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# A Comparative Descriptive Study Exploring Undergraduate Versus Graduate Self-Regulated Learning in Online Nursing Courses

Monica Panaitisor
*University of Northern Colorado*

UNIVERSITY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

# A COMPARATIVE DESCRIPTIVE STUDY EXPLORING UNDERGRADUATE VERSUS GRADUATE SELF-REGULATED LEARNING IN ONLINE NURSING COURSES

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Monica Panaitisor

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Accepted by the Doctoral Committee

_____
Michael Aldridge, Ph.D., Research Advisor

_____
Kathleen N. Dunemn, Ph.D., Co-Research Advisor

_____
Melissa Henry, Ph.D., Committee Member

_____
Gary Heise, Ph.D., Faculty Representative

Date of Dissertation Defense_____

Accepted by the Graduate School

_____
Jeri-Anne Lyons, Ph.D.
Dean of the Graduate School
Associate Vice President for Research

# ABSTRACT

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Preparation of new graduate nurses is more important now than ever given the current state of health care. The pandemic has caused online nursing education to be a permanent content delivery modality across all degree programs. Best practices for e-learning only address course organization, instructional materials, learner interaction, course technology, and support while having no regard for the unique learner needs of different degree levels. Online learning success could be determined by how well students are able to self-regulate their learning; however, these behaviors have rarely been measured and compared in nursing students at different degree levels taking online nursing courses. The purpose of this study was to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses.

This quantitative comparative descriptive study measured self-regulated learning (SRL) behaviors in traditional undergraduate and traditional graduate nursing students in online nursing courses. An electronic 32-item survey measuring SRL and developed by Artino and Stevens (2009) was utilized for data collection. Demographic data were also collected. A purposeful sample of 100 nursing students—55 traditional Bachelor of Science in Nursing undergraduates and 45 traditional graduates in Master of Science in nursing, Doctor of Education, Advanced Practice Registered Nurse, Doctor of Nursing Practice, and Doctor of Philosophy programs from

across the United States—participated in the study. Data were exported to Statistical Package for the Social Sciences for analysis.

Data were analyzed using descriptive statistics with non-parametric testing. A statistically significant difference was found when comparing age categories to the task value SRL subscale. Scores in the task value, elaboration, self-efficacy, and critical thinking subscales were not statistically significant between undergraduate and graduate nursing students in online courses. Scores between healthcare experience were also not statistically significant with SRL subscale comparisons.

Recommendations for faculty based on this study included give more support and instructional strategies to undergraduate nursing students in online nursing courses; self-regulated learning ought to be assessed at the start of a course; an assessment of SRL at the beginning of a course would establish a baseline that could be useful to both students and faculty; scaffolding should be implemented to help students improve their self-regulated learning skills; and professional development should be completed to learn the unique competencies required for online teaching. More research is needed in assessing SRL in real time, possibly with the use of tracking or artificial intelligence and studying how SRL affects educational outcomes.

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# CHAPTER I

## INTRODUCTION TO STUDY

Nursing education is tasked with preparing students to care for mankind. Pre-licensure nursing education has a responsibility to transform students into safe, effective nurses who have sound clinical judgement and deliver high quality care to all persons in our complex healthcare delivery system (Kavanagh & Szweda, 2017). Approximately 90% of new graduates will work in the acute care setting initially (National Council of State Boards of Nursing [NCSBN], 2023). Today's acute care patients have higher acuity with decreased length of stay than ever before (Kavanagh & Szweda, 2017). The demands are high for new graduate nurses preparing for practice with more acutely ill patients who have shorter hospital stays, which requires new graduates to notice changes in a patient's condition or detect signs of deterioration and competently act to improve patient outcomes (Kavanagh & Szweda, 2017).

The National Council Licensure Examination (NCLEX-RN) needed to achieve a registered nurse (RN) license assesses the base level of knowledge needed to be competent as a new nurse (NCSBN, 2023). Prior to 2020, NCLEX-RN pass rates for all first-time, U.S.-educated candidates from the various types of programs (diploma, baccalaureate, associate, and special program) were 87.11% in 2017, 88.29% in 2018 and 88.18% in 2019 (NCSBN, 2023). However, a 2017 survey of hospitals found 77% of new graduate nurses failed to demonstrate clinical competence, signifying a gap between preparation and actual clinical competence (Kinyon et al., 2021). Nurse educators have been using these data and stakeholder feedback to improve curricula to better cultivate the knowledge and skills needed by competent new graduate

nurses. Nursing education has traditionally taken place in brick-and-mortar schools using face-to-face learning in the classroom, laboratory, and clinical settings (Soriano & Oducado, 2021). With the digital age, an increasing number of nursing education courses and programs were moved to the online platform for graduate and some undergraduate degree levels. As of 2019, 20 million Americans were enrolled in at least one fully online course with expanding admission to online schools and programs (Schrenk et al., 2021).

The coronavirus disease (COVID)-19 pandemic forced 1.6 billion students of higher education programs worldwide, which had been face-to-face, into emergency remote education in the online, virtual environment in March 2020 (Linnes et al., 2022). This emergency remote education differed from well-established online learning due to its fast-paced changes in transitioning from face-to-face content delivery to the remote, online environment over a few weeks (Linnes et al., 2022). Nursing, being a practice profession where pre-licensure and advanced-practice students must learn and practice skills in the laboratory and clinical settings, had a difficult transition to forced remote e-learning where computer-based technologies and the internet were used to promote teaching and learning (Soriano & Oducado, 2021). The learning and practice of practical skills, bedside experience, and communication with patients were transitioned to the virtual environment due to restrictions for social distancing to prevent spread of the virus (Koh et al., 2022). Following this change, new graduates perceived themselves as being untrained in some interaction and real-world practices and they felt concerned about the risks they might introduce to patients once they entered the nursing workforce (Koh et al., 2022). Faculty made this online transition in a matter of weeks, many without prior knowledge of online teaching methods or online course development (Koh et al., 2022). Roddy et al. (2017) described online course development as being “more complex than merely translating written materials to

an online format, requiring meticulous planning and maximization of available online technologies to cater to a variety of individual differences, student timetables and external commitments, and assessments modes" (para. 2).

Four years on from the start of the pandemic, restrictions for in-person skills laboratory practice and opportunities in the clinical setting eased for some programs, allowing for a more well-rounded, practical education for nursing students that was missed during the height of the COVID-19 crisis. Despite there being an end in sight for these restrictions, nursing education has been changed forevermore, suggesting some future nursing courses and programs would continue to be managed online or have some online components (Karlsen et al., 2023).

Nursing educators have a duty to conduct research and implement best practice for online modes of study, and continual adjustment and evaluation must be pursued to ensure that courses meet student needs (Roddy et al., 2017). The acute care climate has become more challenging for new graduate nurses who had received pandemic mandated e-learning. These new nurses are likely to have theoretical knowledge but lack practical competence (Kinyon et al., 2021). They use concrete thinking and depend upon technology to evaluate patients' conditions, potentially missing cues that point to a bigger picture (Kinyon et al., 2021).

Even before the pandemic, a 2020 study of new graduates found 65-76% of these new nurses were unable to meet entry level clinical judgement skills and most had difficulty translating knowledge and theory into practice (Murray et al., 2020). A 2021 survey by the NCSBN found less than 50% of employers reported 'yes definitely' to being asked if new graduates were ready to provide safe and effective care (Kinyon et al., 2021). New graduate nurses were also faced with the negative backlash and aftereffects of the pandemic on experienced nurses, acute care, and health care in general. A 2022 qualitative study reported new

graduates experienced difficulty dealing with death, high-acuity care with limited training, difficulty with being short-staffed, lack of support from the healthcare team, uncertainty, vulnerability, anxiety, depression, and posttraumatic stress (Aukerman et al., 2022).

For the foreseeable future, many schools of nursing have committed to remaining online indefinitely or continuing to deliver content through e-learning (Schrenk et al., 2021). Since the start of the pandemic, NCLEX-RN pass rates for all first-time, U.S. educated from all program levels have declined: 86.57% in 2020, 82.48% in 2021, and 79.9% in 2022 (NCSBN, 2023). Given the continued use of e-learning and the many challenges awaiting new graduates, nursing education must evaluate online teaching and learning. Unique competencies are required for online teaching success so institutions must invest in training and developing online faculty (Roddy et al., 2017). Currently, best practices for online courses are indistinguishable among different nursing degree levels. A general set of best practices applies to all nursing courses offered online whether the content is pre-licensure undergraduate, master's, or doctoral level. These different degree level online learners have different demographics, experience in the field of nursing, self-regulatory, and learning needs. These differences must be considered when developing and delivering course content online.

## Best Practices in Online Education

Standards of evaluating quality in online courses have been used for several years. These standards do not differentiate based on content or degree level of the courses being offered online. Bonnel et al. (2019) described best practices in online teaching through incorporating creation of a supportive course or online community, active faculty presence in the course, sharing clear expectations with students, integrating both individual and group learning activities, having both synchronous and asynchronous assignments, encouraging learners to

connect content with current events, interlinking course concepts with personalized learning, completing ongoing course evaluation and learner feedback, developing discussion posts that emphasize critical thinking and community building, and creating opportunities for the integration of learned knowledge through reflection. No mention was made of using different strategies with different degree level students or if research had been done that showed these best practices were appropriate for all students regardless of degree level. Online course design best practices stated that course facilitation should include gaining knowledge of the learners at the start of the course, orienting learners to the course and technologies needed, transitioning to active and authentic learning opportunities and assignments in the middle of the course, ending with feedback and debriefing, using rubrics to promote reliability, the use of self-reflection to synthesize authentic learning, and finally creating closure of the course (Bonnel et al., 2019). Strategies of how to achieve this course design were not differentiated for undergraduates versus graduates; nor was it mentioned if there should be differences based on degree level.

The Quality Matters (2018) rubric measures course overview, learning objectives, assessment and measurement, instructional materials, learning activities and interaction, course technology, learner support, and accessibility and visibility. It made no differentiation between courses in different degree levels. Different types of students have different experiences with technology, online learning, and online delivery methods; one set of generalized measurements cannot meet these students' needs. Authement and Dormire (2020) used the Quality Matters rubric to build the Online Nursing Education Best Practices Guide (ONE guide). This ONE guide contains an instructor checklist of best practice essentials based on the model that are organized into seven categories: course introduction, course delivery, available, approachable, discussion board interaction, announcements, feedback and grading, and email interaction

(Authement & Dormire, 2020). Their model and checklist also did not consider learner needs based on degree or content experience, leaving it very generalizable to all online course delivery. Blood-Siegfried et al. (2008) similarly had a generalized rubric for evaluating quality online courses. It was created by faculty members who worked at the university where it was used. It was applied to graduate nursing courses with no literary evidence justifying how those standards would best meet graduate learners' needs; the reason for this might be the multiple learning theories utilized by different teachers. Flexibility was always given to these educators to present their content in whichever way they deemed necessary.

There has been little exploration of how nursing students from different degree levels learned in online courses and even fewer comparison of undergraduate and graduate students learning needs in online education. "Evidence, to date, has been anecdotal, precipitating the need for a more thorough review of literature and measurable way to determine preferred teaching and learning strategies" in the online environment for nursing students in these various degree levels (Harlan et al., 2021, para. 9). Graduate level nursing students have some degree of work experience in the field, bringing knowledge with them to the virtual classroom. Learning for graduate students in the online environment consists of advanced dialogue and application of discipline-specific content to problems that could be enhanced with various instructional techniques within a specific online community (Holzweiss et al., 2014). Pre-licensure, traditional undergraduate nursing students currently enrolled in nursing courses are Generation Z individuals (Chunta et al., 2021). These students differ from previous generations and graduate students; they are true digital natives, have limited experience with face-to-face communications so might have communication inadequacies, and are at risk for isolation, insecurity, and mental health issues due to technology saturation (Chunta et al., 2021). These current undergraduate

students need assistance with motivation and discipline to be successful with online learning (Chunta et al., 2021). Roddy et al. (2017) also expressed those individual differences, such as self-regulated learning abilities, are important to assess in students prior to online learning. Careful training is recommended for faculty members who are teaching in the online environment, which requires development of different teaching competencies compared to face-to-face teaching (Roddy et al., 2017). Specialized training or competency is currently not required for most nursing educators teaching in the online environment (Roddy et al., 2017). More research is needed to evaluate these different degree level students and educators, their learning needs, and what instructional strategies are most effective for them in the online environment.

## Self-Regulated Learning

Since the beginning of the pandemic, pre-licensure and graduate nursing students, normally attending face-to-face content delivery with faculty and peers, were forced to shift suddenly to e-learning, which required self-regulation in various online, non-traditional formats. Self-regulated learning (SRL) is defined as the process where students use meta-cognitive skills to plan, implement, and reflect on their learning (Roddy et al., 2017). This definition encompasses the processes that occur during SRL: metacognition, motivation, and behavior during the learning process. Assessment of SRL explores how students can perform and govern these processes during their learning. Research on SRL began in the 1970s-1980s when researchers developed an inclusive definition of SRL and "integrated learning strategies, metacognitive monitoring, self-concept perceptions, volitional strategies, and self-control processes under a single research rubric" (Zimmerman, 2008, para. 3). Numerous SRL models have been developed and researched. Each model for SRL aims to understand and "actively

monitor student learning processes and outcomes, while investigating how they regulate and adapt their behavior, cognition and motivation when necessary to optimize their learning outcomes" (Zimmerman, 2008, para. 3).

Online learning, as discussed above, consists of asynchronous, synchronous, or blended content delivery. Students are required to review content, perform activities, participate in online discussions, and complete assignments independently within these different online content delivery methods. Self-regulation is an important factor in the online environment considering learners might choose learning time, space, and processes while engaging in e-learning (Yoo & Jung, 2022). The tasks related to e-learning are presented in a non-linear format using advanced information and communication technologies, which require a high degree of self-regulation for students to be successful (Yen et al., 2018). "Self-regulated learners constantly organize, monitor, and evaluate their study plans and eventually achieve better academic performance than non-self-regulated learners" (An et al., 2022, para. 1).

Limited research has been conducted on SRL behaviors among nursing students in different degree levels. Several studies in other disciplines have compared undergraduate and graduate SRL in the online environment. Differences in motivation, procrastination, critical thinking strategies, and self-efficacy have been identified between the two groups (Arbaugh, 2010; Artino & Stephens, 2009; Camargo et al., 2014; Cao, 2012; McKeown & Anderson, 2016). This extra-disciplinary research also identified different methods and levels of support needed among these different degree level students in the online environment; yet, nursing continues to have the same set of online best practices regardless of degree-level (Artino & Stephens, 2009; McKeown & Anderson, 2016). Nursing-specific investigation into SRL behaviors in

undergraduate and graduate nursing students in online nursing courses was needed to evaluate and inform student-centered online learning, teaching, and course development practices.

## Statement of Problem

New graduate nurses are ill prepared to enter practice. As mentioned above, prior to the pandemic, 77% of new graduates failed to meet practice competencies (Kinyon et al., 2021). Patient populations in acute care today are sicker and discharged after less time in the hospital; these new nurses have difficulty caring for them competently (Kavanagh & Szweda, 2017). New graduate nurses have many challenges transitioning onto practice in a post pandemic healthcare system. New graduates experience difficulty dealing with death, high-acuity care with limited training, difficulty with being short-staffed, lack of support from the healthcare team, uncertainty, vulnerability, anxiety, depression, and posttraumatic stress (Aukerman et al., 2022). Murray et al. (2020) found 65-76% of new graduate nurses were unable to meet entry level clinical judgement skills and most had difficulty translating knowledge and theory into practice. The NCSBN found that less than 50% of employers reported 'yes definitely' to being asked if new graduates were ready to provide safe and effective care (Kinyon et al., 2021). Since the start of the pandemic, many courses in nursing education have moved to a remote, e-learning environment, which currently continues in varying degrees with a large number of programs committing to remaining online indefinitely or continuing to deliver content through e-learning (Schrenk et al., 2021). As remote, e-learning has been relied upon in pre-licensure nursing education, NCLEX-RN pass rates have decreased by 8.39% since 2018 (NCSBN, 2023). There are only generic best practices for the delivery of online nursing courses regardless of degree level. Undergraduate and graduate nursing students have different characteristics, experience, self-regulation, and learning needs that must be evaluated to better inform online nursing education.

## Purpose of Study

The purpose of this study was to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses.

## Research Questions and Hypotheses

This quantitative comparative descriptive study aimed to establish whether a difference existed between undergraduate and graduate nursing students' self-regulated learning behaviors in online nursing courses. The following research questions guided this study:

Q1 What are the differences in task value, self-efficacy, elaboration, and critical thinking self-regulated learning behaviors between traditional undergraduate nursing students compared to traditional graduate nursing students in online nursing courses?

Q2 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across age categories?

Q3 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across healthcare experience categories?

## Rationale and Significance of Study

Nursing education must improve the preparedness of new graduate nurses. E-learning is now a permanent course delivery method in nursing education at all degree levels. Best practices for online nursing education are currently generalized to be used in all online courses regardless of content or learners experience and self-regulating learning needs. However, the broader literature supported that differences existed between undergraduate and graduate learners. The experience level of students in each degree level is very different and these students need specific instruction toward reaching their unique academic goals. Nursing-specific research exploring the differences between undergraduate and graduate online learners was scant. The current best practices did not address the differences between these degree levels' unique learning needs and

faculty lacked sufficient support applying best practices tailored to their students' learning needs. This study examined and compared traditional undergraduate and traditional graduate nursing students' self-regulating behaviors in online nursing courses to determine if these differences were significant. This research helped determine if the current best practices for online nursing education were similarly effective for courses in all degree levels and helped inform nursing curricula of specific degree level learner needs in online courses.

## Theoretical Framework: Constructivism

The theoretical framework for this study was constructivism. Constructivism is an educational theory that describes the relationship between the learner and the content being learned (Weimer, 2013). Constructivism theorizes that knowledge cannot be passively given to students; instead, learners must actively construct new ideas or concepts based on their current or past knowledge (Hunt, 2018). The learner positions new knowledge so it connects with previous knowledge and experiences that are known and make sense to the learner (Weimer, 2013). This theory supports learner-centered teaching approaches. The educator plays the role of facilitator of learning rather than the center of dispensing knowledge (Kala et al., 2010). Faculty must facilitate opportunities that encourage and support the building of understanding in the learner and promote an active learning environment (Kala et al., 2010). Constructivist approaches support e-learning in nursing education, which is a natural learner-centered modality (Kala et al., 2010). Active learning activities that foster content integration and new knowledge connection development that integrates prior knowledge and validates current knowledge are easily suited to online nursing education (Kala et al., 2010).

This theory was used as a lens with which to view undergraduate and graduate online nursing education in this study. These different degree level students are constructing new

knowledge in a similar fashion; however, the type of knowledge differs. Traditional undergraduate nursing students are constructing foundational concepts and skills of the nursing discipline upon prior knowledge from high school sciences and life experiences. Foundational concepts are more challenging to learn in the online environment due to the limitations of not being able to interact with the environment. In contrast, traditional graduate nursing students are constructing new advanced nursing knowledge upon previously learned foundational and practice knowledge and experiences. This researcher believed that with this previous experienced nursing knowledge base, construction of advanced nursing concepts was more conducive and better facilitated in the online platform for graduate learners. The difference between the types of knowledge being constructed by these different groups of students should correlate with distinct learner needs within online nursing education. This study explored these individual group learning needs through a constructivist theoretical framework.

## Overview of Research Approach and Design

The research design for this study was comparative descriptive. The purpose of this design was to describe and compare the variables among two groups (Gray et al., 2017). Within this design, data collection occurred within the same time frame, in a natural setting, relating to the incidence of a phenomenon of interest and its characteristics (Gray et al., 2017). This design did not have an intervention and did not predict outcomes; it only described them (Gray et al., 2017). Comparative descriptive designs normally have predominantly descriptive or inferential statistics. (Gray et al., 2017). This study aimed to explore and compare the differences in self-regulated learning behaviors of undergraduate and graduate nursing students in online nursing courses. This aim aligned well with the comparative descriptive research design in that it described self-regulated learning behaviors in both groups and compared these behavior

differences between the groups. An intervention was not used during this study and the statistical analysis did not predict an outcome. Inferential statistics were used during data analysis. The comparative descriptive design was most appropriate for this study.

## Methods

The design of this study was quantitative comparative descriptive. The setting for this study was across the United States and sample recruitment method was through multiple online groups. An electronic 32-item survey developed by Artino and Stephens (2009) was used as the primary instrument for data collection. The study had two independent variables (traditional undergraduate and traditional graduate nursing students) and one dependent variable (self-regulated learning behavior). The survey instrument obtained data for each of the independent and dependent variables. The survey was entered into Qualtrics® and data were analyzed in Statistical Package for the Social Sciences (SPSS). Descriptive and inferential statistics were completed to analyze the data using SPSS to answer each research question.

## Researcher Perspectives and Assumptions

The pandemic has made online nursing education a permanent content delivery modality at all degree levels. The effectiveness of online nursing education is paramount to producing safe, competent, knowledgeable nurses. Assuming differences exist between traditional undergraduate and traditional graduate nursing students learning needs, this was not reflected in how content was delivered in the online platform between these two groups. Quality of online nursing education was of the utmost importance to this researcher. Given the current lack of attention to best practices for online teaching tailored to these unique degree level needs, there was a need for nursing specific research on this topic. Being an educator of traditional undergraduate nursing students and being in the process of completing an online advanced

nursing degree has motivated interest in exploring the differences between these two groups. The goal of this researcher was to have significant data to inform a change in best practices for online nursing education.

## Definition of Terms

**Online Course.** A course given fully using computer technologies and the internet without any in-person component. This might be delivered in asynchronous, synchronous, or blended formats.

**Self-Regulated Learning (SRL).** A cyclical process where the student plans the material to learn by using strategies that have worked in the past, uses similar techniques to monitor their own progress, reflects on their performance, and finally returns to plan their next lesson by using the information gained through this learning experience (Pintrich, 2004). This differs from self-directed learning, which is a process through which individuals take initiative regarding their learning without assistance from others (Chen et al., 2019). This study did not address self-directed learning.

**Traditional Graduate Nursing Student**. A nursing student who has already earned their registered nurse (RN) nursing license enrolled in a master's or doctoral program in nursing.

**Traditional Undergraduate Nursing Student**. A pre-licensure nursing student currently enrolled in a baccalaureate nursing program.

## Summary

This chapter provided an introduction, statement of the problem, research questions and hypotheses, rationale and significance, theoretical framework, overview of research approach and design, methods, researcher perspectives and assumptions, and definition of terms for this

study. To summarize, preparation of new graduate nurses is more important now than ever given the current state of health care. The pandemic has caused online nursing education to be a permanent content delivery modality across all degree programs. Best practices for e-learning only address course organization, instructional materials, learning activities and interaction, course technology, learner support, and accessibility and visibility and have no regard for the unique learner needs of different degree levels. Online learning success could be determined by how well students are able to self-regulate their learning; however, these behaviors have rarely been measured and compared in nursing students of different degree levels taking online nursing courses. Constructivism was used as a theoretical framework to support the differences in how students in these groups constructed different types of knowledge in the online platform. This comparative descriptive study aimed to explore and compare the differences in self-regulated learning behaviors of undergraduate and graduate nursing students in online nursing courses. The following chapter provides a synthesis of the literature on previous research and theory supporting this phenomenon.

# CHAPTER II

# LITERATURE REVIEW

This chapter explores what is known about the theories of constructivism and andragogy, self-regulated learning, and undergraduate versus graduate learning broadly and in nursing education. The purpose of this study was to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses. To inform the study and to be sure the results of the study contributed new knowledge to the body of nursing education, a literature review was conducted. This chapter first discusses the findings of that review and then discusses self-regulated learning (SRL) and its theoretical frameworks, how it has been used in nursing education, and what is known about the differences between graduate and undergraduate learning. Finally, the gap in the literature is described.

## Literature Review of Research Questions

A thorough literature review was conducted in 2022-2023. Medical subject headings of "distance education," "nursing students," and "education, nursing, graduate" were searched in combination with "self-regulated learning," "andragogy," and "adult learning theory" in PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), APA PsychInfo, Google Scholar, and ERIC databases. A date range of 2016-2023 was used. The dates were expanded after an initial search to 2004-2023. Publications not written or translated into English were excluded from the search. Hand searches of reference lists were also conducted. An academic librarian was consulted to assist with the search to try to ensure all potential articles

were captured. These searches returned 82 articles, book chapters, and dissertations, of which 26 were included in this chapter, while the other 56 were excluded for not meeting inclusion criteria or relevance to this study. Three of these articles were from nursing and spoke to comparing or describing undergraduate and graduate learning in the online environment.

## Self-Regulated Learning

Self-regulated learning (SRL) is defined as a cyclical process where the student plans the material to learn by using strategies that have worked in the past, uses similar techniques to monitor their own progress, reflects on their performance, and finally returns to plan their next lesson by using the information gained through this learning experience (Pintrich, 2004). A learner's SRL ability is regulated by the prefrontal cortex and anterior cingulate cortex, which develops over time from childhood into young adulthood (Ormrod et al., 2020). These two areas within the brain gradually gain control over several centers in the midbrain, including the amygdala, that control emotions during normal brain development (Ormrod et al., 2020). Traditional undergraduate students, aged 18-22, are still developing these areas of the brain, which are linked to their ability to regulate behaviors, emotions, and cognitive processes along with variations of temperament known as effortful control; all are needed for SRL (Ormrod et al., 2020). Allowing for differences in effortful control, personality traits, and differences in learned study behaviors, traditional undergraduate students might have increased needs for guidance and support with their SRL related to their ongoing brain development (Ormrod et al., 2020). The different SRL models address this variance.

Several models of SRL have been developed and used in education and research: Zimmerman, Pintrich, Boekaerts, Winne, Efklides, and Hadwin et al. (Panadero, 2017). Each model explored SRL in different contexts and with different measurement tools. Zimmerman

developed three models for SRL from a socio-cognitive perspective including the cyclical phases model that described forethought, performance, and self-reflection as an SRL cycle (Panadero, 2017). Pintrich examined the influence of motivation in successful SRL and developed a questionnaire for its measurement (Panadero, 2017).

Boekaerts (as cited in Panadero, 2017) developed two SRL models including the model of adaptable learning, which describes two processing modes; a coping or well-being mode and a learning or mastery mode, considering emotions of completing learning tasks based on functioning within these two modes. Winne (as cited in Panadero, 2017) explored SRL through metacognitive processes, whereby studying is influenced by SRL in a four-phase feedback loop: task definition, goal setting and planning, enacting study tactics and strategies, and metacognitively adapting studying. Efklides (as cited in Panadero, 2017) developed the metacognitive and affective model of self-regulation learning model, which combined conventional SRL models with metacognition. Hadwin et al. (as cited in Panadero, 2017) produced their model from a collaborative learning context where self-regulation, co-regulation, and shared regulation were used in group learning. Pintrich (2004) and Boekaerts et al.'s (2012) models are investigated further for the purposes of this study.

According to Pintrich (2004), SRL makes four assumptions: learners are active in the learning process; learners can monitor, control and regulate certain aspects of their cognition, motivation, and behavior; they set learning goals and are able to monitor and adapt to meet these goals; and finally, learner's self-regulation can mediate the relationship among learner, context, and eventual achievement. Based on these assumptions, SRL is organized into four phases: phase one of planning and goal setting, and activation of perceptions, knowledge, and context of the task; phase two of metacognitive processes awareness and monitoring of different details of the

task, self, or context; phase three in which control and regulation occur of the task, self, or context; and finally, phase four where there is reflection and reaction of the task, process, self, or context (Pintrich, 2004). Within this self-regulatory process, there can be regulation of motivation, behavior, context, and cognition separately as well as overall (Pintrich, 2004). All these self-regulatory processes are needed for effective online learning (Ormrod et al., 2020).

Boekaerts et al.'s (2012) dual processing model describes the conflicting SRL pathways students could engage in that guide their behavior, expand one's knowledge and skills, protect one's commitment to the learning activity, and prevent threat and harm to the self. This model explains how possible barriers affect self-regulation during the course of the learning process or timeframe. As students receive tasks or assignments to complete for their learning, their perception of how the task would affect their psyche either triggers them to view it as a threat to their well-being, which would lead them to protect their ego from damage and move to the well-being pathway, or views it as being aligned with their goals causing them to desire augmenting their competence which would lead them to the mastery/growth pathway (Panadero, 2017). These pathways are not exclusive and students might start on one but then move to the other if they are triggered by negative or positive cognitions and emotions (Panadero, 2017). For example, if a student would receive instruction for a large project and get overwhelmed at first, they might start going down the well-being pathway by procrastinating; if sometime later they would receive clarification and support from faculty for the project, they might suddenly feel positive emotions and perceive they might indeed be successful, causing them to change toward the mastery/growth pathway and actively work to complete the project. This SRL model could help educators and learners understand factors affecting motivation for learning.

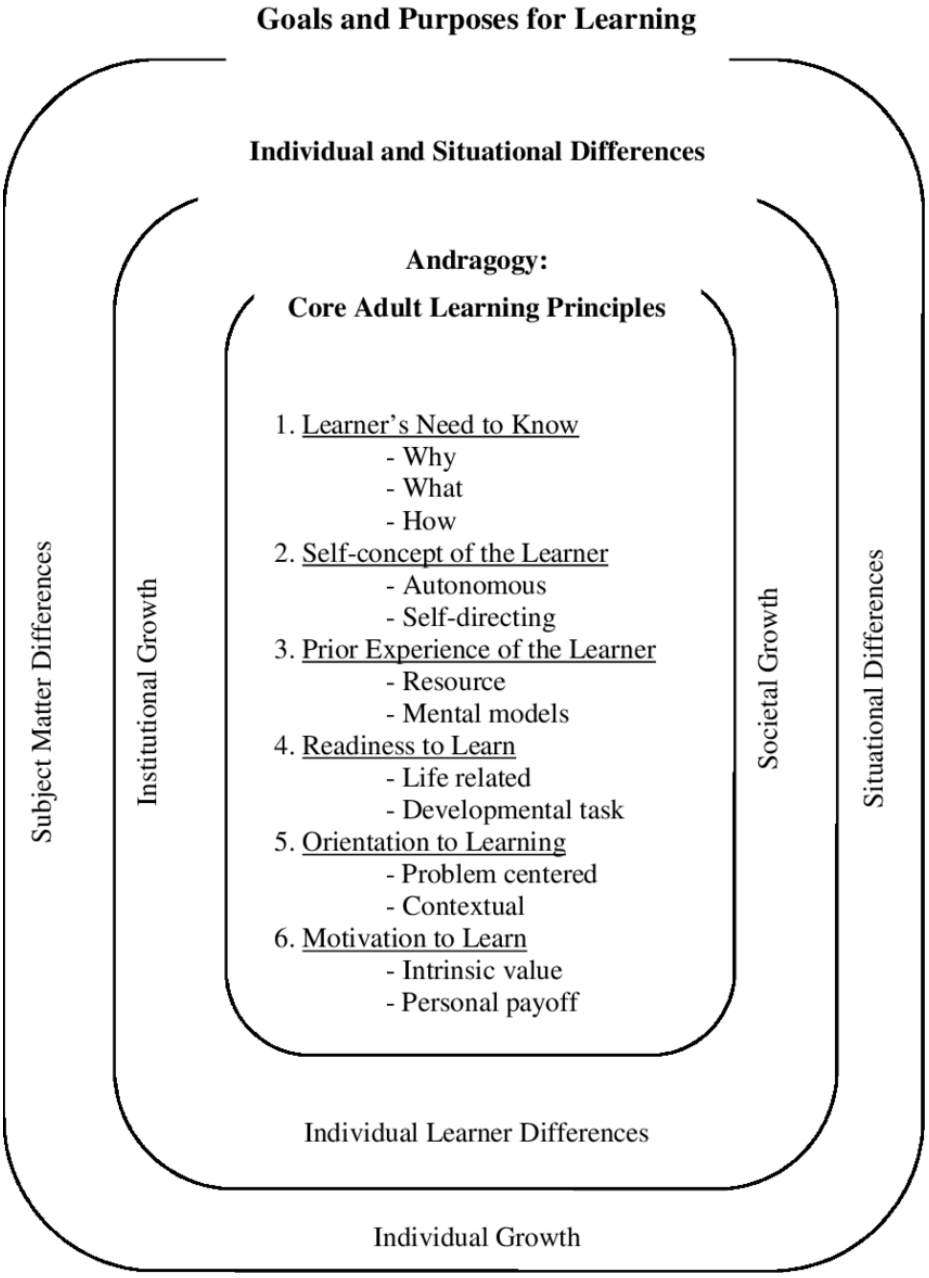
## Theoretical Framework for Self-Regulated Learning

### *Andragogy*

Adult learning theory or andragogy, first described by Knowles (1978), posits that all adult learning is similar, self-disciplined, and self-motivated. The purpose of andragogy is to explain how adult learning is different from child education or 'conventional learning' (Knowles, 1978). It proposes that adults have different needs when it comes to learning. An 'adult' in this theory is described as someone belonging to any of the last three stages of Erikson's stages of psychological development: stage six young adulthood, stage seven adulthood, and stage eight old age (Knowles et al., 2020; Ormrod et al., 2020). For the purposes of this study, adulthood is defined as age greater than or equal to 18 years. Traditional teaching methods often are not congruent with how adults learn. The outcome of andragogy is to understand adult learning and use this understanding to implement techniques that work for adult learners. The theory is not nursing specific but it impacts nursing education; nursing is taught to adult learners and the methods of teaching that content is supported by andragogy. At the time that Knowles initially articulated his theory in the 1970s, the belief was adults learn the same way as children. Knowles believed adults learn differently. He stated, "They had theories about the *ends* of adult education but not about the *means* of adult learning" (para. 2). These two purposes—understanding adult education and using it to implement teaching methods that work for adult learners—could be identified in the theory. The theory is useful as long as there are adults who are learning and teachers of adults who are teaching. There does not seem to be an end point unless there are no longer adults who are learning and teaching. The theory is useful in all adult education about any subject or discipline (Knowles et al., 2020; see Figure 1).

**Figure 1**

*Model of Andragogy Learning Theory*




*Note.* Andragogy in practice model. From Knowles, M. S., Holton III, E. F., & Swanson, R. A. (2020). *The adult learner: The definitive classic in adult education and human resource developmen*t, p. 6, Taylor and Francis Group. Reprinted with permission (see Appendix A).

**Major Concepts and Definitions of Andragogy.** The major concepts identified in the theory are adults and learning or education. The sub-concepts for each of the major concepts are self-directed, experience, and internal motivation for adults and problem-centered for learning. The scope of these concepts is to understand how adults think about learning and the differences of how they learn when compared to conventional learning (Knowles, 1978; Knowles et al., 2020). The definitions of the concepts are either described or implied. The theory does not specifically define an adult but it is implied that an adult is not a child. The definition of an adult in the United States at the time of the writing of this theory was any person 18 years or older (Law Reform Commission, 1977). The definition of the concept of learning is also not defined in the theory; however, the implication is understanding new information. The sub-concept of self-directed is also not defined within the theory. Its definition is understood as meaning the direction of learning comes from the learner because he or she sets the subjects that would be studied. The sub concept of experience is partially implied and defined as being the knowledge one gains through the events in one's life in which meaning and reality have been attributed, where the person is an active participant (Knowles, 1978; Knowles et al., 2020). The internal motivation sub-concept is defined as personal needs and interests that are satisfied by learning (Knowles, 1978). The sub-concept of problem-centered learning happens because adults are motivated to learn in order to deal with an issue or problem of immediate concern (Merriam & Bierema, 2014). These are the definitions of each of the concepts and sub-concepts of the theory.

**Assumptions of Andragogy.** The assumptions of this theory are very clearly stated. The theory is, in fact, related through six assumptions: (a) "Adults need to know the reason for learning something," (b) "As a person matures, his or her self-concept moves from a dependent personality to one of a self-directing human being," (c) "An adult accumulates a growing

reservoir of experience, which is a rich resource for learning," (d) "The readiness of an adult to learn is closely related to the developmental tasks of his or her social role," (e) "There is a change in time perspective as people mature—from future application of knowledge to immediacy of application. Thus, an adult is more problem-centered than subject centered in learning" and (f) "Adults are mostly driven by internal motivation, rather than external motivators" (Merriam & Bierema, 2014, p. 47).

These assumptions imply that all adults are the same and share each of these things in common. These are factual assumptions. Knowles (1978) valued information about the nature of adult learning. By understanding this nature, one can apply it to teaching styles, activities, and techniques that could make education for adults more effective.

**Critique of Andragogy**. The concepts are concrete and easy to understand. The theory can be generalized to a large population. Each of them is important to the overall purpose of the theory. These concepts have been formulated from other theories and writings (Knowles, 1978; Knowles et al., 2020). The sub-concept of internal motivation is more qualitative than the others. It is difficult to measure internal motivation and it therefore can only be described by the person experiencing it. Even with this more abstract sub-concept, the concepts relate to each other well, sending an understandable message. Each sub-concept describes the concepts from different angles, thus leading to a better, more holistic understanding of the theory.

Although andragogy has been used extensively in nursing education, it historically was argued by interdisciplinary scholars. They stated that separating andragogy and pedagogy was doing a disservice to students (Darbyshire, 1993). Darbyshire (1993) and Hartree (1984) argued that pedagogical practices could promote problem-based, self-directed, independent learning such as andragogy describes. Darbyshire proposed that nurse educators must embrace the caring

pedagogy by delving into the nature and meaning of teaching and learning, capitalizing on the lived experience of educators and students rather than selecting various teaching and learning techniques that would support students in their learning such as andragogy suggested. Merriam (2001) also criticized andragogy for focusing too much on the individual learner while ignoring the sociohistorical context in which learning occurs. Blondy (2007) alternately argued that andragogical assumptions helped faculty understand the realities of adult learners while developing online courses that took learners' needs, backgrounds, characteristics, and expectations into account for their success. Taylor and Kroth (2009) had conflicting critique, stating that andragogy should be classified as a model of assumptions about learning or a conceptual framework that serves as a basis for a theory rather than a theory itself. They had confusion over which procedures constituted andragogical practice and that characteristics described as 'adult' were not only found in adults (Taylor & Kroth, 2009). Andragogy was also criticized for lacking a way to be empirically tested (Taylor & Kroth, 2009). Loeng (2018) argued that the theory was welcomed when it was developed; however, it had a weak empirical basis and ignored the relationship between the individual learner and society by not taking into account how factors such as privilege or suppression influenced learning.

Self-motivation was ignored in these arguments. Current undergraduate and graduate nursing students are products of the world around them, which shaped their motivation to learn nursing and what was important for them to know in the delivery of nursing care to a very complex, post-pandemic healthcare system. This internal motivation was key to driving their studies, their resilience in the face of challenges, and their drive to be nursing change agents. Andragogy supported and described this motivational outlook that fueled nursing students' educational goals.

**Andragogy Use in Nursing Education**. Andragogy is a useful theory to all nurse faculty from undergraduate to post-doctoral education. It applies to all adult students and faculty. It creates an understanding that is important to nursing education. The theory's concepts, definitions, purposes, and assumptions are grounded in the practice of nursing education as well as all adult education. It has, and will continue to have, a practical value for all nursing students and faculty.

Decelle (2016) described andragogy as fundamental for online nursing education. Online nursing education was originally designed for mature nursing students who were self-directed, self-motivated, and non-traditional adult learners. This online environment that nursing faculty develop and facilitate must encourage students to critically reflect on content and problem-solve collaboratively with peers, which directly speaks to andragogy (Decelle, 2016). Andragogy is the linchpin for learner-centered online education.

The theory of andragogy supports self-regulated learning in all degree levels of higher education. Traditional undergraduates have some unique characteristics that do not meet these assumptions of andragogy or only partially meet them. These traditional undergraduate students, mostly consisting of ages 18 to 22, are new to being adults and might have immature tendencies related to continuing brain development (Ormrod et al., 2020). They might not be significantly self-disciplined or motivated relating to their life experiences and situation. As a result, faculty who base their teaching methods on andragogy might not fully meet their students' learning needs. Cadet's (2021) literature review of nursing students' learning characteristics supported this claim and found that andragogy might not be ideal for all nursing students in the online setting and pedagogical techniques might be needed for some. Further research found differences existed in learning characteristics related to age, culture, and previous student experience, which

might affect whether andragogical techniques would be effective; faculty must evaluate these student characteristics to determine if online learning, based on andragogy, is a good fit (Cadet, 2021; Norrie & Dalby, 2007). Crookes et al. (2013) also conducted a literature review investigating teaching techniques based on andragogy for student nurses and found that online teaching techniques had the potential to foster learning that was relatable to real life problems. Similarly, Draganov et al. (2013) reviewed 51 nursing studies and found that andragogy supported continuing education and professional training in nursing. The importance of previous experience when learning nursing is pivotal to andragogy; traditional undergraduate nursing students could have limited healthcare experience and, therefore, have difficulty using andragogical techniques.

Andragogy has been widely used as a theoretical framework to develop and implement nursing education teaching methods. Several examples are cited here but this list was not intended to be exhaustive. Nguyen et al. (2016) used the theory to develop an arts-based learning method to teach nursing theory to undergraduate students. Activities were designed to provide a link between theory and practice, which prompted students' intrinsic learning motivation (Nguyen et al., 2016). Barbour and Schuessler (2019) used andragogy as a framework to guide the implementation of a flipped classroom technique in nursing education to promote critical thinking and clinical judgement. Huun et al. (2021) similarly used the theory to develop individualized pathways to transition licensed practical nurses to the Bachelor of Science in Nursing (BSN). They found andragogy supported creating self-paced, individualized educational routes that were able to focus on diversity, equity, and inclusion to best address student needs (Huun et al., 2021). These andragogical methods were designed to align with students' previous learning (Huun et al., 2021). Sibrian et al. (2022) similarly used andragogy as a framework for

developing a virtual new graduate program for use during and post-COVID-19 pandemic. Andragogy supported virtual education strategies that could be applied to a post-pandemic nursing educational system (Sibrian et al., 2022). McAtee (2023) also used andragogy as a theoretical framework when conducting a qualitative study on the preferred instructional methods of millennial nursing students—those born between 1980 and 2000. Results showed millennials preferred a mix of andragogical methods and non-andragogical methods such as traditional in-person lectures (McAtee, 2023). These studies and reports of teaching methods supported the idea that the theory of andragogy could be used as a basis for online and classroom self-regulated learning. Comparing undergraduate and graduate self-regulated learning, as this study proposed, would shed light on whether these andragogical strategies were most effective when used similarly in these two populations.

**Self-Regulated Learning Research**

Self-regulated learning has been conducted in various disciplines including nursing. Assessment of SRL ability and characteristics in e-learning and face-to-face modalities on higher education students has been a popular topic of research. The main themes for this SRL research were to evaluate the SRL functionality and strategies for success in the classroom and clinical environments. The aim of this research was to inform educators on how important SRL is and to scaffold or model SRL strategies to undergraduate students to assist with their academic achievement.

Yen et al. (2018) explored how SRL framework could be serviceable in the online learning environment. They developed a framework for SRL emphasizing eight features that facilitated and supported SRL skills for students: learning plan, records/e-portfolio and sharing, evaluation, human feedback, machine feedback, visualization of goals/procedures/concepts,

scaffolding, and agents (Yen et al., 2018). The authors emphasized building these features into online platforms to help with student success. The article connected the importance of SRL strategy use for students in the online environment.

### *Self-Regulated Learning of Nursing Students in the Didactic Setting*

Chen et al. (2019) conducted a cross-sectional and correlational study on SRL, metacognitive ability, and general self-efficacy on 199 second- and third-year undergraduate nursing students at a university in China. They found these students had moderate levels of self-regulated learning and metacognitive ability with low levels of general self-efficacy. Results showed the third-year students had lower general self-efficacy scores than second-year students, suggesting possible increased stress and subject exhaustion in more advanced undergraduate courses. Third-year students also had higher SRL scores than their second-year counterparts, suggesting the students learned more self-regulation strategies as they advanced through the program. Positive relationships were found overall among self-regulated learning, metacognitive ability, and general self-efficacy.

An et al. (2022) compared the effects of augmented reality (AR) as a learning method versus textbook conventional method requiring undergraduate nursing students to have a high level of self-regulated learning in a piloted randomized controlled trial. Sixty-two students from two universities in Korea were evaluated with self-reported questionnaires and pre-and posttests. Results showed the textbook group helped improve SRL competency superiorly compared to the AR group. The researchers expressed limitations with the length of the study, device, and high-speed internet access for students in the AR group, which might have led to decreased SRL competency. These results aligned with previous research (Arbaugh, 2010; Artino & Stephens, 2009; Billings et al., 2005; McKeown & Anderson, 2016) showing that undergraduate students

needed more connection with faculty and peers to help support their development and use of SRL strategies in the online environment. Similarly, a mixed-method study conducted by Yoo and Jung (2022) showed the importance of teaching SRL and presence for Korean undergraduate student satisfaction in the digital platform. Specific teaching methods were found to be needed for nursing students online. Use of teaching strategies on presence and SRL was found to promote comprehension and in-depth understanding among students (Yoo & Jung, 2022). Results of these studies showed that undergraduate nursing students benefited from faculty support and scaffolding to increase use of SRL strategies and success in the online environment.

### *Self-Regulated Learning of Nursing Students in the Clinical Setting*

Several studies also evaluated SRL in the clinical environment for nursing students and practicing nurses. In 2004, Kuiper and Pesut conducted an integrative review investigating how successful promoting of cognitive and metacognitive reflective reasoning skills using SRL could be used in the clinical setting. Literature showed that critical thinking could be developed through safe, sound self-regulatory judgements. The use of self-regulation learning prompts supported the development of metacognitive insights and strengthened the application of critical thinking and reflective thinking in clinical reasoning contexts (Kuiper & Pesut, 2004).

In 2010, Kuiper et al. also executed a descriptive study using narrative analysis of reflective journaling for 26 senior undergraduate nursing students in their clinical practicum experience. The students were split into two groups, one group having a 60-hour practicum experience and the other having a 120-hour practicum experience. The 120-hour group showed more frequent use of metacognitive self-evaluation strategies, suggesting greater practice hours might promote self-regulation with higher-level thinking, leading to higher levels of competence, self-direction, and self-efficacy (Kuiper et al., 2010). These results showed that more practice

and application of SRL skills helped students develop critical and reflective thinking skills required in the clinical setting.

In 2018, Iyama and Maeda developed and tested a self-regulated learning scale in clinical practice for nursing students (SRLS-CNP). This tool was tested on 376 second through fourth year undergraduate nursing students in Japan. The instrument was organized into motivation and learning strategies subscales. The Cronbach's α for the instrument was 0.853 with all factors having adequate internal consistency (Iyama & Maeda, 2018). The tool was deemed to have good reliability and validity.

In 2022, Kurt and Eskimez used the SRLS-CNP in a descriptive cross-sectional study aimed at examining self-regulated learning in clinical practice and its influencing factors on undergraduate nursing students. The sample consisted of 614 first through fourth year undergraduate nursing students at one university in Turkey. Results showed the SRL-CNP in clinical practice was higher in females, first year students, and students interested in their major. The results were similar to Chen et al.'s (2019) findings of motivation and self-efficacy decreasing with advancing in the undergraduate program. The researchers recommended providing students in advanced undergraduate nursing courses with skills to cope with difficulties, only giving responsibilities to match their capabilities, and providing environments that increased SRL to facilitate learning (Kurt & Eskimez, 2022). To increase SRL skills for students, faculty must be role models that convey experiences and clinical practices in a positive manner, support them during skill application, and give them encouragement (Kurt & Eskimez, 2022).

Dogu et al. (2022) also investigated the relationship between SRL in clinical practice with the SRLS-CNP and a self-efficacy scale. They performed a descriptive, cross-sectional

study of 417 second through fourth year undergraduate nursing students in Turkey. Results showed nursing students had high levels of SRL and moderate levels of self-efficacy. Dogu et al. found differing results from Chen et al. (2019) and Kurt and Eskimez (2022) where SRL levels positively correlated with self-efficacy scores in both didactic and clinical settings. Researchers suggested that helping students develop their SRL skills would help elevate clinical practice performance and self-efficacy levels.

### *Summary of Self-Regulated Learning Research in Nursing Settings*

Self-regulated learning has been researched in didactic, online, and clinical nursing settings. Self-regulated learning skills are important for both undergraduate nursing students and practicing nurses. Faculty must incorporate scaffolding and support for the increased development of these skills. These studies showed that increased levels of SRL improved critical thinking, critical reflection, and academic success. Self-regulated learning has not been explored in the literature for the online environment between undergraduate and graduate nursing students. The next section addresses what is known about undergraduate versus graduate learning.

## Undergraduate Versus Graduate Learning

### Degree Level Comparisons in Nursing

Few studies have explored the difference between undergraduate and graduate online learning. There are even fewer nursing specific studies on the subject with the literature review identifying one published research study and two descriptions of teaching methods articles. Billings et al. (2005) investigated generational differences of nursing undergraduate and graduate perceptions of their online learning experiences. They evaluated 558 students from five different degree levels from six different institutions using the Evaluating Educational Uses of the Web in Nursing tool to measure student's perceptions of use of technology, educational practices,

outcomes, and student support. Findings showed that educators needed to better understand students from different generations, that there was an imbalance between student expectations of what the educational environment would be compared to reality, a variety of instructional strategies should be used to accommodate these different learners, and there was continued need for further research regarding educational practices in web-based nursing courses.

Best practices in teaching similar courses at different degree levels have not been investigated. Individual studies have taken place with regard to teaching pharmacology to undergraduate nursing students and to graduate nursing students. Gill et al. (2019) conducted a systematic review of best practices in teaching pharmacology undergraduate nursing students. Of the 20 studies evaluated, results showed that online, simulation, and integrated methods of teaching were most effective compared to traditional lecture, problem-based learning, and flipped classroom methods (Gill et al., 2019). In comparison, Bata-Jones and Avery (2004) reviewed a comparison of web-based versus face-to-face teaching methods to graduate nursing student in an advanced pharmacology course. Results showed no significant difference with either method of teaching advanced pharmacology (Bata-Jones & Avery, 2004). The results of this older study emphasized that there were differences in achieving learning outcomes when comparing adults with topic experience versus adults with no experience in terms of the teaching methods used, as was true for undergraduate students versus graduate students.

**Outside of Nursing Comparisons**

Several other disciplines studied differences in undergraduate versus graduate learning behaviors in online and face-to-face environments. Holzweiss et al. (2014) studied graduate students' perceptions of online learning. They found master's students preferred a deeper level of learning and required more instructional forethought and planning. They preferred

constructivism learning theory methods. McKeown and Anderson (2016) found undergraduates focused on foundational content learning in the general curriculum whereas graduates focused on advanced content and skill development for specific professional fields. Graduate students felt peer online relationships and a sense of online community were very important and showed differences in undergraduate versus graduate online learning. Their findings revealed that undergraduates needed more variety to cater to different learning styles compared to graduates. The comfort with technology-based learning increased as students went from undergraduate to graduate studies. They discovered the phrase 'one size fits all platforms' to be false and different degree level students needed different levels of support with online platforms (McKeown & Anderson, 2016).

Similarly, Arbaugh (2010) performed a literature review exploring differences between undergraduate and Master of Business Administration students. Findings showed that because undergraduates differed in age, maturity, self-discipline, and work experience, their behavior was more peer driven. Differences in undergraduate learning styles were more likely to predict course outcomes. Undergraduates needed more instructor feedback, increased variety in their activities, content repository was important, and they could be less successful in online courses than face-to-face. By comparison, graduate students' behavior was more self-motivated and disciplined. Graduates valued student to student interactions more than student to instructor, they valued communication of elements of course management systems, and they benefitted from more blended learning environments.

Cao (2012) conducted a study looking at procrastination and self-regulation in undergraduate versus graduate education students. Sixty-six undergraduates were compared with 68 graduates when filling out questionnaires self-evaluating their procrastination and self-

regulation (Cao, 2012). Results showed that procrastination was supported by student beliefs across both degree levels, age negatively correlated with procrastination in undergraduate students but did not in graduates, and procrastination negatively impacted mastery-goal approaches, or goals set to achieve mastery of content, in graduate students but not in undergraduate students. This supported the andragogical idea that inexperienced undergraduate students were more likely to procrastinate if they did not have the problem-based motivation to learn compared to graduate students. Similarly, Camargo et al. (2014) investigated an e-learning strategy used with undergraduate and graduate dental students. They found graduate students performed better and were more successful with an e-learning strategy compared to undergraduates, supporting the premise that experienced-in-the-field students performed better when they were required to self-regulate in an online platform.

In a study by Artino and Stephens (2009) that measured motivation and self-regulation in online learning by undergraduate and graduate learners, differences between the degree levels were seen. These differences were measured using an adapted version of the Motivated Strategies for Learners Questionnaire and Wolters Self-Report Survey. Results showed graduate students had more adaptive self-regulated learning, greater use of critical thinking strategies, and lower levels of procrastination. Undergraduates were more likely to procrastinate, had greater task value beliefs, and greater motivation to enroll in future online courses. Undergraduate implications were that clear and detailed syllabi and assignment instructions were needed, these learners needed instructors' help with setting challenging goals, and they needed timely, honest, and explicit performance feedback; whereas graduate learners could self-regulate. Dianati et al. (2022) also found that undergraduates' underdeveloped self-regulation processes were a barrier to understanding the benefit of a flipped classroom teaching method when compared to graduate

students. These different degree level students had different evolution of self-regulation, which could be a barrier to the effectiveness of their online learning. In summary, undergraduate students were learning the basic skills of their profession whereas graduate students were learning advanced concepts. Undergraduates needed more instructor support and a variety of instructional strategies compared to graduates. Graduates were more mature and therefore better at self-regulation, ha more problem-based motivation, and were more successful in online education versus undergraduates. More research is needed on this topic, especially in nursing.

## Theoretical Framework

The theoretical framework for this study was constructivism learning theory. The basis for constructivist theory is that learning happens actively and knowledge is constructed through experiencing and reflecting on the experience (Oermann et al., 2018). Learners do not gain knowledge through pre-formed knowledge via transmission from educators or other sources. Instead, learners draw on experience and engagement with social environments where competence must be applied (Weeks et al., 2019). Learning is achieved by building mental structures called *schemata* or units of organized information, which are active mental models and represent generic concepts stored in the memory (Weeks et al., 2019). When new information is encountered, it either supports existing schemata or conflicts with them, forcing reshaping and replacing to accommodate the new concept (Weeks et al., 2019). Constructivist learning environments are student-centered, where educators facilitate the building of knowledge through active learning experiences. The constructivist processes of learning occur in nursing students to different degrees depending upon previous experience with content being taught, suggesting that the more experience with the subject matter the student has, the easier it is to construct new knowledge (Weeks et al., 2019).

Constructivism has been used as a core learning theory in nursing education and research. This theory supported online nursing education. Kala et al. (2010) informed nurse educators on how electronic learning is supported by constructivism and how courses could be developed using this theory to help students acquire knowledge and enhance decision-making skills. They advocated for the use of constructivist theory use in the e-learning environment through personal active involvement and interaction with faculty and peers on this platform. E-learning strategies based on constructivism were found to facilitate students' learning of problem-solving skills that might be used in the clinical environment (Kala et al., 2010). The authors emphasized that educators should design online courses by enhancing active learning, facilitating social interaction, and creating quality learning materials based on constructivism.

Online active learning tools such as virtual simulation (VS) are also supported by constructivism. Dolan et al. (2021) described the evidentiary and theoretical foundations for virtual simulation following the 50% or more use of virtual simulation allowed to replace nursing clinical hours during the COVID-19 pandemic. The authors detailed the limitations of VS including lack of debriefing with academic or clinical faculty and peers, scaffolding, and the amount of time spent in the activity. They identified more research is needed on these limitations, urging educators to evaluate their VS experiences to ensure students' learning needs were being met; synchronous debriefing sessions were recommended to support students' learning based on their individual needs (Dolan et al., 2021). Support was an overarching theme in active learning strategies for undergraduate nursing students in the online environment to facilitate constructing new knowledge due to their lack of work experience in the field.

A knowledge construction in undergraduate nursing students study based on constructivist grounded theory was conducted in South Korea. Lee et al. (2018) conducted a

qualitative study with 16 fourth-year undergraduate nursing student participants. Results showed knowledge building occurred in three processes: connecting with information, deciding to accept information, and building knowledge. Information connection happened by an active decision-making process due to participants not being able to connect with every piece of information in a clear and comprehensive way (Lee et al., 2018). This decision-making process was fueled by five factors: learners' interest, necessity of information, volition to learn, utility of information, and the frequency of information connection (Lee et al., 2018). In the process of building knowledge, the researchers identified differences and levels within its construction: memorization, understanding, synthesizing and applying, and creation. The authors concluded that knowledge acquisition ran continuously and simultaneously, each of the processes influencing the others and combining with previous knowledge and experience to form new knowledge supporting constructivist theory (Lee et al., 2018). This evidence fit well with both constructivism and self-regulated learning in how there are multiple intrinsic factors guiding the construction or lack thereof of new knowledge for undergraduate nursing students.

Constructivist learning approaches have also been studied in graduate nursing education. Moss et al. (2010) analyzed constructivist strategies in a graduate nursing course in a qualitative study. Results showed that learning in graduate education stemmed from the ways in which educators and students formed a unique community of practice. Researchers emphasized that integration of academic and workplace cultures did not occur; instead, a "dialectical synergy was fostered which enabled both groups to draw from each other to sustain development in their respective cultural geographies" (Moss et al., 2010, p. 331). Traditional graduate nursing education where students are mid-career professionals supports learning outcomes through active

discussion and interaction between faculty and peers through constructivist methods (Moss et al., 2010).

A constructivist theoretical framework has also been used by researchers studying practicing nurses' continued education. Stankiewicz et al. (2016) designed a pressure injury recognition and assessment continuing education program based on constructivism. The pressure injury program was developed and administered to 25 staff nurses employed at eight hospitals across Australia. Program evaluation occurred with pre- posttest assessments. Results showed a constructivist-based educational program was effective for improving nursing knowledge and participants had higher post-test scores following the program (Stankiewicz et al., 2016).

In summary, constructivism has been used as a theory to frame research at all levels of higher education. Evidence showed more support is needed for those students who have limited previous work experience and knowledge in nursing. Traditional undergraduates had limited previous experience and knowledge of nursing and, therefore, required more support and scaffolding for constructivist-based approaches to be most successful. Practicing nurses and graduate nursing students had increased nursing experience and could, therefore, construct advanced knowledge more easily than undergraduates. This study explored self-regulated learning behavior differences between traditional undergraduate and traditional graduate nursing students through the lens of constructivism theory.

## Gap in the Literature

A substantial gap existed in the literature of nursing-specific studies to compare SRL behaviors in undergraduate versus graduate nursing students in the online setting. Only one nursing study (Billings et al., 2005) investigated perceptions of undergraduates versus graduates in online learning. The two other nursing articles (Bata-Jones & Avery, 2004; Gill et al., 2019)

explored best practices for teaching pharmacology to undergraduate and graduate students. More nursing research is needed to fully explore the differences in SRL between these two populations in online courses and to better understand whether our best practices for online courses fit both degree level's needs.

## Summary

In summary, the literature showed large gaps in nursing-specific research exploring the differences between undergraduate and graduate online learners. The theory of andragogy did not apply to adult learners of different ages equally. Literature from different disciplines supported that differences exist between undergraduate and graduate learners. Undergraduates show evidence of having a more difficult time constructing new nursing knowledge, being less self-motivated and disciplined than graduates, their behavior is more peer-driven, they are just developing their self-regulation skills, and they need a variety of content delivery to cater to different learning styles. They differ in age, maturity, motivation, work experience, and need to learn foundational knowledge, making it difficult to have the self-regulation needed for fully online courses. Graduates prefer constructivist techniques, are focused on advanced content and skill development within their field, have better developed self-regulation behaviors, value student to student interaction and learning, and are more successful in the online environment. These differences characterize the need for more specified best practices to meet the learning needs of each level. This study aimed to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses.

# CHAPTER III

# METHODOLOGY

The purpose of this study was to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses. This chapter discusses the methods used to conduct this study. Successful online learning requires students to have high levels of self-regulation. Evidence showed that traditional undergraduate and traditional graduate nursing students had differences in their knowledge and ability to use self-regulation. Generic best practices for online courses might not meet the learning needs of these different populations. This study aimed to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses. A comparative descriptive design was used. The study's research participants, methods of data collection, instrumentation, and data analysis are discussed. The following research questions guided this study:

Q1 What are the differences in task value, self-efficacy, elaboration, and critical thinking self-regulated learning behaviors between traditional undergraduate nursing students compared to traditional graduate nursing students in online nursing courses?

Q2 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across age categories?

Q3 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across healthcare experience categories?

## Research Design

The research design used to address the research questions in this study was a quantitative comparative descriptive design. The purpose of this design was to describe and compare the variables among the two populations: traditional undergraduate nursing students and traditional graduate nursing students (Gray et al., 2017). In this type of design, data collection is in a single time frame that relates to these two populations and their self-regulation (Gray et al., 2017). This study did not have an intervention and did not predict outcomes; it only described and compared variables among the two groups. Comparative descriptive designs are normally predominantly descriptive or inferential statistics (Gray et al., 2017). This study used an electronic self-report survey using a Likert scale for data collection from both groups. This numerical data described the participants' self-regulation and demographic data that were analyzed. Cherry and Jacob (2023) described how surveys are a useful method for obtaining demographic information and behavior patterns for a quantitative research methodology. The aim of this study aligned well with the comparative descriptive research design in that it described self-regulated learning behaviors in both groups and compared these behavior differences between the groups. Since an intervention was not used in this study, this design fit well with its purpose. Finally, this design allowed for the research questions to be answered.

## Research Participants

This study's research participants were traditional undergraduate nursing students and traditional graduate nursing students in online nursing courses. The following describes inclusion and exclusion criteria for participants.

**Inclusion Criteria**

Participants were divided into two groups in the study: traditional undergraduate nursing students (Group One) and traditional graduate nursing students (Group Two). Participants were included in Group One if they were a traditional undergraduate, pre-licensure nursing student, at least 18 years of age, and enrolled in an accredited baccalaureate nursing program in the United States. These students needed to be enrolled in at least one fully online nursing course at the time of the study.

Group Two included traditional graduate nursing students who were enrolled in a Master of Science in Nursing (MSN), advanced practice registered nurse (APRN), Doctor of Nursing Practice (DNP), Doctor of Education in nursing, or a Doctor of Philosophy in nursing program in the United States and enrolled in at least one fully online nursing course at the time of the study.

**Exclusion Criteria**

Participants were excluded if they were under 18 years of age. Exclusion for Group One were those who are enrolled in a post-licensure registered nurse to BSN program or enrolled in an associate degree nursing program as these students tended to be demographically different from traditional BSN students. Associate degree nursing students are usually older, financially independent, have workforce experience, and are married or have children compared to traditional BSN students (Sabio, 2019). Sabio (2019) reported that 63% of associate degree nursing students were over the age of 25 years, 60% were financially independent of their parents, about 33% worked full time, and might be married or have children. Self-regulated learning skills and behaviors were shown to be more advanced in those who were older and had more life or work experience (Camargo et al., 2014; Cao, 2012). This study aimed to investigate the traditional BSN student, who was generally younger and had little or no work experience in

the field of nursing, to evaluate their SRL skills and behaviors in an online course. Associate degree nursing students did not fit this demographic and were excluded from Group One in this study.

Exclusion for Group Two included those participants who were enrolled in a baccalaureate to graduate bridge program where students were on a continual track from baccalaureate to graduate studies without graduating after obtaining their baccalaureate degree and working in the nursing field prior to enrolling in a graduate nursing program. Students from either group who were in a blended or hybrid online course with an in-person, face-to-face component were also excluded from this study. Participants who were not able to read or write in English or not enrolled in an accredited graduate nursing program in the United States were excluded from this study.

## Setting

This study took place in traditional undergraduate and traditional graduate nursing programs across the United States. Participants were recruited through electronic methods.

## Sample Recruitment

Traditional undergraduate and traditional graduate nursing students enrolled in a fully online nursing course were recruited using various electronic methods. The primary recruitment method was through postings on several Facebook groups, the National League for Nurses (NLN) research participant recruitment request posting, American Association of Colleges of Nursing (AACN) list serve, and the Sigma Theta Tau nursing honor society (The Circle) discussion forum (see Appendix B for posting). Facebook group Everything Nursing-Nurses and Nursing Students is a public group of about 4,800 members primarily composed of nurses and nursing students.  Facebook group Nurses and Nurse Educators Supporting Nursing Students is

another public Facebook group composed of over 4,500 members of nurses, nurse educators, and nursing students from various programs and was used to reach both traditional and graduate nursing students. The AACN connect community online forum consists of almost 42,000 members of nurses, nurse educators, faculty, and deans. Their help was needed in reaching nurses and nursing educators who were enrolled or taught in the target programs. The nursing honor society's (Sigma Theta Tau) website also had an online community discussion forum known as The Circle. This online forum consists of more than 100,000 members who are nurses or nursing students and could reach the targeted population for this study. The NLN also allowed posts for research participant recruitment on their online forum and is composed of over 45,000 nurse educators and scholars. Posting on this forum helped target Group Two, the traditional graduate nursing students for this study.

A significant number of participants were not recruited using the above methods; therefore, a Facebook group called Teachers Transforming Nursing Education with over 16,000 members was used as a secondary method of recruiting participants. This group is primarily composed of nursing educators teaching in various nursing programs. Nurse educators in this Facebook group who taught traditional BSN or traditional graduate nursing education were asked to distribute the survey to their students in online nursing courses (see Appendix C).

A tertiary method of recruitment was used to send individual recruitment emails to nurse educators in several online BSN programs, found through an internet search, to reach Group One participants across the United States.

Purposeful sampling was used to target the traditional undergraduate students in Group One. Stratified sampling was used to target traditional graduate students in Group Two. Participants specified which graduate program they were enrolled in to attempt to achieve a

significant number from each program within the inclusion criteria. Using these various electronic methods recruited the required number of participants for both target populations.

A-priori power analysis using G*Power (version 3.1.9.7) was used to determine the sample size needed for this quantitative comparative descriptive study (Kellar & Kelvin, 2013). With a two-tailed *t*-test set at means—difference between two independent means (two groups), an alpha level of 0.05, a power level of 0.95, and an effect size of 0.8, G*Power determined that a sample size of 84 total (42 in each group) would be sufficient for the study. In the event of attrition based on exclusion criteria, an additional 5% was added to each group making the total number of participants needed at 90 or 45 in each group. A total of 100 participants were recruited: 55 for Group One and 45 for Group Two.

## Methods of Data Collection

### Data Collection

Informed consent (see Appendix D) was obtained prior to data collection. The self-report instrument and demographic questions (see Appendix E) used were entered into Qualtrics® for data collection. Links to the survey were posted on Facebook, The Circle, AACN connect, and the NLN online forums and distributed to electronic lists or individual educators. Once potential participants clicked on the link, they were brought to an informed consent page (see Appendix D). There they gave consent to participate in the research and the link brought them to the survey's inclusion and exclusion criteria questions. Participants who did not meet inclusion criteria were not able to complete the remaining items on the survey. Data were collected following Institutional Review Board approval (see Appendix F) and occurred from November 2023 until February 2024.

## Instrumentation Used

This study used a self-regulation questionnaire developed by Artino and Stephens (2009) (see Appendix E; see Appendix G for permission to use). This instrument consisted of 32 items divided into six subscales including task value, self-efficacy, elaboration, critical thinking, procrastination, and choice (Artino & Stephens, 2009). All subscale items employed a 7-point Likert-type scale arrayed from 1 (*completely disagree*) to 7 (*completely agree*; Artino & Stephens, 2009). Artino and Stephens utilized a combination of four subscales adapted from the from the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich et al. (1993) and two subscales adapted from Wolters' (2003, 2004) Self-Report Survey to develop this study's instrument (see Appendix E). The alphas of each of these subscales are explained below. The six subscales were analyzed individually; lower scores indicated poor self-regulation and higher scores indicated superior self-regulation within the subscale. Subscale scores were analyzed and compared between Group One and Group Two for differences between the groups. Subscale scores were likewise analyzed to explore similarities within each group.

Nine demographic questions were also added to the questionnaire, assessing age, ethnicity, gender, regional geographic location, healthcare experience, length of healthcare experience, previous experience with fully online classes, what percentage of their online course they have completed, and what percentage of their nursing program they have completed (see Appendix E).

### *Motivated Strategies for Learning Questionnaire*

The instrument in this study was adapted from the MSLQ, which was developed by Pintrich et al. (1993) and designed to be used on post-secondary students (Taylor, 2012). It consists of 81 items scored on a 7-point Likert scale ranging from 1 (*not at all true of me*) to 7

(*very true of me*; Pintrich et al., 1993). The MSLQ is divided into two sections: motivation and learning strategies (Pintrich et al., 1993). The motivation section consists of 31 items with six subscales that assess students' goals and value beliefs within a course, what skills they felt they needed in a course, and test-taking anxiety within that course (Pintrich et al., 1993). The subscales of the motivation section are intrinsic goal orientation, extrinsic goal orientation, task value, control beliefs, self-efficacy for learning and performance, and test anxiety, each ranging from four to eight questions (Credé & Phillips, 2011). An example of a task value item is "It is important for me to learn the course material in this class" (Credé & Phillips, 2011). An example of a self-efficacy item is "I believe I will receive an excellent grade in this class" (Credé & Phillips, 2011). The learning strategy section consists of 50 questions with nine subscales assessing the student's use of different cognitive and metacognitive strategies along with how they manage different learning resources (Pintrich et al., 1993). The nine subscales consist of rehearsal, elaboration, organization, critical thinking, meta-cognitive self-regulation, time and study environment, effort regulation, peer learning, and help seeking (Credé & Phillips, 2011). An example of an elaboration item is "When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions" (Credé & Phillips, 2011). An example of a critical thinking item is "I often find myself questioning things I hear or read in this course to decide if I find them convincing" (Credé & Phillips, 2011). These 15 different subscales could be used together or individually according to Pintrich et al. Therefore, it was acceptable to use the subscales rather than the entire tool to decrease the burden of the length of the survey.

The MSLQ has been used and validated over various years of study and research, either as is or modified to fit the researchers' aims (Taylor, 2012). Cronbach's alpha reported by

Pintrich et al. (1993) was used to determine internal consistency for each of the 15 subscales. Alphas ranged from .52 for the help seeking scale to .93 for the self-efficacy scale (Taylor, 2012).

The task value, self-efficacy for learning and performance, elaboration, and critical thinking subscales were adapted from the MSLQ by Artino and Stephens (2009) in their instrument, which was used in this study. The task value 6-item subscale was found to have an alpha of .92, the self-efficacy 7-item scale was found to have an alpha of .91, the elaboration 5-item scale was found to have an alpha of .87, and the critical thinking 5-item subscale was found to have an alpha of .87 by Artino and Stephens.

***Wolters Self-Report Survey***

Artino and Stephens' (2009) instrument, which was used in this study, also adapted two subscales with nine items total from the self-report survey developed by Wolters (2003, 2004). Wolters' survey consists of 89 items scored on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The instrument is divided into three sections: students' personal motivational beliefs and attitudes, students' use of cognitive and metacognitive strategies, and students' perceptions of their classroom (Wolters, 2004). Within these three sections, 17 subscales inquire about classroom goal structures, mastery structure, performance-approach structure, performance-avoidance structure, personal motivational beliefs, mastery orientation, performance-approach orientation, performance-avoidance orientation, self-efficacy, motivational engagement, choice, effort, persistence, procrastination, cognitive strategies, metacognitive strategies, and achievement (Wolters, 2004). An example for a cognitive strategy item is "When I study for math I practice saying the material over and over to myself" (Wolters,

2004). An example for a metacognitive strategy item is “Before starting a math assignment, I try to figure out the best way to do it” (Wolters, 2004).

Artino and Stephens (2009) adapted both the procrastination subscale with five items and the choice subscale with four items from Wolters (2003, 2004) for the online setting. The procrastination subscale investigated the students’ level of academic disengagement or tendency to put off getting started on the work required for their online course with an alpha of .90 (Artino & Stephens, 2009). The choice subscale, adapted for online courses, looked at the students’ intentions to enroll in future online courses or continuing motivation and consisted of four items with an alpha of .88 (Artino & Stephens, 2009). These two subscales were not found to be appropriate for this study as they had been adapted from the Wolters survey and the procrastination subscale was not reverse coded to make those scores count as negative SRL behaviors. These subscale responses were therefore disregarded during data analysis.

This adapted instrument, which was estimated to take approximately 20 minutes to complete, was used in this study and permission for its use was obtained by the author (see Appendix G). Higher scores in each of the four subscales indicated superior SRL behaviors and lower scores indicated poor SRL behaviors in the individual task value, self-efficacy, elaboration, and critical thinking subscales. Prior to the use of the instrument by Artino and Stephens (2009), the instrument was reviewed by a panel of content experts. The expert panel was informed of the study aims and the instrument to be used; their feedback was obtained to maximize the instrument’s content validity. Once approximately 20 responses were received, basic tests to determine reliability of the instrument with this sample were conducted.

## Ethical Considerations

University of Northern Colorado Institutional Review Board approval was obtained prior to recruitment and data collection. Once participants opened the survey link, they were directed to an informed consent form explaining the purpose of the study, risks, benefits, voluntary participation status, and that they could stop participating at any time prior to completing the survey. Once participants continued to the survey, consent was implied. Participation was strictly voluntary. A $50 Amazon gift card was awarded to one participant; no other incentives were given for participation. Participants chose to have their contact information placed in a drawing where they would be entered to win the gift card. There was no cost but time to the participants. This study was not grant funded.

There were minimal risks for participants in this study. Participants did not come from a vulnerable, high-risk group. Reflection upon their self-regulation behaviors could have caused discomfort for participants. If they experienced discomfort, they were encouraged to seek out counseling services at their institution. Participants did not enter any names or identifying data into the survey besides demographics or contact information if they wanted to opt in for the gift card drawing. Data were kept confidential and all survey results were kept on a stored, password-protected computer at the researcher's home until three years after the completion of the study.

## Data Analysis

### General Overview of Data Analysis

Data from completed surveys were gathered from Qualtrics® and entered into IBM's Statistical Package for the Social Sciences (SPSS) software to be analyzed. Data were housed on the password-protected computer in the researcher's home for three years after the completion of the study and were not accessed on any mobile devices. For familiarization of the data, the

research protocol and study design were reviewed. The data collection instruments were reviewed to ensure the data had been collected accurately and completely. The data were then organized and checked for any missing values or outliers. A test of internal consistency was conducted to ensure all items contributed to the overall instrument. Descriptive and inferential statistics were conducted on the data set. There were two independent variables (undergraduate students and graduate students) with one dependent variable being SRL behaviors. After finding the statistical assumptions were not met for *T*-tests, a Mann Whitney U non-parametric statistical test was assessed (Pett, 2016). To determine the relationships between the demographic data and self-regulated learning among the two groups, a non-parametric statistical test was assessed (Kellar & Kelvin, 2013). Outlier tests were performed and instrument reliability was assessed using Cronbach's alpha.

**Research Question One**

> What are the differences in task value, self-efficacy, elaboration, and critical thinking self-regulated learning behaviors between traditional undergraduate nursing students compared to traditional graduate nursing students in online nursing courses?

This question was analyzed using the data gathered from the survey instrument that were entered into SPSS. Descriptive and inferential statistics including medians and a Mann-Whitney U non-parametric test were conducted to determine if there were any differences between these two groups' individual subscale self-regulation behaviors (Gray et al., 2017).

**Research Question Two**

> Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across age categories?

This question was analyzed using the same data gathered from the survey instrument that were entered into SPSS. Multiple non-parametric Kruskal-Wallis tests were conducted to determine if differences existed across age categories in self-regulated behaviors in the task

value, elaboration, self-efficacy, and critical thinking subscales among all participants (Gray et al., 2017; Kellar & Kelvin, 2013; Pett, 2016).

**Research Question Three**

> Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across healthcare experience categories?

This question was analyzed using the same data gathered from the survey instrument that were entered into SPSS. Multiple non-parametric Kruskal-Wallis tests were conducted to determine if differences existed between healthcare experiences in self-regulating behaviors in the task value, elaboration, self-efficacy, and critical thinking subscales among all participants (Gray et al., 2017; Kellar & Kelvin, 2013; Pett, 2016).

## Delimitations

Several delimitations were set for this study. There was a time delimitation for data collection, beginning in November 2023 and ending in February 2024. Participant delimitation was essential for investigating the target populations of traditional BSN students in online courses and traditional graduate nursing students in online courses. Inclusion and exclusion criteria were set to target younger, inexperienced in the field of nursing BSN students and compare them to older, experienced nursing students in terms of self-regulating behaviors. This research also set an inclusion criterion that all participants would be taking a fully online course at the time of the study. Time constraints also caused the instrument used to be the only method of data collection to assess SRL opposed to methods that required online tracking of studying and interviews with participants as a resource delimitation.

## Summary

This chapter discussed the methodology used in this quantitative comparative descriptive study. Inclusion and exclusion criteria for traditional undergraduate and traditional graduate

nursing students in online nursing courses was articulated. The setting for this study was across the United States and the sample recruitment method was through multiple online groups. An electronic 32-item survey, developed by Artino and Stephens (2009), was utilized as the primary instrument for data collection. The survey was entered into Qualtrics® and data were analyzed in SPSS. Descriptive and inferential statistics were completed to analyze the data using SPSS to measure each research question. Chapter IV discusses the results of the study.

# CHAPTER IV

# RESULTS

The purpose of this study was to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses. This chapter discusses the study participants' demographics and results of data analysis in answering the six research questions.

## Research Questions

The following research questions guided this study:

Q1 What are the differences in task value, self-efficacy, elaboration, and critical thinking self-regulated learning behaviors between traditional undergraduate nursing students compared to traditional graduate nursing students in online nursing courses?

Q2 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across age categories?

Q3 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across healthcare experience categories?

## Data Analysis

Data from participants, described below, were reviewed in Qualtrics. A visual review was conducted for errors or missing data and none were found. Out of a total of 130 participant responses, three were under the age of 18, 10 chose a program of study as "other" or as "one of the above but outside the United States," 14 chose "no" to being currently enrolled in an online nursing class, and three left the survey without completing all data collection points. Therefore, these 30 respondents did not meet inclusion criteria and their data were not used for analysis.

A total of 100 participants (N= 100) met inclusion criteria and had complete responses were analyzed—10 above the 90 required by the power analysis. Of these total participants, 55 were undergraduate nursing students and 45 were graduate nursing students. These data were exported out of Qualtrics and analyzed with SPSS Version 29. A statistician was consulted during data analysis.

Demographic data were provided through descriptive statistics. Several demographic variables were explored: age range, ethnicity, gender, geographic region, employment in healthcare, length of healthcare experience, number of prior online classes, percentage of online course completed, and percentage of program completed. These demographics were further analyzed by group: Group One consisted of undergraduate nursing students and Group Two consisted of graduate nursing students.

## Sample Demographics

### *Group One: Undergraduate Students*

Group One, the undergraduate nursing students, had a total of 55 participants (see Table 1). Group One's ethnicity, as reported by the participants, was also recorded. Of the 55 participants, 24 or 43.6% were Black or African American, 15 or 27.3% were White, 10 or 18.2% were Hispanic or Latino, three or 5.5% were Asian, two or 3.6% were "Other," and one or 1.8% was Native American or Indian American. Fifty participants, 90.9% of Group One, were female and five or 9.1% were male. No participant chose 'non-binary' or 'I prefer not to answer' for the gender demographic question.

Five geographic regions were listed as options for the geographic region within the United States where the participant's nursing program was located: Northeast, Southeast, Midwest, Southwest, and West. Of the 55 participants in Group One, 19 or 34.5% were from the

Northeast, 18 or 32.7% were from the Midwest, eight or 14.5% were from the Southeast, eight or 14.5% were from the West, and two or 3.6% were from the Southwest.

Employment in the healthcare field was analyzed from Group One; 39 or 70.9% answered they were employed in the healthcare field. Nine or 16.4% answered they were a full-time nursing student only and seven or 12.7% answered they were employed outside the healthcare field. When asked about the length of healthcare experience, 41 participants answered the question. A total of 14 or 25.5% of participants who worked in health care stated they had over 10 years of experience, 11 or 20% had two years or less of experience, eight or 14.5% had 6-10 years of experience, and eight or 14.5% had three to five years of experience. A discrepancy existed in this data set. Two participants who indicated they did not work in the healthcare field in the previous demographic question chose a length of time employed in the healthcare field in the following question, thereby slightly skewing the results of this question. In addition, 14 respondents did not answer this question.

Of the 55 total participants in Group One, 43 or 78.2% reported they had taken three or more fully online courses before their current online course, six or 10.9% reported taking two prior online courses, four or 7.3% reported taking no prior online courses, and two or 3.6% reported taking one prior online course. Within the online course they were currently enrolled, 27 or 49.1% stated they were greater than or equal to 75% completed with it, 16 or 29.1% stated they were about 50% completed with it, and 12 or 21.8% stated they were less than or equal to 25% completed with it.

The final demographic question for Group One asked about the percentage of their nursing program they had completed. Twenty-three or 41.8% stated they were about 50%

completed with their program, 17 or 30.9% had less than or equal to 25% completed, and 15 or 27.3% had greater than or equal to 75% completed.

**Table 1**

*Demographics of Group One: Undergraduate Nursing Students*

| Variable | Category | *n* | % |
|---|---|---|---|
| Age (years) | 18- 22 Years Old | 8 | 14.5 |
| | 23- 30 Years Old | 19 | 34.5 |
| | 31- 40 Years Old | 14 | 25.5 |
| | 41- 50 Years Old | 11 | 20.0 |
| | 51 or over Years Old | 3 | 5.5 |
| | Missing | 0 | 0 |
| Ethnicity | White | 15 | 27.3 |
| | Hispanic or Latino | 10 | 18.2 |
| | Asian | 3 | 5.5 |
| | Black or African | 24 | 43.6 |
| | American | 1 | 1.8 |
| | Other | 2 | 3.6 |
| | Missing | 0 | 0 |
| Gender | Male | 5 | 9.1 |
| | Female | 50 | 90.9 |
| | Missing | 0 | 0 |
| Geographic Location | Northeast | 19 | 34.5 |
| | Southeast | 8 | 14.5 |
| | Midwest | 18 | 32.7 |
| | Southwest | 2 | 3.6 |
| | West | 8 | 14.5 |
| | Missing | 0 | 0 |
| Employment in Healthcare (HC) | Employed in HC | 39 | 70.9 |
| | Employed outside HC | 7 | 12.7 |
| | Full-time student only | 9 | 16.4 |
| | Missing | 0 | 0 |
| Length of HC Experience (years) | 2 years or less | 11 | 20.0 |
| | 3-5 years | 8 | 14.5 |
| | 6-10 years | 8 | 14.5 |
| | Over 10 years | 14 | 25.5 |
| | Missing | 14 | 25.5 |

Table 1 Continued

| Variable | Category | *n* | % |
|---|---|---|---|
| Number of Prior Online Courses | None | 4 | 7.3 |
| | One | 2 | 3.6 |
| | Two | 6 | 10.9 |
| | Three or More | 43 | 78.2 |
| | Missing | 0 | 0 |
| Percentage of Course Completed | ≤ 25% | 12 | 21.8 |
| | About 50% | 16 | 29.1 |
| | ≥ 75% | 27 | 49.1 |
| | Missing | 0 | 0 |
| Percentage of Program Completed | ≤ 25% | 17 | 30.9 |
| | About 50% | 23 | 41.8 |
| | ≥ 75% | 15 | 27.3 |
| | Missing | 0 | 0 |

***Group Two: Graduate Students***

Group Two consisted of 45 participants (N= 45) who were graduate nursing students (see Table 2). Ethnicity demographics were slightly different in Group Two compared to the other group. Thirty-nine or 86.7% were White, three or 6.7% were Hispanic or Latino, two or 4.4% were Black or African American, and one or 2.2% was Asian. No participants from Group Two were Native American or Indian American or Other. Similar to the other group, Group Two consisted of a total of 43 or 95.6% female and two or 4.4% male graduate students. No graduate students chose non-binary or 'I prefer not to answer' for this demographic question.

Geographical regions were slightly different than the other group; 29 or 64.4% of graduate nursing students were from the Northeast, five or 11.1% were from the Southeast, four or 8.9% were from the Midwest, four or 8.9% were from the West, and three or 6.7% were from Southwest of the United States.

Of the 45 Group Two participants, 42 or 93.3% of them were currently employed in the healthcare field, two or 4.4% were employed outside of the healthcare field, and one or 2.2% was

a full-time graduate nursing student. Similarly to the other group, Group Two had 32 or 71.1% with over 10 years of experience in the healthcare field, six or 13.3% had between 6 and 10 years of experience, three or 6.7% had between three and five years of experience, and two or 4.4% had two or less years of experience in the healthcare field. One participant who stated they did not work in the healthcare field in the previous demographic question answered the length of experience question, slightly skewing its results. In addition, two participants did not answer this question.

When answering the experience with fully online classes demographic question, Group Two had 43 or 95.6% who had taken three or more fully online classes prior to this class, one or 2.2% had taken two previous online classes, and one or 2.2% had taken one previous online class prior to this class. No graduate students chose having no prior online classes.

Multiple programs were included in the inclusion criteria for Group Two. Of the 45 total participants in Group Two, 26 or 53.3% were in an MSN program, 10 or 22.2% were in a DNP program, five or 11.1% were in a Doctor of Philosophy program, three or 6.6% were in an APRN program, and one or 2.2% was in a Doctor of Education program.

Group Two stated that 26 or 57.8% were greater than or equal to 75% completed with their current online course. Fourteen or 31.1% of them were less than or equal to 25% completed with their current online course, and five or 11.1% were about 50% completed with their current online course. Group Two also stated that 21 or 46.7% of them were greater than or equal to 75% completed with their nursing program, 14 or 31.1% of them stated they were less than or equal to 25% completed with their nursing program, and ten or 22.2% of them stated they were about 50% completed with their nursing program.

**Table 2**

*Demographics of Group Two: Graduate Nursing Students*

| Variable | Category | *n* | % |
|---|---|---|---|
| Age (years) | 18- 22 Years Old | 1 | 2.2 |
| | 23- 30 Years Old | 5 | 11.1 |
| | 31- 40 Years Old | 14 | 31.1 |
| | 41- 50 Years Old | 12 | 26.7 |
| | 51 or over Years Old | 13 | 28.9 |
| | Missing | 0 | 0 |
| Ethnicity | White | 39 | 86.7 |
| | Hispanic or Latino | 3 | 6.7 |
| | Asian | 1 | 2.2 |
| | Black or African American | 2 | 4.4 |
| | Missing | 0 | 0 |
| Gender | Male | 2 | 4.4 |
| | Female | 43 | 95.6 |
| | Missing | 0 | 0 |
| Geographic Location | Northeast | 29 | 64.4 |
| | Southeast | 5 | 11.1 |
| | Midwest | 4 | 8.9 |
| | Southwest | 3 | 6.7 |
| | West | 4 | 8.9 |
| | Missing | 0 | 0 |
| Employment in Healthcare (HC) | Employed in HC | 42 | 93.3 |
| | Employed outside HC | 2 | 4.4 |
| | Full-time student only | 1 | 2.2 |
| | Missing | 0 | 0 |
| Length of HC Experience (years) | 2 years or less | 2 | 4.4 |
| | 3-5 years | 3 | 6.7 |
| | 6-10 years | 6 | 13.3 |
| | Over 10 years | 32 | 71.1 |
| | Missing | 2 | 4.4 |

Table 2 Continued

| Variable | Category | *n* | % |
|---|---|---|---|
| Number of Prior Online Courses | One | 1 | 2.2 |
| | Two | 1 | 2.2 |
| | Three or More | 43 | 95.6 |
| | Missing | 0 | 0 |
| Percentage of Course Completed | ≤ 25% | 14 | 31.1 |
| | About 50% | 5 | 11.1 |
| | ≥ 75% | 26 | 57.8 |
| | Missing | 0 | 0 |
| Percentage of Program Completed | ≤ 25% | 14 | 31.1 |
| | About 50% | 10 | 22.2 |
| | ≥ 75% | 21 | 46.7 |
| | Missing | 0 | 0 |

## Instrumentation

Participants completed a 32-item self-report questionnaire with six subcategories aimed at measuring self-regulated learning developed by Artino & Stephens (2009). On the instrument, higher scores in each of the four subscales indicated superior SRL behaviors and lower scores indicated poor SRL behaviors in the individual task value, self-efficacy, elaboration, and critical thinking subscales.

Reliability testing was completed per group on the overall instrument and the individual subscales for this study. Group One (the undergraduate nursing students) had an overall instrument reliability of $\alpha = 0.91$ and Group Two (the graduate nursing students) had an overall instrument reliability of $\alpha = 0.89$. Both showed good to excellent internal consistency for the instrument.

Reliability testing was also completed for each of the individual subscales within the instrument. The task value subscale consisting of six items had an $\alpha = 0.94$, indicating excellent internal consistency. The self-efficacy subscale consisting of seven items had an $\alpha = 0.97$,

indicating excellent internal consistency. The elaboration subscale consisting of five items had an α= 0.94, also indicating excellent internal consistency. The critical thinking subscale, consisting of five items, had an α= 0.83, indicating good internal consistency.

## Research Question One

Research question one explored the differences in each of the four subscales of task value, self-efficacy, elaboration, and critical thinking SRL behaviors between undergraduate nursing students and graduate nursing students in online nursing courses. Non-parametric testing was conducted for each of the different subscale analysis due to assumptions not being met for *t*-tests.

### Task Value Subscale Analysis

A Mann-Whitney U test was done to determine if there were differences in task value scores between undergraduate and graduate students. This analysis was conducted because the data were not normally distributed as assessed by visual inspection of Q-Q plots and histograms for each group. Distributions of the task value scores for undergraduate and graduate students were similarly skewed as assessed by visual inspection of a histogram. The task value score was not statistically significantly different between undergraduates (*Mdn* = 6.67) and graduates (*Mdn* = 6.67), $U = 1333.50$, $z = 0.69$, $p = .491$. This indicated that in this sample, both undergraduates and graduates had similar task value SRL behaviors.

### Self-Efficacy Subscale Analysis

A Mann-Whitney U test was done to determine if there were differences in self-efficacy scores between undergraduate and graduate students. This analysis was conducted because the data were not normally distributed as assessed by visual inspection of Q-Q plots and histograms for each group. Distributions of the self-efficacy scores for undergraduate and graduate students

were similarly skewed as assessed by visual inspection of a histogram. The self-efficacy score was not statistically significantly different between undergraduates (*Mdn* = 6.43) and graduates (*Mdn* = 6.14), $U = 1165.00$, $z = -0.51$, $p = .612$. This indicated that in this sample, the undergraduates had a slightly higher overall self-efficacy than graduates but not enough to be statistically significant.

**Elaboration Subscale Analysis**

A Mann-Whitney U test was done to determine if there were differences in elaboration scores between undergraduate and graduate students. This analysis was conducted because the data were not normally distributed as assessed by visual inspection of Q-Q plots and histograms for each group. Distributions of the elaboration scores for undergraduate and graduate students were similarly skewed as assessed by visual inspection of a histogram. The elaboration score was not statistically significantly different between undergraduates (*Mdn* = 6.40) and graduates (*Mdn* = 6.60), $U = 1405.50$, $z = 1.20$, $p = .232$. Thus, in this sample, the graduates had slightly higher elaboration SRL behaviors such as pulling information from previous knowledge and connecting it to the topic being learned when compared to undergraduates but not enough to be statistically significant.

**Critical Thinking Subscale Analysis**

A Mann-Whitney U test was completed to determine if there were differences in critical thinking scores between undergraduate and graduate students. This analysis was conducted because the data were not normally distributed as assessed by visual inspection of Q-Q plots and histograms for each group. Distributions of the critical thinking scores for undergraduate and graduate students were similarly skewed as assessed by visual inspection of a histogram. The critical thinking score was not statistically significantly different between undergraduates (*Mdn* =

5.20) and graduates (*Mdn* = 5.60), *U* = 1349.00, *z* = 0.78, *p* = .439. Similar to the other subscales, graduates in this sample had slightly higher critical thinking SRL behaviors when compared to undergraduates but not enough to be statistically significant. Table 3 presents detailed comparisons of the instrument subscales.

**Table 3**

*Instrument Subscale Comparisons*

| Subscale | Group One Undergraduates Medians | Group Two Graduates Medians | *U* | *z* | *p* |
|---|---|---|---|---|---|
| Task Value | 6.67 | 6.67 | 1333.50 | 0.69 | .491 |
| Self-Efficacy | 6.43 | 6.14 | 1165.00 | -0.51 | .612 |
| Elaboration | 6.40 | 6.60 | 1405.50 | 1.20 | .232 |
| Critical Thinking | 5.20 | 5.60 | 1349.00 | 0.78 | .439 |

## Research Question Two

Research question two investigated the differences across age categories in task value, elaboration, self-efficacy, and critical thinking SRL behaviors among all participants. Undergraduate and graduate student demographics, as shown above, consisted of various age ranges of the total 100 participants: nine participants (9%) were 18-22 years old and 91 participants ( 91%) were between the ages of 23 and greater than or equal to 51 years. A Kruskal-Wallis test was done to determine if there were differences in SRL subcategory scores and age among participants. This analysis was conducted because the data were not normally distributed

as assessed by visual inspection of Q-Q plots and histograms for each group. Non-parametric testing was conducted for each of the different subscale analyses.

**Task Value Subscale Analysis**

There was a statistically significant difference across age categories and the task value SRL measure, $\chi^2$ 14.109, $p$ = .007. Pairwise comparisons showed that the age category of 18-22 years displayed significantly lower task value scores when compared to other age categories. This younger age category of 18-22 years had lower task value scores than their older age categories.

**Elaboration Subscale Analysis**

A Kruskal-Wallis test was completed to assess the difference between age and elaboration SRL among all participants. There was no statistically significant difference across age categories in the elaboration SRL, $\chi^2$ 6.035, $p$ = .197. These results showed age did not indicate a contrast in elaboration SRL behaviors.

**Self-Efficacy Subscale Analysis**

A Kruskal-Wallis test was completed to assess the difference between age categories and self-efficacy SRL among all participants. There was no statistically significant difference across age categories in the self-efficacy SRL, $\chi^2$ 2.071, $p$ = .723. These results showed age did not exhibit dissimilarity in self-efficacy SRL behaviors.

**Critical Thinking Subscale Analysis**

A Kruskal-Wallis test was completed to assess the difference between age categories and critical thinking SRL among all participants. There was no statistically significant difference across age categories in the critical thinking SRL, $\chi^2$ 3.339, $p$ = .503. These results showed age did not influence critical thinking SRL behaviors as theorized (see Table 4).

**Table 4**

*Subscale Analysis Age—Kruskal-Wallis*

| Subscale | $\chi^2$ | *p* (two-tailed) |
|---|---|---|
| Task Value | 14.109 | .007 |
| Elaboration | 6.035 | .197 |
| Self-Efficacy | 2.071 | .723 |
| Critical Thinking | 3.339 | .503 |

## Research Question Three

Research question three explored the differences between healthcare experience and task value, elaboration, self-efficacy, and critical thinking SRL behaviors among all participants. The demographics data showed that most participants had healthcare experience as about 81 or 81% worked in healthcare at the time of the questionnaire. A Kruskal-Wallis test was done to determine if there were differences in SRL subcategory scores among participants who had healthcare experience. This analysis was conducted because the data were not normally distributed as assessed by visual inspection of Q-Q plots and histograms for each group.

### Task Value Subscale Analysis

A Kruskal-Wallis test was completed to assess the difference between healthcare experience and task value SRL among all participants. There was no statistically significant difference between healthcare experience and task value SRL, $\chi^2$ .566, $p$ = .754. These results showed healthcare experience did not indicate a contrast in task value SRL behaviors.

**Elaboration Subscale Analysis**

A Kruskal-Wallis test was completed to assess the difference between healthcare experience and elaboration SRL among all participants. There was no statistically significant difference between healthcare experience and elaboration SRL, $\chi^2$ .361, $p$ = .835. These results showed healthcare experience did not exhibit dissimilarity in elaboration SRL behaviors.

**Self-Efficacy Subscale Analysis**

A Kruskal-Wallis test was completed to assess the difference between healthcare experience and self-efficacy SRL among all participants. There was no statistically significant difference between healthcare experience and self-efficacy SRL, $\chi^2$ 4.072, $p$ = .131. These results showed healthcare experience did not indicate difference in self-efficacy SRL behaviors.

**Critical Thinking Subscale Analysis**

A Kruskal-Wallis test was completed to assess the difference between healthcare experience and critical thinking SRL among all participants. There was no statistically significant difference between healthcare experience and critical thinking SRL, $\chi^2$ .941, $p$ = .625. These results showed healthcare experience did not exhibit contrast in critical thinking SRL behaviors as theorized (see Table 5).

**Table 5**

*Subscale Analysis of Healthcare Experience—Kruskal-Wallis*

| Subscale | $\chi^2$ | $p$ |
|---|---|---|
| Task Value | .566 | .754 |
| Elaboration | .361 | .835 |
| Self-Efficacy | 4.072 | .131 |
| Critical Thinking | .941 | .625 |

## Summary

This chapter discussed the data and analysis for the demographics of the study and research questions. The demographic data presented described both sample groups. Data were analyzed using descriptive statistics with non-parametric testing. The results of the study showed a difference did exist in task value self-regulated learning behaviors between younger students when compared with older students. Younger students reported less understanding of the significance of the course content being learned compared to older students. Scores in the elaboration, self-efficacy, and critical thinking subscales were not statistically significant between undergraduate and graduate nursing students in online courses. Scores between healthcare experience were also not statistically significant within SRL subscale comparisons. Chapter V discusses these results and their significance to nursing education and implications for future research.

# CHAPTER V

# DISCUSSION

Nursing education must improve the preparedness of new graduate nurses. E-learning is now a permanent course delivery method in nursing education at all degree levels. Best practices for online nursing education are currently generalized to be used in all online courses regardless of content or learners' experience and self-regulating learning needs. The broader literature supported that differences did exist between undergraduate and graduate learners. The experience level of students in each degree level is very different and these students need specific instruction toward reaching their unique academic goals. Nursing-specific research exploring the differences between undergraduate and graduate online learners was scant. Current best practices do not address the differences between these degree levels' unique learning needs, and faculty lack sufficient support applying best practices tailored to their students' learning needs. The tasks related to e-learning are presented in a non-linear format using advanced information and communication technologies, which require a high degree of self-regulation for students to be successful in the online environment (Yen et al., 2018).

## Purpose of the Study

The purpose of this study was to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses.

The following research questions guided this study:

Q1 What are the differences in task value, self-efficacy, elaboration, and critical thinking self-regulated learning behaviors between traditional undergraduate nursing students compared to traditional graduate nursing students in online nursing courses?

Q2 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across age categories?

Q3 Are task value, elaboration, self-efficacy, and critical thinking self-regulated learning behaviors different across healthcare experience categories?

In-depth analysis of the data and findings for each research question were reported in the previous chapter. This chapter gives a cursory review of methodology, summary of the results, discussion of major findings and how they relate to previous research, and the theoretical framework for this study. Afterwards, discussion of the study limitations and implications for nursing education and future research follow.

## Methodology

This exploratory quantitative comparative descriptive study included 100 participants. This sample was organized into two groups: Group One—traditional undergraduate nursing students ($n$= 55) and Group Two—traditional graduate nursing students ($n$= 45). Participants completed an electronic 32-item self-report questionnaire developed by Artino and Stephens (2009) measuring self-regulated learning behaviors. Data from completed surveys were gathered from Qualtrics and entered into IBM's SPSS software Version 29 for analysis. The data were organized and checked for any missing values or outliers. A test of internal consistency was conducted to ensure all items contributed to the overall instrument. Descriptive and inferential statistics were then conducted on the data set.

## Summary of Results

The demographic data presented described both sample groups. Data were analyzed using descriptive statistics with non-parametric testing. A statistically significant difference was found when comparing age categories to the task value SRL subscale in research question two. Statistical significance was not found when answering either of the other two research questions. Scores in the task value, elaboration, self-efficacy, and critical thinking subscales were not statistically significant between undergraduate and graduate nursing students. Scores between healthcare experience were also not statistically significant within SRL subscale comparisons.

## Discussion of Results

### Participants

#### *Group One: Undergraduate Students*

Inclusion criteria for the participants were aimed at recruiting traditional pre-licensure BSN students in online nursing courses for Group One and traditional graduate students in online nursing courses for Group Two. The goal for Group One was to recruit undergraduate students between the ages of 18-22 who did not have much work or healthcare experience. This age group showed the most difference compared to graduate students in the literature; traditional undergraduate students, mostly consisting of ages 18 to 22, are new to being adults and might have immature tendencies related to continuing brain development (Ormrod et al., 2020). They might not be significantly self-disciplined or motivated, both of which are important factors that affect SRL and by extension success in online learning (Cadet, 2021).

The sample for Group One in this study ($n$= 55) only had 14.5% or eight participants who met this age group goal of 18-22 years, which could have affected the results of this study. The reason for difficulty recruiting this age group was due to an inclusion criterion of students having

to be currently enrolled in an online nursing course. As more BSN nursing programs have been coming out of the pandemic, it appeared fewer fully online nursing courses were offered at the undergraduate level. Traditional BSN programs are offered online; however, based on this study's limited sample, an older demographic might be currently enrolled in these programs. Traditional BSN programs also typically require courses from outside disciplines such as electives or statistics that might be offered online alongside nursing courses. If this study should be reproduced, the inclusion criterion should be changed to include 18–22-year-old traditional pre-licensure BSN students who are enrolled in any fully online course as opposed to specifying an online nursing course.

The majority (70.9%) of Group One's participants were employed in the healthcare field. Evidence showed previous exposure to content being taught made constructing new knowledge about that subject matter easier, especially in the online setting (Weeks et al., 2019). This factor also might have affected the SRL subscale scores of Group One.

Another demographic variable that could have affected SRL subscale scores of Group One was 92.7% of them had already taken at least one previous online course. Evidence has shown that experience with previous online learning in which higher levels of SRL are needed to be successful causes students to improve their SRL skills, which would make them more likely to be successful in future online courses (Chen et al., 2019).

A final variable that could have affected SRL subscale scores of the undergraduate group was their experience with online learning. Demographic data for Group One showed 78.2% of them had taken at least three previous online courses before their current online course. Most of the undergraduate students in this study had a good deal of experience with online courses compared to undergraduate students from 5 or 10 years ago. Artino and Stephens (2009), who

developed the instrument used in this study, reported 80% of their undergraduate group had experience with one prior online course. The experience level of undergraduates in online learning has exponentially increased in recent years, which could have led to undergraduates having developed stronger SRL skills by necessity compared to the same degree level students in years past due to the pandemic (Giltenane & Dowling, 2023). During the beginning of the pandemic, rapid change to online learning was necessary, which led to undergraduates developing motivation and willingness to learn in an online group setting to increase their understanding of the course content in a supportive setting (Giltenane & Dowling, 2023). The circumstance of needing to find a method to be successful was what helped undergraduates develop their SRL skills to a higher level than those who came before them.

In summary, the sample of undergraduate students who participated in this study was different than what was conceptualized as a traditional undergraduate student in the literature. If the study were to be reproduced, an inclusion criterion should focus on 18–22-year-old pre-licensure BSN students enrolled in a fully online course for Group One participants.

***Group Two: Graduate Students***

Group Two (the graduate nursing students) had 45 participants. Most of them (86.7%) were 31 years of age or older and White. These demographics were expected from recruiting traditional graduate students. About 64% of the graduate students went to school in the Northeast. A more even disbursement of participants' school geographical locations would have been ideal; however, a small number of participants were from each of the other regions in the United States. The expectation was that most or all the graduate student participants would be employed in health care and 93.3% of them were; 71.1% of those had worked over 10 years. Also as expected, all of the graduate students had taken at least one previous online course prior

to their current online course. These demographics fit well with the goal sample population for graduate students.

**Research Question One**

Research question one explored the differences in each of the four subscales of task value, self-efficacy, elaboration, and critical thinking SRL behaviors between undergraduate nursing students and graduate nursing students in online nursing courses. Each of the four subscales' undergraduate and graduate scores was compared and none were found to be statistically significant. This finding was inconsistent with previous research results. Artino and Stephens (2009) found graduate learners had higher scores on critical thinking when compared to undergraduates with the same instrument used in this study. A possible explanation for this variance could be the study sample was small since there were 45 participants in the graduate Group Two.

**Research Question Two**

Research question two investigated the difference between participant age categories and each of the four SRL behavior subscales. The results showed statistically significant differences across age categories in the task value subscale. The nine total participants who were between the ages of 18-22 years had statistically significant lower task value scores when compared with the 31-40 year and 51 years or over age categories. This indicated that when participants responded to questions related to the significance of the content material they were learning and being able to use this information in future courses, the 18–22-year-olds reported less surety of this than the 31-40 year and 51 and over-year-olds. This suggested that older students realized the value of the task or course material they were learning about more so than did younger

students. This result was consistent with Billings et al.'s (2005) study, which found generational differences did affect educational practices and outcomes in online nursing education.

None of the other three subscales of elaboration, self-efficacy, or critical thinking showed any statistically significant results when compared across the different age categories. These results were inconsistent with previous research by Billings et al. (2005), Artino and Stephens (2009), and Dianati et al. (2022) who found older or graduate students had more developed self-regulation processes especially with regard to critical thinking. An explanation for this result variance between this study and the previous one could be found in the demographics of both groups. In this study, the preferred age range of 18-22 years was not met in much of the Group One sample. Most of the undergraduate students in the sample of the current study were at least 23 years of age. This factor (age) enhanced SRL abilities, which might have affected the overall SRL scores when comparing them to graduate students as enough of an age gap did not occur between the two groups to cause the findings to be statistically significant.

**Research Question Three**

Research question three explored the difference between healthcare experience among participants and SRL behaviors within the four subcategories. The study results did not show any statistically significant difference among task value, elaboration, self-efficacy, and critical thinking SRL scores based on healthcare experience. Previous research did not address this difference. This difference was investigated due to the exploratory nature of this study and the premise put forth by the theoretical framework of constructivism. Constructivism related to this study's results is discussed below. An explanation for why statistical significance was not found might be due to 81% of the total participants having healthcare experience. A significant contrast was not made due to only a small number of participants not having healthcare experience.

## Theoretical Framework

The theoretical framework for this study was constructivism learning theory. The basis for constructivist theory is that learning happens actively and knowledge is constructed through experiencing and reflecting on the experience (Oermann et al., 2018). Learning is achieved by building mental structures called schemata or units of organized information that are active mental models and represent generic concepts stored in the memory (Weeks et al., 2019). When new information is encountered, it either supports existing schemata or conflicts with them, forcing reshaping and replacing to accommodate the new concept (Weeks et al., 2019). The constructivist processes of learning occur in nursing students to different degrees depending upon previous experience with content being taught, suggesting the more experience with the subject matter the student has, the easier it is to construct new knowledge (Weeks et al., 2019). This theory supports online nursing education (Kala et al., 2010).

Constructivist theory has supported both undergraduate and graduate nursing education. Lee et al. (2018) found evidence that both constructivism and self-regulated learning are similar in how there are multiple intrinsic factors guiding the construction or lack thereof of new knowledge for undergraduate nursing students. Moss et al. (2010) stated that traditional graduate nursing education, where students are mid-career professionals, supports learning outcomes through active discussion and interaction between faculty and peers through constructivist methods. This study explored the SRL behavioral differences between both these groups through the lens of constructivism theory.

The findings of this study could be viewed through this constructivism lens. The overall task value SRL scores of older nursing students were higher than younger nursing students due to older students possibly having life experience and experience with the subject matter being

taught, thereby making it easier for them to construct new advanced knowledge on what they had previously learned or experienced. The statistically significant task value SRL score differences between age categories supported this premise.

In contrast with the findings of the task value SRL results between younger and older students, no significant differences were found between age and any other subcategory or healthcare experience and any other subcategory These results were not supported by constructivism. Each of these factors would have had a positive correlation on SRL scores from this theoretical perspective. Possible explanations for why there was no statistical difference based on these factors could lie with the small sample size, disproportionally large number of participants who had healthcare experience and took at least one previous online course prior to the study. More data are needed to determine if constructivism theory is fully supported in the success of online nursing education.

## Recommendations for Faculty

The following are this researcher's recommendations for faculty based on the results of this study:

1. Give more support and instructional strategies to undergraduate nursing students in online nursing courses. According to the literature, graduate students, when compared with undergraduate nursing students, had higher self-regulated learning behavior scores, which are important for success in online learning (Arbaugh, 2010; Artino & Stephens, 2009; Billings et al., 2005; McKeown & Anderson, 2016). Undergraduates, when compared to graduates, required clear and detailed syllabi and assignment instructions; these learners needed instructors' help with setting challenging goals; and needed timely, honest, and explicit performance feedback

more than graduate students did (Artino & Stephens, 2009). Because undergraduates differ in age, maturity, self-discipline, and work experience, their behavior is peer-driven. Results of this study showed a statistically significant difference in lower recognition scores of the value of the course content in younger students compared to older students. Differences in undergraduate learning styles are more likely to predict course outcomes. Undergraduates needed more instructor feedback and increased variety in their activities; content repository was more important for success in undergraduate online courses compared to graduate online courses (Arbaugh, 2010). Yen et al. (2018) emphasized eight features that facilitated and supported SRL skills for students within the online setting: developing and managing a personalized learning plan, implementing an e-portfolio and sharing it with peers and faculty for feedback, self and peer evaluation of work, human feedback from peers and faculty, machine feedback from an animated learning platform such as Assessment Technologies Institute, visualization of goals/ procedures/concepts within their learning plan, and scaffolding SRL skills. Emphasis should be placed on building these features into online platforms to help with student success (Yen et al., 2018).

2. Self-regulated learning ought to be assessed at the start of a course. An assessment of SRL at the beginning of a course would establish a baseline that could be useful to both students and faculty. Self-regulated learning skills are adaptable and could be improved upon throughout the learning process. Based on SRL assessment findings, faculty could adjust their instructional strategies to adaptively support individual student learning needs (Karlen et al., 2023). Several approaches have

been used to assess SRL skills and how students plan, monitor, and regulate their cognition, motivation, and behavior while learning. Self-reporting questionnaires such as the instrument used in this study with its first four subscales as is and the procrastination subscale modified to be reverse coded, the MSLQ, or the Wolters Self-Report Survey could give an overview of these SRL processes once learning is offline or completed. On-line strategies or strategies that assess learning while it is happening could also be used such as 'Think out loud' protocols where students answer targeted questions real-time as they are learning or event-based data that use electronic trace data such as navigational logs, keystrokes, mouse movement, and eye gaze points for measurement (Lim et al., 2023). Faculty must consider differences such as burden of time and cost with each strategy when planning the assessment. Data gathered from the assessment of SRL could inform students of where their strengths and improvement needs lie and faculty on how best to utilize instructional tools to provide personalized support of development of SRL skills through scaffolding.

3. Scaffolding should be implemented to help students improve their self-regulated learning skills. Scaffolding is defined as the use of instructional tools and strategies facilitated by faculty with the goal of supporting learners to achieve success where they previously could not independently (Lim et al., 2023). Scaffolding should consist of providing ongoing assessment of student learning needs, calibrating support based on need, and reducing support when students become independent (Lim et al., 2023). Forms of scaffolding include prompts, tools, pedagogical agents, and faculty feedback (Dever et al., 2024). They could be generalized or

personalized based on electronic SRL tracking data. Prompts could be set up as pop-ups that help remind students to review assignment directions, ask them to set goals for studying or steps to completing an assignment, remind them to actively take notes while reading course content, or ask them to connect previous knowledge learned earlier in the course or in the program to topics being studied where they could write in a short answer type question format. These scaffolding techniques could guide students into developing their SRL skills of planning and controlling their learning, overseeing the effectiveness of the strategies used during learning, and making decisions to modify these strategies to help them achieve their learning goals (Lim et al., 2023). These methods would be relatively easy for faculty to implement in an online lesson or course.

4. Complete professional development to learn the unique competencies required for online teaching. Roddy et al. (2017) emphasized that unique competencies are required for online teaching success and institutions must invest in training and development of online faculty. Different degree level learners have differences in their demographics, experience in the field of nursing, and self-regulation skills that affect their online learning needs. These differences must be considered when developing and delivering course content online. Current best practices such as the Quality Matters (2018) rubric and the Online Nursing Education Best Practices Guide (Authement & Dormire, 2020) for nursing should be used when developing an online course. Educators should recognize that these best practices are generalized and make no differentiation between factors that influence students in courses at different degree levels.

## Limitations and Strengths

This study had several limitations. Recruitment was not randomized. The majority of participants from Group Two went to school in the Northeast of the United States and 57.7% of them were in an MSN program. Generalizability would be difficult due to this non-randomized sample. The power analysis conducted called for a sample size of at least 90 participants. Although this study had 100 total participants, the individual groups were not representative of the target population. This skewed sample limited the generalizability of the results.

Most of Group One participants (85.5%) were older than the typical 18–22-year-old undergraduate student upon which much of the literature was based. Having more mature participants who also had more experience within the healthcare field and with online learning skewed the distribution of the data and the results.

Another limitation was the instrument was a self-report questionnaire. Response bias might have occurred with the use of this instrument due to inaccurate or overestimation of participants' SRL behaviors (Kellar & Kelvin, 2013). The full instrument with all six subcategories was insufficient for this study due to the adaptation from two different questionnaires and the lack of reverse coding for the procrastination subcategory. The comparative descriptive design was also a limitation of the study as it had an inherent lack of causality (Gray et al., 2017). The study was able to describe SRL behaviors of undergraduate and graduate nursing students in online courses but not the cause of those behaviors.

There were some strengths to the study as well. A substantial gap existed in the literature on nursing-specific research comparing undergraduate and graduate nursing students in the online environment. This study filled some of this gap and identified a need for further research on this topic. Reliability testing was consistent with previous testing on the instrument used for

this study. The instrument's four subcategories of task value, elaboration, self-efficacy, and critical thinking had good to excellent internal consistency. The study also had consistent task value differences within age category findings that could be practically applied to recommendations for faculty in the needed increased support of these students in the online setting.

## Recommendations for Future Research

More research is needed to evaluate these different degree level students, their learning needs, and what instructional strategies are most effective for them in the online environment. Further research is needed on assessing SRL in undergraduate and graduate nursing students in online courses. Increasing the sample size in both groups is recommended. Along with the sample size, the target age range of traditional undergraduates should be 18-22 years. This population most differs from graduate students and who need the most support in online learning. Recruitment should also aim to include students who do not have experience in the healthcare field so a truer comparison could be made with those who had previous healthcare experience. The instrument used in this study was mostly reliable; however, its adaptation of two different self-report questionnaires and lack of reverse coding for the procrastination subcategory as well as its self-reporting nature might have caused response bias. Modification of this instrument is recommended and other instruments should be developed to assess SRL as it is occurring and over time of a course or program.

Besides further investigating SRL in these two groups, course content delivery, teaching strategies effectiveness, and impact on learning outcomes should be explored in both groups individually and in comparison. Best practices for online nursing education remain generalized and do not consider the differences in various degree learners, in the content being delivered, nor

the methods with which it should be delivered. These differences characterize the need for more specified best practices to meet the learning needs of each level.

The results of this study showed statistically significant task value SRL scores between the younger age categories compared to the older age categories. This study did not measure educational outcomes. Support and enhancement of SRL skills in the clinical setting showed increased critical thinking application, critical reflection, elevated clinical practice performance, and self-efficacy (Dogu et al., 2022; Kuiper & Pesut, 2004). Future research is needed to measure the effect of SRL scores on educational outcomes in the didactic setting. Questions to explore in future research might include: What is the correlation between SRL scores and course outcomes? and how does improvement in SRL throughout a course affect formative or summative assessments?

## Unique Contributions of This Study

This study aimed to explore and compare the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses. There was a substantial gap in the literature on the comparison of undergraduate and graduate nursing students' self-regulation in the online setting. Only one previous nursing study explored this topic. Following the COVID-19 pandemic, e-learning is now a permanent course delivery method in nursing education at all degree levels. Current online learning best practices do not address the differences between these degree levels' unique learning needs and faculty lack sufficient support applying best practices tailored to their students' learning needs. This quantitative comparative descriptive study compared SRL behaviors of traditional undergraduate and traditional graduate students in the online setting in an exploratory fashion. The instrument used for this study was found to be reliable within the task value, elaboration, self-efficacy, and

critical thinking subcategories and could be used in future research for measuring SRL to help adapt our teaching methods to better meet individual group needs. Results from this study showed a difference did exist in task value self-regulated learning behaviors between younger students when compared with older students. Younger students reported less understanding of the significance of the course content being learned compared to older students. Recommendations for faculty and future research were shared. This study added to the body of nursing knowledge.

## Conclusion

Nursing education must improve the preparedness of new graduate nurses. E-learning is now a permanent course delivery method in nursing education at all degree levels. Best practices for online nursing education are currently generalized to be used in all online courses regardless of content or learners' experience and self-regulating learning needs. They do not address the differences between these degree levels' unique learning needs and faculty lack sufficient support applying best practices tailored to their students' learning needs. The tasks related to e-learning are presented within an online course in a non-linear format using advanced information and communication technologies, which require a high degree of self-regulation for students to be successful. This study examined and compared the differences in self-regulated learning behaviors of traditional undergraduate and traditional graduate nursing students in online nursing courses.

The results of the study showed a difference existed in task value self-regulated learning behaviors between younger students when compared with older students. Younger students reported less understanding of the significance of the course content being learned compared to older students. Scores in the elaboration, self-efficacy, and critical thinking subscales were not statistically significant between undergraduate and graduate nursing students in online courses.

Scores between healthcare experience were also not statistically significant within SRL subscale comparisons. Data from this research highlighted the increased need for further nursing-specific research on this topic and a call for reevaluating the effectiveness of current best practices for online nursing education.

# REFERENCES

An, J., Oh, J., & Park, K. (2022). Self-regulated learning strategies for nursing students: A pilot randomized controlled trial. *International Journal of Environmental Research and Public Health, 19*(15), 9058. https://doi.org/10.3390/ijerph19159058

Arbaugh, J. B. (2010). Do undergraduates and MBAs differ online?: Initial conclusions from the literature. *Journal of Leadership & Organizational Studies, 17*(2), 129-142.

Artino, A. R., & Stephens, J. M. (2009). Academic motivation and self-regulation: A comparative analysis of undergraduate and graduate students learning online. *The Internet and Higher Education, 12*(3-4), 146-151.

Aukerman, R., White, L., Gierach, M., Miller, T., & Wolles, B. (2022). The lived experience of nurses transitioning to professional practice during the COVID-19 pandemic. *Nursing Forum*, *57*(5), 756‑764. https://doi-org.unco.idm.oclc.org/10.1111/nuf.12759

Authement, R. S., & Dormire, S. L. (2020). Introduction to the online nursing education best practices guide. *SAGE Open Nursing*, *6*, 2377960820937290-2377960820937290. https://doi.org/10.1177/2377960820937290

Barbour, C., & Schuessler, J. B. (2019). A preliminary framework to guide implementation of the flipped classroom method in nursing education. *Nurse Education in Practice, 34*, 36-42. https://doi.org/10.1016/j.nepr.2018.11.001

Bata-Jones, B., & Avery, M. D. (2004). Teaching pharmacology to graduate nursing students: Evaluation and comparison of web-based and face-to-face methods. *The Journal of Nursing Education, 43*(4), 185-189. https://doi.org/10.3928/01484834-20040401-01

Billings, D. M., Skiba, D. J., & Connors, H. R. (2005). Best practices in web-based courses: Generational differences across undergraduate and graduate nursing students. *Journal of Professional Nursing, 21*(2), 126-133.

Blondy, L. C. (2007). Evaluation and application of andragogical assumptions to the adult online learning environment. *Journal of Interactive Online Learning, 6*(2), 116-130.

Blood-Siegfried, J. E., Short, N. M., Rapp, C. G., Hill, E., Talbert, S., Skinner, J., & Goodwin, L. (2008). A rubric for improving the quality of online courses. *International Journal of Nursing Education Scholarship, 5*(1), 34-13.

Boekaerts, M., Musso, M., & Cascallar, E. C. (2012). Self-regulated learning and the understanding of complex outcomes. *Education Research International, 2012*, 1-2. https://doi.org/10.1155/2012/686385

Bonnel, W. E., Smith, K. V., & Hober, C. L. (2019). *Teaching with technologies in nursing and the health professions: Strategies for engagement, quality, and safety* (2nd ed.). Springer Publishing Company

Cadet, M. J. (2021). Examining the learning characteristics of nursing students: A literature review. *The Journal of Nursing Education, 60*(4), 209-215. https://doi.org/10.3928/01484834-20210322-05

Camargo, L. B., Raggio, D. P., Bonacina, C. F., Wen, C. L., Mendes, F. M., Bönecker, M. J. S., & Haddad, A. E. (2014). Proposal of e-learning strategy to teach atraumatic restorative treatment (ART) to undergraduate and graduate students. *BMC Research Notes, 7*(1), 456-456. https://doi.org/10.1186/1756-0500-7-456

Cao, L. (2012). Differences in procrastination and motivation between undergraduate and graduate students. *The Journal of Scholarship of Teaching and Learning, 12*(2), 39-64. https://doi.org/10.14434/josotl.v12i2.2018

Chen, J. H., Björkman, A., Zou, J. H., & Engström, M. (2019). Self–regulated learning ability, metacognitive ability, and general self-efficacy in a sample of nursing students: A cross-sectional and correlational study. *Nurse Education in Practice, 37*, 15-21. https://doi.org/10.1016/j.nepr.2019.04.014

Cherry, B., & Jacob, S. (2023). *Contemporary nursing* (8th ed.). Elsevier.

Chunta, K., Shellenbarger, T., & Chicca, J. (2021). Generation Z students in the online environment: Strategies for nurse educators. *Nurse Educator*, *46*(2), 87-91. https://doi.org/10.1097/NNE.0000000000000872

Credé, M., & Phillips, L. A. (2011). A meta-analytic review of the motivated strategies for learning questionnaire. *Learning and Individual Differences, 21*(4), 337-346. https://doi.org/10.1016/j.lindif.2011.03.002

Crookes, K., Crookes, P. A., & Walsh, K. (2013). Meaningful and engaging teaching techniques for student nurses: A literature review. *Nurse Education in Practice, 13*(4), 239-243. https://doi.org/10.1016/j.nepr.2013.04.008

Darbyshire, P. (1993). In defense of pedagogy: A critique of the notion of andragogy. *Nurse Education Today, 13*(5), 328-335. https://doi.org/10.1016/0260-6917(93)90072-A

Decelle, G. (2016). Andragogy: A fundamental principle of online education for nursing. *Journal of Best Practices in Health Professions Diversity, 9*(2), 1263-1273.

Dever, D. A., Wiedbusch, M. D., Romero, S. M., & Azevedo, R. (2024). Investigating pedagogical agents' scaffolding of self-regulated learning in relation to learners' subgoals. *British Journal of Educational Technology, 55*(4), 1290-1308. https://doi.org/10.1111/bjet.13432

Dianati, S., Iwashita, A. N., & Vasquez, C. (2022). Flipped classroom experiences: Comparing undergraduate and postgraduate perceptions of self-regulated learning. *Issues in Educational Research, 32*(2), 473.

Dogu, O., Karadas, A., & Eskin Bacaksiz, F. (2022). The relationships between self-regulated learning in clinical nursing practice and self-efficacy: A cross-sectional study among nursing students. *Perspectives in Psychiatric Care, 58*(4), 2107-2115. https://doi.org/10.1111/ppc.13037

Dolan, H., Amidon, B. J., & Gephart, S. M. (2021). Evidentiary and theoretical foundations for virtual simulation in nursing education. *Journal of Professional Nursing, 37*(5), 810-815. https://doi.org/10.1016/j.profnurs.2021.06.001

Draganov, P. B., Andrade, A. d. C., Neves, V. R., & Sanna, M. C. (2013). Andragogy in nursing: A literature review/Andragogía en la enfermería: Una revisión de la literatura. *Investigación y Educación En Enfermería, 31*(1), 86.

Gill, M., Andersen, E., & Hilsmann, N. (2019). Best practices for teaching pharmacology to undergraduate nursing students: A systematic review of the literature. *Nurse Education Today, 74*, 15-24. https://doi.org/10.1016/j.nedt.2018.11.017

Giltenane, M., & Dowling, M. (2023). Student nurses' experiences of remote learning during Covid-19 pandemic: A qualitative evidence synthesis. *Journal of Advanced Nursing, 80*(7), 2614-2628. https://doi.org/10.1111/jan.15887

Gray, J. R., Grove, S. K., & Sutherland, S. (2017). *Burns and Grove's the practice of nursing research: Appraisal, synthesis, and generation of evidence* (8th ed.). Elsevier.

Harlan, M. D., Rosenzweig, M. Q., & Hoffmann, R. L. (2021). Preferred teaching/learning strategies for graduate nursing students in web-enhanced courses. *Dimensions of Critical Care Nursing*, *40*(3), 149–155. https://doi.org/10.1097/DCC.0000000000000469

Hartree, A. (1984). Malcolm Knowles' theory of andragogy: A critique. *International Journal of Lifelong Education, 3*(3), 203-210. https://doi.org/10.1080/0260137840030304

Holzweiss, P. C., Joyner, S. A., Fuller, M. B., Henderson, S., & Young, R. (2014). Online graduate students' perceptions of best learning experiences. *Distance Education, 35*(3), 311-323.

Hunt, D. D. (2018). *The new nurse educator: Mastering academe* (2nd ed.). Springer Publishing Company.

Huun, K. M., Kummerow, A., & Jenkins, J. T. (2021). Educating and transitioning a diverse nursing workforce: LPN to BSN. *The Journal of Continuing Education in Nursing, 52*(12), 558-564. https://doi.org/10.3928/00220124-20211108-07

Iyama, S., & Maeda, H. (2018). Development of the self-regulated learning scale in clinical nursing practice for nursing students: Consideration of its reliability and validity. *Japan Journal of Nursing Science, 15*(3), 226-236. https://doi.org/10.1111/jjns.12191

Kala, S., Isaramalai, S., & Pohthong, A. (2010). Electronic learning and constructivism: A model for nursing education. *Nurse Education Today, 30*(1), 61-66. https://doi.org/10.1016/j.nedt.2009.06.002

Karlen, Y., Bäuerlein, K., & Brunner, S. (2023). Teachers' assessment of self-regulated learning: Linking professional competences, assessment practices, and judgment accuracy. *Social Psychology of Education, 27*(2), 461-491. https://doi.org/10.1007/s11218-023-09845-4

Karlsen, K., Aronsen, C., Bjørnnes, T. D., Harberg, T. B., Halland, A. N., Holand, T., Jakobsen, L., Kornbakk, L., Kvalshaug, B., Lian, H., Nygård, C., Solsvik, A. K., Trømborg, E., & Emaus, N. (2023). Integration of e-learning approaches in a post-pandemic learning environment – Norwegian nursing students' recommendations from an action research study. *Heliyon*, *9*(2). https://doi.org/10.1016/j.heliyon.2023.e13331

Kavanagh, J. M., & Szweda, C. (2017). A crisis in competency: The strategic and ethical imperative to assessing new graduate nurses' clinical reasoning. *Nursing Education Perspectives, 38*(2), 57-62. https://doi.org/10.1097/01.NEP.0000000000000112

Kellar, S. P., & Kelvin, E. A. (2013). *Munro's statistical methods for health care research* (6th ed.). Wolters Kluwer Health/Lippincott Williams & Wilkins.

Kinyon, K., D'Alton, S., Poston, K., & Navarrete, S. (2021). Improving physical assessment and clinical judgment skills without increasing content in a prelicensure nursing health assessment course. *Nursing Reports*, *11*(3), 600-607. https://doi.org/10.3390/nursrep11030057

Knowles, M. S. (1978). Andragogy: Adult theory in perspective. *Community College Review, 5*(3), 9-20.

Knowles, M. S., Holton, E. F., III, & Swanson, R. A. (2020). *The adult learner: The definitive classic in adult education and human resource development* (9th ed.). Taylor & Francis Group.

Koh, Y., Lee, C., Chua, M. T., Phoon, B. S. M., Cheung, N. M. T., & Chan, G. W. H. (2022). Medical and nursing students' perceptions of online learning and pandemic preparedness during COVID-19 in Singapore. *Asia Pacific Scholar* (Online), *7*(3), 51-56. https://doi.org/10.29060/TAPS.2022-7-3/SC2738

Kuiper, R. A., Murdock, N., & Grant, N. (2010). Thinking strategies of baccalaureate nursing students prompted by self-regulated learning strategies. *The Journal of Nursing Education, 49*(8), 429-436. https://doi.org/10.3928/01484834-20100430-01

Kuiper, R. A., & Pesut, D. J. (2004). Promoting cognitive and metacognitive reflective reasoning skills in nursing practice: Self-regulated learning theory. *Journal of Advanced Nursing, 45*(4), 381-391. https://doi.org/10.1046/j.1365-2648.2003.02921.x

Kurt, E., & Eskimez, Z. (2022). Examining self-regulated learning of nursing students in clinical practice: A descriptive and cross-sectional study. *Nurse Education Today, 109*, 105242-105242. https://doi.org/10.1016/j.nedt.2021.105242

Law Reform Commission. (1977). *The law relating to the age of majority, the age for marriage and some related subjects.* https://www.lawreform.ie/_fileupload/consultation%20papers/wpAgeofMajority.htm.

Lee, J. J., Clarke, C. L., Carson, M. N., & Yang, S. C. (2018). How do Korean nursing students build knowledge? A constructivist grounded theory study. *BMJ Open, 8*(7), e022050-e022050. https://doi.org/10.1136/bmjopen-2018-022050

Lim, L., Bannert, M., van der Graaf, J., Singh, S., Fan, Y., Surendrannair, S., Rakovic, M., Molenaar, I., Moore, J., & Gašević, D. (2023). Effects of real-time analytics-based personalized scaffolds on students' self-regulated learning. *Computers in Human Behavior, 139*, 107547. https://doi.org/10.1016/j.chb.2022.107547

Linnes, C., Ronzoni, G., Agrusa, J., & Lema, J. (2022). Emergency remote education and its impact on higher education: A temporary or permanent shift in instruction? *Education Sciences*, *12*(10), 721. https://doi.org/10.3390/educsci12100721

Loeng, S. (2018). Various ways of understanding the concept of andragogy. *Cogent Education, 5*(1), 1496643. https://doi.org/10.1080/2331186X.2018.1496643

McAtee, B. (2023). Preferred instructional methods of millennial nursing students. *Nursing Education Perspectives, 44*(2), 116. https://doi.org/10.1097/01.NEP.0000000000000944

McKeown, T., & Anderson, M. (2016). UTAUT: Capturing differences in undergraduate versus postgraduate learning. *Education & Training, 58*(9), 945-965. https://doi.org/10.1108/ET-07-2015-0058

Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. *New Directions for Adult and Continuing Education, 2001*(89), 3-14. https://doi.org/10.1002/ace.3

Merriam, S. B., & Bierema, L. L. (2014). *Adult learning: Linking theory and practice* (1st ed.). Jossey-Bass.

Moss, C., Grealish, L., & Lake, S. (2010). Valuing the gap: A dialectic between theory and practice in graduate nursing education from a constructive educational approach. *Nurse Education Today, 30*(4), 327-332. https://doi.org/10.1016/j.nedt.2009.09.001

Murray, M., Sundin, D., & Cope, V. (2020). A mixed-methods study on patient safety insights of new graduate registered nurses. *Journal of Nursing Care Quality, 35*(3), 258. https://doi.org/10.1097/NCQ.0000000000000443

National Council of State Boards of Nursing. (2023). *NCLEX pass rates*. https://www.ncsbn.org/exams/exam-statistics-and-publications/nclex-pass-rates.page

Nguyen, M., Miranda, J., Lapum, J., & Donald, F. (2016). Arts-based learning: A new approach to nursing education using andragogy. *The Journal of Nursing Education, 55*(7), 407-410. https://doi.org/10.3928/01484834-20160615-10

Norrie, P., & Dalby, D. (2007). How adult are our learners?: A cross-sectional exploration of the learning characteristics of nursing students in a United Kingdom university. *Journal of Research in Nursing, 12*(4), 319-328. https://doi.org/10.1177/1744987107075254

Oermann, M. H., De Gagne, J. C., & Phillips, B. C. (Eds.). (2018). *Teaching in nursing and role of the educator: The complete guide to best practice in teaching, evaluation, and curriculum development.* Springer Publishing Company

Ormrod, J. E., Anderman, E. M., & Anderman, L. H. (2020). *Educational psychology: Developing learners* (10th ed.). Pearson.

Panadero, E. (2017). A review of self-regulated learning: Six models and four directions for research. *Frontiers in Psychology*, *8*, 422-422. https://doi.org/10.3389/fpsyg.2017.00422

Pett, M. A. (2016). *Nonparametric statistics for health care research: Statistics for small samples and unusual distributions* (2nd ed.). Sage Publications.

Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review, 16*(4), 385-407.

Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire (MSLQ). *Educational and Psychological Measurement, 53*, 801-813.

Quality Matters. (2018). *Specific review standards for the QM higher education rubric* (6th ed.) https://www.qualitymatters.org/sites/default/files/PDFs/StandardsfromtheQMHigherEducationRubric.pdf.

Roddy, C., Amiet, D. L., Chung, J., Holt, C., Shaw, L., McKenzie, S., Garivaldis, F., Lodge, J. M., & Mundy, M. E. (2017). Applying best practice online learning, teaching, and support to intensive online environments: An integrative review. *Frontiers in Education*, *2*. https://doi.org/10.3389/feduc.2017.00059

Sabio, C. (2019). Associate degree nursing students' perceived barriers to baccalaureate nursing education and intentions to enroll in a baccalaureate-only nursing environment. *Teaching and Learning in Nursing, 14*(1), 9-14. https://doi.org/10.1016/j.teln.2018.08.004

Schrenk, N., Alves, K., Schrenk, B., & Van Dam, D. (2021). Reflecting on best practices for online learning in a post-COVID-19 world. *Online Learning*, *25*(4), 486. https://doi.org/10.24059/olj.v25i4.2460

Sibrian, J., Hutapea, K., Dunbar, G. B., & Kawar, L. N. (2022). A virtual world: New graduate education in the era of COVID-19. *The Journal of Continuing Education in Nursing, 53*(7), 307-311. https://doi.org/10.3928/00220124-20220603-06

Soriano, G., & Oducado, R. M. (2021). Shifting the education paradigm amid the COVID 19 pandemic: Nursing students' attitude to E learning. *Africa Journal of Nursing and Midwifery, 23*(1). https://doi.org/10.25159/2520-5293/8090

Stankiewicz, M., Webster, J., Wallis, M., Tallot, M., & Chaboyer, W. (2016). An education program for pressure injury recognition and assessment utilising constructivism teaching method. *Wound Practice & Research, 24*(2), 100-107.

Taylor, B., & Kroth, M. (2009). Andragogy's transition into the future: Meta-analysis of andragogy and its search for a measurable instrument. *Journal of Adult Education, 38*(1), 1.

Taylor, R. T. (2012). *Review of the Motivated Strategies for Learning Questionnaire (MSLQ) Using reliability generalization techniques to assess scale reliability* (Order No. 3520489). Available from ProQuest Dissertations & Theses Global. (1033786065).

Weeks, K. W., Coben, D., O'Neill, D., Jones, A., Weeks, A., Brown, M., & Pontin, D. (2019). Developing and integrating nursing competence through authentic technology-enhanced clinical simulation education: Pedagogies for reconceptualizing the theory-practice gap. *Nurse Education in Practice, 37*, 29-38. https://doi.org/10.1016/j.nepr.2019.04.010

Weimer, M. (2013). *Learner-centered teaching: Five key changes to practice* (2nd ed.). Jossey-Bass.

Wolters, C. A. (2003). Understanding procrastination from a self-regulated learning perspective. *Journal of Educational Psychology, 95*, 179-187.

Wolters, C. A. (2004). Advancing achievement goal theory: Using goal structures and goal orientations to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology*, *96*, 236-250.

Yen, M., Chen, S., Wang, C., Chen, H., Hsu, Y., & Liu, T. (2018). A framework for self-regulated digital learning (SRDL). *Journal of Computer Assisted Learning, 34*(5), 580-589. https://doi.org/10.1111/jcal.12264

Yoo, L., & Jung, D. (2022). Teaching presence, self-regulated learning and learning satisfaction on distance learning for students in a nursing education program. *International Journal of Environmental Research and Public Health, 19*(7), 4160. https://doi.org/10.3390/ijerph19074160\

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments and future prospects. *American Educational Research Journal, 45*(1), 166-183.

# APPENDIX A

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E) in the case of a photocopy permission, no materials may be entered into electronic memory by User except in order to produce an identical copy of a Work before or during the academic term (or analogous period) as to which any particular permission is granted. In the event that User shall choose to retain materials that are the subject of a photocopy permission in electronic memory for purposes of producing identical copies more than one day after such retention (but still within the scope of any permission granted), User must notify CCC of such fact in the applicable permission request and such retention shall constitute one copy actually sold for purposes of calculating permission fees due; and

F) any permission granted shall expire at the end of the class. No permission granted shall in any way include any right by User to create a substantively non-identical copy of the Work or to edit or in any other way modify the Work (except by means of deleting material immediately preceding or following the entire portion of the Work copied).

iv) Books and Records; Right to Audit. As to each permission granted under the academic pay-per-use Service, User shall maintain for at least four full calendar years books and records sufficient for CCC to determine the numbers of copies made by User under such permission. CCC and any representatives it may designate shall have the right to audit such books and records at any time during User's ordinary business hours, upon two days' prior notice. If any such audit shall determine that User shall have underpaid for, or underreported, any photocopies sold or by three percent (3%) or more, then User shall bear all the costs of any such audit; otherwise, CCC shall bear the costs of any such audit. Any amount determined by such audit to have been underpaid by User shall immediately be paid to CCC by User, together with interest thereon at the rate of 10% per annum from the date such amount was originally due. The provisions of this paragraph shall survive the termination of this License for any reason.

b) ***Digital Pay-Per-Uses of Academic Course Content and Materials (e-coursepacks, electronic reserves, learning management systems, academic institution intranets).*** For uses in e-coursepacks, posts in electronic reserves, posts in learning management systems, or posts on academic institution intranets, the following additional terms apply:

i) The pay-per-uses subject to this Section 14(b) include:

A) **Posting e-reserves, course management systems, e-coursepacks for text-based content,** which grants authorizations to import requested material in electronic format, and allows electronic access to this material to members of a designated college or university class, under the direction of an instructor designated by the college or university, accessible only under appropriate electronic controls (e.g., password);

B) **Posting e-reserves, course management systems, e-coursepacks for material consisting of photographs or other still images not embedded in text,** which grants not only the authorizations described in Section 14(b)(i)(A) above, but also the following authorization: to include the requested material in course materials for use consistent with Section 14(b)(i)(A) above, including any necessary resizing, reformatting or modification of the resolution of such requested material (provided that such modification does not alter the underlying editorial content or meaning of the requested material, and provided that the resulting modified content is used solely within the scope of, and in a manner consistent with, the particular authorization described in the Order Confirmation and the Terms), but not including any other form of manipulation, alteration or editing of the requested material;

C) **Posting e-reserves, course management systems, e-coursepacks or other academic distribution for audiovisual content,** which grants not only the authorizations described in Section 14(b)(i)(A) above, but also the following authorizations: (i) to include the requested material in course materials for use consistent with Section 14(b)(i)(A) above; (ii) to display and perform the requested material to such members of such class in the physical classroom or remotely by means of streaming media or other video formats; and (iii) to "clip" or reformat the requested material for purposes of time or content management or ease of delivery, provided that such "clipping" or reformatting does not alter the underlying editorial content or meaning of the requested material and that the resulting material is used solely within the scope of, and in a manner consistent with, the particular authorization described in the Order Confirmation and the Terms. Unless expressly set forth in the relevant Order Conformation, the License does not authorize any other form of manipulation, alteration or editing of the requested material.

ii) Unless expressly set forth in the relevant Order Confirmation, no License granted shall in any way: (i) include any right by User to create a substantively non-identical copy of the Work or to edit or in any other way modify the Work (except by means of deleting material immediately preceding or following the entire portion of the Work copied or, in the case of Works subject to Sections 14(b)(1)(B) or (C) above, as described in such Sections) (ii) permit "publishing ventures" where any particular course materials would be systematically marketed at multiple institutions.

iii) Subject to any further limitations determined in the Rightsholder Terms (and notwithstanding any apparent contradiction in the Order Confirmation arising from data provided by User), any use authorized under the electronic course content pay-per-use service is limited as follows:

A) any License granted shall apply to only one class (bearing a unique identifier as assigned by the institution, and thereby including all sections or other subparts of the class) at one institution;

B) use is limited to not more than 25% of the text of a book or of the items in a published collection of essays, poems or articles;

C) use is limited to not more than the greater of (a) 25% of the text of an issue of a journal or other periodical or (b) two articles from such an issue;

D) no User may sell or distribute any particular materials, whether photocopied or electronic, at more than one institution of learning;

E) electronic access to material which is the subject of an electronic-use permission must be limited by means of electronic password, student identification or other control permitting access solely to students and instructors in the class;

F) User must ensure (through use of an electronic cover page or other appropriate means) that any person, upon gaining electronic access to the material, which is the subject of a permission, shall see:

- a proper copyright notice, identifying the Rightsholder in whose name CCC has granted permission,
- a statement to the effect that such copy was made pursuant to permission,

- a statement identifying the class to which the material applies and notifying the reader that the material has been made available electronically solely for use in the class, and
- a statement to the effect that the material may not be further distributed to any person outside the class, whether by copying or by transmission and whether electronically or in paper form, and User must also ensure that such cover page or other means will print out in the event that the person accessing the material chooses to print out the material or any part thereof.

G) any permission granted shall expire at the end of the class and, absent some other form of authorization, User is thereupon required to delete the applicable material from any electronic storage or to block electronic access to the applicable material.

iv) Uses of separate portions of a Work, even if they are to be included in the same course material or the same university or college class, require separate permissions under the electronic course content pay-per-use Service. Unless otherwise provided in the Order Confirmation, any grant of rights to User is limited to use completed no later than the end of the academic term (or analogous period) as to which any particular permission is granted.

v) Books and Records; Right to Audit. As to each permission granted under the electronic course content Service, User shall maintain for at least four full calendar years books and records sufficient for CCC to determine the numbers of copies made by User under such permission. CCC and any representatives it may designate shall have the right to audit such books and records at any time during User's ordinary business hours, upon two days' prior notice. If any such audit shall determine that User shall have underpaid for, or underreported, any electronic copies used by three percent (3%) or more, then User shall bear all the costs of any such audit; otherwise, CCC shall bear the costs of any such audit. Any amount determined by such audit to have been underpaid by User shall immediately be paid to CCC by User, together with interest thereon at the rate of 10% per annum from the date such amount was originally due. The provisions of this paragraph shall survive the termination of this license for any reason.

c) ***Pay-Per-Use Permissions for Certain Reproductions (Academic photocopies for library reserves and interlibrary loan reporting) (Non-academic internal/external business uses and commercial document delivery).*** The License expressly excludes the uses listed in Section (c)(i)-(v) below (which must be subject to separate license from the applicable Rightsholder) for: academic photocopies for library reserves and interlibrary loan reporting; and non-academic internal/external business uses and commercial document delivery.

i) electronic storage of any reproduction (whether in plain-text, PDF, or any other format) other than on a transitory basis;

ii) the input of Works or reproductions thereof into any computerized database;

iii) reproduction of an entire Work (cover-to-cover copying) except where the Work is a single article;

iv) reproduction for resale to anyone other than a specific customer of User;

v) republication in any different form. Please obtain authorizations for these uses through other CCC services or directly from the rightsholder.

Any license granted is further limited as set forth in any restrictions included in the Order Confirmation and/or in these Terms.

d) ***Electronic Reproductions in Online Environments (Non-Academic-email, intranet, internet and extranet).*** For "electronic reproductions", which generally includes e-mail use (including instant messaging or other electronic transmission to a defined group of recipients) or posting on an intranet, extranet or Intranet site (including any display or performance incidental thereto), the following additional terms apply:

i) Unless otherwise set forth in the Order Confirmation, the License is limited to use completed within 30 days for any use on the Internet, 60 days for any use on an intranet or extranet and one year for any other use, all as measured from the "republication date" as identified in the Order Confirmation, if any, and otherwise from the date of the Order Confirmation.

ii) User may not make or permit any alterations to the Work, unless expressly set forth in the Order Confirmation (after request by User and approval by Rightsholder); provided, however, that a Work consisting of photographs or other still images not embedded in text may, if necessary, be resized, reformatted or have its resolution modified without additional express permission, and a Work consisting of audiovisual content may, if necessary, be "clipped" or reformatted for purposes of time or content management or ease of delivery (provided that any such resizing, reformatting, resolution modification or "clipping" does not alter the underlying editorial content or meaning of the Work used, and that the resulting material is used solely within the scope of, and in a manner consistent with, the particular License described in the Order Confirmation and the Terms.

15) **Miscellaneous.**

a) User acknowledges that CCC may, from time to time, make changes or additions to the Service or to the Terms, and that Rightsholder may make changes or additions to the Rightsholder Terms. Such updated Terms will replace the prior terms and conditions in the order workflow and shall be effective as to any subsequent Licenses but shall not apply to Licenses already granted and paid for under a prior set of terms.

b) Use of User-related information collected through the Service is governed by CCC's privacy policy, available online at www.copyright.com/about/privacy-policy/.

c) The License is personal to User. Therefore, User may not assign or transfer to any other person (whether a natural person or an organization of any kind) the License or any rights granted thereunder; provided, however, that, where applicable, User may assign such License in its entirety on written notice to CCC in the event of a transfer of all or substantially all of User's rights in any new material which includes the Work(s) licensed under this Service.

d) No amendment or waiver of any Terms is binding unless set forth in writing and signed by the appropriate parties, including, where applicable, the Rightsholder. The Rightsholder and CCC hereby object to any terms contained in any writing prepared by or on behalf of the User or its principals, employees, agents or affiliates and purporting to govern or otherwise relate to the License described in the Order Confirmation, which terms are in any way inconsistent with any Terms set forth in the Order Confirmation, and/or in CCC's standard operating procedures, whether such writing is prepared prior to, simultaneously with or subsequent to the Order Confirmation, and whether such writing appears on a copy of the Order Confirmation or in a separate instrument.

e) The License described in the Order Confirmation shall be governed by and construed under the law of the State of New York, USA, without regard to the principles thereof of conflicts of law. Any case, controversy, suit, action, or proceeding arising out of, in connection with, or related to such License shall be brought, at CCC's sole discretion, in any federal or state court located in the County of New York, State of New York, USA, or in any federal or state court whose geographical jurisdiction covers the location of the Rightsholder set forth in the Order Confirmation. The parties expressly submit to the personal jurisdiction and venue of each such federal or state court.

*Last updated October 2022*

# APPENDIX B

## SOCIAL MEDIA POST FOR STUDENT PARTICIPANTS

Hello there fellow nursing student! Do you have 20 minutes to fill out a questionnaire about your self-regulated learning for your online nursing class?. COVID-19 has changed the way we deliver nursing education, and I would love your input in how taking online courses influences your learning behaviors. I hope to use this data to compare differences between degree levels' self-regulated learning to influence best practices in online nursing education specifically tailored to the different degree levels. Your input will help nursing students get the most out of their online education! Your answers on this questionnaire will have no effect on your course grade whatsoever, in fact your course faculty will not have access to any data or results. Participation is completely anonymous and confidential; I will not even ask for your identity. This 20-minute questionnaire asks you to rate your self-regulated learning behaviors in your online nursing class. Answer as honestly as possible and you will be entered for a drawing to win a 50-dollar Amazon gift card! Thank you!

# APPENDIX C

## SOCIAL MEDIA POST FOR NURSE EDUCATORS

Hello there fellow nursing educators! COVID-19 has changed the way we deliver nursing education, and as a part of my dissertation study I would love your students' input in how taking online courses influences their learning behaviors. I hope to use this data to compare differences between traditional undergraduate BSN students and traditional graduate nursing students' self-regulated learning to influence best practices in online nursing education specifically tailored to the different degree levels. Their input will help nursing students get the most out of their online education! Participation is completely anonymous and confidential. This 20-minute questionnaire asks them to rate their self-regulated learning behaviors in an online class. Please pass this on to your BSN, MSN, APRN, DNP, PhD or EDD in nursing students and they will be entered for a drawing to win a 50-dollar Amazon gift card as a thank you for their participation!

# APPENDIX D

# INFORMED CONSENT

UNIVERSITY OF
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**Informed Consent Form for Participation in Research**

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**Title of Research Study:** A COMPARATIVE DESCRIPTIVE STUDY EXPLORING UNDERGRADUATE VERSUS GRADUATE SELF REGULATED LEARNING IN ONLINE NURSING COURSES

**Researcher(s):** Monica Panaitisor MSN, RN School of Nursing PhD in Nursing Education
email: pana5383@bears.unco.edu
**Research Advisor:** Dr. Michael Aldridge
email: michael.aldridge@unco.edu

**Procedures:** I am researching self-regulated learning in traditional undergraduate BSN nursing students and traditional graduate MSN, APRN, DNP, PhD in nursing, and EdD in nursing students in a fully online nursing course. As a participant in this research, you will be asked to fill out a questionnaire. This questionnaire will have you evaluate your self-regulated learning behaviors in your online nursing course. The questionnaire will each take approximately 20 minutes. At the end of the questionnaire, you will be asked if you would like to opt in to be entered into a drawing to win a 50-dollar Amazon gift card.

For the questionnaire, you will not provide your name, but will be asked to provide your age, gender, ethnicity, regional geographic location, healthcare experience, length of healthcare experience, previous experience with fully online classes, and percentage of your course and program that you have completed. Therefore, your responses will be anonymous. Only the researcher will examine individual responses. The results of the study will be presented in group form only (e.g., averages) and all original data will be kept in the researcher's biometric protected computer.

Risks to you are minimal. You may feel anxious or frustrated with your self-evaluation of your self-regulated learning behaviors. If you experience these feelings you are encouraged to seek counseling services at your institution. The benefits to you include understanding how self-regulation behaviors can aid in your overall success in online courses. In addition, your responses may help nurse educators better understand how we present content in online nursing courses to different degree levels.

Participation is voluntary. You may decide not to take part in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in a loss of benefits to which you are otherwise entitled. Please take all the time you need to read through this document and decide whether you would like to take part in this research study. If you decide to take part, your completion of the research procedures indicates your consent. Please print this form for your records. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Research and Sponsored Programs, University of Northern Colorado at irb@unco.edu or 970-351-1910.

# APPENDIX E

## SURVEY INSTRUMENT WITH DEMOGRAPHIC QUESTIONS

Inclusion/Exclusion Criteria
Answers that lead to exclusion criteria will automatically end the survey.

1. Are you at least 18 years of age?
    A. Yes
    B. No

2. Which of the following accredited programs in the United States are you currently enrolled in
    A. Pre-licensure Baccalaureate in Science of Nursing (BSN) program
    B. Masters in Science of Nursing (MSN) program
    C. Advanced Practice Registered Nursing (APRN) program
    D. Doctorate in Nursing Practice (DNP) program
    E. Doctorate of Philosophy in Nursing (PhD) program
    F. Educational Doctorate in Nursing (EdD) program
    G. One of the above but not in the United States
    H. Other
3. Are you currently enrolled in a fully online nursing course (without any in-person component)?
    A. Yes
    B. No

All subscales utilized this following response scale:

| Completely disagree | Mostly disagree | Tend to disagree | Neutral | Tend to agree | Mostly agree | Completely agree |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Motivational beliefs

Task value
1. I think I will be able to use what I learn in this course in other courses.
2. It is important for me to learn the course material in this class.
3. I am very interested in the content area of this course.
4. I think the course material in this class is useful for me to learn.
5. I like the subject matter of this course.
6. Understanding the subject matter of this course is very important to me.

Self-efficacy
1. I believe I will receive an excellent grade in this class.
2. I'm certain I can understand the most difficult material presented in the readings for this course.
3. I'm confident I can learn the basic concepts taught in this course.

4. I'm confident I can understand the most complex material presented by the instructor in this course.
5. I'm confident I can do an excellent job on the assignments in this course.
6. I'm certain I can master the skills being taught in this class.
7. Considering the difficulty of this course, the teacher, and my skills, I think I will do well in this class.

Deep processing strategies

Elaboration
1. When I study for this class, I pull together information from different sources, such as readings, online discussions, and my prior knowledge of the subject.
2. I try to relate ideas in this subject to those in other courses whenever possible.
3. When reading for this class, I try to relate the material to what I already know.
4. I try to understand the material in this class by making connections between the readings and the concepts from the online activities.
5. I try to apply ideas from course readings in other class activities such as online discussions.

Critical thinking
1. I often find myself questioning things I hear or read in this course to decide if I find them convincing.
2. When a theory, interpretation, or conclusion is presented in the online discussions or in the readings, I try to decide if there is good supporting evidence.
3. I treat the course material as a starting point and try to develop my own ideas about it.
4. Whenever I read an assertion or conclusion in this class, I think about possible alternatives.
5. I try to play around with ideas of my own related to what I am learning in this course.

Motivational engagement

Procrastination
1. I often find excuses for not starting the work for this course.
2. I delay studying for this course, even when it is important.
3. I postpone doing the work for this class until the last minute.
4. I promise myself I will do something for this course, then put it off anyway.
5. I frequently put off getting started on the readings and assignments for this course.

Choice
1. I look forward to taking more online courses in the future.
2. I won't take another online class unless it is required. (reverse coded)
3. I plan to avoid taking any class that involves online learning. (reverse coded)
4. If I had a choice, I would take an online course rather than a traditional face-to-face course.

Demographic Data Questions:

1. What is your age
a. 18-22 years old
b. 23-30 years old
c. 31-40 years old
d. 41-50 years old
e. 51 or over years old

2. Specify your ethnicity
a. White
b. Hispanic or Latino
c. Asian
d. Black or African American
e. Hawaiian or Pacific Islander
f. Native American or Indian American
g. Other

3. What is your gender?
a. Male
b. Female
c. non-binary
d. I prefer not to answer.

4. At which geographic region within the United States is your nursing program?
a. Northeast
b. Southeast
c. Midwest
d. Southwest
e. West

5. Are you currently..?
a. A nursing student employed in the healthcare field.
b. A nursing student employed outside the healthcare field.
c. A full time nursing student only

6. If you answered A. to the previous question, how long have you been employed in the healthcare field?
a. 2 years or less
b. 3-5 years
c. 6-10 years
d. Over 10 years
e. N/A

7. How many fully online classes have you taken prior to this class?
a. None
b. One
c. Two
d. Three or more

8. Please indicate what percentage of your online courses you have completed?
a. ≤ 25%
b. About 50%
c. ≥ 75%

9. Please indicate what percentage of your nursing program you have completed
a. ≤ 25%
b. About 50%
c. ≥ 75%

# APPENDIX F

## INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

| | |
|---|---|
| Date: | 10/30/2023 |
| Principal Investigator: | Monica Panaitisor |
| Committee Action: | **IRB EXEMPT DETERMINATION – New Protocol** |
| Action Date: | 10/30/2023 |
| Protocol Number: | 2310053946 |
| Protocol Title: | A COMPARATIVE DESCRIPTIVE STUDY EXPLORING UNDERGRADUATE VERSUS GRADUATE SELF REGULATED LEARNING IN ONLINE NURSING COURSES |
| Expiration Date: | |



The University of Northern Colorado Institutional Review Board has reviewed your protocol and determined your project to be exempt under 45 CFR 46.104(d)(702) for research involving

Category 2 (2018): EDUCATIONAL TESTS, SURVEYS, INTERVIEWS, OR OBSERVATIONS OF PUBLIC BEHAVIOR. Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by 45 CFR 46.111(a)(7).

You may begin conducting your research as outlined in your protocol. Your study does not require further review from the IRB, unless changes need to be made to your approved protocol.

**As the Principal Investigator (PI), you are still responsible for contacting the UNC IRB office if and when:**

UNIVERSITY OF
NORTHERN COLORADO

Institutional Review Board

- You wish to deviate from the described protocol and would like to formally submit a modification request. Prior IRB approval must be obtained before any changes can be implemented (except to eliminate an immediate hazard to research participants).
- You make changes to the research personnel working on this study (add or drop research staff on this protocol).
- At the end of the study or before you leave The University of Northern Colorado and are no longer a student or employee, to request your protocol be closed. *You cannot continue to reference UNC on any documents (including the informed consent form) or conduct the study under the auspices of UNC if you are no longer a student/employee of this university.
- You have received or have been made aware of any complaints, problems, or adverse events that are related or possibly related to participation in the research.

If you have any questions, please contact the Interim IRB Administrator, Chris Saxton, at 970-702-5427 or via e-mail at chris.saxton@unco.edu. Additional information concerning the requirements for the protection of human subjects may be found at the Office of Human Research Protection website - http://hhs.gov/ohrp/ and https://www.unco.edu/research/research-integrity-and-compliance/institutional-review-board/.

Sincerely,
Michael Aldridge
Interim IRB Administrator

University of Northern Colorado: FWA00000784

# APPENDIX G

## PERMISSION TO USE SURVEY INSTRUMENT

## Re: MSLQ- Instrument Request

Artino, Anthony <aartino@email.gwu.edu>
Tue 7/25/2023 9:41 AM

To:
Panaitisor, Monica <pana5383@bears.unco.edu>

Sure, please just reference our work accordingly.

**Anthony R. Artino, Jr., Ph.D.**Professor & Associate Dean for Educational ResearchCo-Director, Academy of Education ScholarsSchool of Medicine & Health SciencesThe George Washington University(860) 942-9345 | aartino@email.gwu.edu
Deputy Editor, *Journal of Graduate Medical Education*
Associate Editor, *Perspectives on Medical Education*Assistant Editor, *Academic Medicine*
"*It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena… who at the bestknows in the end the triumph of high achievement, and who at the worst, ifhe fails, at least fails while daring greatly*" —Theodore Roosevelt, 1910
***Note: There is no need to reply to my emails after hours or on weekends.**GW Logo GW

Bicentennial Logo logo-twitter_sm logo-linkedin_sm

On Tue, Jul 25, 2023 at 11:27 AM Panaitisor, Monica <pana5383@bears.unco.edu> wrote:

Good morning Dr. Artino Jr and Dr. Stephens,
My name is Monica Panaitisor and I am a PhD in nursing education student at the University of Northern Colorado.
I am currently writing my dissertation and would like to ask permission to use the instrument (your32-item modified MSLQ) in my study. I am hoping to conduct a survey of undergraduate vs graduate nursing students' SRL in online nursing courses from a variety of nursing programs across the country.

Thank you for your time, I eagerly await your response.
Sincerely,
Monica Panaitisor MSN, RN