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Prelicensure Nursing Students' Perceptions of a Rapid Transition to an Online Learning Environment

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**PRELICENSURE NURSING STUDENTS' PERCEPTIONS OF A RAPID TRANSITION
TO AN ONLINE LEARNING ENVIRONMENT**

A Thesis
Submitted to the Faculty
of the Department of Nursing
College of Nursing and Health Sciences
of Winona State University

by
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In Partial Fulfillment of the Requirements
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ABSTRACT

Background/Objective: The need to transition to an online learning environment secondary to the COVID-19 pandemic required prelicensure nursing educators and students to become rapidly familiar with new teaching modalities. There is insufficient evidence to support the effectiveness of, and satisfaction with, the online learning environment in prelicensure nursing education due to historic underutilization of online methods and lack of research. The aim of this study is to evaluate the experiences and satisfaction of prelicensure nursing students with regards to effective teaching modalities following a rapid transition from the traditional to online learning environment due to the COVID-19 pandemic.

Method: This study is a secondary analysis of data from an online survey of 215 students registered for the prelicensure nursing major at a medium sized state university in the American Midwest in the spring semester of 2020. During this semester, a rapid transition from the traditional to online learning environment occurred as a result of the COVID-19 pandemic. Analysis within this secondary study focused on a series of open-ended questions inviting students to comment on the effectiveness of, and satisfaction with, online learning, together with perceived barriers, advantages and disadvantages. Framework analysis was utilized for the secondary qualitative data analysis.

Theoretical Framework: The constructivist learning theory was utilized to guide review of literature and data analysis in this thesis. This theory aids in the application of active learning in the context of adult learners.

Results: Four themes were identified in the secondary analysis of the survey responses which appeared to shape the students' experiences of the shift to online learning. These were: learning environment, course design and delivery, communication, and learner characteristics.

Conclusions: Perceptions of online learning were personal to, and differed between, individual students. Analysis of open-ended responses suggested each of these themes could be experienced by students along a continuum ranging from unfavorable to favorable. The combination of each student's experiences along these continua appear to cumulatively impact and predict their success in the online learning environment. Faculty can directly impact two of the themes identified: course design and delivery and communication. Utilizing appropriate strategies in these areas has the potential to improve student learning outcomes in the online learning environment. The online learning environment can be tailored to the student's individual learning needs, therefore increasing successful outcomes for students.

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CHAPTER ONE

Introduction

The transition to a fully online environment after the spread of the COVID-19 pandemic left all educators with the need to quickly transition didactic classes to the online environment and attempt to understand and utilize online teaching modalities. Online learning has only recently become integrated into nursing education, creating a gap in literature in relation to the most appropriate strategies for online course delivery, specifically in prelicensure nursing. This chapter explores the background to the project, types of learning environments, definitions of terms utilized, and purpose of the secondary analysis.

History of Current Problem

The use of the internet and advancements in technology have expanded student learning capabilities exponentially over time (Sinacori, 2020). In recent times, health educators are joining their colleagues in other disciplines in increasing their online academic offerings. The current generation pursuing higher education are computer literate, making the online learning environment an effective way of reaching students. This requires different instructional methods than a traditional classroom (Sinacori, 2020). Research shows the combination of online and face-to-face instruction, known as blended learning, results in higher achievement, higher student satisfaction, stronger student persistence, and increased flexibility in teaching and learning (Thai et al., 2020). It is important to address the effectiveness of, and satisfaction with these new delivery methods. The student perspective of this transition in delivery is critical to consider. With the ever-changing fields of nursing, healthcare, and education, it is the educator's responsibility to create a successful educational environment to support learners.

Nursing Demands

A significant advantage of online learning for nursing education is the potential to reach more students and ultimately address nursing shortages. According to the US Bureau of Labor Statistics (2021) the nursing field is anticipated to grow by 300,000 nurses by 2029, with approximately 176,000 additional openings due to retirements and work field exit per year. The American Association of Colleges of Nursing (AACN, 2020c) projects the need for registered nurses will increase 2-3% each year. In addition to this increase, there is a projected nursing shortage of five hundred thousand nurses in the US by 2025 (AACN, 2020c). In their report of factors contributing to the current and projected shortage of nurses, the National Advisory Council on Nurse Education and Practice (NACNEP) identifies a deficit in nursing faculty as a significant factor (NACNEP, 2010). Concurrently, there is increased emphasis on nurses obtaining a baccalaureate degree, with the Institute of Medicine (IOM) recommending at least 80% of Registered Nurses (RNs) be baccalaureate prepared (AACN, 2020b). These factors directly impact the need for more nurses and nurse educators. The National League for Nursing (NLN, 2014) cited multiple factors contributing to the shortage of nurse educators including challenges in demographic diversity, funding, and the imminent retirement of nursing faculty. Additionally, the AACN reports one third of nursing faculty are on track to retire by 2025 (AACN, 2020c).

Online, virtual, or electronic learning (e-learning) has been shown to reduce faculty shortages and connect students with non-traditional learning needs (Billings & Halstead, 2020). Online learning has been cited as enhancing creativity and flexibility amongst faculty and students. Secondary to these benefits, nursing programs are beginning to evolve from a traditional face-to-face learning environment to a hybrid or online learning environment (Billings

& Halstead, 2020). With the COVID-19 pandemic, many nurse educators and their students have been forced to transition to online learning rapidly and with little preparation. This has particularly affected prelicensure nursing programs, which have typically adopted a more traditional face-to-face approach for most activities. It is important to address the effectiveness of and satisfaction with these new delivery methods.

COVID-19 Pandemic

At the beginning of 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic (AACN, 2020a). COVID-19, a new strain of the coronavirus, spread rapidly throughout the world. This virus spreads through person-to-person contact with infection occurring via respiratory droplets as an infected person coughs, sneezes, or talks (Centers for Disease Control and Prevention [CDC], 2020). Due to the ease of transmission many states enacted stay-at-home orders encouraging citizens to leave their homes only for essential tasks such as obtaining groceries and medical needs, in conjunction with facial mask mandates and limitations to group gatherings. These measures were used to slow or halt the spread of the virus.

The CDC released updated guidelines for the Institutions of Higher Education strongly encouraging educational institutes follow local public health departmental recommendations in order to slow the spread of the virus and ensure the health and safety of students, staff, and faculty (AACN, 2020a). Many of these local public health recommendations included limitations on class delivery formats, graduation ceremonies, non-essential meetings, and clinical experiences. As a result, educational delivery transitioned almost entirely to the online environment. In addition, a personal protective equipment (PPE) shortage arose within the healthcare field. The uncertain nature of transmission, in addition to the rapid PPE shortage, eliminated clinical experiences for most students pursuing degrees in healthcare.

Learning Environments

Many different methods of educational delivery are utilized in higher education. These include the traditional learning environment, online learning environment, and hybrid learning environment. It is important to differentiate these three methods in consideration of the purpose of this thesis.

Traditional Learning Environment

Historically, the traditional learning environment in nursing education consisted of face-to-face lectures in a physical classroom, skills practice or simulation in a lab, and clinical experiences within the hospital and community settings. This environment involves students being physically present in a classroom with a professor(s), didactic instruction, structured class time, lectures, writing activities, and exams occurring with the instructor and students together in-person (Billings & Halstead, 2020). Currently, these methods are often utilized in conjunction with an online platform for ease of access to classroom resources and enhanced communication between students and faculty.

Most prelicensure nursing programs continue to utilize in-person lectures to provide content on a wide range of topics to large groups of students (Bastable, 2019). These programs are primarily based on campus to teach and assess the knowledge and skills needed for a successful nursing career. This assessment includes the evaluation of skills competency by the educator in a simulated environment. Skills are further developed through direct observation and practice with the educator or clinical partners in hospital and community settings (Esposito & Sullivan, 2020).

Online Learning Environment

In an online learning environment (also referred to as virtual or e-learning) all instruction and evaluation occurs on a digital platform connected to the internet and can be synchronous or asynchronous (Billings & Halstead, 2020). “Online learning uses the internet paired with various types of software such as learning management systems, learning portals, e-learning platforms, virtual learners' environment, or course management system,” (Billings & Halstead, 2020, p. 410). In general, the current generation of students possess extensive knowledge and expertise in utilizing technologies needed for online learning, such as laptops, smart phones, and e-books. According to Billings and Halstead (2020), the traditional learning environment will not be adequate for future nurses. A combination of online learning and technology will be necessary to adequately prepare future nurses because of the increased integration of technology in the healthcare field (Billings & Halstead, 2020).

Implementation of online learning requires consideration of internet access, computer literacy, and learner confidence using technology (Sowan & Jenkins, 2013). Technology, such as virtual simulation and conferencing, can be utilized to help deliver content (Esposito & Sullivan, 2020). Transitioning from traditional to online learning can be difficult for faculty who are naïve in regards to technology; partnering with technology proficient colleagues for education and support can lessen the burden of this transition (Billings & Halstead, 2020). The online learning environment encompasses many methods and tools such as videos, podcasts, and interactive websites which can aid in students’ retention of knowledge and application to practice (Billings & Halstead, 2020). The online learning environment has been associated with an increased workload for educators due to these various tools which require additional preparation by instructors when compared to face-to-face instruction (Billings & Halstead, 2020). Faculty

teamwork and student engagement greatly factor into the success of online delivery (Esposito & Sullivan, 2020).

Typically, pre-licensure nursing programs have not had significant offerings in an online format for multiple factors. In the United States, each state has its own requirements for nursing education to meet licensure eligibility. For the vast majority, students must graduate from an accredited program to sit for the National Council Licensure Examination (NCLEX) (Gaines, 2019). This accreditation is provided in tandem between the federal government and accrediting bodies, such as the Commission on Collegiate Nursing Education (CCNE) and the Accreditation Commission for Education in Nursing (ACEN) (Billings & Halstead, 2020; Gaines, 2019). To meet these requirements, academic institutions must ensure faculty are licensed in all states where they supervise students in clinical practice (Billings & Halstead, 2020). This can limit the accessibility of online courses to out of state students due to the inability to fulfill each state's board of nursing requirements. The State Authorization Reciprocity Agreement (SARA) is aiming to bridge these gaps and allow for some educational opportunities to be expanded outside of state lines. Due to these requirements, utilizing a completely online format is virtually impossible in prelicensure nursing education (Billings & Halstead, 2020).

Hybrid Learning Environment

The United States Department of Education (2010) refers to hybrid or blended learning as a combination of online learning with face-to-face instruction. This can be executed in nursing education through online lecture or demonstration, either synchronous or asynchronous, with in-person skills competency check off (Bastable, 2019). Hybrid learning maintains the "...desire to retain the advantages of face-to-face learning while also introducing the advantages of online learning..." (McCutcheon et al., 2018, p. 31).

Research Problem Statement

There is a lack of evidence to support the effectiveness of, and satisfaction with, an online learning environment for prelicensure nursing programs. As healthcare and technology advance, prelicensure nursing students must be equipped to adapt to the environments they will work in following their graduation and licensure (Billings & Halstead, 2020). Online learning enhances the learner's ability to adjust to these ever-changing technologies (Billings & Halstead, 2020). Online learning has been shown to reduce faculty shortages and connect students with non-traditional learning needs (Billings & Halstead, 2020). For online learning to be effective nurse educators need to also be aware of new and upcoming technologies. This requires educators to be granted opportunities to learn and receive training in the use of novel programs through instructional technology (IT) support.

The global COVID-19 pandemic changed delivery methods for many nursing programs rapidly, necessitating a quick transition to the online learning environment. Despite this change in delivery the need to prepare baccalaureate nurses, address the shortage of RNs nationwide, and continue to enhance the quality of nurses entering practice continues (AACN, 2020b; AACN, 2020c; NACNEP, 2010). These issues prompted discussion about the effectiveness and quality of content delivered to undergraduate nursing students within the online environment at one Midwest university. Faculty wondered how the rapid transition of teaching from traditional to online learning environment changed the perception of the student in terms of learning effectiveness and satisfaction.

Purpose

The purpose of this thesis is to examine prelicensure undergraduate nursing students' experience and perception of online learning following rapid transition from a traditional learning environment in the context of the COVID-19 pandemic.

Research Questions

Among prelicensure nursing students during the pandemic:

1. What are their perceptions of advantages and disadvantages of online learning?
2. Which aspects of online learning are they most satisfied with?
3. Which aspects of online learning are they most dissatisfied with?
4. What barriers to online learning do they identify?

Definition of Terms

To ensure clarity throughout this thesis the following terms are defined. There was a lack of consistent definitions in the literature (Barisone et al., 2019), therefore Billings and Halstead (2020) was mainly used for guidance in relation to definitions.

Prelicensure Nursing Student

Conceptual Definition: A student without previous nursing education or a nursing license who is studying for a Bachelor of Science (BS) degree to obtain licensure as a registered nurse (Winona State University, n.d.). This study also included research on associate degree programs in the literature review.

Operational Definition: Prelicensure baccalaureate nursing students at a public university in the Midwestern United States. This study only focused on the generic baccalaureate program.

Online Learning Environment

Conceptual Definition: “[Online learning] allowed students to study at their preferred time and at their own pace... [and] experience[d] enhanced self-initiation in learning through the web-based approach.” (Chan et al., 2016, p. 35).

Operational Definition: Post-COVID-19 transition to online instructional methods for prelicensure baccalaureate nursing students at a public Midwestern university in the United States.

Learning Effectiveness

Conceptual definition: The student’s achievement of expected learning outcomes (Billings & Halstead 2020, p. 439).

Operational Definition: Students report the educational program has enabled them to meet the program learning outcomes. Responses of students to survey question 21 in Appendix E. (21. If not, what could have been changed to more effectively meet the learning outcomes?)

Learner Satisfaction

Conceptual Definition: “Students evaluate teaching strategies and environments highly on course evaluations” (Billings & Halstead, 2020, p. 522).

Operational Definition: Students report online programming met their expectations. Responses of students to survey question 22 and 26 in Appendix E. (22. Please provide 2 concrete suggestions for how delivery of content in the online setting could be improved. 26. Is there anything else that you would like to add about your experiences of the Nursing Department’s response to Covid 19 and how it has affected you?)

Advantages & Disadvantages

Conceptual Definition: Beneficial or unbeneficial factor or combination of factors (Merriam Webster, n.d.). Student’s individual perception of factors in an online learning environment.

Operational Definition: Responses of students to survey questions 18 and 19 in Appendix E.

(18. From your personal point of view, please list 2 advantages of having your courses moved to an online environment. 19. From your personal point of view, please list 2 disadvantages of having your courses moved to an online environment.)

Barriers

Conceptual Definition: “those factors that negatively affect the ability of the learner to pay attention to and process the information” (Bastable, 2019, p. 21).

Operational Definition: Responses of students to survey questions nine and ten in Appendix E.

(9. Was there anything that limited your ability to participate in online learning activities? 10. Please describe situation.)

Summary

Historically, prelicensure nursing education has occurred in a traditional learning environment, although post-licensure and graduate education has moved more deliberately to incorporate a range of educational delivery methods. The COVID-19 pandemic necessitated a rapid transition to a completely online delivery of curriculum for students of nursing, providing an opportunity to evaluate learning effectiveness and student satisfaction in an online environment. The impact of rapid transition to these methods also needs to be examined. This chapter describes the traditional, online, and hybrid learning environments, research problem, research questions, key terms, and purpose of this thesis. In the next chapter, a review of literature more deeply explores this phenomenon.

CHAPTER TWO

Introduction

The purpose of this thesis is to examine prelicensure undergraduate nursing students' experience and perception of online learning following rapid transition from a traditional learning environment in the context of the COVID-19 pandemic. To explore this phenomenon, a review of literature was completed. While investigating this topic, very little research was found regarding the transition to online learning for prelicensure nursing students. This shifted the focus of the literature review to better understand what prelicensure nursing students perceive as effective and satisfying in online learning environments and teaching methods. The search strategies, synthesis of literature, and conceptual framework are discussed in this chapter.

Search Strategies

The literature search utilized databases available through Institutional library services which included CINAHL, PubMed, and ERIC. Search terms were established through combining population (undergraduate or prelicensure nursing students) with subject (traditional learning, online learning, and/or hybrid learning), and outcome (satisfaction and effectiveness with education). Research involving associate degree programs were not excluded in the literature search as both degrees prepare for students to sit for the NCLEX exam. These searches were further limited to academic articles published in the last ten years and articles written in the English language. A complete description of the search strategy is located in Appendix A. Articles were first evaluated by title relevance. If the title appeared relevant, the abstract was read thoroughly by a member of the thesis team. If the abstract was relevant then the full text article was critically appraised by at least one team member for final inclusion in this review

provided the above parameters were also met. A total of 22 articles were included in the literature review. Relevant information for each article reviewed is included in Appendix B.

Literature Review

While critically appraising the literature, themes emerged in relation to outcomes for evaluating prelicensure nursing education including motivation and attitude, self-efficacy, learning effectiveness, skill acquisition, and learner satisfaction. The literature reviewed included studies with a combination of qualitative and quantitative research methodologies, systematic reviews, and one randomized controlled trial. Of the 22 articles reviewed, the level of evidence (as determined based on Ackley et al., 2008 effectiveness rating scheme) was as follows: level three (three articles), level four (one article) level five (five articles), level six (13 articles). Three systematic reviews (Cant & Cooper, 2017; Gill et al., 2019, McCutcheon et al.,2015) and one meta-analysis (Li et al., 2019) were reviewed; however, upon critical appraisal these articles were not as rigorous as established in the rating scheme by Ackley et al. (2008). The strengths and limitations of the articles reviewed are addressed throughout this chapter.

Motivation and Attitude

Many articles provided information on student motivation and attitudes toward traditional, online, and hybrid learning. Some studies measured students' motivation while evaluating the effectiveness of online learning versus hybrid or traditional learning in prelicensure nursing students (Gagnon et al., 2013; McCutcheon et al., 2018). Furthermore, McCutcheon et al. (2018) conducted a post-test survey of 122 prelicensure nursing students in the United Kingdom who participated in a clinical supervision skills training module delivered in either an online or blended classroom. They found students who received training via the blended learning intervention scored higher in motivation and attitudes on the Manchester

Clinical Supervision Scale ($M = 85.5$, $SD = 9.8$) than the online learning control group ($M = 79.5$, $SD = 9.7$, $p = < .001$) (McCutcheon et al., 2018). Shorey et al. (2018) conducted a pre and post-test survey with 124 first year nursing students in Singapore to examine their attitude toward a blended learning module implemented within their study and measured this via the Communication Skills Attitude Scale (CSAS). Results indicated there was a statistically significant increase in the CSAS scores from pre-test ($M = 80.6$, $SD = 9.4$) to post-test ($M = 159.6$, $SD = 426.4$, $p = .042$, Cohen $d = .2$) showing improved attitude towards blended learning (Shorey et al., 2018).

Two literature reviews identified themes of motivation and attitude of prelicensure nursing students; however, findings were inconclusive. Walker et al. (2016) conducted an integrative review of nursing student satisfaction with their learning journey and identified motivation as a major theme. Four of their forty-nine reviewed studies recognized self-motivation and personal commitment to study as major motivational factors for educational success, however, the review does not provide numerical data or comparisons between these studies. Li et al. (2019) performed an analysis on eight studies examining how blended learning affects nursing students' knowledge, skills, and satisfaction. They found nursing students expressed a positive outlook with the online learning environment, however, reported online delivery as a sole method of instruction was not their first choice (Li et al., 2019).

Gagnon et al. (2013) conducted a questionnaire within an introductory research course for 112 undergraduate nursing students in Quebec, Canada to determine the effectiveness of a blended learning intervention versus traditional lecture. They also reported on motivation through a satisfaction questionnaire. The intervention and control groups were further split into three groups based on their baseline motivation scores (low, medium, and high). The low and

medium baseline motivation groups showed statistically significant differences between the intervention and control groups, with the control group (traditional learning) scoring higher post-test motivation scores [Low (intervention $M = 1.9$, control $M = 3.5$, $p = .014$) Medium (intervention $M = 3$, control $M = 3.8$, $p = .015$)]. The high baseline motivation students in the intervention group had significantly higher motivation scores than the control (intervention $M = 4.8$, control $M = 4.3$, $p = .024$). This shows highly motivated students find success in a blended learning environment, while the in-person support of a traditional environment aids in success for low and medium motivated students. The researchers also comment on this difference by indicating teaching delivery does not affect motivation, rather personal teaching style of each instructor aids in student motivation (Gagnon et al., 2013). Overall, evidence from articles reviewed were conflicting regarding the theme of motivation and attitude throughout all learning environments.

Self-Efficacy

The theory of self-efficacy asserts that a desired outcome or behavior may occur once a person believes they are capable and competent in this behavior (Bastable, 2019). According to Bastable (2019), self-efficacy has four main pillars including performance accomplishments, modeling of desired behavior through observation, encouraging language from behavioral experts, and emotional arousal. Bastable (2019) emphasizes the importance of self-efficacy in nursing education. The pillars of self-efficacy utilize behavior specific predictions, which can be essential in predicting participation in current and future educational programs of the learner. Self-efficacy needs to be maintained in an online learning environment to achieve learning objectives (Bastable, 2019). Within the literature, multiple studies utilized self-efficacy as an outcome measure, though there was variation in how this was measured.

Two studies examined self-efficacy within online learning environments by evaluating pre and post-test scores compared to traditional and blended learning approaches (Cant & Cooper, 2017; Shorey et al., 2018). In the systematic review conducted by Cant and Cooper (2017) two articles addressed self-efficacy, finding significant improvements in self efficacy within the online learning environment in one. Shorey et al. (2018) found the increase in the communication self-efficacy scale to be statistically significant (pre-test $M = 12.2$, post-test $M = 49.1$, $d = .3$, $p = .003$) when implementing a blended learning intervention. Yeh et al. (2019) studied 26 senior prelicensure nursing students in the United States who utilized an online learning module to aid in student ability to use Situation Background Assessment and Recommendation (SBAR) reporting in critical patient situations. Students felt more prepared to utilize this method in the clinical setting after completing the online learning module (95% reported “very helpful”) indicating self-efficacy in this skill.

Herron et al. (2019) compared video simulated case studies to a written case study and found the video simulation in 165 prelicensure nursing students in the United States resulted in no significant difference in the student’s self-confidence in performing nursing skills overall (control $M = 33.7$, intervention $M = 33.8$, $p = .95$). Although this study occurred in the traditional learning environment, it provides information on incorporating video simulation technologies in place of in-person case studies. Chan et al. (2016) reported on the theme of self-efficacy through measuring self-learning ability among 122 prelicensure nursing students enrolled in a nursing clinical specialties course in Hong Kong. They found no difference in self-efficacy between face-to-face and web-based approaches in case-based learning ($p = .947$) (Chan et al., 2016).

McCutcheon et al. (2015) conducted a systematic review of 19 studies to discover if online or blended learning enhanced clinical skill education. This review reported on three articles that examined self-efficacy as an outcome with mixed results (McCutcheon et al., 2015). In their integrative review, Walker et al. (2016) found self-efficacy did not significantly affect nursing students' satisfaction with their learning journey.

Once again, overall evidence from articles the studies reviewed was conflicting. Some studies identified an increase in self-efficacy among students learning in an online environment whereas other studies did not.

Learning Effectiveness

Learning effectiveness of prelicensure nursing students was identified as a common theme within reported outcomes in the majority of studies reviewed. There was variation in how this outcome was both measured and reported across the studies. Indicators included post-test scores, exam scores, subjective assessments of student comprehension of knowledge, most commonly following a simulation-based intervention, student questionnaire responses, and themes identified in literature reviews. Studies reported variable outcomes, some indicating an increase in knowledge acquisition, others finding no significant differences. No studies identified a decrease in learning effectiveness following an online or hybrid learning intervention.

Esposito and Sullivan (2020) describe a shift to online simulated clinical experiences in an attempt to disseminate information about effective educational methods during the COVID-19 pandemic. Of the 17 undergraduate nursing students surveyed in this study, simulation-based clinical experiences delivered online subjectively enhanced comprehension of concepts (100% positive feedback). In research by Giddens et al. (2010), 695 undergraduate nursing students in a university within the U.S. were surveyed after use of a virtual community with patient scenarios.

It was found that the use of this virtual community aided students in understanding patient conditions relating to their educational content. Gill et al. (2018) in their systematic review of 20 articles evaluating pharmacology teaching methodologies in undergraduate nursing students found online methods, simulation, and integration of content within other nursing curricula were most effective in acquisition of knowledge.

Kidd et al. (2012) reported on the effectiveness of an online simulation program through a survey identifying educational effectiveness and technical difficulties reported by the 126 undergraduate nursing students involved in the study. Over four semesters, students were invited to complete a survey identifying educational effectiveness, with possible ranges of scores being 8-32, higher scores indicating higher effectiveness. Following implementation of the online simulation program, semester means of report educational effectiveness ranged from 19.7 - 29.4. Educational effectiveness was found to be negatively correlated with technical difficulty experienced by the students ($r = -.472, p < .01$) (Kidd et al., 2012). These findings suggest online simulation programs within nursing education may be an educationally effective tool.

Two studies indicated a favorable outcome for blended learning when compared to either the traditional learning environment alone, or the online learning environment alone. Li et al. (2019), in their analysis of blended learning compared to a control of traditional learning reported an improvement in knowledge (standard *M* difference = .70, 95% CI [.5, .9], $p < .001$) based on review of eight studies. McCutcheon et al. (2018) measured knowledge through a 10-point multiple choice questionnaire, comparing clinical supervision skills among undergraduate nursing students between those who received a blended teaching approach and those who received a solely online teaching approach. The blended learning intervention group scored higher in the outcome of knowledge compared to the online learning control group ($p < .015$)

though no effect size was provided (McCutcheon et al., 2018). In a qualitative study by Barisone et al. (2019) effectiveness of web-based learning in conjunction with traditional teaching methods was studied amongst 26 undergraduate nursing students in Italy. Students reported more effective skills education when traditional classroom was combined with online learning (Barisone et al., 2019).

Similarly, research by McCutcheon et al. (2015) reported on the outcome of knowledge in their systematic review of online or blended learning versus face-to-face (traditional) learning of clinical skills in undergraduate nursing students. Mixed results were noted but most papers reviewed reported on a similar or higher level of knowledge following online teaching intervention (McCutcheon et al., 2015). Gagnon et al. (2013), measured learning effectiveness through scores of undergraduate nursing students on two separate exams, comparing the impact of blended teaching with traditional face-to-face teaching. A significant difference was found on the first exam, with the blended learning group scoring higher than the control, but no significant difference was found between groups on the second exam (exam one $p = .03$, exam two $p = .68$) (Gagnon et al., 2013).

Three studies identified no significant difference in increased knowledge following the intervention of an online or blended learning delivery compared to the traditional learning environment (Blissitt, 2016; Chan et al., 2016; Graber et al., 2019). Following implementation of a blended teaching format of a pathophysiology course in 56 undergraduate nursing students in the U.S. which had previously been delivered via traditional in-person lecture format, no significant differences were noted in post-test scores ($p = .401$) (Blissitt, 2016). Chan et al. (2016) reported student questionnaire responses regarding clinical reasoning in 122 undergraduate nursing students in Hong Kong undertaking case-based learning in both

traditional classroom and web-based methods. No difference was reported (Chan et al., 2016). Graber et al. (2019) compared a traditional learning environment to an online learning environment in a nursing mental health course amongst 110 prelicensure nursing students. Learning effectiveness was measured through class grade averages (traditional $M = 82.8$, online $M = 82.4$). No difference was found ($t = .704$) (Graber et al., 2019). Overall evidence from articles reviewed was conflicting regarding the theme of learning effectiveness. In the studies reviewed, evidence for positive, negative, and mixed results of learning effectiveness were reported.

Skill Acquisition

Mastering nursing skills is at the core of nursing education. Skills driven classes focus on these nursing skills and the student's ability to adequately perform them. William et al. (2016) reviewed the difference between virtual reality simulation and traditional classroom method of phlebotomy education in 62 undergraduate nursing students in Kuwait. They found no significant difference between the groups, suggesting this education is effective with both methods (100% completion for both groups, $M = 1$, $SD = 0$). The researchers did indicate, while not statistically significant, the virtual phlebotomy group had lower patient pain scores (control $M = 1.91$, experimental $M = 1.86$, $p = .702$), decreased tourniquet time, (control $M = 14.4$, experimental $M = 10.1$, $p = .104$) and faster completion of the skill (control $M = 20.7$, experimental $M = 13.5$, $p = .101$) (William et al., 2016).

Three studies in a review of literature by Li et al. (2019) reviewed skill acquisition; these results were combined and analyzed by their team. They found a trend towards skill improvement in the hybrid course over traditional learning, but this was not statistically significant ($p = .13$) (Li et al., 2019). In a systematic review by McCutcheon et al. (2015),

thirteen of the nineteen studies reported on clinical skill following online education. Minimal statistical data were reported; however, they describe six studies found significantly positive results following online education intervention, three studies had inconclusive results, and six studies demonstrated no statistically significant differences (McCutcheon et al., 2015). In a systematic review by Cant and Cooper (2016) four of twenty-five articles on simulation education in undergraduate nursing students found high fidelity simulation can increase skill acquisition in this population, however, the authors noted further research is needed to support this conclusion.

The studies reviewed provided inconclusive evidence to support the transition of skills acquisition education to a completely online learning environment. Due to the significance of skill acquisition in the nursing profession, additional research should be conducted to provide a clearer conclusion.

Learner Satisfaction

Most studies evaluated satisfaction with program or learning environment. Several studies found high levels of satisfaction with an online learning environment. Foss et al. (2013) found their newly initiated e-compedium program, which was a multimedia interactive tool for review of content, was rated “very good” or “good” by 99% of 349 undergraduate nursing students. The students were also asked to rate traditional educational tools such as lectures which 96% of students reported as “very good” or “good” (Foss et al., 2013). Therefore, the online learning intervention was rated similarly to a traditional learning intervention by these students through descriptive statistics.

Scarborough (2015) investigated the distance education learning environment and social presence factors among 13 undergraduate nursing students’ participating in a synchronous video

conferencing course. Students reported instructor support ($p = .015$) and interaction with instructors ($p < .002$) as factors that contributed to student's satisfaction when using synchronous videoconferencing compared to the traditional learning environment. Yeh et al. (2019) identified an overall learner satisfaction rate of 93.5% ($N = 46$) with the completion of a course in an online learning environment. This course utilized an online case study to introduce students to SBAR reporting which gave them the opportunity to reflect and rewrite their own SBAR report at the end of the activity (Yeh et al., 2019). In their qualitative study Esposito and Sullivan (2020) found in course feedback students reported feeling overwhelmingly satisfied with virtual simulation during the COVID-19 pandemic and found importance in group work while faculty promoted engagement. Mgutshini (2013) conducted a qualitative study evaluating 53 pre-registration baccalaureate nursing students' satisfaction with an online mental health class compared to a traditional delivery format. They found the online class prompted more positive statements and students were more satisfied with their ability to go back and review challenging content (Mgutshini, 2013).

In the systematic review evaluating online or blended learning versus face-to-face learning of clinical skills in undergraduate nursing education reported by McCutcheon et al. (2015), 11 of the 19 articles reviewed reported on the outcome of satisfaction with varied results. Gagnon et al. (2013) examined students' satisfaction with a blended learning intervention compared to traditional learning. They found no differences in the students' satisfaction overall (control $M = 79.5$, intervention $M = 78.3$, $p = .678$) showing either educational environment can result in high levels of satisfaction (Gagnon et al., 2013). Two other studies found similar results indicating there is no difference in satisfaction between traditional and online learning environments (Chan et al., 2016; Graber, 2019). Herron et al. (2019) found no difference in

satisfaction of 165 baccalaureate nursing students in the U.S. when comparing video simulation in a traditional learning environment to a written case study.

The analysis conducted by Li et al. (2019) explored the effects of the hybrid learning environment on nursing student knowledge, skill, and satisfaction in eight different studies. They found a difference in the satisfaction scores ($z = 2.5, p = .01$) between students in hybrid programs and traditional programs. It was reported the online format allowed for added clinical images and animations compared to the traditional learning environment. This integration could have been possible with traditional learning, but the unconventional nature of online education might also prompt a more creative educational style, thus leading to more interactive lectures (Li et al., 2019). Munich (2014) examined external factors that contributed to successful online learning in a qualitative survey of 29 undergraduate and graduate nursing students in Canada. They found students felt more successful in their education with the addition of technology support, discussion forums with classmates, and affirmational support from peers. The discussion forums provided opportunity for students to process content together, as well as express emotional needs (Munich, 2014).

Blissit (2016) reported that among 56 nursing students taking a pathophysiology course, a traditional classroom environment was more satisfying than a hybrid learning environment ($M = 4.3, SD = 0.7$, compared with, $M = 3.7, SD = 0.7$) ($p = .003$) in course reviews. McCutcheon et al. (2018) surveyed 122 undergraduate nursing students participating in a hybrid learning environment compared to an online learning environment in a clinical supervision course. Results showed students in a hybrid learning environment had higher levels of satisfaction ($M = 30.9, SD = 6.5, N = 57$) compared to the online learning environment ($M = 26.5, SD = 6.9, N = 55$) ($p < .001$) (McCutcheon et al., 2018). Learner satisfaction was a complex outcome, utilizing

various measurements in the studies reviewed. Additionally, reported outcomes were mixed in the satisfaction expressed by learners. Therefore, no one learning environment was associated with a higher level of learner satisfaction over another.

Critique

The level of evidence for each study was appraised by the effectiveness rating scheme (Ackley et al., 2008) and is noted in the literature table (Appendix B) and summarized at the beginning of this chapter. Overall limitations were small sample sizes, studies conducted with just one or two cohorts, often in a single setting, use of multiple evaluation tools to measure outcomes making comparison difficult, and lack of experimental design to control for extraneous variables. Additionally, very few articles explained their interventions in detail, providing little guidance for educators seeking evidence-based educational techniques. Each individual study had benefits to the program they implemented but so few were generalizable and almost none utilized the same intervention. At the time of this search there was only one published study (Esposito & Sullivan, 2020) identifying the impact of COVID-19 on delivery of nursing programs and this provided minimal evidence to support this study.

The diverse methodology between studies provides a wider outlook on a large topic. Studies were also from several countries, providing a global view on nursing education and a look at the transition to online learning within several educational programs and health systems.

Summary

The synthesis of the literature identified a vast array of conclusions drawn from studies examining differences between online, blended, and traditional learning environments. Participants in these studies described increases in motivation and attitude, self-efficacy, learning effectiveness, skill acquisition, and satisfaction. However, some studies showed no difference

between the environments of learning in the above listed outcomes. Consensus between and among studies was inconsistent. Multiple studies suggested areas for continued research in the online learning environment for nursing education. This research could further close the gap in identifying appropriate and effective online teaching methods.

Conceptual Framework

Theoretical and conceptual frameworks utilized within the literature were reviewed. Common theories utilized, often to guide the research, included constructivist learning theory (Blissitt, 2016; Chan et al., 2016; Giddens et al., 2010; Kidd et al., 2012; McCutcheon et al., 2015; Shorey et al., 2018), social support theory (McCutcheon et al., 2015), self-directed learning readiness (Gagnon et al., 2013), Kirkpatrick model (Gill et al., 2019), Knowles' theory of adult learning (Blissitt, 2016; Mgutshini, 2013; Walker et al., 2016), self-efficacy theory (Shorey et al., 2018), and theory of deliberate practice and master learning (Yeh et al., 2019). The constructivist learning theory was most prevalent amongst the reviewed studies.

The constructivist learning theory can be described as an active learning process where the learner develops new knowledge through internal processing of concepts against previous experiences and learning (Billings & Halstead, 2020). This theory gives insight in examination of learning within social situations and various learning environments (Billings & Halstead, 2020). The four major assumptions of this learning theory in relation to the process of learning include the utilization of previous learning experiences, assimilation and accommodation leading to new knowledge, learning as an organic activity and one which occurs through internal processing of concepts by the learner (Brandon & All, 2010). These assumptions highlight the key concept of active learning in this theory, which was noted in multiple studies reviewed. Most commonly, studies reported on the active learning process in regard to online or hybrid learning

environments (Blissitt, 2016; Chan et al., 2016; Gagnon et al., 2013; Graber, 2019; Kidd et al., 2012; Walker et al., 2016). Due to prevalence within the reviewed literature and purpose of this thesis, the constructivist learning model was further considered in the creation of the conceptual map.

Conceptual Map

The themes identified within the literature review guided the authors in creation of a conceptual map (see Appendix C). The conceptual map outlines common motivators identified in literature that appear to contribute to the transition of prelicensure nursing programs to online or hybrid learning environments. The map also identifies commonly desired outcomes after effective online education techniques are implemented. This illustrates the integration of themes within the literature and their relation to the concept. The constructivist learning theory influenced the creation of this map. The online learning environment is driven by self-motivation and internal processing for successful learning outcomes aligning with the constructivist learning theory.

Summary

Chapter Two provides an overview of the literature reviewed including the search strategy, critique of evidence, and synthesis of findings in relation to themes within the identified studies. This review of literature revealed a variety of methods to enhance prelicensure nursing students' perception of educational effectiveness and satisfaction; however, there was a lack of consistency in evaluation measures. There is lack of evidence to inform the transition of prelicensure nursing programs from traditional learning environments to online or hybrid learning environments. The constructivist learning theory and concept map guided the analysis and interpretation of data in relation to purpose of this thesis.

CHAPTER THREE

Introduction

This thesis is a secondary analysis of data from a primary study conducted in the spring semester of 2020, by Davies and Koehler. The purpose of the secondary analysis is to examine prelicensure undergraduate nursing students' experience and perception of online learning following rapid transition from a traditional learning environment in the context of the COVID-19 pandemic. This chapter outlines the methodologies utilized in the primary study and secondary analysis.

Primary Study

Purpose

The purpose of the primary study was to examine how undergraduate nursing students' learning experience was affected as a result of the COVID-19 pandemic and rapid transition to online learning. The pandemic resulted in a state mandated shelter in place order directly affecting the delivery of higher education. Data were collected to understand the impact of the global pandemic and consequent shift to online learning for prelicensure nursing students. These data can inform future curriculum design in the online learning environment.

Design

The primary study was a cross-sectional survey design using a self-completion survey tool administered to undergraduate students enrolled in the prelicensure nursing major at a medium sized state university in the American Midwest. The survey tool had three main components: demographic information, the Perceived Stress Scale (PSS) and a series of questions regarding students' satisfaction and perceptions of effectiveness through the spring

semester 2020. The Perceived Stress Scale (PSS) is a validated tool to measure an individual's perceived stress in a certain situation or time relative to their coping (Cohen et al., 1983).

Sample and Setting

The sample consisted of 325 students registered for the prelicensure nursing major at a medium sized state university in the American Midwest on two campuses, campus A and campus B. All students enrolled in the prelicensure nursing major were invited to voluntarily participate in the study, across all four academic terms. This prelicensure nursing program is a four-year program for students without registered nurse licensure. The first two years include general education prerequisite courses, such as anatomy, physiology, and microbiology, with the last two years being nursing specific curriculum. The prelicensure nursing major includes four terms (Term 1 junior in their first semester of nursing program [16 credits], Term 2 junior in their second semester of nursing program [14 credits], Term 3 senior in their third semester of nursing program [14 credits], Term 4 senior in their fourth semester of nursing program [15 credits]). Two campuses, involving 215 nursing students, completed the survey (72% response rate).

Ethical Considerations

The primary study was reviewed and approved by the Institutional Review Board at the host university. An email was sent to all prelicensure undergraduate nursing students with an invitation to participate in the study (see Appendix D). The study focused on learning experiences over the semester of transition during the beginning of the COVID-19 pandemic. Participation was completely voluntary, and all responses were anonymous. Information about the study was included in a cover letter and informed consent was inferred upon completion of

the survey. There were no foreseen benefits or risks for the participants who were in this study. Participants could drop from this study at any point in time.

Instruments

A survey was specifically designed for this study by the primary authors and included questions examining perceptions and experiences during the rapid transition to online education as a result of the COVID-19 pandemic. The web-based survey included questions about demographic characteristics and utilized Likert scales to assess satisfaction with transitioning courses to the online learning environment (see Appendix E). Open-ended questions were included to allow students to explain their answers and comment with suggestions for future changes. The survey tool also included the Perceived Stress Scale (PSS) (Cohen, et al., 1983). The survey included 22 questions and estimated time for completion was 15 minutes. The responses to the PSS scale were not included in the current study.

Data Collection Procedure

Students who met the inclusion criteria for the study were informed via an email which included a link to the survey tool (see Appendix D). One additional reminder email was sent. The survey tool was completed online by those students who agreed to participate. Data from completed survey responses were stored in the university's Qualtrics program.

Strengths and Limitations of Primary Study

Strengths of the primary study include the convenience of participation for students resulting in a high response rate, open ended questions allowing consideration of students' opinions, and large sample size. The original researchers also utilized a validated tool to measure stress. This was a self-report voluntary study which can be advantageous in seeking people's opinions during an emotional period, allowing students to express their opinion in their own

words rather than selecting from options written by the researcher. Utilizing an online data collection platform, such as Qualtrics, can reduce the error of secondary data entry.

A limitation of this study is that it was performed at one university at a single time point. Another limitation was the lack of pre-data to compare experience and stress levels of students prior to transition to the entirely online delivery format. The lack of comparison to other prelicensure nursing programs is also a limitation. Although inclusion of open-ended questions provides participants the opportunity to express opinions and explain responses, it can be difficult to ensure accurate interpretation by the researchers. Additionally, it was not a formally validated survey tool.

Secondary Analysis

Given that the COVID-19 pandemic was still prevalent in the fall semester of 2020, additional analysis on this data set was desired. It was decided to further analyze the data set collected from spring 2020 to identify themes within student responses that could be advantageous in continuing effective online education. This secondary analysis further explores the prelicensure nursing students' experiences of online education following transition from a traditional learning environment at the beginning of the COVID-19 pandemic. The secondary analysis focuses on perceived advantages and disadvantages of online learning, and identification of online teaching and learning strategies found to be most helpful from the student perspective. Secondary data analysis further explored sixteen of the twenty-two survey questions. Shenton (2004) and Forero et al.'s (2018) framework was utilized to ensure validity and rigor. Qualitative analysis of free-text responses was done utilizing the five stages of framework analysis: familiarization, identifying a framework, indexing, charting, mapping and interpretation (Richie & Spencer, 1994). This will be described in further detail in Chapter 4.

Ethical Considerations

In addition to the primary study ethics, the authors of this thesis completed human subjects training and obtained IRB approval from the IRB committee of the host university. The identity of participants remained anonymous throughout the study.

Summary

This chapter outlines the methodology of both the primary study and the secondary analysis. The instruments utilized in the primary study were further explained including data collection methods and secondary data analysis. An overview of the methodology for the secondary analysis is provided with identified challenges and tools implemented for successful execution. Ethical considerations and limitations of both studies were also considered and addressed in this study.

CHAPTER 4

Introduction

This chapter will provide a description of the sample, research questions, data analysis framework, and emerging themes from data analysis. The four emerging themes include learning environment, course design and delivery, communication, and learner characteristics.

Description of Sample

Two hundred and fifteen prelicensure nursing students completed the online survey (72% response rate) on two campuses, campus A and Campus B. Refer to Table 1 for demographics of each campus.

Table 1.

Demographics of Campus A and Campus B

Campus A	Campus B
93% White 2% Asian 1% Hispanic 1% American Indian 1% Black 2% two or more 1% unknown	93% White 3% Asian 1% Hispanic 3% two or more
94% female 6% male	93% female 7% male

Research Questions

Questions for the secondary analysis were as follows:

Among prelicensure nursing students during the pandemic:

1. What are their perceptions of advantages and disadvantages of online learning?
2. Which aspects of online learning are they most satisfied with?
3. Which aspects of online learning are they most dissatisfied with?
4. What barriers to online learning do they identify?

Data Analysis

The researchers utilized a modified framework analysis which consisted of five stages: familiarization, coding, plotting data onto identified codes, identifying emerging themes, synthesizing themes into main concepts, and reviewing data to ensure transparency and rigor of the analysis (Ward et al., 2013). Familiarization with the data involved the three researchers independently reading through the descriptive data in order to gain a sense of the breadth and variability of the responses. The researchers then coded the responses and entered identified codes onto an excel spreadsheet, initially creating one sheet for each of the research questions. At this point the researchers noted substantial overlap in responses. Next, they utilized the initial codes to map the data set onto. The researchers collaborated and identified emerging themes and subthemes across the sheets for each research question. Following discussion, the researchers then condensed the codes into seven mutually agreed upon themes. Researchers then synthesized these into four overarching themes of learning environment, course design and delivery, communication, and learner characteristics. These themes, and relevant sub-themes will be described in detail, together with illustrative quotes from student responses. Student perceptions of the advantages and disadvantages of online learning, satisfying and dissatisfying components, and barriers to learning were personal to and differed between individual students.

Identified challenges of the research team included an unfamiliarity with framework analysis. Resources were utilized to close this knowledge gap including academic advisor assistance and research articles for guidance. There was potential for different interpretations of qualitative data among the researchers. When such discrepancies arose, all researchers evaluated the data together and came to a two-thirds consensus.

Learning Environment

One emerging theme from the data analyzed was learning environment. This included where students were physically located after the transition to online learning occurred, together with access to resources. Some students reported their home environments were beneficial to their learning needs due to comfort, lack of physical space constraints, better sleep hygiene, and decreased social interaction. One student described their learning environment as follows: “I could switch up my learning environment whether it was a different room in my house or outside on the patio.” Another student wrote: “I enjoy seeing my family, but miss the face-to-face interaction. I feel like I can get more done and have gotten better sleep as well being at home.”

However, other students reported increased distractions, lack of dedicated study space, lack of routine, poor internet connections, technical issues, lack of resources, and lack of social interactions with their cohort due to being located in a different environment than a traditional classroom. Multiple students described their challenges with the home learning environment, “For me personally, [I] just felt like I had a difficult time keeping on top of things especially when my whole family is in the house and there's multiple distractions at place [sic].”

Some students commented on the challenges of performing school activities in a busy living environment:

My place of relaxation has been forced into becoming an academic environment so now I have nowhere to relax. There is no place available to take quizzes or tests in peace.

The noise of roommates carrying out their daily lives in between classes is highly distracting and detrimental to my grades.

Others noted the effects of having no physical separation between school and home life and the psychosocial effects of this:

More distractibility and clutter; I like to keep aspects of my life separate for easier organization and planning, moving everything online combined the educational part of my life with my relax/‘wind-down’ part of my routine because I now had to use my bedroom/apartment as my living space, relaxing space, and my learning space. Grouping aspects of my life like this made me feel like I have less control, or less of a ‘grip,’ on my daily routines and learning strategies.

Some students reported how the dependence on wireless internet affected their ability to be successful in the online environment: “My internet connection is often very spotty because of all of my family doing online schooling and working online in the same house.”

Overall, individual learners preferred different learning environments. Some learners preferred the home environment while others felt it was a hindrance to their learning needs, especially those who had external distractions. Some students felt they were able to have a successful school life balance while at home, while others felt they were unable to differentiate between the two. In addition, reliable internet access is imperative for success in the online learning environment.

Course Design and Delivery

A second theme to strongly emerge within the analysis was course design and delivery. This theme encompasses content delivery, ways to support self-efficacy and motivation, assignments and exams, and clinical replacement.

Students reported being satisfied with decreased ‘busy work’ and course rigor, the ability to re-watch pre-recorded lectures in their own time, increased employment of open notes for

quizzes and exams which also led to decreased test anxiety, and the ease of access to online content and lack of paper content. Some students enjoyed short, concise lecture videos as well as having synchronous scheduled classes, while others preferred the flexibility of asynchronous content. Two students reflected on the benefits of the self-paced nature of certain online classes: “Some classes allowed open notes on the quizzes and increased time to take exams.”

I really like recorded lectures rather than having a PowerPoint to just read over yourself. I know synchronous is more challenging as students are working throughout the day, but having these classes and having to be on zoom allows for a normal schedule and ability to ask questions.

Conversely, some students described a lack of structure, schedule and consistency between courses, and disorganization of the learning management system (LMS) with undefined expectations. One student describes their frustration with the structure of their online course: “I feel like it was difficult to keep track of new assignments and manage everything. I also felt like some classes added even more time-consuming tedious tasks to make up for being online.”

Students recommended lecture breaks, engaging teaching methods such as Kahoot, video and games, as well as releasing content or structuring in LMS week by week. Students offered their own recommendations: “[O]ffer brief periods of rest from lecturing to give a break from staring at a computer screen.” Another student suggested: “I would recommend more interactive tools such as class polls, Kahoot’s, videos, games etc. Looking at a screen for days can make people sleepy, so asking questions and involving the audience helps!”

Overall, students felt overwhelmed with the amount of content and assignments making them feel less prepared for their NCLEX and expectations for historical class delivery were not met. Some students stated: “Tests give me much more anxiety because I feel like I've barely touched the subject.” Another student expressed, “Prerecorded lectures don't allow students to make questions in real time.” A third student reflected on the difficulty of this format for their learning:

Learning in this format was so difficult. A lot of professors had to cut down course content. Likewise, I feel like the exams being open book were not beneficial because I feel like I was not forced to study and know the information as well.

Many students were disappointed with the lack of clinical replacements and rigor of their simulation experience. However, some found value in virtual simulations in meeting learning outcomes and developing confidence. One student stated: “I thought the V-sims did a fantastic job of targeting very specific diagnosis [sic] or complications and provided a very good learning experience with in-person experiences not possible...”

Students reported group work as being both a positive and negative experience within online learning. Students expressed their thoughts on group work as follows: “The group work was more difficult than usual.”

I would feel better still being able to do the work ‘in class’ together as to make sure I fully understand it and am able to complete it. Allow for peer revisions or continuing to be in groups for some activities.

I would continue to do more group work sessions or mini projects that keep us involved with other students and allow us to share ideas while we are isolated. Presentations and group projects were easier to accomplish remotely than I anticipated...

In summary, effective course organization and utilization of teaching strategies to promote active learning were identified as advantageous to learners. However, what was perceived as effective varied between individual students.

Communication

Communication also emerged as an important theme within the data. Student survey responses included a wealth of information on their experiences and preferences for communication between students and their faculty members, as well as communication with fellow classmates.

Communication between students and faculty

Clear expectations and weekly outlines for classes were reported as helpful by students. Some classes were set up with minimal communication and direction from faculty, which caused increased stress and anxiety for students. Students commented that faculty who co-teach classes should have consistent expectations for the class to decrease confusion. Students reported a desire for a synchronous “school schedule” even with online course delivery and meetings: “In class we are able to have actual interactions with professors and ask questions about lectures (during an actual lesson) and can also learn from other students’ questions about that material.”

There were suggestions to have the learning management system be organized for realistic student access:

Not having the in-person clarification for assignments. Having to understand what was happening through [school specific LMS] which was highly confusing towards the end of the semester with all of these [group evaluations]. I was kind of lost with all the things in the assessments page - honestly confusing.

Students reported communication in online delivery is imperative to achieving learning outcomes: “Communication is KEY. The professors should provide a good, solid outline of assignments so that we know what is due when and when dates are being changed.”

Some students expressed faculty were more available through web-based video chat or email than before online learning was enabled, while others felt faculty were more distant without established office hours. This juxtaposition is evident in the following comments: “Since moving to an online format, this is the most accessible my professors have ever been. It has been incredibly helpful to be able to quickly get in touch with them regarding questions.” Conversely, another student stated, “Communication between some professors was even more scarce than it was when we had face-to-face class time.”

There was a feeling of excessive reminders and communication from faculty creating information overload at times. Students identified having weekly meetings could be a helpful opportunity to clarify class assignments and expectations:

I have found (the) meetings schedule with the faculty has been very helpful during this time. It gives me some structured times and I am able to get my questions answered.

I feel that if these were more frequent, the online setting could be improved.

Communication between classmates

Students voiced a variety of opportunities to participate in class via chat options or vocalizing on camera, allowing for more students to participate who would not have done so in the in-person class setting. One student reflected on this: “The shy kids got a chance to be more interactive on zoom using the chat.”

Some students identified group work was easier to accomplish by only establishing a time and not a physical meeting location: “Learning how to use Zoom was probably more

beneficial for writing our group papers than having to meet somewhere else and do it. Zoom has made meeting for classes more efficient.” In contrast, others found it challenging to accomplish group work over electronic platforms: “Reduce group work as much as possible. It's difficult to carry out the same level of work needed to succeed on assignments when working over online formats.”

Overall, communication is imperative to students' academic success in the online learning environment. In addition, finding a concise and systematic LMS design would be advantageous to students' success.

Learner Characteristics

The theme of learner characteristics incorporated student motivation, preferred learning style and time management. Some students described an increase in time management, enhanced school-life-work balance, and increased independence. Motivated students enhanced their abilities to perform self-directed learning while utilizing different teaching and learning modalities. Some students stated the flexibility of coursework allowed for enhanced time management:

I can do things on my own time and have smaller lengths of worktime compared to having to sit through long periods of class at once where I lose focus more often. I can spend more time learning to understand things that might not come as easily to me compared to being in class and going with the pace of the professor.

However, other students identified disadvantages of the increase in personal autonomy accompanying the move to online learning. For example, some described a lack of motivation, focus, and attitude towards the online environment, resulting in poor attention and retention of information. Increased requirements for self-teaching were seen as a barrier for

students, causing them to feel overwhelmed. The increase in distractions and use of different teaching and learning modalities made the online environment unfavorable for some students: “I struggle to maintain level of motivation needed for nursing school and often felt overwhelmed with PowerPoints, emails, and all the different class schedules”

Students appreciated more flexibility to spend time with family, the ability to work more with classes being online and decreased commute times: “It allowed for more flexibility, in that I could work or take time for myself and still be able to do the work on time.” Overall, perception of success in the online learning environment depends to some extent on personal learning style and motivation.

Due to the lack of face-to-face contact, some students felt they had an increased sense of self-teaching. Students described decreased engagement and lack of immediate feedback, reduced opportunities to informally ask questions during pre-recorded lectures, lack of access to resources, and an excessive amount of screen time as barriers to effective online learning. One student discussed their challenges without a regular course meeting schedule:

Having more concrete schedules for the online course would be helpful to keep things straight when we cannot see our professor or ask questions with readily available answers. One of my courses had no supplemental class time on zoom and this hindered my learning for the class, so I recommend more zoom class time for online courses.

Another student reflected on the challenges of maintaining motivation in the online environment:

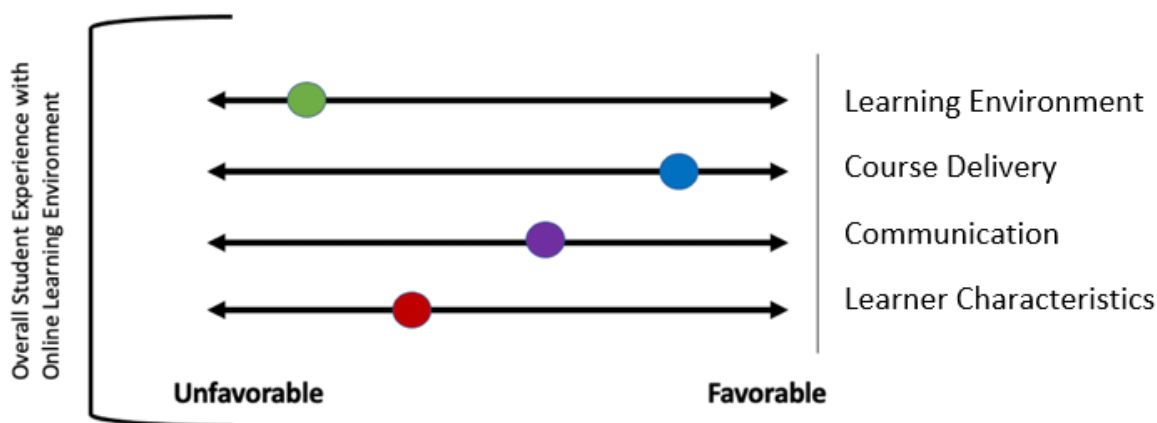
It's hard to stay motivated to finish the day when you're online. It's hard to learn when you can't ask questions when you think of them or see someone do a skill. And you can't practice your skills because we don't have the equipment like we do in lab.

Identifying Student's Experience on a Continuum

As data were further analyzed, it was noted that responses in relation to each theme occurred along a continuum ranging from unfavorable to favorable. The individual student's experience of each of the four themes can be identified utilizing the same parameters. This allows these four themes to be used collectively to represent the student's overall perception of satisfaction and success within the online learning environment. These themes are echoed within the constructivist learning theory, emphasizing the importance of students processing new knowledge internally through active learning. The success of a student in the online learning environment is directly related to how the course content is delivered and the characteristics for autonomy the learner possesses. Refer to Figure 1 for a fictional example of how a student's experience of these themes on the continuum could influence their experience within the online learning environment.

Figure 1

Fictional Example of Student Responses Along Response Continuum by Theme



Summary

After analyzing the data, four main themes emerged including learning environment, course design and delivery, communication, and learner characteristics. Perception of online learning advantages, disadvantages, satisfiers, dissatisfiers and barriers were personal to and differed between individual students. Students frequently described advantages and barriers of the learning environments in which online instruction occurred. Some found their home environments as an advantage to their learning experiences due to items such as enhanced comfort and sleep hygiene, while others reported their environments as a barrier to their online learning due to disruptions to routine, poor internet connections, and technical issues.

Students described varying preferences in relation to course design and delivery in terms of scheduling, structure, assignments and exams, and clinical replacement. Some students appreciated the flexibility of asynchronous classes whilst others enjoyed the structure of synchronous course delivery. Disadvantages included disorganization of the LMS, undefined expectations, and difficulties with motivation. Students offered a wealth of suggestions for content delivery including lecture breaks, engaging teaching methods, and increased structure through release of course content within the LMS weekly. Assignments and exams were reported by some students as being overwhelming in the online learning environment and commented that student expectations, given the historical context of class delivery, were not met. However others appreciated the less formal approach to testing in some online classes. Students' reactions to replacement activities for clinical experiences, such as simulations, were also varied with some identifying these as a barrier to meeting their learning objectives, while others seemed satisfied. One primary advantage to content delivery in the online learning environment reported by students was the ability to enhance meaningful group work.

Communication was one of the most evident themes impacting student experiences within the data, echoing findings from the literature review. Students' survey responses included information on their experiences and preferences for communication between students and faculty members as well as communication between fellow classmates. Overall disadvantages and barriers to the online learning environment included lack of clear expectations, scheduling, organization, and overall communication. Classroom participation and interaction with classmates during lecture times were seen as both satisfying and dissatisfying to some.

Learner characteristics was a separate theme that primarily focused on student motivation, time management, and preferred learning style. Self-motivated students appreciated asynchronous courses while others preferred enhanced guidance from instructors. Students who did not seem to value a high degree of autonomy described a lack of motivation and focus leading to poor attention and attrition in relation to completion of course content which led to feelings of being overwhelmed.

In conclusion, we found the four themes of learning environment, course design and delivery, communication, and learner characteristics can be considered in the context of online learning as a series of continua, each ranging from unfavorable to favorable. The combination of the student's experience of each theme collectively influences their perception of satisfaction and success within the online learning environment. Faculty can directly impact two of the themes identified: course design and delivery and communication. Individualization of the student's learning experience through tailored course delivery and support of learning needs can contribute to increased satisfaction and successful learning outcomes.

CHAPTER V

Chapter five has been developed as a manuscript for submission to the Journal of Nursing Education and Practice. Author guidelines for the journal are in Appendix F.

Abstract

Background/Objective: The need to transition to an online learning environment secondary to the COVID-19 pandemic required prelicensure nursing educators and students to become rapidly familiar with new teaching modalities. There is insufficient evidence to support the effectiveness of, and satisfaction with, the online learning environment in prelicensure nursing education due to historic underutilization of online methods and lack of research. The aim of this study was to evaluate the experiences and satisfaction of prelicensure nursing students with regards to effective teaching modalities following a rapid transition from the traditional to online learning environment.

Method: This study was a secondary analysis of data from an online survey of 215 students registered for the prelicensure nursing major at a medium sized state university in the American Midwest in the spring semester of 2020. During this semester, a rapid transition from the traditional to online learning environment occurred as a result of the COVID-19 pandemic. Analysis within this secondary study focused on a series of open-ended questions inviting students to comment on the effectiveness of, and satisfaction with, online learning, together with perceived barriers, advantages and disadvantages in the context of a rapid transition to an online learning environment during the spring semester 2020. Framework analysis was utilized for the secondary qualitative data analysis.

Results: Four themes were identified in the secondary analysis of the survey responses from the primary study which appeared to shape the students' experiences of the shift to online learning.

These were: learning environment, course design and delivery, communication, and learner characteristics. Analysis of open-ended responses suggested that each of these themes could be experienced by students along a continuum ranging from unfavorable to favorable. The combination of each student's experiences along these continuums appear to cumulatively impact and predict their success in the online learning environment.

Conclusions: Perceptions of online learning were personal to, and differed between, individual students. Faculty can directly impact two of the themes identified: course design and delivery and communication. Individualization of the student's learning experience through tailored course delivery and support of learning needs will aid in increased satisfaction and successful learning outcomes. Analysis of open-ended responses suggested that each of these themes could be experienced by students along a continuum ranging from unfavorable to favorable. The combination of each student's experiences along these continua appear to cumulatively impact and predict their success in the online learning environment.

Key Words: [Undergraduate nursing, Online education, COVID-19]

Introduction

The transition to a fully online environment after the spread of the COVID-19 pandemic left educators with the need to quickly transition didactic classes to the online environment and attempt to understand and utilize online teaching modalities. Online learning has only recently become integrated within nursing education, creating a gap in literature in relation to the most appropriate strategies for online education, specifically in prelicensure nursing.

COVID-19

At the beginning of 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic (AACN, 2020). Due to the ease of transmission of the virus, many states

enacted stay-at-home orders encouraging citizens to leave their homes only for essential tasks such as obtaining groceries and medical needs, in conjunction with facial mask mandates and limitations to group gatherings. The CDC released updated Guidelines for the Institutions of Higher Education strongly encouraging educational institutes to follow local public health departmental recommendations in order to slow the spread of the virus and ensure the health and safety of students, staff, and faculty (AACN, 2020). This led to most universities transitioning to fully online programs midway through the spring semester of 2020.

Online Learning in Higher Education

The use of the internet and advancements in technology have expanded student learning capabilities exponentially over time (Sinacori, 2020). The current generation pursuing higher education are computer literate making the online learning environment an effective way of reaching students. This requires different instructional methods than a traditional classroom (Sinacori, 2020). Research showed combining online and face-to-face instruction, known as blended learning, results in higher achievement, higher student satisfaction, stronger student persistence and increased flexibility in teaching and learning (Thai et al., 2020). It is important to address the effectiveness of, and satisfaction with these new delivery methods. The student perspective of this transition was critical to consider. With the ever-changing fields of nursing, healthcare, and education, it is the educator's responsibility to create a successful educational environment to support learners.

Learning Environments

Three main methods of educational delivery are utilized in higher education including the traditional learning environment, online learning environment, and hybrid learning environments.

Traditional learning environments involve students being physically present in a classroom with a professor(s), didactic instruction, structured class time, lectures, writing activities, and exams occurring with the instructor and students together in-person (Billings & Halstead, 2020). Historically, the traditional learning environment in nursing education consisted of face-to-face lectures in a physical classroom, skills practice or simulation in a lab, and clinical experiences within the hospital and community settings. Currently, these methods are often utilized in conjunction with an online platform for ease of access to classroom resources and enhanced communication between students and faculty.

Online learning environments (also referred to as virtual or e-learning) utilize a digital platform for all instruction and evaluation while connected to the internet and can be synchronous or asynchronous (Billings & Halstead, 2020). “Online learning uses the internet paired with various types of software such as learning management systems, learning portals, e-learning platforms, virtual learners' environment, or course management system,” (Billings & Halstead, 2020, p. 410). The online learning environment encompasses many methods and tools such as videos, podcasts, and interactive websites which can aid in students’ retention of knowledge and application to practice (Billings & Halstead, 2020). Online learning has been associated with an increased workload for educators due to these various tools which require an increased need for preparation by instructors when compared to face-to-face instruction (Billings & Halstead, 2020). Faculty teamwork and student engagement greatly factor into the success of online delivery (Esposito & Sullivan, 2020).

The United States Department of Education (2010) refers to hybrid or blended learning as a combination of online learning with face-to-face instruction. A combination of online learning

and technology will be necessary to adequately prepare future nurses because of the increased integration of technology in the healthcare field (Billings & Halstead, 2020).

Review of Literature

To explore the phenomenon of prelicensure undergraduate nursing students' experience and perception of online learning following rapid transition from a traditional learning environment, a review of literature was completed. While investigating this topic, very little research was found regarding the transition to online learning for prelicensure nursing students. This shifted the focus of the literature review to better understand what prelicensure nursing students perceive as effective and satisfying in online learning environments and teaching methods.

Search Strategy

The literature search utilized databases including CINAHL, PubMed, and ERIC. Search terms were established through combining population (undergraduate or prelicensure nursing students) with subject (traditional learning, online learning, and/or hybrid learning), and outcome (satisfaction and effectiveness with education). These searches were further limited to academic articles published in the last ten years and articles written in the English language. Upon critical analysis of the literature, themes emerged in relation to outcomes for evaluating prelicensure nursing education, including motivation and attitude, self-efficacy, learning effectiveness, skill acquisition, and learner satisfaction.

Motivation and Attitude

Many articles provided information on student motivation and attitudes toward traditional, online, and hybrid learning. Some studies measured students' motivation while

evaluating the effectiveness of online learning versus hybrid or traditional learning in prelicensure nursing students (Gagnon et al., 2013; McCutcheon et al., 2018).

Li et al. (2019) performed an analysis on eight studies examining how blended learning affects nursing students' knowledge, skills, and satisfaction. They found nursing students expressed a positive outlook with the online learning environment, however, reported that online delivery as a sole method of instruction was not their first choice (Li et al., 2019). Gagnon et al. (2013) commented that teaching delivery does not affect motivation, rather the personal teaching style of each instructor aids in student motivation. Overall, evidence from articles reviewed was conflicting regarding the theme of motivation and attitude across different learning environments.

Self –Efficacy

Bastable (2019) emphasizes the importance of self-efficacy (belief in oneself), in nursing education and argues that this must be maintained in an online learning environment to achieve learning objectives. Multiple studies reviewed utilized self-efficacy as an outcome measure, though there was variation in how this was measured.

Two studies examined self-efficacy within online learning environments by evaluating pre and post-test scores compared to traditional and blended learning approaches (Cant & Cooper, 2017; Shorey et al., 2018). In the systematic review conducted by Cant and Cooper (2017) two articles addressed self-efficacy, finding significant improvements in self efficacy within the online learning environment in one. Shorey et al. (2018) also found increased scores on the communication self-efficacy scale when implementing a blended learning intervention. Conversely, Chan et al. (2016) found no difference in self-efficacy between face-to-

face and web-based approaches in case-based learning. Again, evidence from the studies reviewed was conflicting.

Learning Effectiveness

Perception of learning effectiveness on the part of prelicensure nursing students was identified as a common theme within reported outcomes in the majority of studies reviewed. There was variation in how this outcome was both measured and reported across the studies. Measurements included post-test scores, exam scores, subjective assessment of student comprehension of knowledge following a simulation-based intervention, and student questionnaire responses.

In research by Giddens et al. (2010), 695 undergraduate nursing students in a university within the U.S. were surveyed after use of a virtual community with patient scenarios. It was found the use of this virtual community aided students in understanding patient conditions. Gill et al. (2018) in a systematic review of 20 articles evaluating pharmacology teaching methodologies in undergraduate nursing students found online methods, simulation, and integration of content within other nursing curricula were most effective in acquisition of knowledge. Two studies indicated a favorable outcome for blended learning when compared to either the traditional learning environment alone, or the online learning environment alone (Li et al., 2019; McCutcheon et al., 2018). In two studies (McCutcheon et al., 2015; Gagnon et al., 2013) comparing online or blended versus face to face, mixed results were noted but most papers reviewed reported on a similar or higher level of knowledge following an online teaching intervention. In the transition from traditional to blended or online learning environments, two studies reported no significant differences in post-test scores and learning effectiveness respectively (Blissit, 2016; Graber et al., 2019).

Overall evidence from articles reviewed was conflicting regarding the theme of learning effectiveness. In the studies reviewed, evidence for positive, negative, and mixed results of learning effectiveness were reported.

Skill Acquisition

Skills driven classes focus on nursing skills and the student's ability to adequately perform them. William et al. (2016) reviewed the difference between virtual reality simulation and traditional classroom method of phlebotomy education in 62 undergraduate nursing students in Kuwait. They found no significant difference between the groups, suggesting that this education is effective with both methods. Three studies in a review of literature by Li et al. (2019) reviewed skill acquisition; these results were combined and analyzed by their team. They found a trend towards skill improvement in the hybrid course over traditional learning, but this was not statistically significant (Li et al., 2019). In a systematic review by McCutcheon et al. (2015), thirteen of the nineteen studies reported on clinical skills following online education. Minimal statistical data were reported; however, they describe six studies which found significantly positive results following online education intervention. Three studies had inconclusive results, and six studies demonstrated no statistically significant differences (McCutcheon et al., 2015).

Learner Satisfaction

Several studies found high levels of satisfaction with an online learning environment (Esposito & Sullivan, 2020; Scarborough, 2015; Yeh et al., 2019). In a qualitative study, Esposito and Sullivan (2020) found students reported feeling overwhelmingly satisfied with virtual simulation during the COVID-19 pandemic and found importance in group work while faculty promoted engagement.

In a systematic review evaluating online or blended learning versus face-to-face learning of clinical skills in undergraduate nursing education by McCutcheon et al. (2015), 11 of 19 articles reported on the outcome of satisfaction with varied results. Three other studies found similar results indicating that there is no difference in satisfaction between traditional and online learning environments (Chan et al., 2016; Gagnon et al., 2013; Graber, 2019). Students felt more successful in their education with the addition of technology support, audio visual aids, discussion forums with classmates, and affirmational support from peers (Li et al., 2019; Munich, 2014). Learner satisfaction was a complex outcome, utilizing various measurements in the studies reviewed. Additionally, reported outcomes were mixed in the satisfaction expressed by learners. Therefore, no one learning environment was associated with a higher level of learner satisfaction over another.

Summary

The synthesis of the literature identified varying conclusions from studies examining differences between online, blended, and traditional learning environments. Participants in these studies described increases in motivation and attitude, self-efficacy, learning effectiveness, skill acquisition, and satisfaction. These themes are echoed in the constructivist learning theory, emphasizing the importance of students processing new knowledge internally through active learning. The success of a student in the online environment is directly related to how the course content is delivered and the characteristics for autonomy the learner possesses. However, some studies showed no difference between the environments of learning in the above listed outcomes. No studies showed negative impacts of the online learning environment. Consensus between and among studies was inconsistent. Multiple studies suggested areas for continued

research in the online learning environment for nursing education. This research could further close the gap in identifying appropriate and effective online teaching methods.

Methods

This study was a secondary analysis of data from a primary study, with a purpose to examine how the learning experiences of undergraduate nursing students were affected as a result of the COVID-19 pandemic and resulting rapid transition to online learning. The primary study in consisted of an online survey of 215 students registered for the prelicensure nursing major at a medium sized state university on two campuses in the American Midwest. The response rate of the students who completed the survey was 72% (215/300). Refer to Table 1 for demographics of campus A and campus B.

Table 1.

Demographics of Campus A and Campus B

Campus A	Campus B
93% White 2% Asian 1% Hispanic 1% American Indian 1% Black 2% two or more 1% unknown	93% White 3% Asian 1% Hispanic 3% two or more
94% female 6% male	93% female 7% male

The survey instrument used in the primary study included a combination of structured and open-ended questions exploring different aspects of the online learning environment. Data were collected on the effectiveness of, and satisfaction with, online learning, together with perceived barriers, advantages and disadvantages in the context of a rapid transition to an online learning environment during the spring semester of 2020.

In addition to reporting demographic data, the secondary analysis focused upon qualitative data generated in response to a number of open-ended questions. The researchers utilized a modified framework analysis (Ritchie & Spencer, 1994), which consisted of five stages: familiarization, coding, plotting data onto identified codes, identifying emerging themes, synthesizing themes into main concepts, and reviewing data to ensure transparency and rigor of the analysis (Ward et al., 2013). Familiarization with the data involved three researchers independently reading through the descriptive data in order to gain a sense of breadth and variability of the responses. The researchers then coded the responses and entered identified codes onto an excel spreadsheet, initially creating one sheet for each of the research questions. At this point the researchers noted substantial overlap in responses. Next, they utilized the initial codes to map student responses onto the codes. The researchers collaborated and identified emerging themes and subthemes across the sheets for each research question. Following discussion, the researchers then condensed the codes into seven mutually agreed upon themes which could be observed over a continuum. Researchers then synthesized these into four overarching themes of learning environment, course design and delivery, communication, and learner characteristics. These themes, and relevant sub-themes are described, together with illustrative quotes from student responses.

Results

This study aimed to evaluate the experiences of prelicensure nursing students with regards to effective teaching modalities and satisfaction following a rapid transition from the traditional to online learning environment due to the COVID-19 pandemic.

The study aimed to answer the following questions.

1. What are students' perceptions of advantages and disadvantages of online learning?
2. Which aspects of online learning are students most satisfied with?
3. Which aspects of online learning are students most dissatisfied with?
4. What barriers to online learning do students identify?

After analyzing the data, four main themes emerged that appeared to influence students' experiences of the move to online learning. These were: learning environment, course design and delivery, communication, and learner characteristics. A main finding was that perception of online learning in relation to advantages, disadvantages, satisfiers, dissatisfiers and barriers were personal to, and differed between, individual students. Table 1 provides select students' responses to illustrate the main themes and sub-themes.

Table 2

Selected Student Responses Categorized by Themes.

MAIN THEME	SUB-THEME	ILLUSTRATIVE QUOTES
Learning Environment	Home environment	<p>“I could switch up my learning environment whether it was a different room in my house or outside on the patio.”</p> <p>“I enjoy seeing my family but miss the face-to-face interaction. I feel like I can get more done and have gotten better sleep as well being at home.”</p> <p>“For me personally, [I] just felt like I had a difficult time keeping on top of things especially when my whole family is in the house and there's multiple distractions at place[sic].”</p> <p>“My place of relaxation has been forced into becoming an academic environment so now I have nowhere to relax. There is no place available to take quizzes or tests in peace. The noise of roommates carrying out their daily lives in between classes is highly distracting and detrimental to my grades.”</p>
	Internet	<p>“My internet connection is often very spotty because of all of my family doing online schooling and working.”</p>

MAIN THEME	SUB-THEME	ILLUSTRATIVE QUOTES
Course Design and Delivery	Self-pace/Flexibility/Structure	<p>"I really like recorded lectures rather than having a PowerPoint to just read over yourself. I know synchronous is more challenging as students are working throughout the day but having these classes and having to be on zoom allows for a normal schedule and ability to ask questions."</p> <p>"Prerecorded lectures don't allow students to make questions in real time."</p> <p>"I feel like it was difficult to keep track of new assignments and manage everything. I also felt like some classes added even more time-consuming tedious tasks to make up for being online."</p>
	Lecture Breaks and Engagement	<p>"...[O]ffer brief periods of rest from lecturing to give a break from staring at a computer screen."</p> <p>"I would recommend more interactive tools such as class polls, Kahoot's, videos, games etc. Looking at a screen for days can make people sleepy, so asking questions and involving the audience helps!"</p>
	Content and Assignments	<p>"Some classes allowed open notes on the quizzes and increased time to take exams."</p> <p>"Learning in this format was so difficult. A lot of professors had to cut down course content. Likewise, I feel like the exams being open book were not beneficial because I feel like I was not forced to study and know the information as well."</p>
	Virtual Simulation	<p>"I thought the Vsims did a fantastic job of targeting very specific diagnosis or complications and provided a very good learning experience with in-person experiences not possible..."</p> <p>"Simulations not as rigorous as in person (clinical, skills lab)"</p>
	Group Work	<p>"I would continue to do more group work sessions or mini projects that keep us involved with other students and allow us to share ideas while we are isolated. Presentations and group projects were easier to accomplish remotely than I anticipated..."</p> <p>"The group work was more difficult than usual."</p> <p>"I would feel better still being able to do the work 'in class' together as to make sure I fully understand it and am able to complete it. Allow for peer revisions or continuing to be in groups for some activities."</p>
Communication	Between Students and Faculty	<p>"Since moving to an online format, this is the most accessible my professors have ever been. It has been incredibly helpful to be able to quickly get in touch with them regarding questions."</p> <p>"In class we are able to have actual interactions with professors and ask questions about lectures (during an actual lesson) and</p>

MAIN THEME	SUB-THEME	ILLUSTRATIVE QUOTES
		<p>can also learn from other students' questions about that material.”</p> <p>“Communication is KEY. The professors should provide a good, solid outline of assignments so that we know what is due when and when dates are being changed.”</p>
	Virtual Meetings	<p>“I have found (the) meetings schedule with the faculty has been very helpful during this time. It gives me some structured times and I am able to get my questions answered. I feel that if these were more frequent, the online setting could be improved.”</p>
	Learning Management System (LMS)	<p>“Not having the in-person clarification for assignments. Having to understand what was happening through [school specific LMS] which was highly confusing towards the end of the semester with all of these [group evaluations]. I was kind of lost with all the things in the assessments page – honestly confusing.”</p>
	Classmates	<p>“The shy kids got a chance to be more interactive on zoom using the chat.”</p> <p>“Learning how to use Zoom was probably more beneficial for writing our group papers than having to meet somewhere else and do it. Zoom has made meeting for classes more efficient.”</p> <p>“Reduce group work as much as possible. It's difficult to carry out the same level of work needed to succeed on assignments when working over online formats.”</p>
Learner Characteristics	Time Management	<p>“I can do things on my own time and have smaller lengths of worktime compared to having to sit through long periods of class at once where I lose focus more often. I can spend more time learning to understand things that might not come as easily to me compared to being in class and going with the pace of the professor.”</p>
	Motivation and Attention	<p>“I struggle to maintain level of motivation needed for nursing school and often felt overwhelmed with PowerPoints, emails, and all the different class schedules”</p> <p>“It's hard to stay motivated to finish the day when you're online.”</p>
	Work, School, Life Balance	<p>“It allowed for more flexibility, in that I could work or take time for myself and still be able to do the work on time.”</p>
	Self-Teaching	<p>“The recorded lectures were very helpful for going back over things that were discussed in class”</p> <p>“Having more concrete schedules for the online course would be helpful to keep things straight when we cannot see our professor or ask questions with readily available answers. One of my courses had no supplemental class time on zoom and this</p>

MAIN THEME	SUB-THEME	ILLUSTRATIVE QUOTES
		<p>hindered my learning for the class, so I recommend more zoom class time for online courses.”</p> <p>“It's hard to learn when you can't ask questions when you think of them or see someone do a skill. And you can't practice your skills because we don't have the equipment like we do in lab.”</p>

Learning Environment

Students frequently described advantages, disadvantages and barriers to online learning in relation to the environment in which online instruction occurred. Some found their home environment advantageous to their learning experiences due to benefits such as enhanced comfort and improved sleep hygiene, while others reported their environment as a barrier to their online learning due to disruptions to routine, presence of family members, poor internet connections, and technical issues.

Course Design and Delivery

Students described varying preferences in relation to course design and delivery, including content delivery, assignments and exams, and clinical replacement. Some students appreciated the flexibility of asynchronous classes whilst others enjoyed the structure of synchronous course delivery. Disadvantages included disorganization of the learning management system (LMS), undefined expectations, and difficulties with motivation. Students offered a wealth of suggestions for future content delivery including lecture breaks, use of more engaging teaching methods, and increased structure through release of course content within the LMS weekly. Assignments and exams were reported by some students as being overwhelming in the online learning environment and commented how student expectations, given the historical context of class delivery, were not met. However, others appreciated the less formal approach to testing in some online classes. Students' reactions to replacement activities

for clinical experiences, such as simulations, were also varied, with some identifying these as a barrier to meeting their learning objectives, while others seemed satisfied. One primary advantage to content delivery in the online learning environment reported by students was the ability to enhance meaningful group work. Overall, students had varied responses.

Communication

Communication was one of the most evident themes impacting student experiences, echoing findings from the literature review. Survey responses included information on students' experiences and preferences for communication between students and faculty members as well as communication between fellow classmates. Overall disadvantages or barriers to the online learning environment included lack of clear expectations, scheduling, organization, and overall communication. Classroom participation, interaction with classmates, and group work during lecture times were seen as satisfying to some and dissatisfactory to others.

Learner Characteristics

The theme of learner characteristics included student motivation, time management and preferred learning style. Self-motivated students appreciated asynchronous courses while others preferred enhanced guidance from instructors. Students who did not seem to value a high degree of autonomy described a lack of motivation and focus leading to poor attention and attrition in relation to content which led to feelings of being overwhelmed.

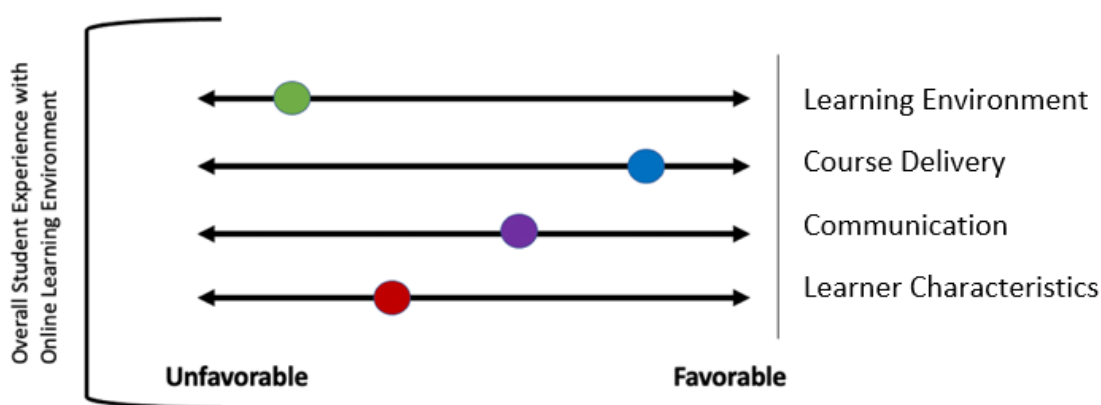
Conclusion

In conclusion, the researchers identified four themes from the secondary analysis of data: learning environment, course design and delivery, communication, and learner characteristics, which appeared to be experienced by students along a continuum ranging from unfavorable to favorable. The combination of the student's experience of each of the four identified themes

along the continuum seemed to collectively influence their perception of satisfaction and success within the online learning environment. Refer to Figure 1 for a fictional example of how a student's collective experience of these themes might be expressed along this continuum, therefore affecting their experience within the online learning environment.

Figure 1

Fictional Example of Student Responses Along Response Continuum by Theme



Discussion

Student perceptions of the advantages and disadvantages of online learning, satisfying and dissatisfying components, and barriers to learning were personal to, and differed between, individual students. The online learning environment is not a 'one size fits all' approach and should be tailored to the individual learner. This finding is consistent with findings in the review of literature. The conceptual map in Appendix C shows motivators, actions and the desired outcomes to find success in the online learning environment. Success in the online learning environment depends partly on the individual learning style and motivation of the student. However, educators' methods of course delivery and utilization of communication can

greatly impact the student's own personal learning experience within the online learning environment.

The findings from this study complement and extend the findings of the literature review.

The review identified desired outcomes of online learning including motivation and attitude, self-efficacy, learning effectiveness, skill acquisition, and learner satisfaction. The findings of the current study identify four main themes reflecting different contributors to online learning as a series of continuum, from unfavorable to favorable. Utilizing all three authors for interpretation helped strengthen the themes emerging from the data. Shenton (2004) explains strategies to ensure trustworthiness in qualitative research projects based on Guba's four criteria of trustworthiness. In addition, Forero et al. (2018) describes four-dimension criteria to assess rigor in qualitative research. These two strategies were utilized to ensure validity and reliability in the secondary analysis. A student's position on each of the four continua appears to collectively influence how a student perceives the online learning environment. This perception can affect how satisfied the student will be in their online learning journey and how successful they will be in achieving the desired outcomes, identified in the review of literature, within an online learning environment.

Implications for Teaching

It is vital for educators to understand and implement effective teaching modalities to enhance students' experiences in the online environment. Each student has different learning styles, and their learning experience should be tailored towards their individual needs (Swan, 2003). This includes, but is not limited to, appropriate and thorough content presentation and delivery for the online classroom, effective and clear communication to students regarding assignments and expectations, engaging content, and availability of faculty for

communication with students who have questions and concerns. In a similar evaluation, Swan (2003) found students preferred organized courses with clear, consistent and concise learning outlines with clear student expectations. Students found communication with faculty and classmates an important role in their learning outcomes for guidance and feedback (Swan, 2003). Educators do not have direct control over learner characteristics and the student's learning environment but can ensure students are aware of available resources to enhance their experience in a favorable direction in order to attain desired outcomes. Educators should provide a range of teaching and learning modalities to satisfy a variety of learners. The current interest in HyFlex modes of teaching, where content of a single course is available in a range of formats and delivery methods, seems promising in this respect (Dorsey et al., 2021). Since students' aggregate experience of their learning environment, course design and delivery, communication, and learner characteristics appears to be influential in students' overall satisfaction, faculty should consider each of these areas when planning online programs.

Implications for Future Research

Future research should include investigation into specific teaching modalities, examples of interventions, course design, course delivery, and methods of effective communication. There is a need for assessing learning styles and implementing specific teaching methods to tailor instruction to individual students. Research should investigate the online learning environment and determine appropriate training and resources needed to best prepare faculty, staff, and students throughout their courses and programs.

Strengths and Limitations

Strengths of this study include its large sample and high response rate, thoughtful and rich responses from most of the participants, timely capture of experiences, and respondent anonymity, which is likely to result in more honest responses.

Limitations of the study include its homogenous sample, and cross-sectional methodology in which data were collected on only one sample, at one university, in a singular demographic location (Midwest region). The sample consisted of primarily young females of Caucasian origin with minimal representation of other demographic groups. Additionally, the impact of the pandemic, which was outside the control of the researchers, could have influenced students' responses. While questions did elicit appropriate responses from students a validated survey tool was not utilized.

Conclusion

In conclusion, attainment of desired learning outcomes within the online learning environment is influenced by learning environment, course design and delivery, communication, and learner characteristics. Individualization of the student's learning experience through tailored course delivery and support of learning needs will aid in increased satisfaction and achievement of learning outcomes.

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Appendix A

Search Strategy

Date of Search	Keyword Used	Limits	Database/Source Used	# of Hits			
				Listed	Reviewed	Saved	Used
9/25/20	Undergraduate nursing or pre-licensure nursing or nursing student or nursing education or nurse education (12,298) & Online learning or distance learning or hybrid learning or blended learning or online teaching or e-learning (277,082), & Satisfaction or dissatisfaction or barriers or strengths or completion (116,295)	Academic Journals	ERIC	125	18	6	6
10/17/20	Undergraduate nursing or pre-licensure nursing or nursing student or nursing education or nurse education (229,643) & Online learning or distance learning or hybrid learning or blended learning or online teaching or e-learning (21,854), & Satisfaction or dissatisfaction or barriers or strengths or completion (342,852)	Academic Journals, <10 years, Adult age (18-44), English language	CINAHL	158	10	1	1
10/17/20	Undergraduate nursing or pre-licensure nursing or nursing student or nursing education or nurse education (292,721) & Online learning or distance learning or hybrid learning or blended learning or online teaching or e-learning (66,214), & Satisfaction or dissatisfaction or barriers or strengths or completion (2,354,295)	Nursing Journals, <5 years, Adult (18-44), English, RCT and Systematic Review	PubMed	127	7	1	1
10/30/20	Undergraduate nursing or pre-licensure nursing or nursing student or nursing education or nurse education (229,960) & Online learning or distance learning or hybrid learning or blended learning or online teaching or e-learning (21,948), & Satisfaction or dissatisfaction or barriers or strengths or completion (343,825)	Academic Journals, <10 years, Adult age (18-44), English language	CINAHL	161	9	1	1

Date of Search	Keyword Used	Limits	Database/Source Used	# of Hits			
				Listed	Reviewed	Saved	Used
10/03/20	undergraduate nursing OR pre-licensure nursing (5,310) & online teaching OR online course OR online learning OR distance learning OR hybrid learning OR blended learning OR e-learning (51,153) & satisfaction OR dissatisfaction (112,956)	>10 years, English language	PubMed	49	13	9	9
10/15/20	undergraduate nursing OR pre-licensure nursing (4,348) & online teaching OR online course OR online learning OR distance learning OR hybrid learning OR blended learning OR e-learning (13,512) & satisfaction OR dissatisfaction (77,354)	>10 years, English language, Academic Journal	CINAHL	62	7	1	1
10/16/20	undergraduate nursing OR pre-licensure nursing (236) & online teaching OR online course OR online learning OR distance learning OR hybrid learning OR blended learning OR e-learning (71,319) & satisfaction OR dissatisfaction (10,048)	>10 years, English language, Academic Journal	ERIC	8	2	0	0
10/9/20	Undergraduate nursing OR Pre licensure nursing AND Education (5299) AND Satisfaction (266)	Academic journals, English <10 years (3604)	CINAHL	266	26	7	3
10/25/20	Undergraduate nursing OR Pre licensure nursing AND Education AND Satisfaction	English, <10 years,	Pub Med	303	13	4	2
10/25/20	Undergraduate nursing OR Pre licensure nursing AND Education AND Satisfaction	English, < 10 years	ERIC	34	4	0 Two reviewed (already in search)	0

Appendix B

Literature Review

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/Level of evidence
Barisone et al. (2019)	To explore the perception and effectiveness of web-based learning in facilitating the development of clinical skills in undergraduate nursing students.	N = 26 undergraduate nursing students (2 nd year of nursing) at 3 different universities in Italy.	<ul style="list-style-type: none"> *Qualitative descriptive *Videos of how to do skills (urinary catheter, insertion of NG tube, placing PIV, obtaining blood sample). *Students were asked to watch videos 15 days before clinicals and review as many times as needed. *Post interventions focus group. 	<ul style="list-style-type: none"> *The use of the online videos help be a bridge from in theory to practice. *The use of traditional teaching methods, such as classrooms and skills labs with blended web-based methods improved student learning the performance of correct gestures. *Some students find technology difficult to utilize and all e-learning can make students feel isolated. *Themes that emerged from data: use of web-based learning improved healthcare outcomes, technology helped support traditional learning and unsure of which videos to utilize to support clinical skills (unless told by educator). 	<ul style="list-style-type: none"> *The use of blended learning is rapidly expanding because there is more transition from traditional to e-learning. *Utilizing the blended learning can help bridge can gaps between theory and practice. 	<ul style="list-style-type: none"> *Level VI <u>Limitations</u> *Very specific videos *Clinical placement was not broad.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Blissitt (2016)	Identify which content delivery method (traditional or blended) is most effective for introductory biomedical nursing courses in terms of student success and satisfaction.	*N = 56 nursing students taking their first pathophysiology course. 25 control (traditional format). 30 intervention group (blended format).	*Quasi-experimental, non-randomized control group pre-test-post-test design. *Blended-learning format included online learning activities as primary teaching strategy and one face-to-face session per unit used for activities, not lecture. *Satisfaction was measured by student evaluation of educational quality questionnaire, adopted from Marsh’s Student Evaluation of Educational Quality Questionnaire. 29 total questions. *Pre-test was a proctored 18-item exam which included two questions from each nine units of course completed on the first day of the course. Post-test was administered on the last day of the course composed of the same items as the pre-test.	*Differences in post-test scores were not statistically significant between traditional and blended courses ($p = 0.401$). *Statistically significant differences in course satisfaction scores across course format ($p = 0.003$). Students in traditional group reported higher satisfaction ratings ($M = 4.26, SD = 0.65$) than students in the blended group ($M = 3.71, SD = 0.68$).	Some students may have a higher satisfaction with traditional lecture courses versus blended, though they do not necessarily perform better.	*Level VI <u>Limitations</u> *Small sample size. *Convenience sampling. *Does not state setting where study occurred. *Pre and post-test included the same questions. *Post-test scores improved significantly in both groups from pre-test, this may have been due to memorization of these questions.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results /Findings	Implications	Critique/ Level of evidence
Cant & Cooper (2017)	To appraise and review evidence on the impact of simulation-based education for prelicensure nursing students.	<p>*Reviewed 25 articles within the objective</p> <p>*Databases searched included CINAHL, PubMed, and Google Scholar</p> <p>*Search terms included ‘nursing student’, ‘baccalaureate’, ‘education, nursing’; ‘education, methods’; ‘learning’; ‘teaching’; ‘patient simulation’; and ‘human simulation’</p> <p>*Exclusion criteria included non-English, qualitative reviews, those involving debriefing, and interprofessional simulation.</p>	<p>*Systematic Review</p> <p>*Utilized the Joanna Briggs Institute methodology for conduct of an umbrella review.</p> <p>*Focused on topics of simulation effectiveness, patient deterioration/safety,</p> <p>*Simulation delivery, psychomotor impact, self-efficacy, and non-technical skills.</p> <p>*Most articles were a mix of quasi-experimental and experimental designs.</p>	<p>*High Fidelity simulation contributed to higher scores on skill and knowledge exams, safety, and confidence</p> <p>*Simulation enhanced cognitive outcomes and clinical skill, was not able to measure affective or psychomotor outcomes.</p>	<p>*Overall, the studies reviewed had positive impacts on the nursing students. Students felt the simulation was a safer place to practice skills and gain confidence in the clinical setting without potential harm coming to a patient.</p> <p>*Shown to improve self-efficacy, clinical skill acquisition, competence and confidence.</p>	<p>*Level V <u>Limitations</u></p> <p>*Lack of consistent measurement tools between studies</p> <p>*Little further detail about “high quality” study designs.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
<p>Chan et al. (2016)</p>	<p>Examine the experience of undergraduate nursing students' case-based learning (CBL) using both traditional classroom and web-based delivery in terms of self-learning ability, clinical reasoning ability, and satisfaction in learning.</p>	<p>N = 122, year 3 undergraduate baccalaureate nursing students at a university in Hong Kong enrolled in a "Nursing in Clinical Specialties" course.</p>	<p>*Mixed methods, quantitative and qualitative. *Traditional face-to-face approach was used during the first semester of the course. Web-based approach was used during the second semester of the same course, with the same students. *Perceived self-learning ability, critical thinking ability, and level of satisfaction in CBL measured through a questionnaire distributed at conclusion of CBL sessions at end of each semester. *Questionnaire contained 5-point Likert scale on subscales of self-learning ability, clinical reasoning ability, and students' satisfaction. *Qualitative student learning experience obtained through focus group interviews using semi structured interview guides at conclusion of CBL sessions at end of only the second semester.</p>	<p>*No significant difference between traditional classroom and web-based approach to CBL in terms of self-learning ability, clinical reasoning ability, and satisfaction in learning. *Students appreciated flexibility in online delivery of CBL. Students expressed increased self-initiation in learning with online delivery of CBL.</p>	<p>Web-based delivery of this content may be similar to traditional classroom delivery in terms of perceived self-learning ability, critical thinking ability, and learning satisfaction.</p>	<p>*Level VI <u>Limitations</u> *Small sample size, one cohort. *Same cohort used in traditional vs. online CBL learning, limiting findings. *CBL topics varied by semester based on course content. *Outcome measures entirely subjective through student self-reporting via questionnaire. *No objective outcome measures. *Qualitative data only obtained at conclusion of second semester.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Esposito & Sullivan (2020)	“to disseminate the modern methods for clinical teaching-learning and positive outcomes of a novel pedagogy during extraordinary pandemic conditions” (p. 522)	N = 17 second semester third year traditional undergraduate nursing students at a university in the northwestern United States during the COVID-19 pandemic in Spring Semester of 2020.	*Educational evaluation *Student/Faculty needs assessment (pre-launch). *Post simulation written reflections every week.	*Needs assessment: No student needs, faculty needed hardware and online platform training, given to them by the school's IT department. *100% positive feedback for online SIMs in material comprehension, appreciation of teamwork between peers, and sense of community during the pandemic. *“Many” students were unexpectedly satisfied with their learning through virtual SIMs. *Faculty reported similar feedback as students with the added stress of transferring to an online platform mid semester.	* Clear direct communication from faculty and students were key to successful transition within community. *Students did report a longing to be in the hospital setting. It was easier to become fatigued after watching multiple videos in tandem, and frustrations with not being able to have conversation with patients within the SIM.	*Level VI <u>Limitations</u> *Small sample size *Relatively quick publication for the events that transpired. *Does not describe how “many” students were unexpectedly satisfied with their learning.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Foss et al. (2013)	To explore students' perceptions of e-compendium tools compared to traditional tools. (E-compendium are electronic rich media sources providing content, i.e., pictures of anatomy of different brain lobes and their purpose).	630 undergraduate nursing students. Of the 630, N = 349 students completed the study (class of 2009, 2010 and 2012) Norway.	*Survey (Descriptive Quantitative Design) *Lectures, textbooks, study tasks, e-compendiums (electronic rich media-students able to listen to texts, figures, photos, animations and features of Adobe with MC questions at end of compendium), podcasts, digital multiple-choice questions, digital discussions.	*85% of students reported e-compendiums were "very good", 76% of students said lectures were "very good", 68% said MCQ were "very good", 61% did not recommend the textbook. Overall students liked the e-compendiums. *They found that the younger classes had higher number of students' ratings "very good" in the e-compendiums than older students. (Possibly due to the exposure of computers earlier in childhood). *Not many utilized podcasts but was the same content as in the e-compendiums.	The use of e-compendiums was highly scored in undergraduate nursing students compared to any other tools available to them (textbooks, podcasts, study tasks, etc.).	*Level VI <u>Limitations</u> *Difficult to identify which specific learning tools are successful due to the numerous variables of student engagement, previous knowledge, access, and knowledge of technology. *Was only done with Norwegian nursing students.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
<p>Gagnon et al. (2013)</p>	<p>Determine effectiveness of blended teaching (internet-based tutorials with traditional lecture) compared to conventional face-to-face classroom teaching in outcomes of knowledge, satisfaction, and self-learning readiness in an undergraduate nursing introductory research course.</p>	<p>*First year undergraduate nursing students at Laval University in Province of Quebec, Canada enrolled in a “introduction to the research process” class. *N = 102: 52 intervention group, 50 control group.</p>	<p>*Randomized Control Trial *Intervention group utilized internet-based modules for self-study combined with traditional classroom sessions. Control group utilized traditional classroom sessions. Identical evaluation methods between groups. *Comparison between groups on knowledge, satisfaction, and self-directed learning readiness. Knowledge measured through students' scores on midterm and final exams. Satisfaction measured through standardized satisfaction questionnaire (Likert-type responses). SDLR measured through self-directed learning readiness scale (SDLRSNE), a 40 item Likert scale survey. *Interaction effect between student motivation was based on one item within the standardized satisfaction questionnaire measuring motivation in three degrees: unmotivated, motivated, and motivated.</p>	<p>*Teaching method had no impact on knowledge, satisfaction, and SDLR. *Following findings were extrapolated by researchers when adjusting for level of motivation as measured by one item within the standardized satisfaction questionnaire regarding student motivation: *Unmotivated students in blended learning group performed better than unmotivated students in control group regarding knowledge outcome ($p = 0.01$). *The following findings were extrapolated by researchers after adjusting for baseline SDLR scores: *Students with low SDLR scores at baseline in control improved significantly compared to intervention group ($3.5 \pm .3$ vs. 1.9 ± 0.6; $p = 0.01$). *Students with medium SDLR scores at baseline in control improved significantly compared to intervention group ($3.8 \pm .2$ vs. $3 \pm .3$; $p = 0.01$). *Students with high SDLR scores at baseline in the intervention group improved significantly compared to the control group ($4.8 \pm .2$ vs. $4.3 \pm .1$; $p = 0.2$).</p>	<p>*RCT showed no statistical difference in outcomes between blended learning and traditional face-to-face lecture regarding knowledge, satisfaction, or self-directed learning readiness. *Blended learning effectiveness may vary based on unique learner needs or motivation level.</p>	<p>*Level III <u>Limitations</u> *Convenience sampling. *Students were not blinded to intervention. *Does not describe attrition rate. *Intervention and control groups offered at different times of day. *Control group had to buy course materials, intervention group did not.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Giddens et al. (2010)	To assess the benefits of utilizing virtual communities to teach different scenarios to undergraduate nursing students.	N = 248 undergraduate nursing students in six different cohorts at a university in New Mexico. (3 Main campus and 3 distant)	*Descriptive design *Post-intervention Survey *Utilized <i>the Neighborhood</i> , an online community which consisted of virtual setting including 40 patients, 11 households, 4 health care givers, and different real-life scenarios and how students felt that it benefited them in the learning.	*Students on main campus felt that <i>The Neighborhood</i> let them understand patients' conditions. *Students at the distant sites utilized <i>The Neighborhood</i> more often and found correlation between course concepts and scenarios. *Students felt that early on in their course work they were able to correlate course content with scenarios, but in the later levels of the scenarios did not find it as beneficial. *No statistical data reported.	*Utilizing an online community with scenarios relating to content that is being taught can help the students learning outcomes.	*Level VI *Researchers stated they are creating a guideline for how to work within the virtual community. *Large sample size. *Expanded study to different nursing programs to see if it is as successful *Created positive engagement with learners. <u>Limitations</u> Different faculty teach different content, so it is not all the same experience for students.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
<p>Gill et al. (2019)</p>	<p>*Determine best practice for teaching pharmacology to undergraduate baccalaureate nursing students related to literature. *What are current strategies, and the impact of pharmacology knowledge retention and/or pharmacology skills acquisition for undergraduate nursing students? *How do various strategies of teaching method impact undergraduate nursing student satisfaction.</p>	<p>*Mostly single site design. Mostly northern American studies. *N=20 articles. *Review using preferred reporting items for systematic reviews and meta-analyses (PRISMA). *CINAHL, academic search complete, ERIC, education source, health reference center academic. 2000-2017, English language. Exclusion = non-English, anecdotal evidence, focused advanced practice pharmacotherapeutics within graduate nursing programs.</p>	<p>*Systematic review *Quality appraisal via Kirkpatrick's framework and the medical education research quality instrument (MERDQI).</p>	<p>*Online, simulation, and integrated methods of teaching pharmacology were most beneficial for pharmacology knowledge acquisition and student satisfaction. *Traditional lecture, problem-based learning and a flipped classroom were least effective strategies for teaching pharmacology to undergraduate students. *Students were less satisfied with traditional online and flipped methods of teaching in comparison to simulation. *Although students were satisfied with an online approach, most students reported that they preferred to use online tools as a supplement rather than as a replacement for face-to-face lecture or laboratory sessions.</p>	<p>Systematic review identified online, simulation, and integrated methods of teaching pharmacology as most beneficial for knowledge acquisition and student satisfaction.</p>	<p>*Level V *Studies were of moderate quality. Mostly quasi-experimental designs. <u>Limitations</u> *Potential biases were noted in all studies, most related to sampling. *Actual behavior change outcomes were reported in only two articles.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
<p>Graber (2019)</p>	<p>Compare live classroom delivery versus online delivery of a therapeutic crisis management skills course in overall student grade point average, test scores, class grade, and satisfaction survey results.</p>	<p>N = 110 pre-licensure nursing students in a psychiatric mental health nursing course. 63 live classroom, 47 online education.</p>	<p>*Quasi-experimental post-test design. *Measured by overall GPA, test scores, class grade, and student satisfaction survey results. Survey results completed on the last day of class. *Control consisted of live classroom with lecture, case studies, and group work. *Intervention (online delivery) consisted of recorded lecture (recorded from the live class in the control group), case studies, and discussion group work.</p>	<p>No statistically significant differences between live and online education delivery groups in test grades, course grades, GPA, or student satisfaction. Online total $M = 9.3$, classroom total $M = 8.6$</p>	<p>Online delivery of content may be associated with similar outcomes to live face-to-face delivery.</p>	<p>*Level VI <u>Limitations</u> *Setting not discussed. *Students self-selected type of education modality. Potential bias with no randomization. *Survey was developed by researcher and peer reviewed by faculty. *Students had been taught therapeutic crisis management content prior. *30-minute presentation on crisis content was available to both groups. *Limited generalizability, *Convenience sampling.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Herron et al. (2019)	Observe if video simulation in a traditional classroom setting improved satisfaction, knowledge, and confidence compared to a written case study.	Convenience sample of N = 165 baccalaureate nursing students in the south eastern United States.	<ul style="list-style-type: none"> *Quasi-experimental design *Intervention group received video simulation of a case study. Control group received a case study via a PowerPoint presentation. *Measured by Student Satisfaction and Self Confidence scale (SSSLS), post scenario knowledge evaluation, and open-ended questions. 	<ul style="list-style-type: none"> *SSSLS higher in the video SIM group but not statistically significant. No <i>p</i> values stated. *Knowledge acquisition approx. 5% higher than the case study group, though not statistically significant. No <i>p</i> values stated. *Satisfaction <i>p</i> = 0.32, self-confidence <i>p</i> = 0.95. 	Due to the increased knowledge acquisition the addition of a dynamic element, such as video simulation, to learning can help engage students to be more successful.	<ul style="list-style-type: none"> *Level III *Had to eliminate SSSLS pre and mid evaluations because it was confusing to the students.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Kidd et al. (2012)	<p>*If a simulation can be similar to clinical settings for undergraduate nursing students.</p> <p>*These students did not have any patient interaction and faculty wanted to close that gap.</p>	<p>*N = 126 undergraduate nursing students followed throughout their education.</p> <p>*Students enrolled in the mental health-nursing course, who were in the chemical dependency residential treatment program (Fall 1, Fall 2 Spring 1 and spring 2 groups) in a university in Ohio</p>	<p>*Survey (Quantitative data analysis)</p> <p>*Online simulation program (Second life) Chosen due to the multitude of interaction settings.</p> <p>*Students were expected to follow usual protocols in scheduling date and times for site visits, provided learning outcomes, assess surroundings and patient, demonstrate communication skills while conducting mental status assessment.</p>	<p>*Educational effectiveness scores were scored from 8-32. The higher the score higher educational effectiveness per students. This was in relation to technical difficulty ranging from 14-56. The higher the score the higher the technical difficulty.</p> <p>*Each Class results: (Educational effectiveness Technical difficulty) Fall 1(29.35 22.24), Fall 2 (25.94 24.5), Spring 1(20.55 28.57), Spring 2(19.65 26) combined all classes (22.22 26.33).</p> <p>*Overall, there was a significant negative relationship of $r = -0.472$ ($p = <0.01$), if students had greater technical difficulty, they felt that they had less effective education.</p>	<p>Virtual reality simulation can be a good fit for nursing students. It can provide a rich environment and diversity but in a safe setting. Also, virtual can allow students to look back and reflect on performance.</p>	<p>*Level VI <u>Limitations</u></p> <p>*Students who didn't have adequate internet access seemed to have difficulties.</p> <p>*Some students had difficulty with technology and maneuvering client in the simulation, hard to respond sometimes with client.</p> <p>*Obtaining enough support from faculty to start and maintain the program determined to be a limitation.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Li et al. (2019)	Meta –analysis to investigate the effects of blended learning on nursing students, knowledge, skills and satisfaction.	Total of 8 studies met inclusion criteria, N = 574 nursing students Searched EMBASE, PubMed, CINAHL, Cochrane Library in English up to 12/2018. Appropriate search terms were utilized.	*Meta-analysis *Compared traditional, blended learning.	*Satisfaction with blended learning had a statistical significance with a $p = 0.01$ and could be incorporated into nursing education curricula. No effect size was stated. *Statistical significance on knowledge with a $p = <0.00001$. *No statistical significance on skills. *Online learning was more acceptable to students due to it can provide more animations, videos and clinical images than traditional. * Many students stated they like online learning in addition to traditional learning.	This meta-analysis showed the students had higher satisfaction with blended learning compared to traditional learning.	*Level V *Studies from different countries within a time of 2007-2018. <u>Limitations</u> *Tools used for blended learning were different, non-English articles were excluded.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
<p>McCutch eon et al. (2015)</p>	<p>Identify whether online or blended learning enhances teaching of clinical skills in undergraduate nursing students.</p>	<p>*Undergraduate nursing students receiving learning through an online learning modality. Studies explored effect of either blended or online learning teaching strategy for development of clinical skills. *Total N = 19 papers. 14 quantitative (13 with comparison group and one observational with no comparison), one qualitative paper, three mixed methods papers and one integrative review. *Medline, CINAHL, BREI, ERIC, AUEI. *Search terms included e- learning and applications.</p>	<p>*Systematic review *JBI mixed method systematic review process *English language publications. *Sample sizes ranged from N = 82 – N = 231. *Mix of experimental, qualitative, systematic reviews, and pilot studies. *Studies with postgraduate/post registration students excluded *Studies reporting only on instructor/teacher experience excluded or those not primarily about nursing students. *Predetermined themes of method/research design; study aims; sample population; outcome measure; results.</p>	<p>*Online learning for teaching clinical skills is no less effective than traditional means. *Synthesis addressed learning outcomes of clinical skills education including knowledge, performance, self-efficacy, and student satisfaction. *Overall (7) papers reported higher levels of knowledge following an online learning intervention, or no significant difference (5) between face-to-face comparison. Only two papers reported higher level of knowledge after a face-to-face learning intervention. *Overall (6) studies reported no significant difference in skill performance, *Only three papers reported on self- efficacy as an outcome measure. Mixed results. *Overall, five studies indicated higher satisfaction with online learning and four reported no significant difference with student satisfaction.</p>	<p>*Ten of nineteen articles in systematic review indicate online learning offered similar or improved knowledge outcome measures though quality of articles and overall generalizabili ty of findings was reported as weak.</p>	<p>*Level V <u>Limitations</u> *Excluded studies theoretical online teaching. Generalizability limited. *Thorough explanation of search process, including review of articles, review of risk bias within studies, etc. *Outcome measures were different between studies. *Studies included those looking at both blended and online teaching strategies, generalizing results perhaps too broadly.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
<p>McCutcheon et al. (2018).</p>	<p>Compare scores in terms of motivation and attitudes towards clinical supervision, knowledge of clinical supervision and satisfaction of learning method between undergraduate nursing students who received skills training via blended learning approach vs. those who received online only teaching approach.</p>	<p>N = 122 undergraduate nursing students enrolled at a higher education institute in Northern Ireland, United Kingdom. 60 control, 62 intervention.</p>	<p>*Quasi-experimental: Post-test only with comparison group design. *Online learning control group or blended learning intervention group. *Motivation and attitudes measured with Modified Manchester Clinical Supervision Scale. Knowledge measured via 10-point multiple choice questionnaire. Satisfaction measured using university training evaluation tool.</p>	<p>*Nursing students who were part of the blended learning intervention group scored higher in motivation and attitudes ($M = 85.5$) compared to control group ($M = 3.51$) ($p = 0.015$). *Intervention group scored higher in knowledge ($M = 4.2$) compared to control ($M = 3.51$) ($p = 0.015$). *Intervention group scored higher in satisfaction ($M = 30.89$) compared to control ($M = 26.49$) ($p = 0.001$). *Qualitative data on satisfaction revealed student reported satisfaction with blended learning due to learning preference and least satisfaction from control group.</p>	<p>Blended learning compared to online only learning resulted in overall higher motivation, attitudes, knowledge, and satisfaction in undergraduate nursing students.</p>	<p>*Level VI *The specific intervention was for clinical supervision education within a learning module of the Nursing degree program on leadership and management. *Thorough detail of intervention with rationale. <u>Limitations</u> *Data collected from only one cohort. *Post-test only design. *Students were not blinded as to which group of the study they had entered. *Modified Manchester Clinical Supervision Scale – altering reliability/validity.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Mgutshini (2013)	Compare undergraduate nursing students' academic performance and satisfaction with learning experience between online and traditional face-to-face delivery of a psychiatric nursing course.	N = 53 second-year pre-registration baccalaureate nursing students (total four-year program) enrolled in psychiatric nursing course. 23 traditional face-to-face delivery. 30 online distance delivery.	<p>*Mixed methods comparative cross-sectional study.</p> <p>*Control (traditional face-to-face delivery) and intervention (online) groups were taught the same materials and performed the same examinations throughout the course.</p> <p>*Weekly online discussions occurred either during face-to-face time in the control group, or through discussion board for the intervention group.</p> <p>*Nine-item student performance data recording form was utilized.</p> <p>*Satisfaction measured through Student Instructional Reporting questionnaire version 2 (SIR-II).</p>	<p>*Intervention group scored higher than control in GPA (3.29 to 3.05), time spent (11.3 to 8.43) and descriptive data reported higher levels of satisfaction.</p> <p>*Intervention group reported decreased perceived proficiency (64%) compared to traditional content delivery students (72%), however, not statistical analysis was performed to determine a p-value.</p> <p>*Online group commented on value of social interaction.</p>	Online learning had similar outcomes to traditional face-to-face delivery of the psychiatric nursing courses.	<p>*Level VI Content taught by same instructor and materials.</p> <p><u>Limitations</u></p> <p>*One course within one cohort. Sample and setting not described.</p> <p>*No statistical analysis was performed.</p> <p>*Variation in students related to academic performance accounted, and prior knowledge related to subject (higher in online cohort N=7 compared to traditional N=2).</p> <p>*Student satisfaction scale responses difficult to interpret.</p> <p>Content mastery was based on self-reporting of students.</p>

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Munich (2014)	Identify supports beyond the educator that contributed to undergraduate and graduate nursing students' ability and motivation to learn online.	N = 29 undergraduate and graduate nursing students at a university in Canada	*Qualitative Survey Design *Time 1; Telephone interviews were conducted when part way through their online course *Tools and resources available to them, self- evaluation and learning, study and life schedule, group assignments *Time 2: **End of course questions- Addressing online benefits and challenges they faced. *Discussion forum where students could have social conversations.	Online learning is influenced by support. Students identified themes that provided success when they had support from IT, discussion forums, motivation and affirmational support when they were overwhelmed, Social support – from the discussion forum had a safe place to talk among classmates. Educators can positively influence the students' experience.	Online education demand is increasing, if we better understand how to deliver the materials and support the learner throughout their education, we will have more successful students.	*Level VI *Social, affirmational, and technology support from peers online, offline support from family, nursing colleagues, employers, preceptors, and IT can have better success. <u>Limitations</u> *Small Sample size *Participants lived in isolated areas in Canada. *Email nor telephone communication between students was calculated into satisfaction.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Scarborough (2015)	Investigate the ability of the students to interact in educational setting using electronic synchronous technology without being physically present.	N = 13 undergraduate nursing students United States (university in New Mexico).	*Descriptive Design Two satisfaction surveys distributed to online course utilizing synchronous videoconferencing technology. Distance Education Learning Environment Survey (DELES) and Social Presence Survey.	*Found statistical significance in 2 domains of the DELES between baseline and synchronous videoconferencing group (SVG). SVG showed higher scores for instructor support ($p = .015$) and interaction($p = 0.0016$). All other domains were not statistically significant. No significance with the SPS survey. *Support of virtual tutoring of scaffolding strategies have helped the learner's awareness of thinking process to improve the problem-solving abilities for participants. *The motivation and presentation of the instructor can impact the student's outcomes and satisfaction.	Interaction and instructor support are higher in the synchronous environment compared to the face-to-face environment.	*Level VI <u>Limitations</u> *Small study size, one class, one instructor *Need further data to claim the accuracy and evaluation of its effectiveness with larger size to see if all students are still satisfied.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Shorey et al. (2018)	Determine effectiveness of blended learning in a communication module on outcomes of student satisfaction, attitudes in learning communication skills, and self-efficacy in communication skills.	N = 124 first-year undergraduate nursing students at a nursing school in Singapore.	<p>*Quasi-experimental single group pre and post-test.</p> <p>*Redesigned 13-week (one semester) communication module based on blended learning pedagogy.</p> <p>*Included weekly faculty and student face-to-face tutorials.</p> <p>*Lecture materials, PowerPoint slides, multi-media components, quizzes, discussion forums, and reflections available and completed online.</p> <p>*Outcomes measured through Blended Learning Satisfaction Scale (BLSS), Communication Skills Attitude Scale (CSAS), and communication skills subscale of the Nursing Student Self-Efficacy Scale (NSSES) at week one and week thirteen of semester.</p>	<p>*BLSS scores increased from pre-test ($M = 59.62$) to post-test ($M = 129.76$) ($p = 0.012$), effect size 0.2.</p> <p>*CSAS scores increased from pre-test ($M = 80.57$) to post-test ($M = 159.59$) ($p = 0.042$), effect size 0.2.</p> <p>*Communication skills subscale of NSSES scores increased from pre-test ($M = 12.21$) to post-test ($M = 49.08$) ($p = 0.003$), effect size 0.3.</p>	Redesigning communication courses based on blended learning pedagogy may improve satisfaction with blended learning, attitudes in learning communication skills, and self-efficacy in communication skills compared to traditional face-to-face delivery.	<p>*Level VI <u>Limitations</u></p> <p>*Convenience sampling</p> <p>*Single group study, no randomization or control.</p> <p>*Participation was essentially mandatory.</p> <p>*Potential bias as primary researcher was the instructor of the course.</p> <p>*Researchers state different learning styles and feedback on student engagement were provided and causes for improved outcomes, but these are not delineated in the text.</p> <p>*Limited generalizability.</p>

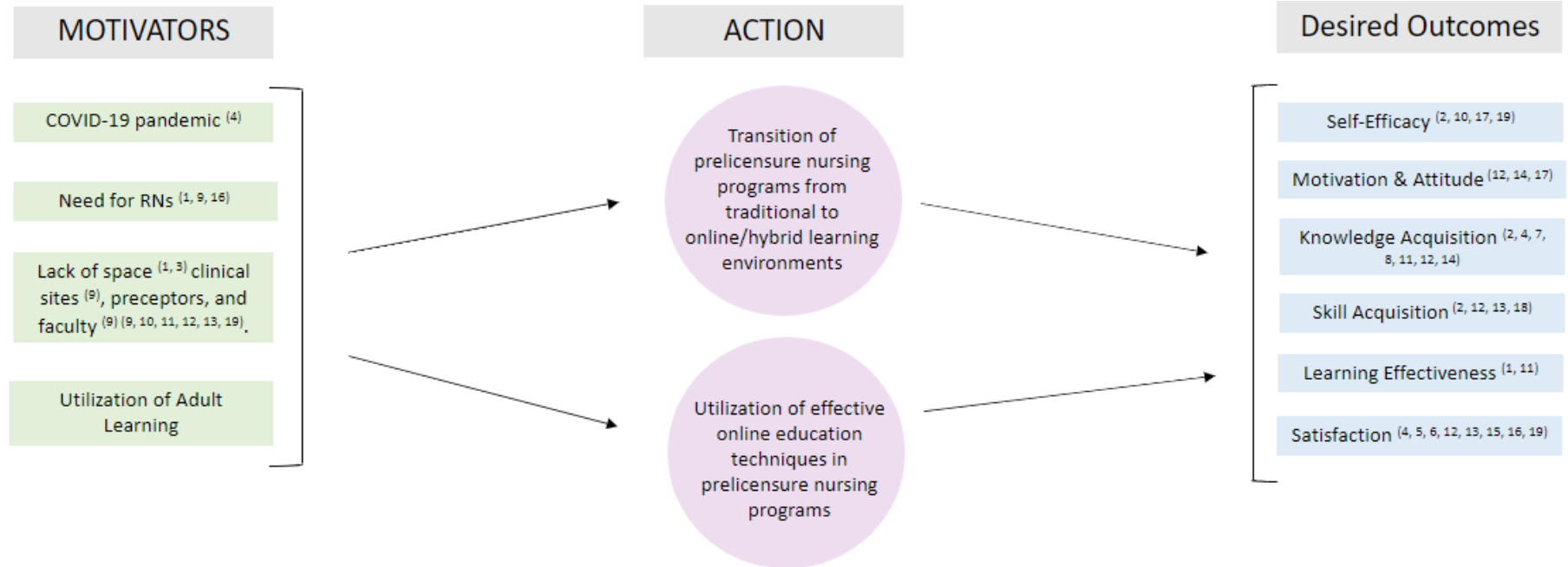
Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Walker et al. (2016)	Examine indicators of undergraduate nursing students' satisfaction with their learning journey.	N = 49 papers. Varied educational roles. *Searched PubMed, CINAHL, Google Scholar, Cochrane, Wiley Online and ProQuest Central. *Only included peer-reviewed papers published in 2008 or later. English language. *Search terms included nursing, student, undergraduate, etc.	*Integrative review *Minimum of two research team members critically appraised papers included. *Quality of research determined by appraisal tools developed by Critical Appraisal Skills Programme across methodologies. *Quality of survey research determined by a separate tool developed by previous researchers.	*Authentic learning, motivation, resilience, support, and collaborative learning were identified as indicators of undergraduate nursing students' satisfaction with their learning journey. *Higher levels of satisfaction when student's feel included and supported during their learning journey.	*Integrative review of both traditional and distance learning deliveries identified themes of authentic learning, motivation, resilience, support, and collaborative learning as important to nursing students' satisfaction with their learning journey. *Reported specifically on the need for social presence in online learning to increase students' perception of support and satisfaction.	*Level V *Describes appraisal tools for quality and rigor analysis. <u>Limitations</u> *Excluded papers outside Western nations. *Reports studies of non-nursing students. *Limited implications for online learning specifically.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
William et al. (2016)	Compare differences in skill performance of phlebotomy between traditional method (in classroom setting with lectures) (control group) and virtual reality simulation (experimental group).	*N = 62 undergraduate nursing students. *Control N = 33, experimental N = 29, randomly selected. *College of nursing in Kuwait.	*Quasi-experimental study *Standardized Phlebotomy skill checklist formulated by CathSim system. Six performance metrics were utilized. *Traditional: utilized simulated plastic arm Virtual Simulation: phlebotomy with six patients.	No significant differences between the two-performance metrics. Both completed procedures successfully. Control group $M = 1$, $SD = 0$, simulation group $M = 1$, $SD = 0$. *There was not significant difference. simulation group compared to control group, pain (sim $M = 1.86$; control $M = 1.91$, $p = 0.702$), lower tourniquet time (sim $M = 10.10$; control $M = 14.39$; $p = 0.104$) and time to complete procedure was lower (sim $M = 13.45$; control $M = 20.57$; $p = 0.101$).	The use of virtual simulation could be utilized in teaching skills to nursing students.	*Level III <u>Limitations</u> *Small study size. *Random patients assigned to both groups (every person has a different pain scale) *Another study should be conveyed to further the evaluation of virtual simulation.

Citation	Purpose	Sample/Setting	Variables/ Instruments Method/ Designs/ Framework	Results/Findings	Implications	Critique/ Level of evidence
Yeh et al. (2019)	To examine the feasibility of story guided practice sessions online to improve prelicensure nursing students interprofessional critical communication competency.	N = 46 senior level prelicensure nursing students enrolled in a research university in the southeastern United States.	<p>*Qualitative experimental study</p> <p>*A clinical story subscription service was utilized as the platform. Students were given 45 minutes to listen to the clinical problem, record an SBAR report, complete a self-assessment checklist, answer reflective questions, and re-record SBAR report after reflection from the questions.</p> <p>*Data were gathered from these assignments and a post survey was sent electronically to evaluate learner satisfaction.</p>	<p>*Learner satisfaction (93.5%).</p> <p>*100% of participants felt more prepared to use SBAR in a critical patient incident.</p> <p>*The highest rated “most helpful” topics were having to record verbal report (84.8%), receiving immediate feedback for SBAR report (76.1%), and having sessions online (73.9%).</p>	Overall, story guided asynchronous practice sessions were positively received by students and provided an effective and low-cost option for enhanced SBAR skills and interprofessional communication.	<p>*Level IV <u>Limitations</u></p> <p>*Technical difficulties were a major barrier.</p> <p>*Learners wanted a wider variety of sessions.</p> <p>*Learners recommended face to face debriefing of the simulation.</p>

Appendix C

Conceptual Map



KEY

- 1. Barisone et al. (2019)
- 2. Cant and Cooper (2017)
- 3. Chan et al. (2016)
- 4. Esposito and Sullivan (2020)
- 5. Foss et al. (2013)
- 6. Gagnon et al. (2013)
- 7. Giddens et al. (2010)
- 8. Gill et al. (2019)

- 9. Graber (2019)
- 10. Herron et al. (2019)
- 11. Kidd et al. (2012)
- 12. Li et al. (2019)
- 13. McCutcheon et al. (2015)
- 14. McCutcheon et al. (2018)
- 15. Mgutshini (2013)
- 16. Scarbrough (2015)

- 17. Shorey et al. (2018)
- 18. William et al. (2016)
- 19. Yeh et al. (2019)



= progressive relationship

Appendix D

E-Mail Invitation to Participate in Study

IMPACT OF A GLOBAL PANDEMIC ON NURSING STUDENTS' LEARNING EXPERIENCES

Information about this study

We are inviting you to take part in a research project. As you are aware, all courses within the nursing program have been transformed to an online format in response to the Covid19 pandemic and the 'shelter in place' order. We are interested to know how this have affected your learning experiences this semester, and also the impact on your perceived stress levels. This information will help us to plan future courses at WSU and will also inform our wider understanding of the impact of the pandemic for undergraduate nursing students.

Taking part in the study involves answering questions on the subsequent screens, which should take no more than 15 minutes of your time. Completing the survey implies your consent for the information you provide to be used for research purposes. All students who are currently undertaking the nursing major at Winona State University are being invited to take part – approximately 300 students in total.

There is no foreseeable benefit or risk for you to participate in this study. The information you provide will remain confidential; your identity will not be linked to any specific information that might be presented or published. Participation in this study is completely voluntary. A decision to not to participate or to withdraw at a later time will involve no penalty or loss of benefits to which you are entitled or negative consequences regarding your role as a student or relationship with Winona State University. If you choose not to be involved in this study, please do not complete the survey. However, we would like to encourage you to participate. We believe that the way for knowledge to progress and grow is through the participation in research. This is your opportunity to help advance the knowledge in your chosen profession. If you have any questions or comments you would like addressed directly, please contact [primary study coordinator]

Appendix E

Survey Tool

Nursing department COVID-19 response with distance learning

You are invited to participate in a research study about your experiences with online/distance learning during this pandemic. The purpose of this survey is to evaluate your experiences with the changes that were made to the WSU nursing curriculum because of COVID-19. Your participation will help to evaluate your learning processes during this experience. You will be prompted to respond to a series of questions on subsequent screens which will take approximately 15-20 minutes of your time. There is no foreseeable benefit or risk for you to participate in this study. The information you provide will remain confidential and anonymous, and your identity will not be linked to any specific information that might be presented or published. Participation in this study is completely voluntary. A decision not to participate, or to withdraw at a later time, will involve no penalty or loss of benefits to which you are entitled; nor would there be negative consequences regarding your role as a student or your relationship with Winona State University. If you choose not to be involved in this study, please do not complete the survey. However, we would like to encourage you to participate. We believe that the way for knowledge to progress and grow is through participation in research. This is your opportunity to help advance knowledge in your chosen profession. If you have any questions or comments you would like addressed directly, please contact [primary study coordinator] Thank you for participating in this study and for completing this survey. We take all feedback seriously and appreciate you taking the time to share your perspective. Thank you.

Q3 Which campus are you assigned to?

[Campus A] (1)

[Campus B] (2)

Q4 For each question choose from the answers accordingly:

	Never (1)	Almost never (2)	Sometimes (3)	Fairly often (4)	Very Often (5)
In the last month, how often have you been upset because of something that happened unexpectedly? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt that you were unable to control the important things in your life? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt nervous and stressed? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last month, how often have you felt confident about your ability to handle your personal problems? (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the last month, how often have you felt that things were going your way? (6)

In the last month, how often have you found that you could not cope with all the things that you had to do? (7)

In the last month, how often have you been able to control irritations in your life? (8)

In the last month, how often have you felt that you were on top of things? (9)

In the last month, how often have you been angered because of things that happened that were outside of your control? (10)

In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? (11)

A horizontal row of five radio buttons, each representing a point on a five-point Likert scale. The buttons are evenly spaced and are currently unselected.

Q2 Which Term are you are currently in? (choose more than one if you are part time progression and in between terms)

Term I (1)

Term II (2)

Term III (3)

Term IV (4)

Q5 If in Term I, how much time did you spend in each of your courses since moving online?

	A great deal (1)	A moderate amount (2)	A little (3)
N341 Skills and Assessment (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N343 Professional Practice I (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N344 Leadership I (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N360 Pharmacology (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N366 Pathophysiology (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q6 If in Term II, how much time did you spend in each of your courses since moving online?

	A great deal (1)	A moderate amount (2)	A little (3)
N352 Caring for the Older Adult (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N354 Research and EBP (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N353 Professional Practice II (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N358 Psychosocial Adaptations (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 If in Term III, how much time did you spend in each of your courses since moving online?

	A great deal (1)	A moderate amount (3)	A little (4)
N426 Population Health I (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N421 OB (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N422 Peds (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N443 Professional Practice III (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N446 High Acuity (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8 If in Term IV, how much time did you spend in each of your courses since moving online?

	A great deal (1)	A moderate amount (3)	A little (4)
N453 Professional Practice IV (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N427 Population Health II (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N444 Leadership III (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N454 Capstone/Immersion (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N458 Mental Health (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 Was there anything that limited your ability to participate in online learning activities?

- Yes (1)
- No (2)

Q10 If yes, please describe the situation.

Q11 How satisfied or dissatisfied were you with online support you received from WSU (including IT support)?

- Extremely satisfied (1)
- Satisfied (2)
- Neither satisfied nor dissatisfied (3)
- Dissatisfied (4)
- Extremely dissatisfied (5)
- Not applicable (6)

Q12 How satisfied or dissatisfied were you with your instructor(s)' use of technology?

- Extremely satisfied (1)
- Satisfied (2)
- Neither satisfied nor dissatisfied (3)
- Dissatisfied (4)
- Extremely dissatisfied (5)
- Not applicable (6)

Q13 How satisfied or dissatisfied were you with the adapted course materials?

- Extremely satisfied (1)
- Satisfied (2)
- Neither satisfied nor dissatisfied (3)
- Dissatisfied (4)
- Extremely dissatisfied (5)
- Not applicable (6)

Q14 How satisfied or dissatisfied were you with the level of rigor (academically, intellectually and personally challenging) in your courses?

- Extremely satisfied (1)
- Satisfied (2)
- Neither satisfied nor dissatisfied (3)
- Dissatisfied (4)
- Extremely dissatisfied (5)
- Not applicable (6)

Q15 How satisfied or dissatisfied were you with your interaction with fellow students?

- Extremely satisfied (1)
- Satisfied (2)
- Neither satisfied nor dissatisfied (3)
- Dissatisfied (4)
- Extremely dissatisfied (5)
- Not applicable (6)

Q16 How satisfied or dissatisfied were you with your interaction with instructor(s)?

- Extremely satisfied (1)
- Satisfied (2)
- Neither satisfied nor dissatisfied (3)
- Dissatisfied (4)
- Extremely dissatisfied (5)
- Not applicable (6)

Q16 How satisfied or dissatisfied were you with your instructor(s)' availability?

- Extremely satisfied (1)
- Satisfied (2)
- Neither satisfied nor dissatisfied (3)
- Dissatisfied (4)
- Extremely dissatisfied (5)
- Not applicable (6)

Q18 From your personal point of view, please list 2 **advantages** of having your courses moved to an online environment.

Q19 From your personal point of view, please list 2 **disadvantages** of having your courses moved to an online environment.

Q20 Do you feel the learning outcomes were met as effectively during the online weeks as they would have been during face to face weeks (please look at the Course Outline for each course for reference, if needed)?

- Yes (1)
- No (2)

Q21 If not, what could have been changed to more effectively meet the learning outcomes (Please look at the Course Outline for each course for reference, if needed)?

Q22 Please provide 2 concrete suggestions for how delivery of content in the online setting could be improved.

Q26 Is there anything else that you would like to add about your experiences of the Nursing Department's response to Covid 19 and how it has affected you?

Appendix F

Journal Guideline

Title of the article:

[Type or copy/paste your title here]

Because of the double-blind review, the authors' information should not be included in this file. Please put authors' information in the separated Title Page.

Abstract:

[The abstract succinctly introduces the paper. It is advised not to exceed 250–300 words. Please do not include any citations in the abstract. Avoid specialist abbreviations if possible.

The abstract must be structured into separate sections: Background/Objective, the context and purpose of the study; Methods, how the study was performed and statistical tests used; Results, the main findings; Conclusions, brief summary and potential implications.]

Objective:

Methods:

Results:

Conclusions:

Key Words :

[Four to six keywords for indexing purpose] **1. Introduction**
[Type or copy/paste your text here]

2. Methods

[Type or copy/paste your text here]

3. Results

[Type or copy/paste your text here]

Number tables consecutively in accordance with their appearance in the text. Place a table's caption above the table's body and its description below the body. Avoid vertical rules. Be sparing in the use of tables and ensure that the data presented in tables do not duplicate results described elsewhere in the article.

For example:

Table 1. This is the title of the table

Groups	Item A		Item B	
	<i>N</i>	<i>M</i>	<i>n</i>	<i>M</i>
Experimental Group	1.182*	0.865	1.450**	1.040
Control Group	1.584*	0.487	1.682**	0.0627

* This the first footnote.

**This is another footnote.

As shown in **Table 1**, the experimental group, and control group ...

Number figures consecutively in accordance with their appearance in the text. Place a figure's caption and description below the figure body. A minimum resolution of 300 DPI is required.

For each figure, the following information should be provided: Figure number (in sequence, using Arabic numerals - i.e., Figure 1, 2, 3 etc); short title of figure (maximum 15 words); detailed legend, up to 300 words.

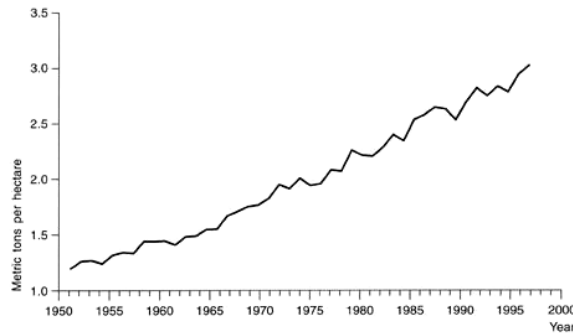


Figure 1. Figure title (This is an example of figure 1)

As shown in **Figure 1**, the experimental group, and control group ...

Note: Avoid abbreviating the titles of tables, figures, and equations (i.e., Tab. 1, Fig. 2, Eq. 3) in the caption or in running text. Do not write “the table above/below” or “the figure on page 32,” because the position and page number of a table or figure cannot be determined until the pages are typeset.

The text size of equations should be similar to normal text size. The formula should be placed center justified with serial number on the right. For example:

$$a = [(1+b)/x]^{1/2} \quad (1)$$

As shown in **Equation (1)**, the Equation ...

[Subheading level 2]

[Type or copy/paste your text here]

[Subheading level 3]

[Type or copy/paste your text here]

4. Discussion

[Type or copy/paste your text here]

Acknowledgement

Please acknowledge anyone who contributed towards the study by making substantial contributions to conception, design, acquisition of data, or analysis and interpretation of data, or who was involved in drafting the manuscript or revising it critically for important intellectual content, but who does not meet the criteria for authorship.

References

All references must be numbered consecutively, in square brackets, in the order in which they are cited in the text (such as ^[1]), followed by any in tables or legends. Reference citations should not appear in titles or headings. Each reference must have an individual reference number. Please avoid excessive referencing. If automatic numbering systems are used, the reference numbers must be finalized and the bibliography must be fully formatted before submission.

Reference style should refer to NLM citation style, see *Citing Medicine: the NLM style guide for authors, editors, and publishers* (<http://www.ncbi.nlm.nih.gov/books/NBK7256/>).

Examples of reference style are shown below:

- [1] Verdecchia A, Francisci S, Brenner H. Recent cancer survival in Europe: a 2000-02 period analysis of EURO CARE-4 data. *Lancet Oncol* 2007;8:784-796. [https://doi.org/10.1016/S1470-2045\(07\)70246-2](https://doi.org/10.1016/S1470-2045(07)70246-2)
- [2] Baselga J, Segalla JGM, Roché H. 3LBA SOLTI-0701: a double-blind, randomized phase 2b study evaluating the efficacy and safety of sorafenib (SOR) compared to placebo (PL) when administered in combination with capecitabine (CAP) in patients (pts) with locally advanced (adv) or metastatic (met) breast cancer (BC). *Eur J Cancer Suppl* 2009;7:3. [https://doi.org/10.1016/S1359-6349\(09\)72031-2](https://doi.org/10.1016/S1359-6349(09)72031-2)
- [3] Carey LA, Dees EC, Sawyer L. The triple negative paradox: primary minimizing chemosensitivity of breast cancer subtypes. *Clin Cancer Res*, in press.
- [4] Jones S, Holmes FA, O'Shaughnessy J. Docetaxel with cyclophosphamide is associated with an overall survival benefit compared with doxorubicin and cyclophosphamide: 7-year follow-up of US Oncology Research Trial 9735[abstract]. *J Clin Oncol* 2009;27:s1177-s1183. PMID:19204201 <https://doi.org/10.1200/JCO.2008.18.4028>
- [5] Jones X. Zeolites and synthetic mechanisms. In *Proceedings of the First National Conference on Porous Sieves: 27-30 June 1996*; Baltimore. Edited by Smith Y. Stoneham: Butterworth-Heinemann, 1996:16-27.

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