinks because each learner is affected by the beliefs and values of their own culture (Vygotsky, 1978/1997; Amineh & Als, 2015). On the other hand, language is an essential tool for communication. It plays a critical role in a learner's cognitive development. The behavior and the culture that a learner observes in the environment are understood through language (Amineh & Als, 2015). Vygotsky (1978/1997) believes that social interactions shape learners' learning. They gain a deeper understanding of new information presented to them when social interaction is present, especially if the interaction involves a *more knowledgeable other* (Clark, 2018). More

knowledgeable others (MKOs) would be instructors, coaches, parents, caregivers, mentors, older individuals, peers, or younger people who understand the content more than the learner (Clark, 2018).

Zone of Proximal Development

The Zone of Proximal Development (ZPD) is described as the gap between the actual developmental level of a learner evaluated individually and the potential development a learner can achieve when social interaction is present or when guided by MKO (Vygotsky, 1978,1997). ZPD has three stages, which three circles can illustrate. *Stage 1*, or the inner circle, is a task the learner can accomplish alone without assistance. The knowledge that the learner has at this stage is the past and the present. *Stage 2*, or the middle circle, is a task the learner can accomplish with assistance. The process of rendering aid or guidance to the learner at this stage is called *scaffolding*. Scaffolding aims to create an environment where the learner can feel comfortable asking questions until the task at stage 3 can be accomplished alone, without any assistance. *Stage 3*, or the outer circle, is a task the learner cannot perform even with help. Failing to achieve a task at this stage means the task's difficulty should be adjusted to fit into the learner's cognitive ability. However, new knowledge is formed if, through scaffolding, the learner accomplishes the task at stage 3 independently (Clark, 2018; Vygotsky, 1978/1997).

Previous Applications of the Theory of Constructivism

The theory of constructivism has been previously applied in many studies. Missildine et al. (2013) compared other approaches to learning to active learning and its effect on academic success and nursing student satisfaction. The result revealed that

active learning increased students' exam scores. In another study by Geist et al. (2015), researchers used a quantitative pretest-posttest nonequivalent control group design to examine the difference in the content knowledge acquisition between the traditional lecture and active learning methods. The sample (n = 86) consisted of baccalaureate nursing students divided into a treatment group and a control group. The result supported the theory of constructivism by showing that students who experienced the active learning approach had significantly higher unit exam scores than those with the traditional lecture approach.

A systematic review of active learning in nursing and health profession courses by Waltz et al. (2014) showed that constructivism, the framework behind the study, was effective, as evidenced by the 15 positive outcomes in the 22 studies reviewed. Additionally, the study by Styers et al. (2018) supported the framework when the active learning exercises that the researchers implemented during class meetings of students taking life science courses proved to promote critical thinking skills. Using a critical thinking assessment test, critical thinking was assessed via a pre/posttest design. The students also assessed their own learning through a self-reported survey wherein the results revealed increased use of critical thinking approaches to solve problems in their daily lives, inside and outside of class. Furthermore, the framework was applied to the studies of Adkins (2018) and Hyun et al (2017). Both studies investigated the effect of active learning activities on students in the classroom. The results reinforced the framework because they showed that active learning increases student engagement and

positively influences student learning by aiding students in comprehending and remembering new content better.

Rationale for Use

In response to the recommendation by the National Academy of Medicine, formerly IOM, nursing leaders have called for nursing education to shift from the traditional curriculum to the constructivist or experiential to better prepare nurses to handle complex skills (Benner et al., 2010; Dzau, 2016). Although many research studies proliferate on active learning and student learning outcomes, less study exists on active learning in the BSN and ADN programs and the NCLEX-RN pass rate on the first attempt.

Literature Review Related to Key Variables

Active Learning

Active learning is a pedagogical technique that encourages students to participate actively and learn during class (Della Ratta, 2015; Harmon & Hills, 2015; Mitchell et al., 2017). The proponents of active learning defined active learning as a process of learning that requires students to do a higher order of thinking. Opposite to active learning, where students take notes and listen passively to lecturers, in AL, students construct their own learning by actively engaging in activities that stimulate critical thinking (Bonwell & Eison, 1991; Carr et al., 2015; Nelson, 2017; Simpson & Courtney, 2002). Active learning occurs when students are engaged and actively participating in an activity instead of listening passively to the teacher (Oerman, 2007). Active learning includes learning through critical reflection (Donnelly & Frawley, 2020). More demanding than

mere reflection, critical reflection is an active, meticulous assessment of ideas and or assumptions that support an ongoing or transpired action. Learners in this activity become aware of the rationales supporting their actions, perceptions, and feelings (Mezirow, 1997 & Kember, 1999, as cited in Farahian et al., 2021). With active learning, students practice critical thinking or higher order of thinking, such as analysis or synthesis (Anderson & Krathwohl, 2001). In Bloom's Taxonomy of hierarchical levels of cognitive skills, analysis, and synthesis are more complex levels of thinking than recall of information and comprehension (Bloom, 1956, as cited in Orgill & Nolin, 2022). Typically, active learning is introduced inside of the classroom. However, the advent of technology made it possible for active learning to continue outside the classroom, whereby students not only listen but can also participate in discussion and reflection (Massey et al., 2005). Active learning has become popular in higher education. There has been a shift from the traditional, lecture-based approach to active learning in the classroom (Serin, 2018; Hartikainen et al., 2019).

Teacher-Centered Versus Learner-Centered Approach

A teacher-centered approach is when the responsibility of imparting knowledge to the students rests solely on the teacher (Mascolo, 2009), and lecture is the primary method used to disseminate knowledge (Bradshaw & Hultquist, 2017). While the teacher is actively disseminating knowledge, the students are passively listening. The theory underpinning the teacher-centered approach is the behaviorist theory by Skinner (2004, as cited in Serin, 2018. Furthermore, according to Serin (2018), behaviorist theory purports that students are passive and do not collaborate. However, students respond to stimuli in

the environment. In the teacher-centered classroom, the teacher has the ultimate power. Learning is when, what, and where the teacher wants it to be (Knowles et al., 2015), and the textbook is the source of information (Serin, 2018). According to Peyton et al. (2010), the typical picture of a teacher-centered classroom is seen with a teacher who lectures the whole time through a whiteboard/smartboard or overhead projector and students who take notes and ask questions during the lecture. The lecture-style process or teacher-centered approach is smooth and hassle-free for students. In nursing education, lecture is still the preferred approach of many students (Billings & Halstead, 2019), although research revealed that students' attention span dwindled after 10-15 minutes (Davis & Buskist, 2008; Wankat, 2002). Most nursing faculty feel comfortable assigning reading materials from textbooks and using PowerPoints for lectures (Bradshaw & Hultquist, 2017; Stolic, 2014;). Faculty may also have concerns that by using an active-learning approach in the classroom, they will receive less favorable course evaluations from students (Billings et al., 2019; Holman & Hanson, 2016). In Iran, for example, the traditional lecture approach is the most common strategy most nursing faculty use (Dehghanzadeh et al., 2018).

In the learner-centered approach, teaching focuses on the student rather than the teacher. The student decides what, when, and where to learn to construct new information from past knowledge and experiences (Bradshaw & Hultquist, 2017; Chan, 2014; Stolic, 2014;). Students can discover and try new ideas individually or in a group to encourage their independence as critical thinkers (Weimer, 2002). Examples of active learning activities students do are writing exercises and reflection, debates, problem-based

learning, games, role-modeling, flipped classrooms, simulation, and many more (Alaagib et al., 2019; Staykova et al., 2017).

The central tenet of the learner-centered approach is active learning (Mitchell et al., 2017). Active learning can increase knowledge retention, improve test scores, create a positive attitude toward learning, and improve critical thinking skills. Serin (2018) also reported that active learning improves cooperative learning, problem-solving, and decision-making skills. However, despite the impetus of higher education to switch to the learner-centered approach (Bonnet et al., 2018), a lecture is still one of the most common teaching methods used in nursing schools (Shatto et al., 2019). In a study by Bristol et al. (2019), out of 536 respondent faculty, only 5% do not use lectures in their classroom. Lectures are economical, time-saving, and practical, especially when resources are scarce (Alaagib et al., 2019; Woodring & Hultquist, 2017;). Lecture is still effective (Schwartstein & Roberts, 2017), especially when the lecture content has multiple sources and students need access to all sources or do not have time to read. Lecture enables the teacher to share updated information that is sometimes absent in the book, explain difficult-to-understand concepts to students, and clarify confusing points of the subject matter. Lecture allows teachers to highlight key concepts and instantly provide examples related to patient care (Woodring & Hultquist, 2017). It effectively controls large-size classrooms and saves time (Espenshade & Radford, 2009). Meanwhile, control may be challenging in the learner-centered classroom, and the ALS are time-consuming (Serin, 2018; Hnatyshyn, 2018).

The NCLEX-RN

The NCLEX-RN exam is a competency exam every nursing graduate should take to acquire a license to practice. Without a license to practice, nursing graduates cannot join the workforce as RNs. The NCLEX-RN exam protects the public by ensuring the licensee is safe and competent to practice nursing (Glasgow et al., 2019). Consisting of 74-145 questions, the NCLEX-RN exam focuses on four areas. Namely, providing a safe and effective care environment, health promotion and maintenance, psychosocial integrity, and physiological integrity (NCSBN, 2023b). The NCLEX-RN exam is trustworthy (Glasgow et al., 2019). Reliability is tested using a decision consistency statistic. While validity such as content validity, sampling validity, face validity, construct validity, scoring validity, and pass/fail validity are ensured to be valid (NCSBN, 2021c).

Origin of the NCLEX-RN Exam

Before NCLEX, nursing graduates were already taking a licensure exam. The exam was called “boards,” an unofficial term for State Board Test Pool Examinations (SBTPE) that started in 1941. The SBTPE was first developed by the National League for Nursing and then by the American Nurses Association. In 1978, NCSBN was established, claiming ownership of the SBTPE. NCSBN renamed the exam, and in 1982, the licensure exam or “boards” was called the National Council Licensure Examination or NCLEX (NCSBN, 2014). Before 1994, the “boards” or NCLEX was a paper and pencil test. Testing is only limited to twice a year, and retired nurses were hired to proctor the exam through the board of nursing. After the exam, test booklets were shipped back to the

vendor, and it took weeks or months for examinees to receive their results. The advent of technology streamlined the examination process for nursing graduates. In April 1994, the first NCLEX was administered via Computerized Adaptive Testing (CAT). At the end of the year, 155,000 examinees were tested via CAT (NCSBN, 2014). Last 2020, the total number of examinees was 252, 387 (NCSBN, 2021).

Bloom's Taxonomy

Effective clinical decision-making is one of the most important skills a nurse should possess to provide safe and quality patient care (White, 2003), and one significant component of effective decision-making is the ability of nurses to understand complex issues and to think critically. The cognitive processing ability of individuals mirrors their skills, abilities, and knowledge. To assess their levels of cognitive processing in a test, various taxonomies have been developed. One of the most common taxonomies used and that gained popularity in nursing is Bloom's taxonomy (Wendt et al., 2007). First published in 1956, one of the purposes of Bloom's taxonomy is to assess the cognitive learning process in an observable and measurable way (Newton et al., 2020). The original Bloom's taxonomy has six levels of cognitive processing arranged in a hierarchy, from simple to complex (Bloom et al., 1956). From the lowest level, it starts with *knowledge, comprehension, application, analysis, synthesis, and evaluation*. It is believed that the higher order of thinking wherein complex cognitive processing occurs are the top levels of the hierarchy, such as the analysis, synthesis, and evaluation (Agarwal, 2018). In the NCLEX exam, Bloom's taxonomy is used as the basis for writing and coding test questions. Because nursing graduates must have the knowledge, skills, and abilities to

provide safe and quality care, most test questions are written at the application level or higher order of thinking, requiring more complex thought processing (NCSBN, 2019).

Active Learning and the NCLEX-RN

Various reasons motivate nursing schools nationwide to increase their first-time NCLEX-RN pass rate. The Commission of Collegiate Nursing Education and the Accreditation Commission for Education in Nursing have set 80% as the NCLEX-RN first-time pass rate nursing schools should attain (NCSBN, 2016a). Some Board of Registered Nursing, such as the state of Pennsylvania, adhere to the 80% NCLEX-RN first-time pass rate requirement. Pennsylvania nursing schools that do not attain 80% are placed on probation (Glasgow et al., 2019). Countrywide, the program accreditation, funding, and reputation of schools with low pass rates are affected (Hanna, 2016). Such are the effects of nursing schools with low NCLEX pass rates that nursing schools employ different strategies to increase their pass rate, and one of these strategies is Active Learning. Active learning stimulates critical thinking (Bonwell & Eison, 1991; Hyun et al., 2017). While most research on active learning is linked to student learning outcomes such as course grades and the NCLEX predictor tests, very little is known about active learning and its effect on the first-time NCLEX-RN pass rates in the BSN program versus the ADN program. In a study done by Bristol et al. (2019), the extent of active learning use by prelicensure nursing faculty and its relationship to NCLEX pass rates were examined. The survey had three items. Faculty were asked to identify the percentage of classroom time they lectured to students. Out of 435 respondents, only n = 22 (5.02%) did not lecture; n = 266 (60.73%) lecture between 26% to 75% of the time, and n = 84

(19.18%) lecture more than 75% of the classroom time. Second, only $n = 24$ (5.48%) used solely active learning in the classroom. No relationships were identified between the estimated extent of active learning use and NCLEX pass rates. Chi-square tests showed that there were no differences in the first-time NCLEX pass rates based on the percent of lecture used in the classroom, $X^2(3, N = 438) = 0.45$, $p = 0.93$, or balance between lecture and active learning in class, $X^2(3, N = 438) = 1.33$. $p = 0.72$.

Bristol et al. (2019) showed no relationship between active learning and NCLEX pass rates. However, an integrative review study by Shatto (2019) showed a positive relationship between active learning and NCLEX pass rates on the first attempt. Young et al. (2013) investigated the relationship between using case studies and NCLEX-RN pass rates in 72 nursing schools. Twenty-four (33.3%) nursing schools used Elsevier online case studies, while 48 (66.7%) did not use case studies in their nursing programs. The total number of students in the study was $n = 3,383$. Students came from different nursing programs such as associate degree (58.3%), baccalaureate (36.9%), and diploma (4.8%). Among the 3,921 students who passed the NCLEX-RN, the pass rate of those who used case studies was higher than those who did not use case studies. The NCLEX-RN pass rate was 92.7% for those who used case studies in the curriculum compared to a pass rate of 89.5% for students who did not use case studies ($p \leq .001$). Similarly, Lyons (2008) evaluated the use of problem-based learning, a method of active learning (Shatto, 2019), and traditional lecture and its association with the NCLEX-RN pass rate on the first attempt by ADN students. The study revealed that the NCLEX-RN pass rate on the first attempt by students in the problem-based learning group was higher (93%) than those in

the lecture group (85%). However, although there have been studies conducted on NCLEX-RN pass rates and active learning, there is a lack of information between the use of active learning by faculty in the BSN and ADN programs, the frequency of use of ALS by faculty, and the difference in NCLEX-RN pass rates on the first attempt.

Summary and Conclusions

Active learning is an instructional methodology that promotes a learner-centered classroom (Chan, 2014; Stolic, 2014; Bradshaw & Hultquist, 2017). There are many methodologies considered active learning. Examples are flipped classrooms (Costelo, 2017), case studies, problem-based learning, and game-based learning (Mattar, 2019). In addition, the use of an audience response system, role-modeling, simulation (Staykova, 2017), team-based learning (Park & Park, 2020), small group discussion, think-pair-share (Santos et al., 2020), card set activity (Hnatyshyn, 2018), and many more, are also forms of active learning.

The ill effects of nursing students failing the NCLEX-RN exam and the implication of decreased NCLEX-RN pass rates on the first attempt of nursing schools motivated nursing schools and nursing educators to shift to active learning from the use of lectures in the classroom. Although active learning stimulates critical thinking, enhances problem-solving skills, and improves students' learning outcomes (Bristol et al., 2019), few studies have reported no significant correlation between active learning and student learning outcomes. However, a gap in research exists between these two variables, active learning and NCLEX-RN. This study determined if there is a

relationship between ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in the BSN and ADN programs.

In Chapter 3, I present the research design and how I planned to conduct the study, recruit participants, analyze data, and address ethical issues.

Chapter 3: Research Method

Introduction

The purposes of this descriptive correlational study were to determine if there is (a) relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in BSN programs, (b) a relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in ADN programs and (c) a difference in nursing students' NCLEX-RN pass rates in BSN programs compared to ADN programs and the use of ALS by faculty. In this chapter, I discussed the research design, methodology, the procedures involving sampling, the data collection process and analysis, and threats to internal and external validity.

Research Design and Rationale

This study is a descriptive correlational design. I chose this research design after considering the research problem, the research questions, the hypotheses derived from the research questions, and the variables. My research questions are:

RQ1: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in BSN programs?

RQ2: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in ADN programs?

RQ3: What is the difference between the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

I used a descriptive correlational analysis for research questions 1 and 2. I examined relationships between active learning and the NCLEX-RN pass rates on the first attempt in the BSN and ADN programs. According to Gray et al. (2017), the main aim of the descriptive correlational design is to examine relationships between and among variables. The collection of data was retrospective. For research question 3, I conducted a comparison analysis to explore differences between ADN and BSN nursing students and the variables of interest. The results of this study contribute to the knowledge of the discipline because they provide nursing faculty with information about active learning and its relationship to first time NCLEX-RN pass rates.

Variables

An independent variable is a variable that is considered a predictor or cause of the outcome. Meanwhile, the dependent variable, also known as the outcome variable, is the result of the outcome a study focuses on (Gray et al., 2017). The independent variable in this study was active learning. I measured faculty ALS use in the classroom using the ALS questionnaire developed by AlRuthia et al. (2019). The ALS questionnaire has been independently tested for its face and content validity by three faculty from the Colleges of Applied Medical Sciences, Medicine, and Pharmacy of King Saud University, Saudi Arabia (AlRuthia et al., 2019). I assessed the reliability of the ALS questionnaire using Cronbach's alpha (α) coefficient test which measures the reliability of an instrument scale. When evaluated, the ALS questionnaire yielded an alpha (α) value of 0.70, indicating acceptable internal reliability (AlRuthia et al., 2019). The NCLEX-RN pass

rate on the first attempt is the dependent variable which was retrieved from the state board of nursing database and measured as a percentage score of students who passed.

Methodology

Population

According to Gray et al. (2017), the target population is the entire group of individuals meeting the sampling criteria. The target population in my study were nursing faculty living in the West Coast region of the United States. These states included Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington. According to the BLS (2023), there are approximately a total of 8,730 nursing faculty employed in the West Coast states teaching in approximately 112 BSN programs and 182 ADN programs (Arizona State BON, 2024; California BORN, 2024; Nevada State BON, n.d., Oregon State BON, 2024; State of Alaska, n.d., State of Hawaii, 2024; Washington State BON, n.d.) Hence, the estimated size of the target population was several thousand. The following sampling criteria determined this target population: (a) nursing faculty teaching in a BSN or ADN program, (b) a BSN or ADN faculty who teach a didactic class, and (c) a nursing faculty with at least a master's degree.

Sampling and Sampling Procedures

The sampling procedure I used was nonprobability (nonrandom) convenience sampling. Participants were selected based on convenience and availability (Creswell & Creswell, 2018). I contacted nursing faculty through email from the target population, and participants willing to participate and met the sampling criteria were included. I recruited until the desired sample was reached.

One weakness of this sampling method is the possibility of selection bias. Because the selection is nonrandom, only some in the population have an equal opportunity to be included in the sample. This sampling method also gave rise to the possibility that the sample does not represent the target population and may not be ideal when a generalization to the whole population is made. Generalizability means that the findings can be applied to groups other than the sample being studied because the sample is representative of the target population. For a sample to represent the target population, the sample has to be the same as the target population in as many ways as possible (Gray et al., 2017; Statistics Canada, 2022). There may be nursing faculty in the target population; although they met the sampling criteria but were unavailable. Attaining a random sample is impossible (Gray et al., 2017). However, to improve the representativeness of the target population, an increase in the sample size is necessary. Nonprobability (nonrandom) convenience sampling also has its strengths because it is inexpensive, accessible, quick, and needs less time to acquire than other types of samples (Gray et al., 2017).

I compiled a list of all the prelicensure nursing schools in the seven West Coast states of the United States, namely Alaska, Arizona, California, Hawaii, Nevada, and Oregon, from each state board of nursing website. With this list, I visited those schools with an online faculty directory where their contact information or email address was located. I emailed all nursing faculty in the directory inviting them to participate in my dissertation (Appendix A). If they were willing to participate, they clicked on the Survey

Link or scanned the QR code. I also included my contact information in case there were questions about my study.

Inclusion Criteria

The inclusion criteria in this study were (a) nursing faculty teaching in a BSN or ADN program, (b) a BSN or ADN faculty who teach a didactic class, and (c) have at least a Master's of science degree in nursing.

Exclusion Criteria

The exclusion criteria in this study were (a) nursing faculty who do not teach in a BSN or ADN program, (b) nursing faculty who only teach clinical nursing, and (c) nursing faculty without a master's degree.

Sample Size

I analyzed the data for RQ1 and RQ2 using multiple regression. I conducted an a priori power analysis using a G*Power (Faul et al, 2009). The following parameters were used in the power analysis: two-tailed multiple regression test, using an $\alpha = 0.05$, power (1-β err prob) of 0.80, and *E*S, 0.15 (medium effect size), and 15 ALS which are the predictors, G*Power yielded a *t* sample size of N = 55. The 15 ALS are: class discussion, think-pair-share, learning cell, collaborative learning, student debate, reaction to videos, small group discussion, class game, learning by teaching, gallery walk, buzz group, and brainstorming, case studies and problem-based learning, flipped classroom, gamification, and computer-based learning (AlRuthia et al., 2019). Participants in the survey were asked what percentage of ALS they use in the classroom.

I analyzed RQ3 using independent samples *t* test. I calculated the sample size using α err prob = 0.05, power (1-β err prob), 0.80, *E*S, 0.0625 (medium effect size) (Faul et al., 2009), which yielded a sample size of N = 158 (79 in each group).

The effect size is the actual difference between two groups or the strength of the association between two variables. Effect size (ES) provides information on the actual difference between the two conditions. It is challenging to justify *E*S (Bartlett, 2022). The calculation of *E*S varies for different statistical tests (Creswell & Creswell, 2018). For RQ 1-3, I used the medium effect size because it is the benchmark recommended by Cohen (1988).

The alpha level or type l error or false positive is the probability of concluding there is an effect when there is not one. The alpha level is typically set at 0.05, a threshold researchers examine for a significant effect. Setting the alpha to 0.05 means that a researcher is willing to make a Type l error 5% of the time in the long run (Bartlett, 2022). Power is the probability that a statistical test will detect an effect when it exists, and it is usually set to 0.80 (Gray et al., 2017; Hunt, 2021).

Procedure for Recruitment, Participation, and Data Collection

Recruitment

Some nursing programs posted their faculty directory on their university website. From these available faculty directories, I obtained a list of the faculty and their email addresses. I emailed the potential study participants the enclosed invitation (see Appendix A). The email contained the recruitment flyer and invitation email which included

instructions to click on the link to access the screening questions (see Appendix B), which were:

1. Do you teach in a BSN or ADN program?
2. Do you teach a didactic class?
3. Do you have a Master's of Science degree in nursing?

Consent

If the individual answered yes to all questions, then the consent screen appeared which contained the consent form. If individuals decided to participate, an informed electronic statement outlined the study's intent, minimizing participant risk and ensuring anonymity. If the individual consented by clicking continue, the following screen was the demographic information. After the demographic information (Appendix D) was completed, the participant began the ALS questionnaire by AlRuthia et al. (2019) (Appendix D). The ALS questionnaire has eight closed-ended questions. Permission to use the ALS questionnaire was granted by the publisher and is included in Appendix E. The maximum time it took to complete all items in the questionnaire was approximately 10 minutes.

I collected data anonymously through an online platform, Qualtrics. I used the feature that de-linked the participants' information from the data. Data were stored electronically on a secured external device and secure cloud storage to which only I have access. All data were password protected. All raw data collected will be stored per policy; maintained for 5 years as the Walden IRB requires. No compensation was offered to participants.

The first section of the survey form was the demographic questions. Examples of information asked were gender, age range, and faculty rank. After the participant completed the demographic data sheet, the questions on ALS followed. The participant was asked if they use ALS in the classroom. If not, they answered no. If they did, they could choose from 15 ALS listed in the questionnaire, and participants were asked to identify which ALS are used in the classroom. After all questions were answered in the survey, the participant's involvement in the study ended, the participant was thanked, and the screen closed.

Before the survey was administered, the anonymous response collector option was turned on to prevent me or anyone from storing and tracing any participants' information. Because the survey was administered online, all data were transmitted over a secure HTTPS connection. I downloaded the data into SPSS and securely stored it in Qualtrics accredited data centers (Qualtrics, 2024). Should any participants have questions, they were instructed that they could contact me using the information I included in the invitation email. Any information I sent and received online was encrypted and password-protected to maintain security and confidentiality.

Archival Data

Data on the NCLEX-RN pass rate on the first attempt were retrospective. In this study, the data collected were first-time NCLEX-RN pass rates within the years 2020-2022. The database was accessible to the public. The NCLEX-RN first attempt pass rates are reported yearly (NCSBN, 2023). These pass rate data are also accessible by visiting each respective nursing board's website. Pass rates of each nursing program are all listed

(California Board of Registered Nursing, 2023). I collected data on the school of nursing in which the participants teach and aggregated the NCLEX pass rates for all the school of nursing included in the ALS instrument.

Instrumentation and Operationalization of Constructs

ALS

To determine the use of ALS by nursing faculty in the West Coast region, I used a questionnaire developed by AlRuthia et al. (2019). The ALS has 15 ALS and has been independently evaluated for its face and content validity by three faculty from the Colleges of Applied Medical Sciences, medicine, and Pharmacy of King Saud University, Saudi Arabia. No report was found on using the ALS by AlRuthia et al. (2019) in other studies.

I evaluated the ALS questionnaire by ALRuthia et al. (2019) for its reliability using Cronbach's alpha which was 0.70. According to Gray et al. (2017) and Peterson and Kim (2013), Cronbach's alpha coefficient ranges from 0.00 to 1.00. The nearer the result to 1.00, the greater the internal reliability. An alpha coefficient of 1.00 means perfect internal reliability and no measurement of error. However, this is almost impossible to attain because all instruments have some measurement of error. The usual cut-off point for a reliable scale is 0.70 or higher (Creswell & Creswell, 2019; Vogt, 2007). I have permission to use the ALS (see Appendix E). I aggregated the data for ALS by school of nursing so that each SON was considered a participant.

NCLEX-RN

The NCLEX-RN exam is a reliable tool that measures the candidates' minimum competency to provide safe, effective nursing care in an entry-level nursing position (NCSBN, 2023). The NCLEX-RN exam since 1994 has been administered using the computer-adaptive testing (CAT) format. With the CAT format, students were tested based on their ability level (NCLEX Education, 2018), which means the next question was based on the candidate's previous answers, determining the difficulty level. This process ensures that the NCLEX exam can obtain maximum information about the candidate's ability to handle the particular item or question (NCSBN, 2023a).

I used the data from the first-time NCLEX-RN pass rates from 2020-2022. The NCLEX-RN exam data used were from the traditional licensure exam before April 1, 2023. The NCLEX-RN exam is graded as pass or fail. Pass or fail is determined by one of these three rules: First, when there is 95% certainty that the candidate's ability is obviously above or below the passing standard. Second, the candidate's ability is very close to passing, and the computer continues administering the maximum number of questions. To identify whether the candidate passes or fails, the computer uses the final ability estimate based on the candidate's answers to all exam questions. If the final ability estimate is at or above the passing standard, the candidate passes. However, if the final ability estimate is below the passing standard, the candidate fails. Third, if the candidate runs out of time and the computer has not determined with 95% certainty whether the candidate has passed or failed, the candidate automatically fails if the candidate has not answered the minimum number of questions. However, if the candidate answered at least

the minimum number of questions, the final score is estimated based on all the answers the candidate gave before the exam ended. If the score is at or above the passing standard, the candidate passes. However, if the score is below the passing standard, the candidate fails (NCSBN, 2023b).

The passing standard for the NCLEX-RN is the nursing ability currently necessary to practice competently at the entry level. Because nursing practice changes over time, the NCSBN Board of Directors evaluates these passing standards every 3 years. The NCLEX scoring system is based on a unit of measurement called logits to score questions and determine whether candidates pass or fail. Logits show the differences between the candidate's ability estimates and the question difficulty. The current passing standard of the NCLEX is 0.18 logits (NCSBN, 2023a).

The NCLEX-RN exam pass rates on first attempts for each nursing school are reported by their respective state board of nursing. Each state board of nursing maintains a database of their NCLEX-RN pass rates. NCLEX-RN pass rates are reported in percentages. I recorded the NCLEX-RN pass rates as categorical variables.

Data Analysis Plan

Survey results of this study from Qualtrics were exported to SPSS v28. However, before I processed the data for analysis and to ensure that these data were accurate and consistent, I screened and cleaned the data. According to Pallant (2020), two steps are involved in the data screening process. The *first* step is to check for errors. This is done by ensuring that each score of each variable is not out of range. For example, if sex is coded 1 for male and 2 for female, I should only find a score of 1 or 2 for this variable

and not any number. Scores that are outside the possible range can distort the statistical analyses. The second step is finding and correcting any errors noted in the data file. When carrying out this second step, it is also crucial for me to check for other errors in the surrounding columns. The final step is to double-check frequencies because sometimes, another error is accidentally committed in correcting one error.

Data with missing values require particular attention. I decided which blank cells need to be filled with zeros and which to leave blank. I classified blank cells as either random or nonrandom. Random missing values may occur because the participant inadvertently needed to answer some questions. Also, if there were only a small number of missing values in the data set, such as less than 5%, it is highly likely to be a random missing value. Nonrandom missing values may occur because the participant purposely did not answer some questions (Assessment Capacities Project, 2016). The default option for dealing with these missing values is to filter these values from analysis either by case-wise or pairwise deletion. The second option was to delete all cases with missing values. However, the disadvantage of this approach is that the sample size is reduced, resulting in a loss of statistical power, which can also affect the sample's representativeness. Another option is imputation, which is done by replacing the missing values. This technique preserves all cases by replacing missing data with a probable value based on other available information. Last, I consulted a statistician with questions about my data set regarding many missing values (ACAPS, 2016; Gray et al., 2016).

Research Question 1: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in BSN programs?

H10: There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

H1a: There is a relationship between the use of ALS in the classroom by Nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

Research Question 2: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in ADN programs?

H20: There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCELX-RN pass rates on the first attempt in ADN programs.

H2a: There is a relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in ADN programs.

Research Question 3: What is the difference between the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

H30: There is no difference between the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

H31: There is a difference between the use of ALS by ADN and BSN faculty and NCLEX-RN in BSN programs compared to ADN programs?

To answer RQ1 and RQ2, I used multiple linear regression. Multiple linear regression is the statistical analysis test used to predict the value of NCLEX-RN pass rate

on the first attempt based on the value of AL strategies by nursing faculty. There have to be two or more IVs when multiple regression is used. According to Gray et al. (2017), this is the test to use when a researcher has an associational study design and a predictive research question involving the linear association between a set of predictors and one customarily distributed dependent variable measured on an interval scale. As part of my analysis, I tested the assumptions for multiple regression. Each participant represented a school of nursing (SON). Each SON was considered a participant. According to the power analysis, I needed faculty from 55 different schools of nursing. For each SON, I calculated a school level ALS usage average using the individual ALS scores collected from individual faculty.

To answer RQ3, I used independent samples *t* test to analyze if there was a statistically significant difference between the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs. I tested the assumptions for independent *t* test. I displayed the summarized relationships among variables in a scatterplot while the demographic variables in graphs and tables. I calculated a Cronbach's alpha on the ALS questionnaire.

Threats to Validity

Construct Validity

Construct validity is whether a study measures all aspects of the concepts it purports to measure. It directly results from how well a researcher has conceptually defined and operationalized a study's variables (Gray et al., (2017). ALS has no standard definition (Van Amburgh et al., 2017). Although I conceptually defined ALS in this

study, it is still possible that the participants have a different perception of what ALS is. Therefore, they may consider other learning activities that are not ALS. The conceptual and operational definitions of ALS must be very well defined; otherwise, it will decrease the effect of threat to the construct validity.

Internal Validity

Internal validity pertains to the accuracy or relevance of the study's results for the question being studied. Threats may arise when mistakes exist, leading to errors in reasoning about the cause and effect (Vogt, 2007). Two threats to internal validity are possible in this study: threats to selection and instrumentation. A threat to selection can occur when selected participants have specific characteristics that predispose them to have certain outcomes (Creswell & Creswell, 2018). This threat to selection is possible considering the sampling method in this study is nonprobability convenience sampling. There may be participants selected who are experienced faculty; therefore, they know which effective ALS activities to utilize in the classroom. I randomly selected participants and increased the sample size to decrease this threat. The second threat is *instrumentation*. Instrumentation happens when there are changes in the instrument used or its calibration (Gray et al., 2017) or when an instrument is modified or combined with another instrument in a study (Creswell & Creswell, 2018).

Statistical Conclusion Validity

Statistical conclusion validity refers to the correctness of a researcher's decisions regarding the statistical tests used in the study. A threat occurs when a factor produces a false data analysis conclusion (Gray et al., 2017). One example of this threat is low

statistical power. To prevent this threat, I performed a power analysis to estimate the number of subjects using a G*power.

Ethical Procedures

I received Walden University Institutional Review Board (IRB) approval # 07-30-24-1011533 on July 30, 2024. After approval from IRB was obtained, I sent an invitation email to all potential participants inviting them to the study. I obtained email addresses from the school faculty directory. The invitation email disclosed the purpose of the study and clarified that the study was voluntary. If any participants had questions, they could contact me using the information I had included in the invitation email.

Summary

The purpose of this correlational study was to determine if there was any relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in the BSN and ADN programs and to find out any differences between the nursing students' NCELX-RN pass rates in BSN programs and the ADN programs, and the frequency of use of ALS by faculty. I collected data from an online survey sent via email, using Qualtrics. I analyzed the data collected using multiple regression and independent *t* test. I reported the results of my study in Chapter 4.

Chapter 4: Results

Introduction

The purposes of this descriptive correlational study were to determine if there was (a) relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in BSN programs, (b) a relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in ADN programs and (c) a difference in nursing students' NCLEX-RN pass rates in BSN programs compared to ADN programs and the use of ALS by faculty. The research questions and hypotheses were the following:

RQ1: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in BSN programs?

$H1_{0:}$ There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

$H1_a$: There is a relationship between the use of ALS in the classroom by Nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

RQ2: What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in ADN programs?

$H2_{0:}$ There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCELX-RN pass rates on the first attempt in ADN programs.

$H2_a$: There is a relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in ADN programs.

RQ3: What is the difference in the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

$H3_{0:}$ There is no difference in the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

$H3_{1:}$ There is a difference in the use of ALS by ADN and BSN faculty and NCLEX-RN in BSN programs compared to ADN programs?

In Chapter 4, I present the data collection process, a report of the results, and a summary of the answers to the research questions. The quantitative data included nursing faculty who either teach in a BSN or ADN program, have master's degree, and teaching a didactic class. In addition, the NCLEX-RN pass rates were taken from the website of nursing schools. I also present the results of the study in accordance with the research questions.

Data Collection

I collected data via online survey using Qualtrics from September 16, 2024, to November 10, 2024. I sent invitation emails to approximately 7,519 nursing faculty from 219 nursing programs of seven West Coast States, Arizona, Alaska, California, Hawaii, Nevada, Oregon, and Washington. I retrieved the email addresses from nursing programs that posted their faculty directory online. I obtained 341 responses; 248 met the criteria. Out of the 248 who met the criteria; 231 used ALS in the classroom.

There were two discrepancies in the data collection process when compared to the data collection plan in Chapter 3. *Firs*t, was the type of data collection platform I used to create the survey. I initially planned to use SurveyMonkey but changed it to Qualtrics, another web-based tool use by researchers for survey, data collection and storage, and evaluation (Qualtrics, 2024). *Second*, there was a switch in the steps on how potential participants participate. An invitation email was sent to all potential participants (see Appendix A). However, following the recommendation of Walden IRB, I did not include a recruitment flyer in the invitation email to prevent confusing potential participants. Also, in the invitation email, participants who were interested were led to the consent form (see Appendix B), before the screening questions (see Appendix C) as opposed to the invitation email (see Appendix A), and then the screening questions (see Appendix C) before the consent form (outlined in Chapter 3).

Description of the Sample

The inclusion criteria for this analysis required that a participant should at least have a master's degree in nursing, be teaching in either a BSN or ADN program, and be teaching a didactic class. I sent a total of 7,519 invitation emails to the prospective participants and collected 231 responses.

Among the nursing faculty participants, 49% taught in a BSN program while, 38% taught in an ADN program. Eighty-five percent of nursing faculty taught a didactic class, and 95% at least have a master's degree. The majority of the participants were 45 to 54 years old and 83% were female which are similar to t the Faculty Census Survey of

Schools of Nursing by the National League of Nursing (2022), most full-time faculty are over the age of 45, and are female.

Results

Descriptive Statistics

Tables 1-A and 1-B are summary of the characteristics of the sample of my study. Among the respondents, majority were female (85%), and majority of the respondents were also between 55-64 years of age (31.5%) followed by those in the age range of 45-54 years (see Table 1).

The academic rank of a professor made up majority of the respondents (39.9%), and next was associate professor (29%). Assistant professor identified as *other* was the third largest number of academic ranks of respondents. Forty-eight percent (48%) of the respondents had taught for 10 years and more, (See Table 2).

Table 1

Sample Characteristics

Variable	*n*	*%*
Age		
25-34 years	7	2.82
35-44 years	55	22.18
45-54 years	76	30.65
55-64 years	78	31.45
65-74 years	29	11.69
75-84 years	3	1.21
Missing	0	0.00
Gender		
Male	34	13.71
Female	211	85.08
Nonbinary / third gender	1	0.40

Prefer not to say	2	0.81
Missing	0	0.00
Nursing Program		
ADN	98	39.52
BSN	123	49.60
Other	24	9.68
Missing	3	1.21

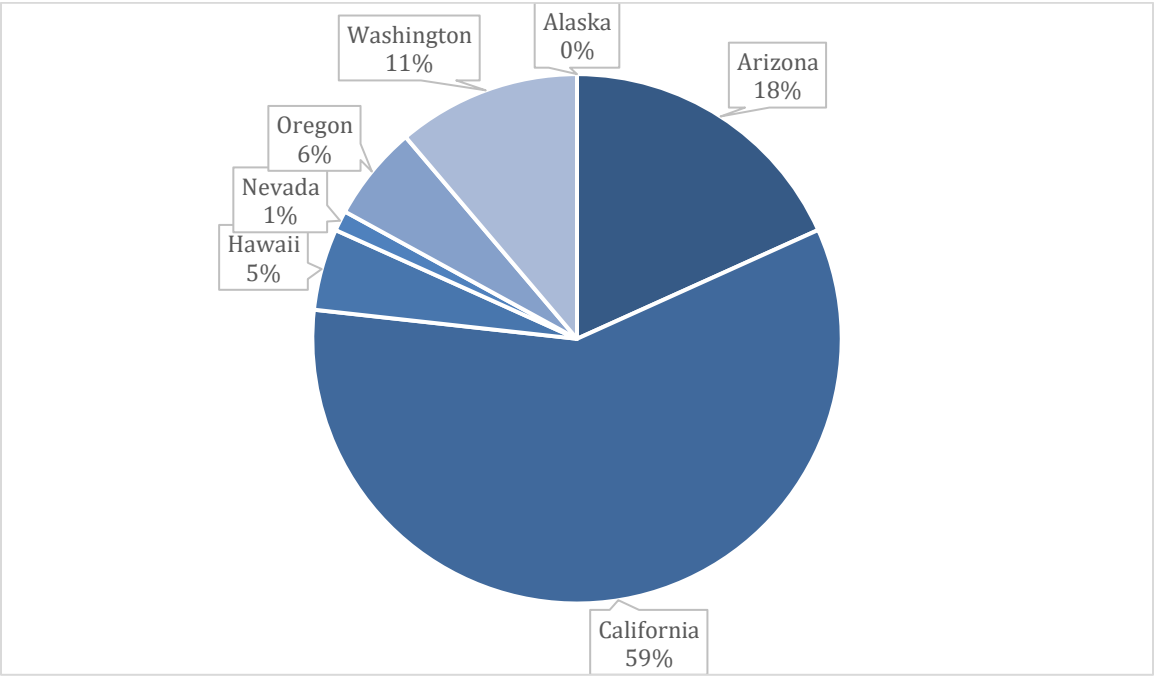
Table 2

Sample Characteristics

Variable *n* %		
Academic rank		
Professor	99	39.92
Associate Professor	72	29.03
Lecturer	21	8.47
Other	51	20.56
Missing	5	2.02
How long have you been a faculty member?		
0-3 years	36	14.52
3-5 years	38	15.32
5-8 years	35	14.11
8-10 years	20	8.06
10 years and above	119	47.98
Missing	0	0.00

Figure 2

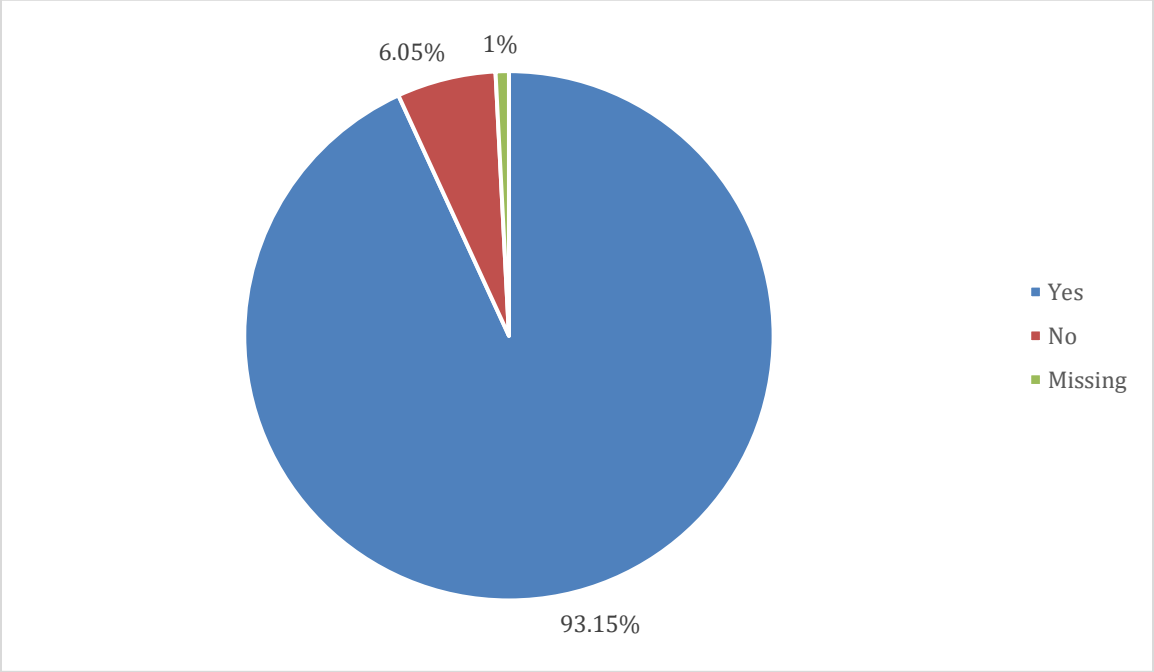
Response Rate by State



I sent the survey to seven of U.S. West Coast states. The majority of the respondents were from California (56.8%) followed by Arizona (17.7%). I did send an invitation email to nursing faculty of Alaska, but I did not receive any responses (See Figure 2). Ninety-three percent (93%) of the respondents did use ALS in the classroom, while 6% of the respondents did not. There were 0.8% of the respondents who answered neither (See Figure 3).

Figure 3

Using ALS in the Classroom



ALS Usage

Among the 231 respondents, class discussion was the most commonly used ALS technique, reported by 91.34% of faculty. This was followed closely by case studies and problem-based learning, which were used by 85.71% of respondents, and collaborative learning groups, utilized by 74.89% of faculty (See Table 3).

Table 3

Frequency Table for ALS Usage

ALS type	n	%
Class discussion	211	91.34
Think-pair-share	117	50.65
Learning cell	9	3.90
Collaborative learning group	173	74.89

Student debate	49	21.21
Reaction to a video	114	49.35
Small group discussion (e.g., seminars and tutorials)	135	58.44
Class game	151	65.37
Gallery walk	16	6.93
Brainstorming and buzz groups	32	13.85
Case studies and problem-based learning (e.g., crossovers, Delphi technique, Role play)	198	85.71
Flipped classroom (inverting your class)	117	50.65
Gamification (e.g., Bingo Game, Crossword Puzzle)	99	42.86
Computer-based teaching and learning	143	61.90
Other	15	6.49

Percentage of ALS Used in the Classroom

The percentage of ALS used in the classroom by faculty had a mean of 49.86% (SD=21.35), based on responses from 223 participants. The distribution of ALS usage exhibited slight positive skewness (Skewness=0.39), indicating that the majority of faculty used ALS near or below the mean, with a few reporting higher percentages.

Reasons for Not Adopting ALS

Among faculty who reported not using ALS in the classroom, the most commonly cited reason was disinterest in using such strategies, especially from the students' vantage point reported by 40.00% of respondents. This was followed by time constraints, which was noted by 26.67% of faculty, and other reasons, reported by 33.33%.

Less frequently reported reasons for not using ALS included lack of technical (20.00%) and administrative support was lack that is needed to make the teaching and learning process more effective (6.67%). Similarly, 6.67% of faculty indicated that their

department and college were very supportive. Additionally, 6.67% of respondents chose not to answer this question. Frequencies and percentages are presented in Table 4.

Table 4

Frequency Table

Variable	n	%
Technical support is lacking	3	20.00
Administrative support to make the teaching and learning process more effective is lacking	1	6.67
The department and the college are very helpful and supportive	1	6.67
I refrain from answering this question	1	6.67
Time constraints	4	26.67
Disinterest in using such strategies especially from the students' side	6	40.00
Other	5	33.33

NCLEX-RN Pass Rates

The data shared in Table 5 represent the average NCLEX-RN pass rates for ADN and BSN programs across six states (Arizona, California, Hawaii, Nevada, Oregon, and Washington) from 2020 to 2022. Trends across years and program types reveal differences in performance and declines in pass rates over time. Pass rates are shown as percentages for each year, with missing data indicated as "N/A."

Table 5

NCLEX-RN Pass Rates (2020–2022) for ADN and BSN Programs Across States

State	Program	Year 2020	Year 2021	Year 2022
AZ	ADN	89.6	81.76	82.55
AZ	BSN	92.81	88.47	86.13
CA	ADN	92.07	90.33	87.84
CA	BSN	92.47	90.42	87.89
HI	ADN	93.76	N/A	N/A
HI	BSN	93.14	N/A	N/A

NV	ADN	95.22	90.54	88.92
NV	BSN	94.07	90.25	90.55
OR	ADN	91.98	87.2	88.92
OR	BSN	92.08	80.33	78.42
WA	ADN	89.95	86.67	85.2
WA	BSN	91.75	86.34	80.67

Arizona

In Arizona, ADN programs experienced a decline in pass rates from 89.60% in 2020 to 82.55% in 2022. BSN programs followed a similar downward trend, with pass rates decreasing from 92.81% in 2020 to 86.13% in 2022. BSN programs consistently outperformed ADN programs by 3.21 to 4.00 percentage points over the 3 years.

California

In California, ADN programs saw a modest decline in pass rates, decreasing from 92.07% in 2020 to 87.84% in 2022. BSN programs also experienced a decline, with pass rates dropping from 92.47% in 2020 to 87.89% in 2022. The difference in pass rates between ADN and BSN programs remained minimal, with BSN programs outperforming ADN programs by less than 1 percentage point each year.

Hawaii

In Hawaii, ADN programs reported an average pass rate of 93.76% in 2020, and BSN programs reported 93.14% in the same year. Data for subsequent years were not available, limiting conclusions about trends over time. However, the 2020 data suggest similar performance between ADN and BSN programs.

Nevada

In Nevada, ADN programs demonstrated a slight decline in pass rates, from 95.22% in 2020 to 88.92% in 2022. BSN programs followed a similar pattern, with pass rates decreasing from 94.07% in 2020 to 90.55% in 2022. BSN programs consistently outperformed ADN programs, maintaining an advantage of 1.63 to 2.15 percentage points over the years.

Oregon

In Oregon, ADN programs showed relatively stable pass rates, starting at 91.98% in 2020 and ending at 88.92% in 2022. In contrast, BSN programs experienced a steeper decline, from 92.08% in 2020 to 78.42% in 2022. By 2022, ADN programs outperformed BSN programs by 10.50 percentage points, reflecting a notable reversal in relative performance.

Washington

In Washington, ADN programs experienced a gradual decline in pass rates, from 89.95% in 2020 to 85.20% in 2022. BSN programs also saw a decrease, starting at 91.75% in 2020 and dropping to 80.67% in 2022. By 2022, ADN programs outperformed BSN programs by 4.53 percentage points, reversing the trend observed in 2020, when BSN programs had a 1.80 percentage point advantage.

Summary

Across the six states, NCLEX-RN pass rates declined for both ADN and BSN programs from 2020 to 2022. BSN programs generally began with higher pass rates in 2020, but experienced steeper declines compared to ADN programs, particularly in

Oregon and Washington. By 2022, ADN programs outperformed BSN programs in Oregon and Washington, while BSN programs maintained an advantage in Arizona, California, and Nevada.

Data Preparation Phase

Quantitative data analysis has three phases. These three phases are the data preparation phase, the preliminary phase, and the primary analysis phase. At the data preparation phase, I entered the data collected into SPSS v28 and checked for errors and missing values using the frequencies procedure. There was a total of 341 responses. However, after I screened the data, 248 respondents met the inclusion criteria with 231 who used ALS in the classroom.

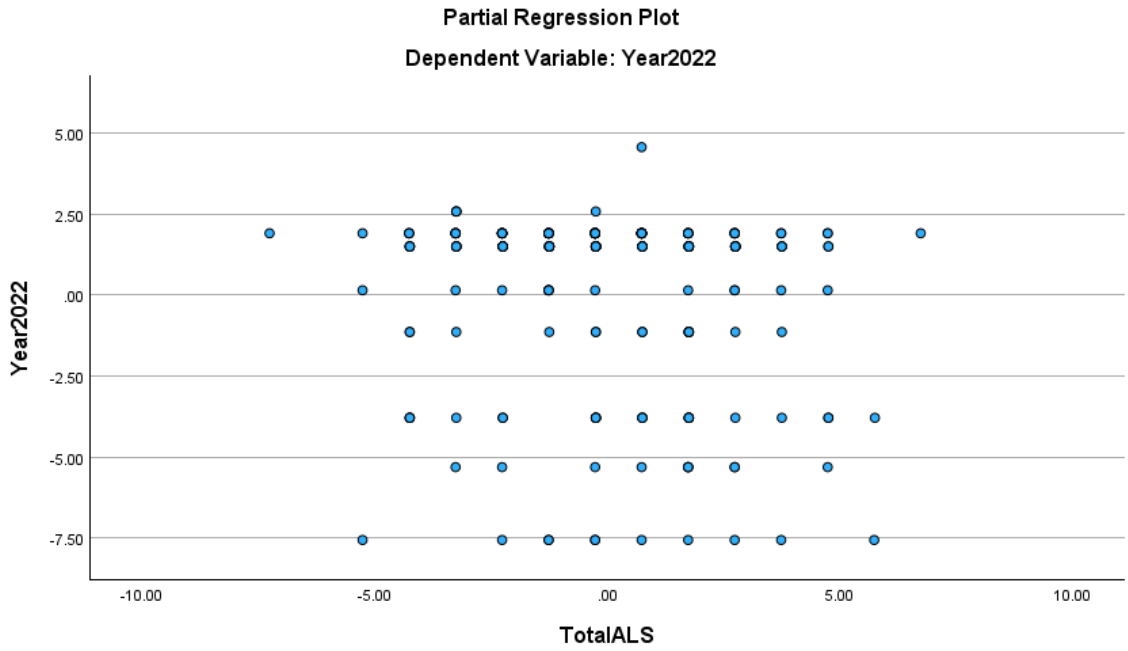
Assumptions of Multiple Regression

In this preliminary phase, I examined the parametric assumptions of multiple regression. These assumptions include linearity, normality, continuous, homoscedasticity, no multicollinearity, and absence of outliers.

I examined linearity using scatterplots. A scatterplot should show a linear or a straight-line relationship between the dependent variable and the independent variables and not a curvilinear relationship. A scatterplot pattern that shows curvilinear means there is a violation in the assumption of linearity (Laerd Statistics, 2025). The partial regression plot shows a somewhat linear relationship between total ALS and NCLEX-RN pass rates (see Figure 4).

Figure 4

Partial Regression Plot



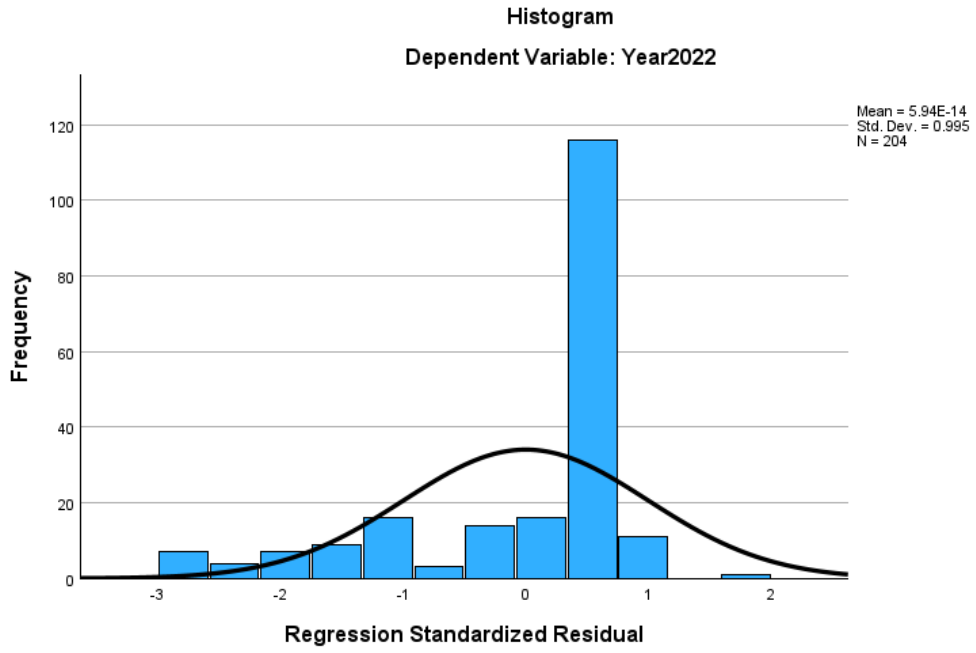
The next assumption of multiple regression is normality which means that the residuals of the model are normally distributed. One way to check for normality is using a histogram of the regression standardized residuals (see Figure 5) (Laerd Statistics, 2025). The distribution exhibited a left-skewed pattern, indicating a deviation from normality. To address this, a logarithmic transformation (LG10) was applied to the dependent variable; however, this did not substantially alter the distribution of residuals. Given that regression analysis is generally robust to violations of normality, the primary analysis proceeded as planned (see Figure 5; Laerd Statistics, 2025).

To further ensure the validity of the results, I conducted a regression analysis with robust standard errors (Method H3) as a supplementary check. The findings from this

alternative approach remained consistent with those obtained from the standard regression analysis. Therefore, my results are based on the standard regression model (Laerd Statistics, 2025).

Figure 5

Histogram of the Residuals for the Regression Model



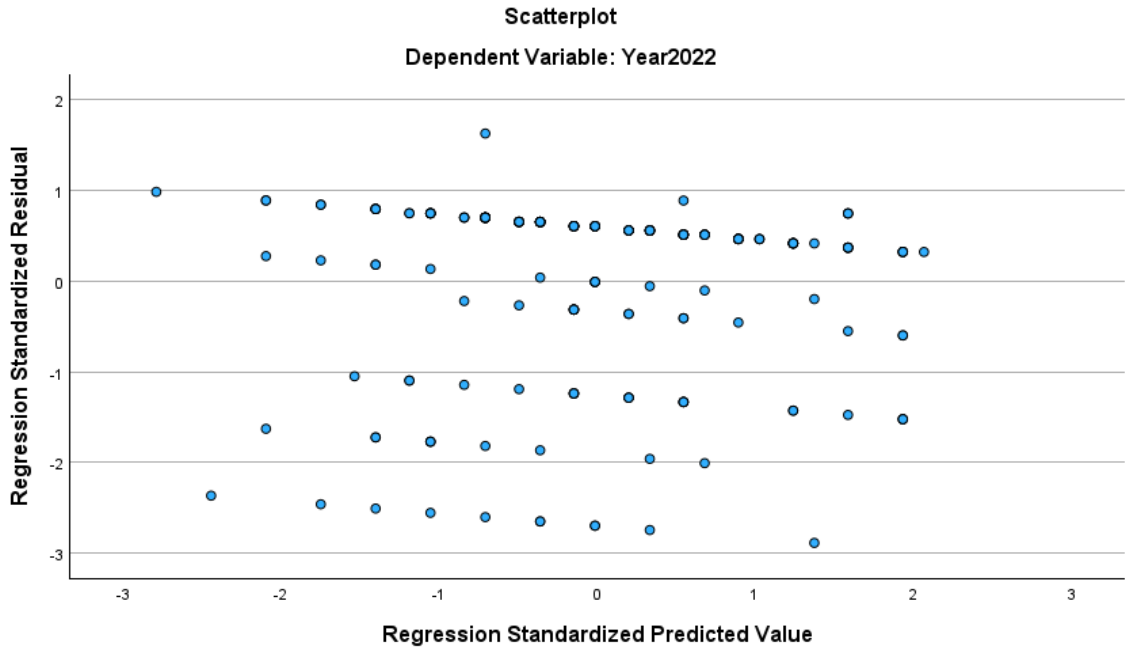
Another assumption is for the dependent variable to be using a continuous scale (Laerd Statistics, 2025). The NCLEX-RN pass rates on first attempt is reported in percentage thus did not violate this assumption.

I evaluated homoscedasticity by plotting the residuals against the predicted values (Bates et al., 2014; Field, 2017; Osborne & Walters, 2002). The assumption of homoscedasticity is met if the points appear randomly distributed with a mean of zero

and no apparent curvature. Figure 6 presents a scatterplot of predicted values and model residuals. The assumption of homoscedasticity was met.

Figure 6

Residuals Scatterplot Testing Homoscedasticity



Another assumption of multiple regression is multicollinearity which occurs when predictor variables are highly correlated with each other. When one or more predictor variables are highly correlated, the regression model violates multicollinearity, which causes the coefficient estimates in the model to become unreliable (Laerd Statistics, 2025). To examine this assumption, I calculated the variable inflation factor (VIF) for each predictor variable. VIFs greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). All predictors in the regression model have VIFs less than 10.

Outlier and influential observations were determined as any observation that has a standardized residuals greater than ±3, leverage values greater than 0.2 (Huber, 1981) and Cook's Distance values above 1. There were no observations with a standardized residual above +-3 (-3.3), leverage values greater than 0.2 or Cook's Distance values above 1 (Laerd Statistics, 2025; Statistics Solution, 2025).

Primary Analysis Phase

This section presents the findings for each research question, including correlation analyses, multiple regression results, and comparisons of ALS usage between ADN and BSN programs.

Research Question 1

What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in BSN programs?

$H_0$1**:** There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

H_A1**:** There is a relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in BSN programs.

To address Research Question 1, I conducted a Pearson correlation analysis to examine the relationship between total ALS usage and NCLEX-RN pass rates for BSN programs. Table 6 presents the correlation results.

Table 6

Pearson Correlation Results for Total ALS Usage and NCLEX-RN Pass Rates (BSN Programs)

Variable	Total ALS	Pass Rate
Total ALS	1	-0.12
Pass Rate	-0.124	1
p-value		0.212

The results indicated a weak, negative correlation that was not statistically significant, $r(99) = -0.12$, $p = .212$. This suggests no meaningful relationship between ALS usage and NCLEX-RN pass rates in BSN programs. Therefore, the null hypothesis was retained. The degrees of freedom (*df*) is 99. It is calculated as sample size, N, minus 2 (Laerd Statistics, 2025).

Following the correlation analysis, I conducted a multiple regression analysis to explore the combined effects of Total ALS usage and program type (ADN vs. BSN) on NCLEX-RN pass rates. The overall model was not statistically significant, $F(2, 201) = 1.89$, $p = .153$, $R^2 = .02$, suggesting that neither total ALS usage nor program type explained a significant proportion of variance in NCLEX-RN pass rates. Table 7 summarizes the results of the multiple regression model.

Table 7

Results for Linear Regression With Total ALS and Program Predicting NCLEX-RN Pass Rates

Variable	B	SE	95.00% CI	β	*t*	*p*	H3a SE	pa
(Intercept)	87.32	0.64	[86.07, 88.58]	0.00	137.23	< .001	.67	<.001

Total ALS	-0.14	0.08	[-0.29, 0.02]	-0.12	-1.73	.085	.09	.110
Program								
ADN	Ref.							
BSN	-0.36	0.40	[-1.15, 0.44]	-0.06	-0.88	.378	.40	.379

Note. Results: $F(2,201) = 1.89$, $p = .153$, $R^2 = .02$a shows the results of the robust standard errors

In the multiple regression analysis presented in Table 7, program type (ADN vs. BSN) was included as an additional predictor to examine its effect. The program type predictor, with ADN as the reference group, was not statistically significant (B = -0.36, t = -0.88, $p = .378$). This indicates that, when controlling for total ALS usage, there is no significant difference in NCLEX-RN pass rates between ADN and BSN programs. Furthermore, the combined model explained only 2% of the variance in NCLEX-RN pass rates ($R^2 = .02$, $p = .153$), confirming that neither total ALS usage nor program type meaningfully predicts NCLEX-RN pass rates.

The multiple regression analysis confirms and extends the findings of the correlation analyses by showing that neither Total ALS usage nor program type predicts NCLEX-RN pass rates in a statistically significant way. These results support the null hypotheses for both RQ1 and RQ2.

Research Question 2

What is the relationship between the use of ALS in the classroom by nursing faculty and nursing students' NCLEX-RN pass rates on the first attempt in ADN programs?

H02: There is no relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in ADN programs.

HA2: There is a relationship between the use of ALS in the classroom by nursing faculty and students' NCLEX-RN pass rates on the first attempt in ADN programs.

To address Research Question 2, I conducted a Pearson correlation analysis to examine the relationship between Total ALS usage and NCLEX-RN pass rates for ADN programs. Table 8 presents the correlation results.

Table 8

Pearson Correlation Results for Total ALS Usage and NCLEX-RN Pass Rates (ADN Programs)

Variable	Total ALS	Pass Rate
Total ALS	1	-0.123
Pass Rate	-0.123	1
p-value		0.221

The results revealed a weak, negative correlation that was not statistically significant: $r(99) = -0.12$, $p = .221$, $n = 101$. Similar to the findings for BSN programs, the use of ALS in ADN programs did not exhibit a significant relationship with NCLEX-RN pass rates on the first attempt. Therefore, the null hypothesis is retained.

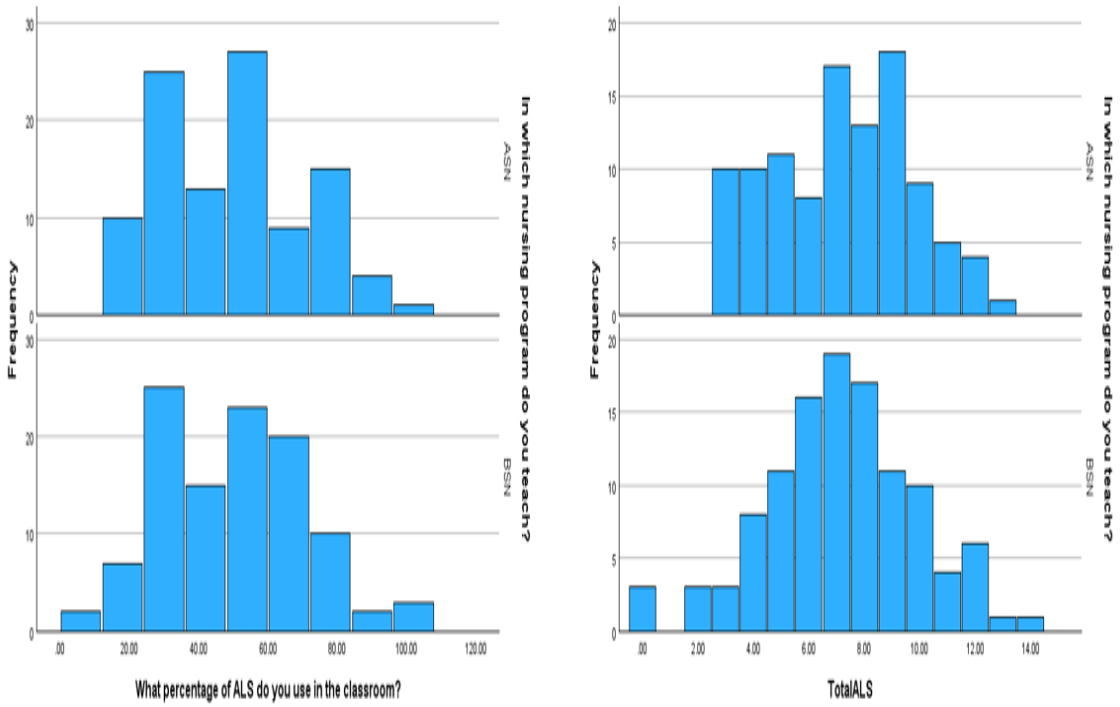
Assumptions of Independent Samples *t*-Tests

Prior to performing the independent samples *t*-tests, the assumptions were checked. For the Percentage of ALS usage in the classroom, Levene's test was conducted to assess whether the variance of was equal between the two programs. The result of Levene's test was not significant based on an alpha value of .05, $F(1, 209) = 0.00$, $p =$

.977 and the assumption of homogeneity of variance was met (Laerd Statistics; 2025; Polit, 2010). Similarly, for the total ALS implementation, the result of Levene's test was also not significant based on an alpha value of .05, $F(1, 217) = 0.00$, $p = .957$ and therefore the assumption of homogeneity of variance was met. Although the groups were not perfectly normally distributed, the distributions are approximately normal and therefore considered sufficient to proceed with the analysis. Figure 7 displays the histograms.

Figure 7

Distribution of Scores



Research Question 3

What is the difference in the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs?

H03: There is no difference in the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs.

Ha3: There is a difference in the use of ALS by ADN and BSN faculty and NCLEX-RN pass rates in BSN programs compared to ADN programs.

To explore this question, I conducted an independent samples *t*-tests to compare the use of ALS between ADN and BSN programs. Two variables were analyzed. The results of the independent samples t-tests are presented in Table 9.

Table 9

Independent Samples t-*Tests*

	N	M	SD	t	df	p	d
Percentage of ALS in the classroom?							
ADN	104	48.77	20.86	-0.087	209	.931	0.012
BSN	107	49.02	20.81				
Total ALS (out of 15)							
ASN	106	7.21	2.54	0.134	217	.893	0.018
BDN	113	7.16	2.75				

The results for percentage of ALS usage showed no significant difference between ADN and BSN programs, $t(209) = -0.087$, $p = .931$, $d = 0.012$. Similarly, there was no significant difference in Total ALS implementation, $t(217) = 0.134$, $p = .893$, $d = 0.018$.

These results indicate that there were no meaningful differences in ALS usage between ADN and BSN programs. The negligible effect sizes further suggest that any observed differences in ALS implementation are trivial and not practically significant. Therefore, there is insufficient evidence to reject the null hypothesis.

I calculated Cronbach's alpha specifically for the section of the questionnaire that asks participants to identify which of 16 ALS they have used in their teaching. Each strategy was treated as a binary variable, coded as 0 (not used) or 1 (used). The analysis yielded a Cronbach's alpha of 0.652, which is considered borderline acceptable for exploratory research (SPSS analysis, 2025).

Summary

The results indicated no relationship on the use of ALS by faculty and the NCLEX-RN pass rates on the 1st attempt in the BSN and ADN programs. Also, there is no difference between the NCLEX-RN pass rates on the first attempt in the BSN and ADN programs, and the frequency of use of ALS by the faculty.

In Chapter 5, I present the interpretation of findings, the limitations, and the recommendations for further studies.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purposes of this descriptive correlational study were to determine if there is relationship between the use of ALS by faculty and nursing students' NCLEX-RN pass rate on the first attempt in BSN and ADN programs, and to identify any differences in the nursing students' NCLEX-RN pass rates in BSN programs compared to ADN programs, and the use of ALS by faculty. Despite studies conducted on the relationship of active learning to student learning outcomes in nursing and various fields of education, limited studies exist on the relationship of active learning to NCLEX-RN. Understanding active learning may help students learn better, pass the NCLEX-RN exam, and join the workforce more quickly, thus helping to alleviate the nursing shortage.

The results indicated no statistical significance on the relationship of the use of ALS by faculty and the NCLEX-RN pass rates on the 1st attempt in the BSN and ADN programs. Also, there was no difference found between the NCLEX-RN pass rates on the first attempt in the BSN and ADN programs, and the frequency of use of ALS among the faculty surveyed.

Interpretation of the Findings

The findings of my study did not support the findings of Missildine et al. (2013) which demonstrated that ALS increased students' exam scores. Because the findings of my study revealed that there was no statistically significant relationship between ALS use in the classroom and students' first time NCLEX-RN pass rates. Bristol et. al. (2019), examined the extent of ALS use by prelicensure nursing faculty and its relationship to

NCLEX pass rates which revealed no relationship between the estimated extent of ALS use and the NCLEX pass rates. The findings of my study confirm Bristol et al.'s (2019) findings. Conversely, Shatto (2019), revealed a positive relationship between ALS and NCLEX pass rates on the first attempt. Examples of ALS that improve critical thinking are case studies and problem-based learning (Mattar, 2019; Shatto, 2019; Von Colln-Appling & Giuliano, 2017).

A study by Young et al. (2013) investigated the relationship between using case studies and NCLEX-RN pass rates which revealed that NCLEX pass rates of students who used case studies were higher than those who did not use case studies. Similarly, Lyons (2008), evaluated the use of a problem-based learning versus traditional lecture and its association with the NCLEX-RN pass rate on the first attempt which revealed that the NCLEX-RN pass rate on the first attempt by students in the problem-based learning group was higher than those in the lecture group. However, the findings of my study did not support Young et al.'s (2013) or Lyons' (2008) findings.

Theory of Constructivism

I chose the theory of constructivism because it supports the philosophical foundation of active learning, the predictor variable in this study. Constructivists purported that people learning is most effective when learners actively construct their own knowledge. To construct their own knowledge, learners relate the new information or experience to their prior learning experience. Their prior learning experience are affected by their individual perception, prior experiences, and interaction with the world. To relate the new information to their own prior experience, learners use either

assimilation or accommodation and reflect on what and why they are doing (Cattaneo, 2017). The role of the teacher is to facilitate the learning experience (Clark, 2018; Knowles et al., 2015; Mattar, 2018). Students' knowledge construction is considered an active process (Mattar, 2019). Although 95% of the respondents used AL in this study, the findings in this study did not support the theory of constructivism.

Limitations of the Study

Generalizability was limited in my study. First, I administered a survey questionnaire online. Although response rate of questionnaires sent by email is higher than mail, the response rate of questionnaires sent by email is still usually less than 50% (Gray & Grove, 2020). My response rate was significantly less than 50%. I sent an invitation email to nursing faculty in the seven West Coast States of Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington. Not all nursing programs listed their faculty email directory online. Therefore, invitation email was only sent to faculty whose email address were found online. Nonetheless, responses were received from six of the West Coast States except Alaska that yielded zero response.

The ALS included in the tool may not have been inclusive enough to capture all the ALS used among the faculty surveyed. Drew and Mackie (2011) stated that there needs to be more clarity in the meaning of active learning. The definition of active learning, according to Drew and Mackie (2011) frequently lacks robustness. A related limitation was the borderline value of Cronbach's alpha found when scale analysis of the measurement tool was carried out. In addition, even though the concept of active learning relies on constructivism or is inspired by it, active learning captures a wide range of

views (Markant et al., 2016). I was not able to match faculty to the program in which they teach except by the type of program (BSN or ADN). I was not able to measure how often ALS strategies are used within the specific program although I did ask the participants to report how often ALS strategies are used within the program on the demographic data sheet.

Recommendations

More research is needed in the area of active learning and ALS in nursing education. Future studies on ALS are needed in large nursing programs because large nursing programs may have more resources which can impact which ALS the faculty can implement (AACN, 2024).

In some regions of the United States, the curricula are mandated in a chain of nursing schools (Arizona College of Nursing, 2025). Teaching faculty have limited academic freedom with regard to which classroom teaching strategies are employed versus programs where the curriculum is developed by the faculty. Therefore, research is needed on ALS use of programs with mandated curriculum versus ALS use of programs whose curriculum is developed by the faculty.

Research is needed to consider the faculty background such faculty rank and teaching experience. Experienced faculty are maybe more comfortable in utilizing ALS despite limited class time versus a novice faculty.

Finally, a mixed study using a quantitative and qualitative approach might enhance study results. According to Gray et al. (2020), with mixed method, the use of both quantitative and qualitative designs gives a researcher the ability to use the strengths

of each method (Gray et al. (2020). Because there needs to be more clarity in the meaning of active learning (Drew & Mackie, 2011; Van Amburgh et al. 2007) it would be beneficial to observe faculty in the classroom with an AL inventory tool that can clearly measure the amount and type of active learning employed and then, investigate the relationship of ALS used in the classroom to NCLEX-RN pass rates on the first attempt in both, BSN and ADN programs.

Implications

The findings from this study contribute to the developing body of knowledge of the nursing profession by informing faculty about best practices in classroom instructions specially on active learning and its relationship to the NCLEX-RN pass rate. The findings of this study also highlighted which ALS is commonly used in the classroom, as well as the common reasons of faculty for not adopting and implementing ALS in the classroom. By uncovering which type of classroom instructions, passive learning or active learning are best practices, nursing faculty can be more effective in assisting students pass the NCLEX-RN exam and thus, help mitigate the nursing shortage which affects positive social change.

New graduates are the first to be affected in the event that they do not pass their NCLEX-RN on the first attempt. Adverse effects may include embarrassment, anxiety, guilt, and delay in employment (Lewis et al., 2023; Roa et al., 2011). New graduates who fail the NCLEX-RN can lose their self-esteem and suffer social stigma, hindering future attempts to pass the NCLEX-RN exam (Roa et al., 2011). The more attempts on the NCLEX-RN new graduates take, the lower their chance of passing (NCSBN, 2020).

Furthermore, new nursing graduates may also be affected financially. Failure to pass the NCLEX will prevent them from working as an RN. They will have to start making payments if they have a student loan. Other factors that may increase the financial burden for new graduates are the cost of the application fee for retesting, the NCLEX-RN review course or review centers, and review materials (Lewis et al., 2023; Roa et al., 2011).

Nursing programs are also affected by the NCLEX-RN failure on first attempts by their students because first-time NCLEX-RN pass rates are outcome measures used by the Board of Nursing (BON) to determine if a nursing program meets nursing education standards (Spector et al., 2020).

Hospitals may remain short-staffed because the new nursing graduates who fail the NCLEX-RN cannot join the workforce until they pass and receive their RN license. The short-staffing situation increases the stress level of RNs who are working and can affect job satisfaction (AACN, 2019). Therefore, the healthcare system will also be affected. The increasing nursing shortage is also due to the retiring Baby Boomers and patients' increasing healthcare needs (AACN, 2019). According to Roa et al. (2011), some nursing graduates work temporarily as staff nurses while waiting for their NCLEX-RN results. However, once they fail, a healthcare organization can only continue to hire them with their nursing license (Roa et al., 2011). With the nursing shortage and no one to replace the vacant posts, the nursing graduates leave, and staff nurses' workload increases. This increase in workload limits the time the nurses spend with their patients. Thus, affecting the quality of patient care (AACN, 2019).

Conclusion

The nursing shortage and the changing demographics of the patient population (AACN, 2024; Population Reference Bureau, 2025) increases the burden of government healthcare agencies in meeting the needs of the new patient population. It is evident that more nurses are needed to join the workforce. To address the issue, nursing programs are graduating more students. However, to join the workforce more, new nurse graduates must pass the NCLEX-RN. Nursing programs must produce nurses who will pass the NCLEX-RN on the first attempt.

Faculty need to be trained more in using ALS. The use of ALS in the classroom requires thoughtful planning and assessment (Faculty Resource Network, 2018). Faculty also need to develop curricula designed to help new nurse graduates pass the NCLEX-RN exam and prepare them for professional practice not only because it is beneficial to their program pass rates, but also to ensure that patients are safe. New nurse graduates are considered safe to practice nursing at an entry-level when they pass the NCLEX-RN exam (NCSBN, 2023). Faculty are nurses too who sworn to ensure the safety of all patients (ANA, n.d.). Therefore, in training nursing students every faculty need to determine the kind of classroom instruction or teaching strategy to utilize that is deem best to improve the academic performance of all students and eventually improve the rate of students passing the NCLEX-RN exams.

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Appendix A: Invitation to Participate

My name is Janette Tingson. I am currently enrolled in the nursing Ph.D. program at Walden University and am currently conducting a quantitative research study on Active Learning Strategies and NCLEX-RN Pass Rate on First Attempt in the BSN and ADN Programs. I understand that you are faculty member teaching in a nursing program. I obtained your contact information from your university website.

I am hoping that you will be willing to participate in my dissertation by completing a brief anonymous survey that will take approximately 5 minutes to complete.

If you are willing to participate, please click on the Survey Link below or scan The QR code to complete the survey.

Click here to complete the ALS Survey

Alternatively, you can scan the QR code below:

If you want to contact me for further questions about my study, I can be Reached through my email at Janette.Tingson@waldenu.edu and/or my phone, (213)321-3967.

Sincerely,
Janette Tingson
Ph.D in Nursing Candidate
Walden University

Appendix B: Screening Questions

1) Do you teach in a BSN or ADN program?
2) Do you teach a didactic class
3) Do you have at least a Master's of science degree in nursing

Appendix C: Demographic Data Sheet and Use of Active Learning Strategies Questionnaire

1. Age group:
□ 25-34 years.
□ 35-44 years
□ 45-54 years
□ 55-64 years.
□ 65-74 years
□ 75-84 years
□ Other: _____

2. Gender:
□ Male
□ Female

3. In which nursing program do you teach?
□ ADN
□ BSN

4. What is your academic rank?
□ Professor.
□ Associate Professor.
□ Assistant Professor.
□ Lecture.
□ Teaching Assistant.
□ Other: _____

5. How long have you been a faculty?
□ 0-3 years
□ 3-5 years
□ 5-8 years
□ 8-10 years
□ 10 years and above

6. In which state in the West Coast is your academic institution located in?
□ Alaska
□ Arizona
□ California
□ Hawaii
□ Nevada
□ Oregon

□ Washington

7. In which school of nursing do you teach? _____

8. Do you use ALS in the classroom? Active learning is activities requiring students to actively participate in a designed learning environment facilitated by a teacher to stimulate critical thinking (Simpson & Courtney, 2002).

□ Yes
□ No

IF no, please skip to question number 12.

9. How long have you been implementing ALS in the classroom?

□ < 2 years
□ 2 to 5 years
□ 6 to 8 years
□ More than 8 years

10. What percentage of ALS do you use in the classroom?
□ <10%
□ 11% to 25%
□ 26% to 50%
□ 51% to 75%
□ 76% to 100%

11. Which of the following active learning strategies have you used in teaching your students? (Please check all the boxes that apply):

□ Class discussion
□ Think-pair-share.
□ Learning cell.
□ Collaborative learning group.
□ Student Debate
□ Reaction to a video
□ Small group discussion (e.g., seminars and tutorials).
□ Class game.
□ Learning by teaching.
□ Gallery walk.
□ Brainstorming and buzz groups.
□ Case studies and problem-based learning (e.g., crossovers, Delphi technique, Role play).
□ Flipped classroom (Inverting your class).
□ Gamification (e.g., Bingo Game, Crossword Puzzle).

□ Computer-based teaching and learning (e.g., Online quizzes, mark assessments and provide feedbacks, Online interactive course materials, Online discussion forum and bulletin boards for online communications video-conferencing and live lectures).
□ None of the above.
□ Other: _____

12. Reasons for not adopting and implementing active learning strategies in your view: (Please check all the boxes that apply):

☐ Technical support is lacking.

☐ Administrative support to make the teaching and learning process more effective is lacking.

☐ No appreciation whatsoever.

☐ The department and the college are very helpful and supportive.

☐ I refrain from answering this question.

☐ Time constraint.

☐ Disinterest in using such strategies especially from the students' side.

☐ Other: _____

Adopted from AlRuthia et al (2019). https://doi.org/10.1186/s12909-019-1580-4

Appendix D: Permission to Use Active Leaning Questionnaire

Journal permissions <journalpermissions@springernature.com>
To:Janette Tingson
Wed, Sep 13 at 8:18 AM

Dear Janette,

Thank you for your recent Springer Nature permissions enquiry.
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Appendix E: Letter Seeking Permission to Use AL Questionnaire

From: Janette Tingson <janettetingson@yahoo.com>
Sent: 08 September 2023 03:19
To: Journalpermissions <Journalpermissions@springernature.com>
Cc: jtingson@apu.edu
Subject: Permission

Dear Sir/Ma'am,

I would like to ask permission to use the survey instrument in the study by AlRuthia et al., (2019), "The Use of Active Learning Strategies in Healthcare Collages in the Middle East" published by BMC Medical Education.

My name is Janette C Tingson and I am a doctoral student at Walden University. I am currently writing my dissertation entitled, "Active Learning and NCLEX-RN Pass Rate on First Attempt in BSN and ADN Programs," under the direction of my dissertation committee chair, Dr. Leslie Hussey @ lesli.hussey@mail.waldenu.edu.

I will adhere to the following conditions:

a. I will use the instrument only for my research study and will not sell or use it with any compensation or curriculum development activities.
b. I will include the copyright statement on all copies of the instrument.
c. I will send a copy of my completed research to your attention upon completion of the study.

May I also receive copies of supplemental material that will help me administer the questionnaire and analyze the results, such as the standard instructions for administering the test and scoring procedures, if any? Should you grant me permission to use the instrument, please indicate so by replying to me at Janette.tingson@waldenu.edu

Respectfully Yours,

Janette C. Tingson

September 7, 2023

Yazed Sulaiman H AlRuthia, PhD
Professor, Department of Clinical Pharmacy
King Saud University, College of Pharmacy
Riyadh, Saudi Arabia

Dear Dr. AlRuthia,
Peace Be Upon You! I am a doctoral student from Walden University and am writing my dissertation entitled, "Active Learning and NCLEX-RN Pass Rate on First Attempt in BSN and ADN Programs," under the direction of my dissertation committee chair, Dr. Leslie Hussey @ lesli.hussey@mail.waldenu.edu.

I have read your research on "The Use of Active Learning Strategies in Healthcare Colleges in the Middles East" and may I please have access or gain a copy to your Questionnaire and be permitted to use this in my research study?

I will assure you that:

a) I will use the instrument only for my research study and will not sell or use it with any compensation or curriculum development activities.
b) I will include the copyright statement on all copies of the instrument.
c) I will send a copy of my completed research to your attention upon completion of the study.

May I also receive copies of supplemental material that will help me administer the questionnaire and analyze the results, such as the standard instructions for administering the test and scoring procedures, if any? Should I be fortunate enough to have a copy of your instrument and permission to use it, please indicate so by replying to me at Janette.tingson@waldenu.edu

Respectfully,
Janette C. Tingson
Doctoral Candidate
Walden University, College of Nursing