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Undergraduate Nursing Students' Learning Style Preferences and Preferred Faculty Teaching
Methods Compared to the Actual Methods Used by Faculty

A dissertation
presented to
the faculty of the Department of Nursing
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Doctor of Philosophy in Nursing

by
L. Cathy Simpson
December 2020

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Keywords: generation, nursing student, teaching preference, learning style, teaching method

ABSTRACT

Undergraduate Nursing Students' Learning Style Preferences and Preferred Faculty Teaching

Methods Compared to the Actual Methods Used by Faculty

by

Cathy Simpson, MSN, RN

Aim. The aim of this study was to examine the generational differences of undergraduate nursing students' learning style preferences and their preferred faculty teaching methods to the teaching methods used most often by nursing faculty in the classroom.

Background. Nursing educators are responsible for creating learning environments that are effective for students that are in different generations and nursing educational pathways. Each generational cohort brings a collective set of characteristics, expectations, and preferences to the classroom, challenging educators to balance the generational learning styles of all students with respectable, evidence-based, pedagogical approaches. This study was one of the first to explore Generation Z's preferred teaching method preferences used in the classroom.

Method. Both descriptive and inferential statistical procedures were used for this study. A one-sample Wilcoxon signed-rank test was performed to evaluate the difference between each of the learning style preferences, followed by a Kruskal-Wallis test that compared the generational differences to the learning styles. A Likelihood-ratio Chi-square (LR χ^2) was performed to assess for association between generational cohorts and their preferred teaching methods used in the classroom.

Results. One hundred eighty-four undergraduate nursing students; and sixty-seven nursing faculty from ten Southeastern states were included in the sample for this study. Using the Index of Learning Styles[®] survey, results found nursing students had either a balanced *active/reflective* and *sequential/global* learning style, or a *sensing* or *visual* learning styles. With regards to preferred teaching methods, lecture, and the use of visual aids in the classroom were identified as the top teaching methods preferred by both student and faculty participants.

Conclusion. Nurse educators are responsible for creating learning environments that are inclusive of students from diverse generational cohorts, spanning six decades and in multiple nursing educational pathways. These results provide new information for nursing educators to utilize in various academic settings.

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DEDICATION

I dedicate the accomplishment of this dissertation to my Lord and Savior, Jesus Christ. Undoubtedly, God's presence in my life was the sustaining force that allowed me to accomplish a task so dauntingly difficult. The completion of this dissertation is for His glory, not mine. To my parents, Jim and Ruth Simpson, who taught me the value of education and that any goal is achievable. Although you are not here to tell me in person, I know that you are proud of my accomplishments and are looking down from above with joy in your hearts. I look forward to our celebratory reunion one day in Heaven.

To my family and friends for understanding when I said numerous times that I could not be there. Your love, encouragement, and unswerving support will be forever treasured. I could not have completed this journey without all of you!

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Chapter 1. Introduction

“One generation passes away, and another generation comes...”

(Ecclesiastes 1:4 New King James Version)

Today’s nurse educators are responsible for creating learning environments that are inclusive of students from four, diverse generational cohorts, spanning six decades who are enrolled in multiple nursing educational pathways, including three traditional programs: Diploma, Associate Degree in Nursing (ADN), and Bachelor of Science in Nursing (BSN). Generation Z (born between 1995 and 2010), currently represents the largest population in the United States (U.S.), and has joined the Baby Boomers (born between 1946 and 1964), Generation X (born between 1965 and 1979), and Generation Y (born between 1980 and 1994) in the college classroom (Statista, 2019). Additionally, Generation Y represents the largest population of nursing students in the classroom (47%), followed by Generation Z (34%), and a combination of Baby Boomers and Generation X who make up the remaining 19% (National League for Nursing, n.d.-b).

Although Generation Z (Gen Z) represents the second largest population of nursing students in the classroom, research including Gen Z is just beginning to appear in the literature. Some research has been written about the generational differences in the nursing workforce; however, due to the dearth amount of research in the literature, little is known about Gen Z in the workforce or in the nursing classroom. A brief review of the literature from 2013 to 2019, using keywords *Generation Z* and *nursing students*, yielded a mere eight articles. As Gen Z continues to enter college and the nursing workforce, additional information about this generation will evolve (Williams, 2018). Whereas, some characteristics of Gen Z have emerged, additional

literature and evidenced-based data are needed to validate any individual differences, specifically identifying their preferred learning styles and teaching method preferences.

Learning is a process that engages students in a manner that best enhances their individual learning styles (DiBartola, 2006; Kolb & Kolb, 2005). In nursing, the academic rigor of the courses requires students to apply, synthesize, and evaluate all information and interventions. The challenge is for nurse educators to create learning environments that support critical thinking through skills and strategies utilizing all types of learning styles (Dibartola, 2006; Marek, 2013). Additionally, educators need to know how to validate connections between learning styles and preferred teaching methods. Each generational cohort brings a collective set of characteristics, expectations, and preferences to the classroom, challenging educators to balance the generational learning styles of all students with respectable pedagogical approaches (Johnson & Romanello, 2005; Robb, 2013).

Effective learning is achieved by using creative teaching strategies designed to include the learning characteristics of each generational cohort in the classroom. For this reason, nurse educators need evidence-based data to support modifications in curricular design, including teaching methods that will not only enhance student learning and academic performance, but will also promote student success and achievement. Similarly, the nurse educators' desire for students to be engaged, enthused, and motivated requires a stronger focus on student-centered learning (Stanley & Dougherty, 2010). This chapter will include background information, a statement of the problem, the purpose of the study, the theoretical framework, hypotheses, conceptual and operational definitions. Finally, the chapter concludes by noting the limitations, delineations, assumptions, and significance of the study.

Background

In 2010, the Carnegie Foundation for the Advancement of Teaching and the Institute of Medicine (IOM), released reports calling for nursing education reform and the transformation of the nursing profession (Benner et al., 2010; Institute of Medicine, 2011). The Carnegie report, *Educating Nurses: A Call for Radical Transformation*, was the first national nursing education study in over 30 years. This report explored the strengths and weaknesses in nursing education, along with the challenges confronting the nursing profession. Likewise, the report also identified the most effective practices for teaching nursing, avenues for the ease of educational pathways to nursing licensure, as well as the revitalization of the nursing curriculum (Benner et al., 2010).

The IOM (2011) multidisciplinary study, *The Future of Nursing: Leading Change, Advancing Health*, examined the nursing workforce, suggesting evidenced-based recommendations to meet the U.S. patient population's diverse health care needs across the lifespan. This report was designed to serve as a blueprint for changes in the nursing profession and in America's complete health care system. Overall, the IOM study and the Carnegie report called for considerable changes in nursing education which included lifelong learning, seamless transitions to higher degree programs, a diverse workforce, as well as educational opportunities for interprofessional education and practice (Institute of Medicine, 2011). When creating and selecting effective teaching methods which "engage, stimulate, and promote transference and assimilation of new knowledge," it is essential for nurse educators to have a clear understanding of the historical aspects of nursing education (Gallo, 2011, p. 195; Parker & Schoenhofer, 2008).

Generational Cohorts

Today, generational cohorts are defined as a group of individuals born within a time span with upper limits of 15 years, whose life stages are shaped by the events, trends, and

developments occurring during that time span (McCrindle, 2014; Nisen, 2013). Individuals within a generational cohort offer differing views regarding their desires, dreams, values, and expectations about work and life.

Baby Boomers, individuals born between 1946 and 1964, are characteristically regarded as being optimistic, productive, and collaborative. Firmly believing that respect is a quality that is earned, they are well- educated, exhibiting both clinical and organizational skills. Boomers, often referred to as workaholics, are loyal employees who identify self-worth when rewarded with promotions or monetary compensations in their jobs (Cook, 2016; Lancaster & Stillman, 2002; McCrindle, 2006; Seemiller & Grace, 2016; Shatto & Erwin, 2016; Smith-Trudeau, 2016).

Generation X (Gen X), individuals born between 1965 and 1979, are identified as being independent, family-focused, socially responsible, informal, innovative, and creative (McCrindle, 2006; Smith-Trudeau, 2016). In addition, Gen X excels at multi-tasking, are hard-working, yet skeptical individuals viewing time as their most precious commodity; they demand work-life balance, flexible schedules, and value external recognition by monetary compensation or awards (Cook, 2016; Lancaster & Stillman, 2002). With regards to relationships with authority, this generation prefers an informal “first name basis” approach to their supervisors (Cook, 2016).

Generation Y (Gen Y), individuals born between 1980 and 1994, often referred to as Millennials, are represented as being confident, entitled, highly social, techno-savvy, and socially responsible. Like Gen X, Gen Y insist on having work-life balance (Lancaster & Stillman, 2002; McCrindle, 2006; Miers et al., 2007; McCrindle, 2006; Smith-Trudeau, 2016). Regarding their work hours, Gen Y desires flexibility in their employment, with the ability to work from home

using online and hybrid-approaches. Although this generation has respect for authority, they question why it should be “unconditional and automatic” (Cook, 2016).

Generation Z (Gen Z) consists of individuals born between 1995 and 2010. Having been exposed to a lifelong immersion of technology, such as the internet, instant messaging, texting, smartphones, and tablets has shaped Gen Z into the most technologically savvy of all generations. Likewise, this has prompted the acquisition of additional names including iGen, Net Gen, or digital natives (Clark, 2017; Cross-Bystrum, 2015; Horovitz, 2012; Loehr, 2017; McCrindle, 2006; Twenge, 2017; Wiedmer, 2015). In addition, the constant saturation of media has influenced their inclination to reach for some type of smart device “every seven seconds,” spending an average of nine or more hours a day on these devices (Cook, 2016). Gen Z’s constant media exposure has had a negative impact on their attention span levels, decreasing its length to eight-seconds, which is four seconds less than that of Gen Y. The aspects which Gen Z lacks in the areas of attention span and critical thinking skills, though, they make up for as risk takers and entrepreneurs (Kaiser Family Foundation, 2010; Pew Research Center, 2014).

Educational Pathways

Registered nursing students can choose from three, traditional educational pathways to obtain their registered nursing (RN) degree. The Diploma, Associate Degree Nursing (ADN), and Bachelor of Science in Nursing (BSN) programs all prepare students to provide comprehensive patient care to diverse patient populations (Anderson, 1981; Bureau of Labor Statistics, 2018; LaRocco, 2010). According to the National League of Nurses (NLN), *Biennial Survey of Schools of Nursing Academic Year 2017-2018*, forty-four percent of the responding NLN member schools offered BSN or higher degrees and 56% offered Diploma, ADN, or vocational nursing degrees (National League for Nursing, n.d.-b).

The percentage of students by generation in each traditional RN pathways in 2018 is illustrated in Table 1. Forty-seven percent of Gen Z nursing students were enrolled in a diploma program, followed by 45% of Gen Y, and approximately 8% of Baby Boomers and Gen X combined. Thirty-eight percent of Gen Z nursing students were enrolled in an ADN program, followed by 45% of Gen Y, and 11% of Baby Boomers and Gen X combined. In the BSN program, 77% of Gen Z nursing students were enrolled, followed by 20% of Gen Y, and only 3% of Baby Boomers and Gen X combined (National League for Nursing, n.d.-b).

Table 1

Students Enrolled in Nursing Educational Pathways

| Generational Cohorts | Nursing Programs | | |
|----------------------|------------------|-----|-----|
| | Diploma | ADN | BSN |
| Baby Boomers/Gen X | ~8% | 11% | 3% |
| Gen Y | 45% | 51% | 20% |
| Gen Z | 47% | 38% | 77% |

Ways of Knowing

In education today, there has been a paradigm shift from a focus on teacher-centered learning to student-centered learning. This curricula change places a greater emphasis on educators to implementing learning activities based on students’ preferred learning styles, rather than their own preferred teaching method (D’Amore et al., 2012). One of the National League for Nursing’s (2013) core competencies recommends that educators identify learning styles in nursing students in order to tailor teaching strategies to correlate with the learning style preferences of the students, empowering them to increase their acquisition of knowledge and skills essential in professional nursing (Madu et al., 2019). Molsbee (2011) identified limited and inconsistency in the literature associated with dominant learning styles of nursing students. This

study confirmed Molsbee's (2011) results, identifying minimal research exploring nursing students' learning styles and preferred teaching methods.

Nurse educators' understanding of the "multiple ways of knowing" is essential in nursing education and practice as they strive to incorporate innovative teaching methods that will not only engage the student, but also will transfer the knowledge which is critical for preparing competent healthcare providers (Cannon & Boswell, 2012, p. 3; Parker & Schoenhofer, 2008, p. 8). Although, there are several "ways of knowing" recognized with relevance to nursing education, it was Carper's (1978) seminal work that identified the four patterns of knowing which have served as the foundation for developing nursing knowledge essential for teaching, learning, and the practice of nursing (Henry, 2018; Zander, 2007). "The four [fundamental] patterns [of knowing] are distinguished according to logical type of meaning and designated as (1) empirics, the science of nursing; (2) esthetics, the art of nursing; (3) the component of a personal knowledge in nursing; and (4) ethics, the component of moral knowledge in nursing" (Carper, 1978, p. 22). For understanding the complexity and diversity of nursing knowledge, comprehension of the four "separate but interrelated and interdependent patterns of knowing," is critical for both the nurse educators and nursing (Carper, 1978, p. 22).

The *Competencies for Nursing Education*, created by the NLN, align education and practice, promoting the role of the nurse educators, while providing standards for nursing graduates from all types of nursing programs (National League for Nursing, 2013). Knowing and using a variety of teaching methods to engage and facilitate learning in students from four generations is complex and multifaceted. The NLN's eight core competencies: *Facilitate Learning; Facilitate Learner Development and Socialization; Use Assessment and Evaluation Strategies; Participate in Curriculum Design and Evaluation of Program Outcomes; Function as*

a Change Agent and Leader; Pursue Continuous Quality Improvements in the Nurse Educator Role; Engage in Scholarship; and Function Within the Educational Environment, provide nurse educators a framework to develop curriculum that facilitates positive teaching and learning environments for the next generation of new nurses and their professional roles. According to the World Health Organization [WHO] (2016), these core competencies are the minimum competencies that a qualified nurse educator should possess (p. 11). When all eight core competencies are implemented, nurse educators are equipped with innovative resources that help shape and transform their nursing faculty roles (Halstead, 2007).

Teaching Gen Z students will challenge nursing instructors to adopt and incorporate new teaching methods, including project-based, active-learning opportunities that accommodate their collaborative nature. Consequently, the nurse educators' focus on creating dynamic learning environments will prompt nursing students to become more effective learners (Renfro, 2012; Shatto & Erwin, 2017; Wiedmer, 2015).

Statement of the Problem

The NLN, the Carnegie Foundation for the Advancement of Teaching, and the IOM have called for the transformation of the nursing profession and nursing education reform (Benner et al., 2010; Institute of Medicine, 2011; National League for Nursing, 2003; National League for Nursing, 2005). This educational reform challenges nurse educators to create learning environments that are inclusive and representative of each generational cohort with respect to their individual learning styles and preferred teaching methods; while at the same time, incorporating innovative changes to pedagogical approaches and retaining the academic rigor of the nursing program (Gallo, 2011; Mangold, 2007).

Multi-generational nursing classrooms across the U.S. are composed of four generational cohorts, enrolled in traditional registered nursing educational pathways, each having diverse characteristics that impact the dynamics of education. Few studies examine generational differences of nursing students and their preferred teaching methods, and none of the studies include Gen Z. The lack of empirical evidence has impeded the call for nursing education reform.

Purpose of the Study

The purpose of this study was to compare undergraduate nursing students' differences in learning preferences and the students' preferred teaching methods used in the classroom to the actual methods used by faculty. In addition, the goal of this study was to increase knowledge and understanding of these concepts, as well as provide nurse educators with evidence-based data to assist with making modifications in curricular design, teaching methods, and instructional strategies.

Specific Aims and Hypotheses

The specific aims and hypotheses for the study were:

Specific Aim I: To compare the generational differences of undergraduate nursing students' learning style preferences.

H₁. There are statistically significant differences in the learning style preferences of undergraduate nursing students based on the generational cohort in which they belong.

H₀. There are no statistically significant differences in the learning style preferences of undergraduate nursing students based on the generational cohort in which they belong.

Specific Aim II: To compare the generational differences of undergraduate nursing students' preferred teaching methods used in the classroom.

H₁. There are statistically significant differences in the preferred teaching methods used in the classroom of undergraduate nursing students based on the generational cohort in which they belong.

H₀. There are no statistically significant differences in the preferred teaching methods used in the classroom of undergraduate nursing students based on the generational cohort in which they belong.

Specific Aim III: To compare the generational differences of teaching methods nursing faculty use most frequently in undergraduate nursing programs.

H₁. There are statistically significant differences in the teaching methods that nursing faculty use most frequently in the classroom based on the generational cohort in which they belong.

H₀. There are no statistically significant differences in the teaching methods that nursing faculty use most frequently in the classroom based on the generational cohort in which they belong.

Specific Aim IV: To compare the generational differences of undergraduate nursing students' a) learning style preferences and preferred teaching methods, and b) students' preferred faculty teaching methods to the actual teaching methods used by faculty.

H₁. There are statistically significant differences in the a) learning style preferences and preferred teaching methods, and b) students' preferred faculty teaching methods to the actual teaching methods used by faculty.

H₀. There are no statistically significant differences in the a) learning style preferences and preferred teaching methods, and b) students' preferred faculty teaching methods to the actual teaching methods used by faculty.

Theoretical Framework

The theoretical foundation for this study was based Malcolm Knowles's Andragogical Theory of Adult Learning (Knowles et al., 2015). Convinced that adults learned differently than children, Knowles began his quest to develop a theory based on the concepts formulated from his field of inquiry of andragogy. In 1968, Knowles first introduced andragogy to the U.S. in his article, "Andragogy, Not Pedagogy" as a science and an art of adult learning, as opposed to pedagogy that focused on children (Knowles, 1968; Knowles et al., 2015; Smith, 2002). Within two years, Knowles's seminal work produced a discrete and unified theory of adult learners (Knowles, 1968, p. 2).

Based on a conceptual, humanistic approach framework, Knowles's Adult Learning Theory (ALT), regards the practice of teaching and educating adults as one that enables educators to facilitate learning through effective processes, which are specifically designed for self-directed adults. Knowles's ALT is based on the following six assumptions: the learners' need to know; the learners' self-concept; the role of the learners' experiences; the learners' readiness to learn; the learners' orientation to learning; and the learners' motivation to learn (Knowles et al., 2015, p.43-47). The six assumptions of Knowles's ALT focus on understanding the ways adults learn, as well as applying the role the teacher has as a facilitator in student-centered learning (Cosejo, 2012; Galbraith & Fouch, 2007; Knowles et al., 2015).

The first assumption of Knowles's theory, the learners' "need to know," refers to individuals developing a "need to know" rationale behind why they need to learn something as they mature. The learning enhances when adults apply the information learned to real-life experiences (Knowles, 1984). Additionally, Knowles's et al. (2015) suggest that when adults engage as 'collaborative partners' in learning experiences, their "need to know" appeals to their

self-concept as independent learners, making learning more effective. This assumption focuses on the *how*, the *what*, and *why* of learning. Research related to the “need to know” premise purports that adults need to know “*how* learning will be conducted, *what* learning will occur, and *why* learning is important” (Knowles et al., 2015, p. 169).

The second assumption of Knowles’s theory, the “learners’ self-concept,” is that adults mature and become responsible for their own decisions, moving from a dependent personality to becoming autonomous and self-directed (Knowles, 1973). A primary goal for adult educators is “to create learning experiences in which adults are helped to make the transition from dependent to self-directed learners” (Knowles et al., 2015, p. 44). Examples of self-directed learning experiences include internships, capstone projects, dissertations, and study groups.

The third assumption of Knowles’s theory is the “role of the learners’ experiences.” Knowles (1973), recognized the significance that prior experiences play in shaping adult learning through the diversity of the learners’ “background, learning style, motivation, needs, interests, and goals” (Knowles et al., 2015, p. 45). When individualizing teaching and learning strategies, the vast sum of the learners’ prior experiences provides fertile resources for educators supporting the inclusion of experiential teaching opportunities.

The fourth assumption in Knowles’s theory, “readiness to learn,” centers on the assumption that adults are more interested in learning when the “need to know” has a direct relevance to real-life situations, such as their jobs and their personal lives (Knowles, 1973). The critical implication for this assumption, identified by Knowles et al. (2015), is to ensure that the timing of the learning experiences coincides with the learners’ developmental phases.

The fifth assumption of Knowles’s theory, the learners’ “orientation to learning” is the premise that as individuals mature, their focus on learning shifts from what they might need to

know in the future to what they need to know for their immediate life situations. For adults, this immediacy of learning creates a “problem-centered” approach to learning (Knowles, 1973; Knowles, 1980; Knowles et al., 2015; Wills & McEwen, 2011).

The sixth assumption of Knowles’s theory, “motivation,” refers to self-directed adult learners determining what they need to learn, how they will learn, and what responsibility for learning they will assume (Knowles et al., 2015). Although, external motivation exists, motivation for learning is primarily internal and is the key factor that propels adult learners to “keep growing and developing” (Knowles 1990; Knowles et al., 2015, p. 47).

The assumptions of Knowles’s ALT provide an understanding of how adult learners learn best through their individual learning needs and learning styles (Forrest, 2004; Lieb, 1991; Parker & Schoenhofer, 2008). Knowles’s ALT aligns with the adult population of undergraduate nursing students across four generational cohorts discussed in this study and can provide nursing educators direction for shaping the students’ learning experiences.

Conceptual Definition of Terms

The following is a list of conceptual definitions used in this study:

- **generational cohorts:** a group of people who are born within a time span with upper limits of 15 years whose life stages are shaped by the events, trends, and developments occurring during that time span (McCrinkle, 2014; Nisen, 2013; Twenge, 2017).
- **educational pathways for nursing students:** the “broadest range of preferred modes and environments for learning” where nursing students can choose from three, traditional educational pathways to obtain their degree. The Diploma, ADN, and BSN

programs all prepare students to provide comprehensive patient care to diverse patient populations (Anderson, 1981; Bureau of Labor Statistics, 2018; LaRocco, 2010).

- **adult learners:** individuals who perform roles associated by today's culture with adults, perceiving themselves responsible for their own lives (Knowles, 1990),
- **learning style preference:** identified through a series of questions on how an individual receives and processes new information as either active/reflective; sensing/intuitive; visual/verbal; or sequential/global (Felder & Silverman, 1988).
- **preferred teaching method:** the learning environment that individuals identify as being essential to successfully acquiring knowledge. Examples of nursing students' preferred teaching methods include lecture, hands-on activities, visual aids, and handouts (Appleman, 2016; Delahoyde, 2009; Kitko, 2011; Walker, 2006).
- **faculty teaching methods:** pedagogical strategies used for the delivery of the curriculum (Leady, 2008). Examples of preferred teaching methods include lecture, storytelling, case studies, visual aids, and the use of handouts (Appleman, 2016; Delahoyde, 2009; Kitko, 2011; Walker, 2006).

Operational Definition of Terms

The following is a list of operational definitions used in this study:

- **generational cohorts:** Baby Boomers, individuals born between 1946 and 1964; Gen X, individuals born between 1965 and 1979; Gen Y, individuals born between 1980 and 1994; and Gen Z, individuals born between 1995 and 2010 were identified from the demographic data.
- **educational pathways for nursing students:** Undergraduate nursing students who participated in the study had to be enrolled in one of the three, traditional educational

pathways: Diploma, ADN, or BSN program. Demographic data captured this information.

- **learning Style preferences:** Undergraduate nursing students' learning style preference was measured using Felder & Soloman's (1994) 44-item Index of Learning Styles® (Appendix A).
- **preferred teaching methods:** The 30-item Walker/Delahoyde Teaching Method Survey (Delahoyde, 2009, Walker et al., 2006) was used to measure the nursing students' preferred teaching methods used in the classroom (Appendix B).
- **faculty teaching methods:** The 30-item Delahoyde Teaching Method Faculty Survey (Delahoyde, 2009) was used to identify the teaching methods used by faculty in the classroom (Appendix C).
- **demographic data:** Questions were used to capture the following student information: year born; state where enrolled in a nursing program; type of nursing program enrolled; number of nursing courses completed; gender; race/ethnicity and additional academic degrees. Likewise, for the nursing faculty, the following information was obtained: year born; years of teaching experience; type of nursing program; state where currently teaching; gender; race/ethnicity; and highest degree earned (Appendix D).

Assumptions

The assumptions for this study were:

- Participants will respond freely and honestly will answer the questions on the chosen tools.
- Nursing students are in college to learn, and learning is based on teaching.

- The generational age of nursing students impacts their learning style and preferred teaching method.
- Nursing students within their generational cohorts will have similar learning styles and preferred teaching methods.
- Nursing faculty have a preferred methodology in delivering evidenced-based content in their respective nursing classrooms.
- Nursing faculty have the capability to use various teaching methods to facilitate learning.
- Undergraduate nursing students from different generational cohorts will have different learning style preferences and preferred teaching methods compared to the teaching methods actually used by faculty.

Limitations

The most notable limitation of this study was the challenge in recruitment that occurred during a global health pandemic. Furthermore, the onset of the pandemic delayed distribution of the online survey until the end of the semester which may have adversely reduced participation. Additionally, recruitment for participants had to be shifted from a national to a regional sample of undergraduate Diploma, ADN and BSN nursing students, and nursing faculty. A national study would have been more representative of the population, allowing for more generalization. Instead of one entity sending out the surveys to potential participants, surveys were asked to be sent out by almost five hundred different individuals.

Another limitation was the unequal representation of nursing students and faculty from each generational cohort, which makes the results less representative of the general population. Likewise, participants may not have been truthful with their age which could inadvertently affect

the categorized generational cohorts. To adapt for this, disclaimers were included in an information letter ensuring confidentiality of the participants' survey information. Students may have ranked their preferred teaching method according to the methods used by their favorite nursing faculty; and, if students with different learning preferences did not respond, the generational group results could be affected.

Delimitations

Undergraduate nursing students and nursing faculty in Diploma, ADN, and BSN programs from all generations in the Southeastern U. S. were included in the study. Students in licensed practical, non-traditional, or graduate nursing programs were excluded from the study. The study only examined classroom-teaching methods, excluding methods used in the nursing lab, as well as the clinical setting.

Significance of the Study to Nursing

Supporting the NLN position statement calling for the reform of nursing education, nurse educators are challenged to move from the paradigm of long-held teaching traditions to an evidence-based curriculum which is flexible, student-centered, and infused with current technology (Stanley & Dougherty, 2010). Moreover, to promote academic success of nursing students, as well as adequately prepare future generations of nurses. Nurse educators must also identify ways to enhance the learning environment and develop teaching methods that fit with the values, expectations, and learning needs of the four generations currently in the nursing classroom.

Summary

While the landscape of nursing education continues to change, nurse educators must be willing to adapt their teaching pedagogy and create meaningful learning environments which

include the largest generation in the nursing classroom, Gen Z, as they continue to infiltrate colleges and universities. Knowledge gained from this study will provide nurse educators with a better understanding of generational learning styles and teaching preferences that can be used for innovative and transformative nursing education.

Chapter 2. Literature Review

This chapter provides a review of literature that supports the implications for this study. Beginning with the literature review, the first section describes the methods used to search the professional literature. Following this section, relevant themes were identified and reviewed. Generational cohorts, learning styles and preferences, learning style theories, generational differences in nursing students and their preferred teaching methods, and the teaching methods used by nursing faculty were presented, and gaps in the literature were discussed.

Method

The East Tennessee State University (ETSU) online library was used for the systematic review of literature of databases: EBSCOhost, Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Education Full Text (H.W. Wilson), and PsycINFO. Key terms used in the literature search were *generations*, *undergraduate nursing student*, *learning styles*, and *teaching preference*. Additionally, combinations of the key term used in the literature search were *generational cohorts*, *Baby Boomers*, *Generation X*, *Generation Y*, *Generation Z*, *nursing education*, *diploma nursing*, *associate degree nursing*, *baccalaureate degree nursing*, *preferred learning style*, *teaching method*, *teaching strategy*, and *teaching style*. Inclusion criteria involved in the comprehensive search were studies published in English between 2000-2019. Studies prior to 2000 were selected to provide historical information in the areas of learning styles and generational differences.

Generational Cohorts

In response to world events, new technologies, societal values, career options, and economical shifts, the definition of generational cohorts has changed over time. Historically, generational cohorts were limited to a time span ranging from 20 to 25 years. Currently, the

definition focuses not only on time, but also on life stages that are shaped by events, trends, and new developments. Now, the generational cohorts' time span has an upper limit of 15 years (McCrindle, 2014; Strauss & Howe, 1991). Table 2 illustrates generational cohorts defined by various authors.

Table 2

Generational Cohorts Defined

| Source | Baby Boomers | Gen X | Gen Y | Gen Z |
|------------------------------|--------------|------------|-------------------|-----------|
| Dimock (2019) | 1946-1964 | 1965-1980 | 1981-1996 | 1997-2012 |
| Swanson (2018) | 1946-1964 | 1965-1985 | 1978-2000 | 1995-2012 |
| Twenge (2017) | 1946-1964 | 1965-1979 | 1980-1994 | 1995-2012 |
| Stillman and Stillman (2017) | 1946-1964 | 1965-1979 | 1980-1994 | 1995-2012 |
| Seemiller and Grace (2016) | 1946-1964 | 1965-1980s | 1980s-early 1990s | 1995-2010 |
| McCrindle (2014) | 1946-1965 | 1965-1980 | 1980-1995 | 1995-2010 |
| Strauss and Howe (1991) | 1943-1960 | 1961-1981 | 1982-2005 | ----- |

According to Twenge (2017), there is “no exact science or official consensus to determine which birth years belong to which generation” (p. 6). In an attempt to rectify the arbitrary year cutoffs for defining generational cohorts, the terms “micro-generation,” “fringe,” “cusp years,” or “cusper,” are used to identify individuals born immediately before and after traditional generational year ranges, that may share or exhibit characteristics from the two generations that overlap during the year they were born (Campbell et al., 2017; Strauss & Howe, 1991; Taylor, 2018; Twenge, 2017). For clarity, this research study used the terms Baby Boomers, Gen X, Gen Y, and Gen Z and the birth years identified by McCrindle (2014) to define generational cohorts, including participants in the micro-generations. Correspondingly, these terms are representative of the most commonly published ranges of generational cohorts.

Baby Boomer Generation

Characteristically, when it comes to learning, Baby Boomer students are internally focused and extrinsically motivated to succeed. With regards to education and learning, Boomers are punctual, prepared, grade conscientious, and will seek guidance and mentoring if they struggle, especially with technology related challenges. Boomer students are willing to learn what is required to ensure their success (Cook, 2016; Johnson & Romanello, 2005).

Generation X

When it comes to learning, Gen X students desire to be taught what they “need to know” in the shortest amount of time possible, using the easiest, available learning format. Specifically, they are intrinsic learners who prefer working independently, with an expectation of receiving some type of external motivation such as a reward (points or grades) for completion of class assignments. Moreover, for Gen X, education is viewed as a means to an end that will provide financial stability in their career (Cook, 2016; Johnson & Romanello, 2005).

Generation Y

When it comes to learning, Gen Y students’ instant access to internet information, often rely on using web-based data, rather than developing evidenced-based research skills. Likewise, they believe the learning environment is a reciprocal process between the instructor and the student. Furthermore, Gen Y students are achievement oriented, showing a preference for working in groups or teams while demanding immediate feedback on exams and/or class assignments (Johnson & Romanello, 2005).

Generation Z

Gen Z students are described as learners that are driven by graphics, dislike lecture-test classrooms, expect instant feedback, and prefer customized learning experiences (Renfro, 2015).

Although, they appreciate the value of a college education, they will analyze the return on investment (ROI) associated with earning a college degree. In addition, Gen Z understands complex, visual imagery, making visible approaches to teaching more effective than other approaches (Hallowell & Ratey, 2011). Desiring a more hands-on approach to learning, they expect to obtain practical and transferrable skills during the educational process, which will be used later in their careers. Instead of reading and listening to PowerPoint® presentations, they prefer to learn by observation and practice, making traditional lecture-format classes obsolete (Loveland, 2017).

Traditional Educational Pathways for Registered Nurses

Nursing students can choose from three, traditional educational pathways to obtain their degree. The Diploma, ADN, and BSN programs all prepare students to provide comprehensive patient care to diverse patient populations (Anderson, 1981; Bureau of Labor Statistics, 2018; LaRocco, 2010).

Diploma

The Diploma program, the oldest form of nursing healthcare education, is almost extinct today. Since the late 1800s, diploma programs allowed students to become nurses in two or three years, using an apprenticeship model that included working in a hospital while completing required course work. Although, most diploma programs are hospital-based, they are usually partnered with colleges and universities to obtain co-requisite course work (Anderson, 1981; Valiga, 2012).

Associate Degree Nursing

To alleviate the critical shortage of nurses after World War II, ADN programs, decreasing the length of time for entry into practice from three to two years were created

(Organization for Associate Degree Nursing, 2015). Community colleges, vocational schools, along with some universities, offer this efficient and economical educational pathway to becoming a RN, as their graduates continue to contribute to the nations nursing workforce (Mahaffey, 2002; National League for Nursing, n.d.-a; Organization for Associate Degree Nursing, 2015).

Bachelor of Science in Nursing

Typically offered at colleges and universities, BSN programs include courses beyond the scope of those required in the diploma and ADN programs, which serve to enhance the student's professional development and prepare them for broader nurse practice roles. Examples of these courses include: physical and social sciences; public and community health; humanities; nursing management; and nursing research (Health Resources and Services Administration [HRSA], 2007; Raines & Taglaireni, 2008).

Learning Style Theories

Several factors which can develop over time or change with new experiences influence individual learning styles. These include demographic characteristics, internal personality traits, and external teaching environments (Cassidy, 2004; Felder & Brent, 2005). Although the concept of “learning style” as a primary method for individualized learning began early in the mid-20th century, it was not until the 1970’s that it became popular (Coffield et al., 2004). Over the next several decades, many learning style theories emerged and became prevalent in education. According to Coffield et al. (2004) and Reid (2005), there are now over 70 learning style models, theories, and frameworks that describe and measure an individual’s unique and distinctive approach to learning.

For nurse educators to effectively create conducive, learning environments, it is crucial for them to have an understanding of various learning style theories. Adult learning style theories can be grouped into related categories which often overlap and include: instrumental, humanistic, transformative, social, motivational, reflective, and constructivist. While each of the learning style theories have their strengths, it is recommended that nursing faculty use a combination of learning style theories and frameworks to complement their teaching environment while supporting evidence-based educational practices (Mukhalalati & Taylor, 2019; Taylor & Hamdy, 2013). Some of the common learning style theories/models used in nursing education research include Kolb's Experiential Learning Style Model; Dunn and Dunn's Learning Style; Myers-Briggs Type Indicator®; and Felder and Solomon's Index of Learning Style®, which was used in this study. A brief summary of each learning style theory is described.

Kolb's Experiential Learning Style

Based on the synthesis of the works of the “foundational scholars of experiential learning” (Kolb & Kolb, 2017, p. 10), David A. Kolb developed the *Experiential Learning Theory* (ELT) from the belief that learning is a process where knowledge is created through the transformation of experiences or new situations (Kolb, 1984, p. 38). The ELT offers a dynamic view of learning “based on a learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/ abstraction” (Kolb & Kolb, 2017, p. 10). The ELT focuses on information processed through a cyclical model of learning, where the learners encounter, reflect, and transform new situations or experiences. Emphasizing the role that experience plays in the learning process is one of the distinguishing aspects of ELT that separate it from other learning theories (Kolb et al., 2001).

The ELT incorporates two levels, the experiential learning cycle and learning styles. The first level of the ELT, the cycle of learning, consists of four stages that explain the conditions in which the learner learns best: *the concrete experience*; *the reflective observation*; *the abstract conceptualization*; and *active experimentation*. The first stage, *concrete experience*, is the “hands-on” experience of encountering a new experience or reinterpreting a previous experience. The second stage, *reflective observation*, allows time to review or reflect on the experience, clarifying any inconsistencies between the experience and understanding of the experience. The third stage, *abstract conceptualism*, occurs when reflecting on the experience, allows conclusions to be drawn from results occurring from experiences. The fourth stage, *active experimentation*, affords opportunities to apply and test hypothesis formed in stage three in future situations, resulting in a new experience (Kolb, 1984; McLeod, 2017).

The second level of the ELT includes four learning styles that are integrated with the learning cycle which explain the conditions which are more conducive to effective learning. These learning styles include: the *diverging learner*; *the assimilating learner*; *the converging learner*; and the *accommodating learner* (Kolb, 1984; McLeod, 2017). The first learning style, the *diverging learner*, is sensitive, learns best from concrete experiences, and reflective observations. The second learning style, the *assimilating learner*, thinks more abstract and prefers to follow a logical approach to learning. The third learning style, the *converging learner*, considered the problem solvers, are the thinkers and doers. The fourth learning style, the *accommodating learner*, prefers learning through ‘hands-on’ experiences (Kolb, 1984; McLeod, 2017).

Dunn and Dunn's Learning Style Model

The Dunn and Dunn *Learning Style Model*, based on Cognitive Style and Brain Lateralization Theories, is a comprehensive model that identifies learning styles by analyzing individuals' unique strengths and preferences for how they learn best. The initial model identified 12 variables that were different among students. The second revision included 18 variables. Currently, the model includes a total of 20 (five stimuli and the respective elements within each stimulus) that differentiate the conditions in which individuals actually learn (Dunn, 1984; Dunn, 1990; Dunn & Burke, 2006; Dunn & Dunn, 1979).

The variable and its elements include: the environment (sound, light, temperature, seating or room design); emotion (motivation, persistence, responsibility, structure); sociological preferences (colleagues, learning alone, in pairs, or part of a team, authority, with variety); physiological characteristics (perceptual, time of day, intake, mobility while learning); and, psychological (global/analytic, impulsive/reflective) suggest simultaneous and successive processing (Dunn 1990; Dunn & Burke, 2006, p.4; Dunn & Dunn, 1979). The current Productivity Environmental Preference Survey (PEPS) self-report questionnaire (Dunn, Dunn, & Price, 1996) analyzes patterns through which learning occurs. In return, the results of the questionnaire can improve the effectiveness of instructional education by linking an individual's learning style preference with the appropriate evidenced-based teaching strategy(s).

Myers-Briggs Type Indicator® (MBTI®)

Expanding Carl Jung's *Theory of Personality Types*, Katherine Briggs and her daughter Isabel Briggs Myers, developed the *Myers-Briggs Type Indicator®* (MBTI®) which affords the opportunity for individuals to identify their personality type, strengths, and preferences including that of learning and teaching (Cohen, 2008; The Myers & Briggs Foundation, 2019a). Used

worldwide, the MBTI® personality assessment provides a constructive framework, revealing four areas of personality, each with two dichotomous preferences. These include how a person directs their energy, introverted versus extroverted (IE); how information is processed, sensing versus intuition (SN); how decisions are made, thinking versus or feeling (TF); and, the preference for organization, judging versus perceiving (JP) (Brownfield, 1993; McCaulley, 2000).

The MBTI® has been used in counseling, business, industry, and medicine; this assessment has proven useful for educational purposes, assisting students with understand their various learning styles (Mayfield 2012; The Myers & Briggs Foundation, 2019b). According to Cohen (1992), when used in education, the MBTI® helps students understand their most effective learning style through thorough analysis and explanation of each personality type.

Felder and Solomon's Index of Learning Styles

The *Index of Learning Styles*® (ILS) psychometric learning style assessment instrument, developed by Felder and Soloman, evolved from Felder and Silverman's learning style model (Felder & Silverman, 1988; Felder & Soloman, 1994; Zywno, 2003). Components of the ILS were borrowed from Kolb's (1984) ELT, and the MBTI® model based on Carl Jung's personality type theories (The Myers & Briggs Foundation, 2019a). The initial Felder-Silverman model had five dimensions of scale: *inductive-deductive*, *sensing-intuitive*, *visual-verbal*, *active-reflective*, and the *sequential-global* dimension (Felder & Soloman, 1988; Litzinger et al., 2005). Soon after the development of the ILS, the inductive-deductive dimension was deleted from the model after it was determined that this dimension was not necessarily the best style to facilitate learning, nor was there a reliable way to assess the dimension (Felder, 1998).

The *Index of Learning Styles*® is a 44-item assessment-based instrument that is designed to assess 11 items in four dimensions of learning styles through dichotomies. Each of the four

dimensions have polar opposites with the preferences identified as strong, moderate, or mild (balanced); omitting the option of “no preference” (Felder & Spurlin, 2005). The *Index of Learning Styles*[®] purports that a student’s leaning style may be defined by answering the following four questions:

1. “What type of information does the student preferentially perceive: *sensory* (sights, sounds, physical sensations) or *intuitive* (memories, thoughts, insights)?
2. What type of sensory information is most effectively perceived: *visual* (pictures, diagrams, flow charts, demonstrations) or *verbal* (written and spoken explanations)?
3. How does the student prefer to process information: *actively* (through engagement in physical activity or discussion) or *reflectively* (through introspection)?
4. How does the student characteristically progress toward understanding: *sequentially* (in a logical progression of incremental steps) or *globally* (in large “big picture” jumps)?” (Felder, 1993; Felder & Spurlin, 2005, p. 60; Felder & Silverman, 1988).

Although originally designed for engineering and business students, the ILS is now used across many disciplines internationally, including education, nursing, and psychology (Brannan et al., 2016; Felder, 1988; Felder & Brent, 2005; Felkel & Gosky, 2012; Gonzales et al., 2017; McCrow, 2014; Platsidou & Metallidou, 2008).

Nursing Students Learning Style Preferences

Over the past decade, nursing educators have been encouraged to embrace the paradigm shift from a historically teacher-centered to a student-centered learning model. This paradigm shift “calls for nursing education to respond to the changing needs of our student population” while developing a creative, innovative pedagogy that integrates students’ learning styles preferences with an environment that is most effective for knowledge acquisition (Knowles et

al., 2015; Stanley & Dougherty, 2010, p. 378). A review of literature reveals studies that employed various theorists and their assessment tools used to determine the learning style preferences among students from all types of nursing programs, including diploma, associate degree, and baccalaureate degree programs.

Kolb's ELT and LSI have been used frequently as the theoretical framework to identify the learning styles of nursing students in the literature. The results of a study conducted by Rakoczy and Money (1995), found that nursing students in a diploma program preferred learning from concrete, “hands-on” experiences. Closely related to nursing students, Robinson et al. (2012), opted to explore generational and learning styles of nurses employed at a large metropolitan medical center. Like Rakoczy and Money (1995), the most preferred learning style was predominantly *diverger*, providing concrete, “hands-on” experiences. In a similar study, Molsbee (2011) combined Knowles’ ALT and Kolb’s ELT, to examine the association between the dominant learning styles and gender, race, and age of traditional and nontraditional ADN students ranging from 19 to 60 years old. Although there was no statistically significant association between learning style and age groups, there was a statistically significant association between learning style and gender. From an international perspective, BSN students in Australia (D'Amore et al., 2012) and Nigeria (Madu et al., 2019) also preferred learning from concrete, “hands-on” experiences.

Frequently used with elementary students, Dunn and Dunn’s *Productive Environmental Preference Survey* (PEPS), has also been used in nursing education to analyze individuals’ unique strengths and preferences for how they learn best (Dunn et al., 1996). Using the PEPS, Hallin (2014), identified nursing students at a university in Sweden as being ‘flexible’ in their preferred learning styles. With regard to gender, as compared to the male students, women were

highly motivated; preferred structure and mobility; and, identified auditory, tactile, and kinesthetic learning preferences. A more recent study using the PEPS, Hallin et al. (2016), showed no strong preference for a specific learning style; however, several students indicated that “they would benefit from special accommodation to their learning style preferences” when a variation of interactive teaching strategies was implemented (p. 7).

The *Myers-Briggs Type Inventory*[®] is also used to identify students learning and teaching preferences. In a study conducted by Puylert (2006), BSN students with an average age of 23.5 years, showed that ISFJ (introverted, sensing, feeling, judging) typology was the groups’ dominant four-letter score, indicating a preference for applying facts and using practical applications for learning. Students with ISFJ learn best from well-organized, structured, learning environments, including lecture-style teaching. Individually, three predominate learning-style preferences were identified: the ESFJ (20%), the ISFJ (18%), and the ISTJ (12%). Educators wanting to reach most of these students should use a variety of teaching strategies to the top three dominant learning-styles of ESFJ, ISFJ, and ISTJ types. Interestingly, the study showed no INTJ or ISTP types in the sample. These types of learners have visions for long-range planning and exhibit critical, as well as independent thinking skills. Further, they are analytical, organizers, and excel at problem solving. Without visionaries, the nursing profession would lack the innovation and foresight for further growth and advancement of the science of nursing. Additional studies are needed to examine nursing students from multiple colleges and in various types of 2-year and 4-year nursing programs.

Although the use of the *Index of Learning Styles*[®] is relatively new in nursing research, several studies examining the learning styles of nursing students and registered nurses were found in the literature. The ILS allows learners to identify being balanced (have no strong

preference for a particular domain) across the learning dimensions of *sensing-intuitive*, *visual-verbal*, *active-reflective*, and the *sequential-global*; or to identify a moderate or strong preference for just one domain (Felder & Soloman, 1988; McCrow et al., 2014). In studies by Perks (2017) and Gonzales et al. (2017); the predominate learning domain for nursing students was *sensing* on the *sensing-intuitive* dimension without regards to difference in age.

Studies, whose focus was registered nurses, reported the ILS results of the learning style preferences by combining each side of the four dimensions scale and then reporting the two-groupings. McCrow et al. (2014), identified the most common preferred learning styles, as being a balance between the *sensing* ($n = 97$, 68%) and *visual* ($n = 76$, 53%) domains among acute care nurses in South-East Queensland, Australia. Keef's (2014) study, also using the two-grouping result reporting, identified a balance between the *visual* and *verbal* domains as the learning styles preferred by the majority of the registered nurse participants. In both studies, no significant relationships were found between learning styles and age.

The findings from the following studies using the ILS, revealed all four dimensions of the learning style preferences. Zhang & Lambert (2008) identified the primary learning styles of Chinese baccalaureate nursing students as *reflective*, *sensing*, *visual*, and *global*; as compared to Yockey's (2015) study that revealed *sensing*, *sequential*, *visual*, and *active* as the preferred learning style when exploring nursing students' anxiety associated with simulation. However, in Brannan et al., (2016), *active*, *visual*, *sensing*, and *sequential* learning styles were preferred by nursing students exploring their confidence and knowledge in placed in high fidelity simulation settings. Regardless of the order of the preferred learning style domain, there was a common theme suggesting that an awareness of learning styles may empower faculty to incorporate engaging teaching strategies in the nursing classroom.

Generational Differences in Learning Style

Although researchers have examined specific characteristics that influence learning styles, the possible influence of generational diversity among nursing students have been minimally researched. According to Johnson and Romanello (2005), understanding of generational diversity “gives nurse educators insight into how students from different generations learn best” (p. 212). Once generational differences in learning are recognized and understood, “faculty can adjust their teaching methods to meet the learning needs of multigenerational students” (Johnson & Romanello, 2005, p. 215).

Within the nursing profession, Walker et al. (2006) seminal study examined generational differences of Gen X and Gen Y nursing students’ preferred teaching methods. Whereas the study yielded no statistically significant differences between the two generations preferred teaching methods, lecture was identified as the dominate teaching method preferred by the majority (83%) of the students from both generations. Knight (2016) used a mixed-method study to determine generational learning style preferences of healthcare workers. The statistical results from this study indicated that representatives from each generation utilized some degree of the visual, auditory, and kinesthetic learning style. Similarly, the data revealed a significant difference for a visual learning style preference for Baby Boomers and Gen X.

With a focus on law enforcement, Stephens (2015), investigated generational differences in learning style preferences. Three generational cohorts represented in the study identified the *converging* learning style as the dominant preferred learning style. Although, there were no generational differences identified in learning styles, the recognition of a shared dominant learning style can benefit law enforcement instructors and students, permitting a better alignment between training methodology and student needs.

Achieving an understanding of generational differences in learning style preferences among adult learners across the U.S. would allow leaders to develop a more effective training design across the organization. The challenges of effectively training employees from five generational cohorts in the current workforce was the impetus for Shepherd's (2017) study comparing the generational cohorts of Baby Boomers, Gen X, and Gen Y. Whereas the cohorts were similar with their learning style preferences, there were no significant differences identified between the generational cohort's learning style preferences. The results support using a variety of teaching and training activities that are inclusive of all generational cohorts.

Nursing Students Preferred Teaching Methods

A limited number of studies exist that examined the generational differences of undergraduate nursing students' preferred teaching methods, and none of the studies investigated Gen Z (Appleman, 2016; Delahoyde, 2009; Kitko, 2011; Walker et al., 2006, & Walker et al., 2007). Walker et al. (2006) studied the differences in Gen X and Gen Y in BSN students, as well as their preferred teaching methods. This quantitative descriptive study surveyed 134 undergraduate nursing students, comprised of 25 students representing Gen X, and 105 students representing Gen Y. Although, there were no statistically significant differences found between Gen X and Gen Y students regarding their teaching method preferences, the majority (83%) of the students from both generations identified lecture as the preferred teaching method. In addition, the same percentage of students indicated that they did not prefer group work conducted inside or outside of the classroom. In the classroom, the students indicated the desire to have handouts that corresponded with the lecture, along with other supplemental materials. Ninety percent of the students surveyed showed low levels of desire for completely web-based or web-enhanced coursework, despite coming from technological savvy generations. While, on the

other hand, 100% of the student responses supported the first assumption of Knowles's ALT, the learners' "need to know," demonstrating the "pragmatic" nature of Gen X and Y learners' needing to know the "why" behind learning the material (Knowles et al., 2015; Walker et al., 2006, p. 218).

Another study, Walker et al. (2007), compared preferred teaching methods between two groups of BSN students: traditional nursing students without a degree and those with a previous college degree. This quantitative descriptive study surveyed 171 undergraduate nursing students, comprised of 81 traditional students and 48 students with a previous college degree. From a sample size of 171 students, 129 surveys were completed and included in the results. Regarding their teaching method preferences, most of the students from both groups identified lecture as their preferred teaching method; with group work being the least preferred method. Both groups of students in this study indicated that they preferred not to participate in group work conducted either inside or outside the classroom. The students with a previous college degree were motivated and had stronger preferences for a totally web-based classroom, which allowed for self-directed learning, reinforcing the sixth assumption of Knowles's ALT of "motivation" (Knowles et al., 2015).

Expanding on the research conducted by Walker et al. (2006) and Walker et al. (2007), Delahoyde (2009) compared the preferred teaching methods of multigenerational BSN students and the faculty use of teaching methods at five private colleges, located in the Midwest. This quantitative descriptive study surveyed 367 participants, composed of nursing faculty ($n = 38$) and nursing students ($n = 329$). Gen Y ($n = 272$) represented most of the students, followed by Gen X ($n = 49$), and the Baby Boomers, representing the least amount with only six students. The statistically significant findings between Gen X and Y students showed that their preferred

teaching methods included lecture, listening to the lecture versus working in groups; and engaging in group discussions, along with group assignments. Lecture remains the most preferred teaching method identified by the students, as well as the teaching method most frequently used by faculty. Like Walker et al. (2006), this study showed students' low preference for notetaking, along with having a totally web-based course of study. The importance of this study addressed the second assumption of Knowles's theory, the "learners' self-concept," as well as, his fifth principle, the learners' "orientation to learning" (Knowles et al., 2015).

Another study, conducted by Kitko (2011), focused on ADN students instead of BSN students. This study compared multigenerational nursing students' preferred teaching methods and the faculty use of teaching methods at four colleges and universities located in the Northeast. The quantitative descriptive study surveyed 289 participants, comprised of nursing faculty ($n = 45$) and nursing students ($n = 244$). In this study, Gen X ($n = 156$) represented the majority of the students, followed by Gen Y ($n = 67$); Baby Boomers represented the least amount with only 20 students. There were eight statistically significant findings among Gen Y, Gen X, and Baby Boomers in this study. Most significant, the students identified lecture as the most preferred teaching method which, incidentally, is the most frequent teaching method used by faculty. Moreover, the least preferred method was a total web-based course of study without class meetings. This study acknowledged the third assumption of Knowles's theory, the "role of the learners' experiences" (Knowles, 1973). Specifically, the majority of the students indicated that they preferred a "high level of classroom structure" and guidance from the professor shaped by their background and prior learning experiences (Kitko, 2011, p. 137).

Appleman's (2016) quantitative non-experimental study investigated the preferred teaching methods among BSN students based on age, gender, academic year, and

traditional/non-traditional status. The study included a nationwide sample of nursing students ($n = 355$) from which Appleman evaluated the relationships between preferred teaching strategies and self-identified learning styles. In sharp contrast to the other four studies (Delahoyde, 2009; Kitko, 2011; Walker et al., 2006, & Walker et al., 2007) that identified lecture as the preferred teaching method, this study indicated simulation as the preferred teaching method, followed by PowerPoint[®], then lecture, with concept mapping being the least preferred teaching method. This study acknowledged the fourth assumption of Knowles's theory, the learners' "readiness to learn" (Knowles, 1973). The critical implication for this principle, identified by Knowles et al. (2015), was to ensure that the timing of the learning experiences coincided with the learners' developmental phases.

Faculty Teaching Methods

Leady (2008) defined teaching methods as the pedagogical strategies that educators use for the delivery of the curriculum. Although, nursing education reform continues, faculty teaching methods have remained relatively unchanged (Benner et al., 2010; Tanner, 2002). Examples of teaching methods most frequently used in the nursing classroom included: lecture, case studies, simulation, group work, concept mapping, hands-on projects, games, storytelling, handouts, visual aids, role playing, and web-based activities (Bradshaw & Lowenstein, 2010).

When comparing preferred teaching methods across generational cohorts, all traditional educational pathways for registered nurses should be evaluated. Although research has indicated minimal statistically significant results for preferred teaching methods, implications for application in higher education were recommended. Additional research on teaching methods used by faculty is needed to support evidenced-based practices. Overall, students and faculty, regardless of age, generation, or educational pathway, identified lecture as the most preferred

teaching methodology. Following lecture, hands-on activities, case studies, visual aids, and the use of handouts were the students' most preferred teaching methods. Faculty identified lecture as the most common teaching method followed by case studies and visual aids. With regards to the least preferred teaching method, the results for students and faculty were inconsistent regardless of age, generation, or educational pathways. Gen X students favored a total web-based course, as opposed to Gen Y students who are considered as being technologically savvy. Moreover, group work was least preferred by Gen Y students, who preferred working in teams, in contrast to Gen X students, who preferred working independently. The effectiveness of the use of traditional lecture alone, versus a combination of lecture in addition to other teaching strategies was missing from the literature.

Gaps in Literature

Research identifies four generations (Baby Boomers, Gen X, Gen Y, and Gen Z) of students with varying characteristics, expectations, and preferences for learning currently in the nursing classroom; however, only three (Baby Boomers, Gen X, and Gen Y) of the four generations have been extensively studied. Knowing that generational differences exist and the implications these differences have for nursing education, there remains dearth studies regarding the latest generation in the nursing classroom, Gen Z, identifying a gap in research that needs to be investigated.

Although, preferred teaching methods of generational cohorts have been researched since 2006, there has been only five studies that examined the generational differences of nursing students and their preferred teaching methods (Delahoyde, 2009; Kitko, 2011; Walker et al., 2006, & Walker et al., 2007) Regardless, none of the studies included Gen Z. Research studying

the preferred teaching methods of all generational cohorts is not only needed, but also essential for furthering evidenced-based teaching in nursing education (Earle & Myrick, 2009).

When comparing preferred teaching methods across generational cohorts, future research should be inclusive of all traditional educational pathways for registered nurses across the nation. From the literature, the majority of the studies focused on BSN students; with minimal research investigating ADN students, and none examining students from a Diploma program. Consequently, further research conducted on multi-generational classrooms from all nursing educational pathways is warranted and needs to include the advanced nursing degrees. Evidence-based data from future research could provide nurse educators the basis for making changes in curriculum design, improving student learning, academic performance, and ultimately leading to student success and achievement.

Lecture was identified as the most preferred teaching methodology of both faculty and students (Delahoyde, 2009; Kitko, 2011; Walker et al., 2006). Therefore, more studies need to be conducted on the effectiveness of lecture, along with the pairing of traditional lecture used with a combination of other teaching methods, such as visual aids, the use PowerPoint[®], and/or technology. Additionally, for nursing education reform to occur, research needs to be expanded in the area of effective teaching methods by including qualitative and/or mixed-methods methodology which incorporates a much-needed student voice. Findings in this study were limited to results from a quantitative study design.

Summary

Today's nurse educators are challenged to create learning environments that are inclusive of students from four, diverse generations, spanning six decades enrolled in one of three traditional nursing educational pathways. The literature revealed general characteristics and

learning preferences for three of the four generations (Baby Boomers, Gen X, and Gen Y), including specific characteristics of nursing students. However, there was limited information for Gen Z, the latest population of nursing students currently in the classroom.

While the literature revealed traditional lecture as the most preferred teaching method, as well as, the most frequently used teaching method, the need for a paradigm shift from teacher-centered learning to student-centered learning was apparent (Delahoyde, 2009). This shift in instructional pedagogy calls for the implementation of teaching methods that not only fit with the values and expectations, but also the learning needs of all four generations in the nursing classroom.

Chapter 3. Methods

This chapter describes the specific methods and procedures that were used to compare the relationship of undergraduate nursing students' learning style preferences and preferred teaching methods from different generational cohorts to the teaching methods used by faculty. This chapter explains the research design, describes the setting, population, and the sample of the study. A description of the instruments and psychometric properties to support the validity and reliability of the measures are provided. Finally, the chapter concludes with the data collection procedure, an explanation of how human subjects were protected, the data analysis plan, interpretation of the results, and a summary.

Research Design

A quantitative, descriptive correlational design was used to guide the study and examine the preferred teaching methods of undergraduate nursing students from four generations with their learning styles and the teaching methods used by faculty. Using an online survey distributed to undergraduate nursing students and their faculty from Diploma, ADN or BSN nursing programs in the Southeastern U.S., data was collected. Student participants were asked basic demographic information, questions designed to determine their learning style, and to identify teaching method preferences. The student survey concluded with identifying the top five teaching methods that helped them learn the most. Nursing faculty participants were asked basic demographic and questions designed to determine what teaching methods they used in the classroom. The faculty survey concluded with identifying the top five teaching methods they used most frequently in the classroom.

The analysis and synthesis of the participant responses provided statistical data used to answer the research questions and test the stated hypotheses. The researcher's contact

information was provided as a reference for participants if any questions or concerns occurred. Participants were able to complete the survey at their convenience, from a location of their choice, within a four-week timeframe.

Population

The target population for this study was undergraduate nursing students enrolled in, and faculty who teach in, Diploma, ADN, and BSN programs from the following 12 Southeastern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. Although participants were invited to participate from 12 Southeastern states, there were no participants from Mississippi or West Virginia.

Setting

The study was conducted entirely in an online setting using the secure Survey Monkey[®] data collection system as the survey instrument. A non-probability purposive sampling of undergraduate nursing students enrolled in and faculty who taught in Diploma, ADN, and BSN programs from ten Southeastern states were included in this study. Participants included male and female nursing students, currently enrolled at any level of their nursing program, and their faculty that was willing to participate by ranking scaled survey questions. Exclusion criteria included: students enrolled in licensed practical, non-traditional, or graduate nursing programs, and their faculty; those unable or unwilling to participate in the study; or who did not complete the survey.

Sample

A convenience sample of all undergraduate nursing students enrolled in, and faculty who teach in, Diploma, ADN, and BSN programs from colleges and universities in the 12

Southeastern states were invited to participate in this study. Since the population size was unknown for students and faculty, the sample size was calculated using the following formula for a two-proportion test: “ $n = (Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$; where $Z_{\alpha/2}$ is the critical value of the Normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%, α is 0.05 and the critical value is 1.96), Z_{β} is the critical value of the Normal distribution at β (e.g. for a power of 80%, β is 0.2 and the critical value is 0.84) and p_1 and p_2 are the expected sample proportions of the two groups” (Select Statistical Services, n.d.; Wang & Chow, 2007, p 3-4).

When calculating the student sample size with $p_1 = 0.65$ and $p_2 = 0.4$, a sample size of 58.64 ($n = 59$) per group was suggested. When calculating the faculty sample size with $p_1 = 0.65$ and a lower power of $p_2 = 0.35$ size since the results are considered exploratory, a sample size of 24.69 ($n = 25$) per group was suggested. Due to the low numbers of Gen X and Gen Y students, they were combined into one group, Gen XY prior to data analysis. Additionally, the Gen X and Gen Y faculty were also combined into one group, Gen XY prior to data analysis.

Instrumentation

Four instruments for survey instrumentation and associated scoring were used in the study. First, the Felder and Silverman’s *Index of Learning Styles*[®] (ILS) questionnaire (Appendix A) was used to measure the dependent variable of students identified learning style. Second, the *Walker/Delahoyde Teaching Method Survey* (WDTMS; Appendix B), was used to measure independent variables: generational, academic, and demographic variables: age, gender, race/ethnicity, and type of nursing program enrolled, location of nursing program, and the number of nursing courses completed. In addition, this survey measured the dependent variables of faculty teaching method preferences and expectations. Third, the *Walker Teaching Method Survey* (WTMS; Appendix C) also measured faculty teaching method preferences and

expectations of nursing students from different generational cohorts. The main purpose of administering this instrument, was used to provide additional support for the internal consistency and reliability of the original WDTMS survey instrument. Fourth, the *Delahoyde's Teaching Method Faculty Survey* (DTMFS; Appendix D), was used to measure the following independent variables of faculty: generational, academic, and demographic variables: age, gender, race/ethnicity, and type of nursing program employed, location of nursing program, number of years teaching, and the highest degree earned. In addition, this survey measured the dependent variable of teaching methods used in the classroom. Following is a discussion of each instrument.

Learning Style Preference

Learning Style Survey. Felder and Soloman's (1994) *Index of Learning Styles*[®] (ILS), is a 44-item, dichotomous response survey, revised from the original Felder and Silverman ILS, designed to identify perceptual preferences for learning from four dimensions of learning styles. There are 11 items in each of the four learning style dimensions, with two opposing categories in each dimension, *active-reflective* (ACT/REF), *sensing-intuitive* (SEN/INT), *visual-verbal* (VIS/VER), and *sequential-global* (SEQ/GLO). Table 3 illustrates the ILS distribution of questions. To determine the degree of preference, the reported score in each dimension is calculated from -11 to +11 in increments of 2 (-11, -9, ... 9, 11). If the score is between one and three, then it is determined that the learner is well balanced with a "mild preference" for one of the categories from that dimension. If the score is between five and seven, then it is determined that the learner has a "moderate preference" for one category from that dimension. If the score is between nine and eleven, then it is determined that the learner has a "strong preference" for one category from that dimension (Felder & Soloman, 1994).

Table 3*Index of Learning Styles Distribution of Questions*

| Dimension | <i>n</i> | Item Numbers |
|---------------------|----------|--|
| Active - Reflective | 11 | 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41 |
| Sensing - Intuitive | 11 | 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42 |
| Visual - Verbal | 11 | 3, 7, 11, 15, 19, 23, 27, 31, 35, 39, 43 |
| Sequential - Global | 11 | 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44 |

Figure 1 describes each of the dimensions of learning in the ILS model. The ILS questionnaire is accessible at no cost online and when used for educational research. However, permission to use and publish the study results were obtained from the copyright owner, Dr. Richard M. Felder with the stipulation that the directions for scoring the questionnaire would not be published (personal communication, February 19, 2020; see Appendix F).

Figure 1

Felder & Solomon Index of Learning Style® Scale

| | | <u>Strong</u> 11 9 | <u>Moderate</u> 7 5 | 3 | <u>Balanced</u> 1 1 | 3 | <u>Moderate</u> 5 7 | <u>Strong</u> 9 11 |
|----------------------------------|-------------------|--|------------------------|---|------------------------|---|------------------------|-----------------------|
| Processing Information | Active | Retains and understands information best by doing something active with it and likes group work. | | | Reflective | Likes to think about it first and prefers working alone. | | |
| Perceiving Information | Sensing | Likes learning facts and solving problems by well-established methods; Detailed oriented; Good at memorizing facts and doing hands-on (laboratory) work; Dislikes complications and surprises. | | | Intuitive | Prefers discovering possibilities and relationships. Likes innovation, dislikes repetition; grasps new concepts and comfortable with abstractions and mathematical formulations. Don't like course that involve a lot of memorization and routine calculations. | | |
| Receiving Information | Visual | Remembers best what they see (pictures, diagrams, flow charts, timelines, films, and demonstrations). | | | Verbal | Gets more out of words; prefer written and spoken explanations. | | |
| Understanding Information | Sequential | Gain understanding in linear steps in finding solutions, consequently, may not fully grasp total picture. Prefers working in organized, systematic way. | | | Global | Learns in large jumps, absorbs material sometimes without seeing connections, suddenly "gets it." Solves complex problems quickly in novel ways but may not be able to explain the steps to solution. | | |

Note: Felder-Silverman learning styles scale for each domain. Adapted from Brannan, J., White, A., & Long, J. (2016). Learning styles: Impact on knowledge and confidence in nursing students in simulation and classroom. *International Journal of Nursing Education Scholarship*, 13(1), 63–73. <https://doi.org/10.1515/ijnes-2015-0052>. Adapted with permission.

Reliability and Validity. Although psychometric testing was not performed initially on the ILS when developed, numerous studies have since performed construct validity supporting the internal consistency reliability of the instrument. Results of some of the studies are listed in Table 4 for comparison to the current study. According to Tuckman (1999), the reliability of Cronbach’s alpha is determined by the criteria of acceptability for alpha that is appropriate for two different tests. Either the “quantity being measured is univariate, as in an achievement test of knowledge of a subject area or mastery of a particular skill;” or it is “the quantity being

measured [that] reflects a preference or an attitude.” (Felder & Spurlin, 2005, p. 107). The learning style preferences assessed by the ILS fall into the criteria for “measuring a preference or an attitude.” Felder and Spurlin (2005) purport that the acquisition of knowledge, propels learners with a “strong preference” in one learning style category toward a more balanced position of a “less preferred” learning style modality.

Table 4

Cronbach Alpha Coefficients

| Source | <i>n</i> | Act/Ref | Sen/Int | Vis/Vrb | Seq/Glo |
|-------------------------|----------|---------|---------|---------|---------|
| Current Study | 184 | 0.60 | 0.71 | 0.70 | 0.60 |
| Gonzales et al. (2017) | 202 | 0.57 | 0.70 | 0.69 | 0.59 |
| Felkel & Gosky (2012) | 62 | 0.51 | 0.81 | 0.67 | 0.56 |
| Hosford & Siders (2010) | 358 | 0.63 | 0.76 | 0.64 | 0.62 |
| Litzinger et al. (2007) | 448 | 0.61 | 0.77 | 0.76 | 0.55 |
| Cook & Smith (2006) | 89 | 0.62 | 0.77 | 0.72 | 0.65 |
| Cook (2005) | 138 | 0.61 | 0.78 | 0.70 | 0.67 |

Tuckman (1999) suggests that a Cronbach alpha of .75 or greater is acceptable for instruments that measure achievement in a subject area or mastery of a particular skill; and an alpha of .5 or greater is acceptable for a preference or an attitude measurement. Therefore, according to Tuckman (1999), the Cronbach alpha coefficients met acceptable the minimal limits supporting the internal consistency reliability. With regards to the test-retest reliability, overall analysis from multiple studies suggest moderate to strong reliability of the ILS instrument for each measured population (Cook, 2005; Cook & Smith, 2006; Felder & Spurlin, 2005; Felkel & Gosky, 2012; Zywno, 2003).

Preferred Teaching Methods

Two survey tools were used in this study to determine the preferred teaching methods of student and faculty participants.

Student Survey. The *Walker/Delahoyde Teaching Method Survey* (WDTMS), a 30-item questionnaire, was modified from the original *Walker's Teaching Method Survey* (WTMS; Appendix C) used by Walker et al. (2006) to examine the generational teaching method preferences and expectations. The WDTMS includes examples of current teaching methods used in the nursing classrooms, as well as a section for students to choose their top five teaching method preferences. The instrument has a five-point Likert-Type data scale ranging from: 1 = *None at all*; 2 = *Occasionally*; 3 = *Frequently*; 4 = *Always*; and 5 = *Not applicable*. A higher score (3 or 4) indicates a higher preference to teaching preferences. The only modification in this survey was the addition of demographics to include: the type of nursing program the student was enrolled in; the state where the student attended nursing school; the number of nursing courses completed; identifying gender as "other;" and, race/ethnicity. Permission to use, modify, and adapt the original survey tool was requested and granted by Dr. Jean T. Walker (personal communication, November 27, 2019; see appendix G) and Dr. Theresa Delahoyde (personal communication, November 27, 2019; see appendix H).

Reliability and Validity. Walker's original survey, WTMS, was found to have a reliability coefficient, Cronbach's alpha of .82, as well as construct validity from a panel of 15 expert nurse educators with more than 50 years of collective teaching experience (Walker et al., 2006). This study found the Cronbach's alpha for the WTMS to be .66 which is significantly less than the original survey. One contributing factor to the discrepancy was that only 75% of the students completed the WTMS portion of the overall student survey.

Delahoyde (2009) established construct validity for the modified WDTMS through a pilot study conducted with faculty and students from a small, private college in the Midwest, along with eliciting feedback from ten nursing education experts. However, the Cronbach's alpha

was .67 and “was determined to be an ineffective measure of reliability for this type of research tool, because each item on the faculty and student survey were measured separately” (p. 75).

Delahoyde (2009) acknowledged that “a test-retest may have been a better choice to determine the reliability, but was not completed due to the time frame for which the study took place and the inability to have the same participants each time” (p. 75).

The Cronbach’s alpha for this study was determined to be .64. Due to the global COVID-19 pandemic occurring at the time of this study, a test-retest was not able to be performed. However, the results of the WTMS reported here, while not conclusive, do provide additional evidence for the internal consistency of this instrument.

Faculty Survey. The *Delahoyde’s Teaching Method Faculty Survey* (DTMFS), a 30-item questionnaire, was used for nursing faculty participants to determine what teaching methods were used in the classroom, in addition to, identifying the top five teaching methods used most frequently (see Appendix J for faculty survey). The DTMFS has a five-point Likert-Type data scale ranging from: 1 = *None at all*; 2 = *Occasionally*; 3 = *Frequently*; 4 = *Always*; and 5 = *Not applicable*. A higher score (3 or 4) indicates teaching methods used in the classroom. The only modification in this survey included: the state where the faculty taught; the type of program where the faculty taught; the faculty’s highest degree earned; gender; and race/ethnicity. Permission to use, modify, and adapt the original survey tool was requested and granted by Dr. Jean T. Walker (personal communication, November 27, 2019; see appendix G) and Dr. Theresa Delahoyde (personal communication, November 27, 2019; see appendix H).

Reliability and Validity. Walker’s original survey, WTMS, was found to have a reliability coefficient, Cronbach’s alpha of .82, as well as, construct validity from a panel of 15 expert nurse educators with more than 50 years of collective teaching experience (Walker et al.,

2006). Construct validity was established for the modified DTMFS through a pilot study, conducted with faculty and students from a small, private college in the Midwest and by eliciting feedback from ten nursing education experts. The Cronbach's alpha was determined to be .56 (Delahoyde, 2009). This study found the Cronbach's alpha for the DTMFS to be .82 which supports the internal consistency reliability of the instrument.

Protection of Human Subjects

Initial permission to conduct this study using the National Student Nurses' Association (NSNA) membership database to recruit study participants was obtained from the Institutional Review Board (IRB) at East Tennessee State University (ETSU). However, due to the COVID-19 global pandemic crisis, that option was suspended indefinitely, and the sample population was changed to include nursing students and nursing faculty enrolled in, or teach in Diploma, ADN or BSN nursing programs in the Southeastern United States. The IRB was notified, and approval of the modification was received.

Additionally, upon request, IRB permission was obtained at some of the colleges and universities included in the survey. The IRB permits were completed and submitted as requested. Since the college where the researcher is employed was part of the sample population, the director of nursing at the college, like all other nursing programs participating in the study, distributed the recruitment letter and survey link via email to the student and faculty participants.

All undergraduate students enrolled in, and faculty who taught in, Diploma, ADN, and BSN programs in the ten Southeastern states had equal opportunity to participate in the study. No discrimination based on age, year in nursing program, gender, or race/ethnicity occurred. The recruitment letter explained that the involvement in the study was strictly voluntary and could cease at any time during the study.

Procedure

Upon receipt of IRB approval, an email introducing the study (see Appendix I) was sent to the Dean/Director of Nursing at approximately 490 nursing programs in 12 Southeastern states. The introductory email contained the participant recruitment letter (see Appendix J) which included the electronic link to the SurveyMonkey® data collection instrument. If requested, proof of the IRB approval and a copy of the survey was provided to the designated person from the requesting college or university. The Dean/Director of Nursing, or other designated person was responsible for sending the recruitment email with the electronic survey link to potential participants. The recruitment letter explained the purpose of the study, eligibility criteria, approximate time needed to complete the survey, and the electronic link to the SurveyMonkey® data collection instrument. Additionally, the researcher's email address and phone number were provided in the recruitment letter sent via email to the participants for direct contact if questions or concerns arose during the study.

To ensure confidentiality and privacy, the Dean/Director of Nursing or designee did not release the students' email addresses but maintained responsibility for sending the broadcast emails. No identifiable personal information was captured in the survey, and there was not any financial compensation provided to survey participants. All students and faculty participating in the study were given approximately four weeks to complete the survey. Due to schedule changes in the colleges and universities caused by the unexpected global pandemic, an additional week was allowed for participants to complete the survey.

Participation in the study was voluntary, and participants could decline to participate at any time. The participants could only respond once to the survey using their choice of technology with internet access. If they were interested in participating, participants were

instructed to click the link to the SurveyMonkey® data collection instrument. The first page of the survey contained the detailed informed consent. The participants were instructed to click on the “I agree to participate” link if they wished to continue with the survey. However, if they clicked on the “I do not agree to participate” link, the participants were directed to the end of the survey. Once study participants were recruited via broadcast email by their Dean/Director of Nursing, they were able to complete the online survey during a five-week period in their own environment. The participants’ anonymous raw data was organized within the Survey Monkey® database, analyzed using Statistical Package for the Social Sciences (SPSS), Version 26.0, and transferred to a secure encrypted USB drive. This encrypted USB drive will be kept secure for three years, in a locked cabinet, in the Office of Research, within the College of Nursing at East Tennessee State University in Johnson City, Tennessee.

Data Analysis Plan

The Statistical Package for the Social Sciences Version 26.0 (SPSS) was used for data entry and analysis of the ILS, the WDTMS, the WTMS, the DTMFS, and demographic data. Once the data was transferred into the SPSS computer program and checked for accuracy, both descriptive and inferential statistical procedures were used to answer the research questions. The statistical tests included: descriptive analysis and frequencies; Chi-Square (χ^2) Test; One-sample Wilcoxon signed-rank test; Likelihood-ratio Chi-square (LR χ^2); Kruskal-Wallis; Kendall’s tau-b; and the Pearson-r correlation.

Summary

This chapter provides in-depth discussion of the methods used to compare the generational differences of undergraduate Diploma, ADN, and BSN nursing students’ preferred teaching methods, identified learning style preference, and the teaching methods used by nursing

faculty. Included in this chapter was a description of how the population and sample were recruited, selected, and protected. Detailed descriptions of the instruments were provided including measurements of validity and reliability. Finally, the procedure for the study was explained in detail, along with the methods of data reporting and analysis.

Chapter 4. Results

This study was designed to extend the knowledge of generational differences in undergraduate nursing students' learning styles preferences and preferred teaching methods compared to the teaching methods used by nursing faculty. This chapter presents the data analysis procedures, along with the corresponding results used to answer the research questions in this study. There was a total of total of 251 participants: 184 nursing students and 67 nursing faculty from colleges and universities across ten Southeastern states. During the analysis, two nursing students started the survey but stopped midway through the learning style section which resulted in a large amount of missing data; therefore, they were deleted from the final data analysis. In addition, two nursing faculty who started the survey only completed the demographic section; consequently, they were also deleted from the final data analysis.

The statistical program SPSS, Version 26.0, was used to analyze all of the data in this research study. The specific statistical tests used include the following: descriptive analysis and frequencies; Chi-Square (χ^2); One-sample Wilcoxon signed-rank test; Likelihood-ratio Chi-square (LR χ^2) test; Kruskal-Wallis; Kendall's tau-b; and, the Pearson-r correlation's r test. Each statistical test used in the data analysis for each specific aim is discussed within the text in its respective section.

Student Demographics

One hundred eighty-four nursing students between the ages of 19 to 57 years with an average age of 29 years, participated in the study. The following demographic questions were asked on the student survey: birth year; gender; race/ethnicity; zip code of home address; state where enrolled in nursing school; type of nursing program enrolled (Diploma, ADN, BSN); and,

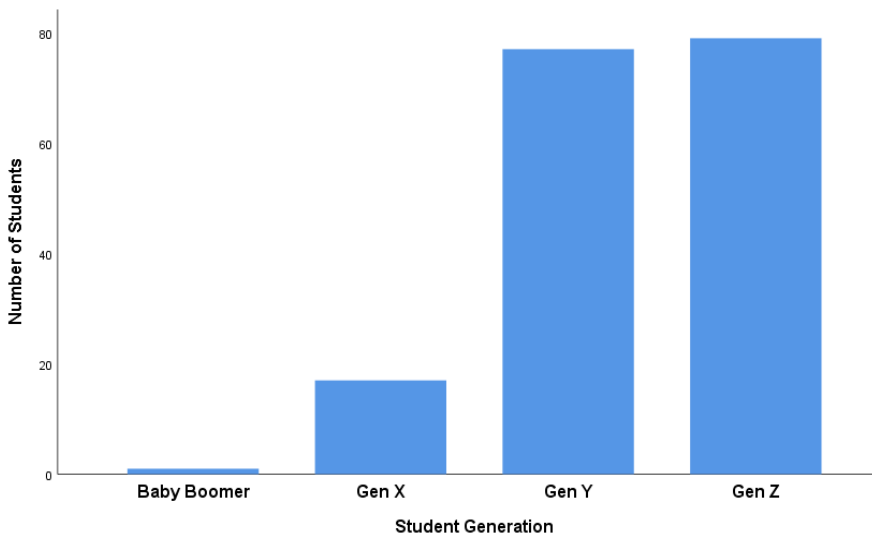
other degrees. Any student who indicated having another degree was asked to provide the title of their first degree.

Students' Generational Cohort

The student survey began with asking participants to type in their year of birth. The birth years were categorized into a specific generational cohort based McCrindle's (2014) definition of generational cohorts: Baby Boomers, Gen X, Gen Y, and Gen Z. The results of the student generational cohorts represented in the study are outlined in Figure 2.

Figure 2

Student Generations



Nine students who did not reveal their birth year on the survey, and one student that revealed a birth year without completing the survey were not included in the data for this category. The survey results found almost all students surveyed were from Gen Y ($n = 77$, 44.3%) with an average age of 32 years or Gen Z ($n = 79$, 45.4%) with an average age of 23 years. One student representing from the Baby Boomer generation ($n = 1$, 0.6%) was 57 years old; 17 students from Gen X (9.8%), with an average age of 45 participated in the study. As a

result of these disproportionately low numbers, the data from the Baby Boomer and Gen X students was not used during the final analysis of the relationships between the different generations of students. Therefore, only the differences between Gen Y and Gen Z were examined during the data analysis.

Students' Gender

The student survey asked the participants to indicate their gender as female, male, or other. The results indicated that 90.8% ($n = 167$) of the student participants were female and only 9.2% ($n = 17$) were male. No participant specified "other" as their gender. Nine students who did not reveal their birth year on the survey and one student who revealed a birth year but did not complete the survey were excluded from the results in this data category.

There were almost equal percentages of females in Gen Y ($n = 70$, 90.9%) and Gen Z ($n = 71$, 89.9%). Only one female student represented the Baby Boomer generation, and 16 students from Gen X were female (94.1%). As well, there were almost equal percentages of male student participants in Gen Y ($n = 7$, 9.1%) and Gen Z ($n = 8$, 10.1%). There was only one male student participant who represented Gen X in the study. The N for the overall gender demographic was 184 students and 174 for generational gender.

Students' Race/Ethnicity

The student survey asked the participants to indicate their race/ethnicity. The majority of the students 84.2% ($n = 155$) classified themselves as Caucasian, followed by 9.2% ($n = 17$) African American students. The remaining ethnicities Asian ($n = 3$, 1.6%), Hispanic ($n = 5$, 2.7%), and another race ($n = 4$, 2.2%) were almost evenly distributed. Gen Y and Gen Z had similar percentages of Asian, African American, Hispanic, Caucasian, and other ethnicities. Gen

X was a mixture of African American and Caucasian, while the Baby Boomer student was Caucasian.

Students' Nursing Program Location

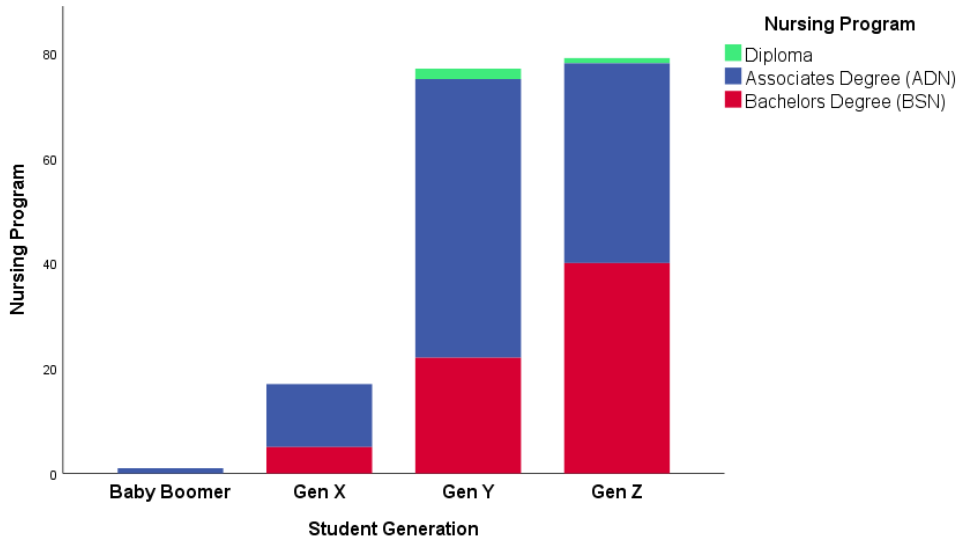
The student survey asked the participants to identify the location of the nursing program where they were enrolled in by a zip code. The results of the study indicated that 40.8% ($n = 75$) of the students who participated in the study were enrolled in a nursing program in Tennessee. Approximately, 36% of the students were from Alabama ($n = 33$, 17.9%) and North Carolina ($n = 34$, 18.5%); and 14% were from Georgia ($n = 13$, 7.1%) and Virginia ($n = 10$, 5.4%). The remaining 10% of the students were enrolled in nursing programs in Arkansas ($n = 7$, 3.8%), Florida ($n = 3$, 1.6%), and Kentucky ($n = 9$, 4.9%). Most students from Gen X, Gen Y, and Gen Z were enrolled in a nursing program in Tennessee, while the Baby Boomer student participant was enrolled in Alabama.

Students' Type of Nursing Program

The survey asked student participants to identify the type of nursing program they were enrolled in and provide three options to choose from: Diploma, ADN, and BSN. The majority of student participants, 59.2% ($n = 109$), indicated that they were enrolled in an ADN program. A total of 72 (39.1%) students were enrolled in a BSN program, and only three (1.6 %) were enrolled in a Diploma nursing program (see Figure 3). Nursing student participants from all four generational cohorts were enrolled in an ADN program. Students from Gen X, Gen Y, and Gen Z were enrolled in the BSN program, and students from Gen Y and Gen Z were enrolled in a diploma program. The majority of students from each generation was enrolled in the ADN program versus the BSN program.

Figure 3

Nursing Programs of Students



Students' Other Degrees

All of the student participants were asked if they had “other” degrees. If they did, they were asked to fill in what type of degree they had previously obtained. Out of 184 student participants, 61 (33.2%) identified that they had other degrees. Forty-eight (26%) students indicated they had one degree; ten (0.05%) students indicated they had two other degrees; and three (0.02%) students indicated they had three other degrees.

The student participants’ degrees listed included: Licensed Practical Nurse (LPN); Pre-Nursing; Associate Degree in Nursing (ADN) as well as degrees in the following disciplines: Accounting; Art and Humanities; Associate in Arts; Associates of Science; Athletic Training; Bachelor of Arts; Bachelor of Science; Biology; Business Management; Chemistry; Dance; Emergency Medical Services; Epidemiology; Exercise Physiology; Exercise Science; Fire, Arson, Explosion Investigations; General Studies; Health Administration; Health Science; History; Human Physiology; Human Services; Licensed Massage Therapist; Master of Arts;

Master of Public Health; Medical Assisting; Medical Office Management; Nutrition and Foods; Paramedic; Physical Education; Physical Therapy Assistance (PTA); Pre-Health; Public Health; Religion; and, Safety, Security, and Emergency Management.

Faculty Demographics

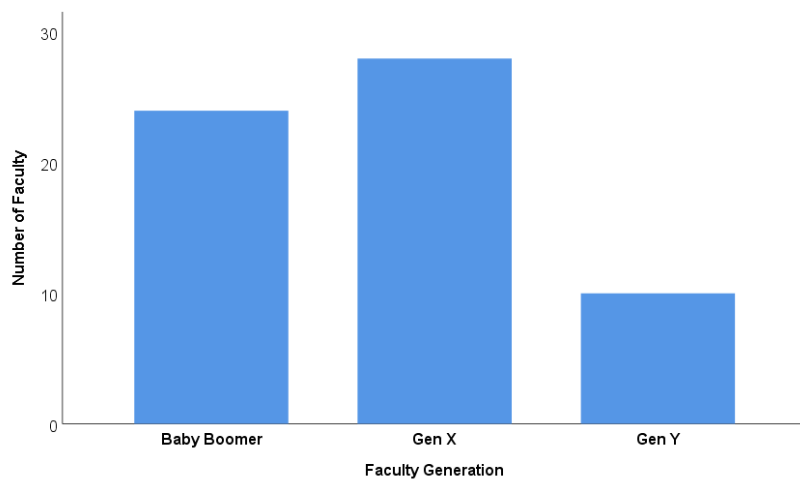
Sixty-seven nursing faculty participated in the study. Ranging from 31 to 65 years of age, with the average age being 52 years old, the faculty taught in the same colleges and universities as the student participants. The demographic section included questions to identify their generation by the year of birth; gender; race/ethnicity; zip code where they lived; the type of nursing program where they taught (Diploma, ADN, BSN); the number of years of teaching experience; and, the highest degree they had earned.

Faculty Generational Cohorts

The generational cohorts of faculty were classified in the same method as the student generations using McCrindle's (2014) definition of Baby Boomers, Gen X, Gen Y, and Gen Z. Only 62 (92.5%) nursing faculty participates provided their year of birth, identifying their generational cohort. The remaining five (7.5%) nursing faculty who did not reveal their birth year on the survey were excluded from the results in this data category. The results found 84% ($n = 52$) of the nursing faculty nearly evenly distributed between the Baby Boomers ($n = 24$, 38.7%) with an average age of 60 years old and Gen X ($n = 28$, 45.2%) with the average age being fifty. The remaining 16% ($n = 10$) of faculty participants was from Gen Y had an average age of 37 years as seen in Figure 4.

Figure 4

Faculty Generations



Faculty Gender

The faculty participants were asked to indicate their gender as female, male, or other. As expected, the results indicated that 92.5% ($n = 62$) of the faculty participants were female and with 7.5% ($n = 5$) were male. No nursing faculty specified “other” as their gender. With regards to the distribution of gender across the generations, the results showed approximately 77% ($n = 48$) of the female nursing faculty were evenly distributed between the Baby Boomers ($n = 22$, 35.4%) and Generation X ($n = 26$, 41.9%). The remaining 15% ($n = 9$) faculty participants were from Generation Y. The five (7.5%) nursing faculty who omitted their birth year on the survey were excluded from the results in this data category.

Faculty Race/Ethnicity

The majority of the nursing faculty who participated in the study were predominantly Caucasian ($n = 52$, 84.8%). Almost 10% of the faculty were African American ($n = 6$) and the remaining ethnicities: Asian ($n = 1$, 1.5%); American Indian or Alaska Natives ($n = 1$, 1.5%); and, Hispanics ($n = 2$, 3%) being evenly distributed. Nursing faculty from the Baby Boomer generation were comprised of two ethnicities, Caucasian ($n = 22$, 91.7%) and African American

($n = 2$, 8.3%). Gen X represented four ethnicities: American Indian or Alaska Natives ($n = 1$, 3.8%); African American ($n = 2$, 7.1%); Hispanic ($n = 2$, 7.1%); and Caucasian ($n = 23$, 82.1%). The least number of nursing faculty participants were from Gen Y, and they were composed of Asian ($n = 1$, 10%), African American ($n = 2$, 20%), and Caucasian ($n = 7$, 70%) ethnicities.

Faculty Nursing Program Location

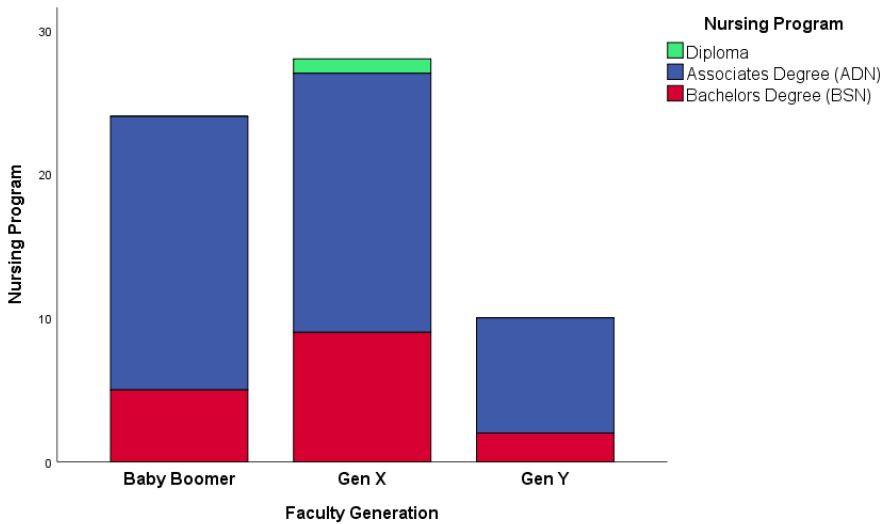
The faculty survey asked the participants to identify the location zip code. of the nursing program where they taught. The results of the study indicated that over half of the faculty who participated in the study taught in a nursing program in either Alabama ($n = 20$, 30.3%) or Tennessee ($n = 14$, 21.2%). Almost 26% of the faculty taught in either Florida ($n = 8$, 12.1%) or North Carolina ($n = 9$, 13.6%). The remaining faculty taught in Arkansas ($n = 5$, 7.6%); Georgia ($n = 3$, 4.5%); Kentucky ($n = 2$, 3%); Louisiana ($n = 3$, 4.5%); South Carolina ($n = 1$, 1.5%); and, West Virginia ($n = 1$, 1.5%). Although the majority of faculty were either Baby Boomers ($n = 24$) or part of Gen X ($n = 27$), nursing faculty from all three generations were relatively represented across most states that participated in the study.

Faculty Type of Nursing Program

The faculty participants were asked to identify the type of nursing program in which they taught from the following options: Diploma, ADN, and BSN. The results showed that the majority of faculty 71.6% ($n = 48$) teach in an ADN program, with the remaining faculty teaching in either a BSN program ($n = 18$, 26.9%) or a Diploma nursing program ($n = 1$, 1.5%). More nursing faculty from each generation taught in the ADN programs than the BSN programs. Only one faculty taught in the Diploma program, and they represented Gen X. Figure 5 displays the distribution of data for each of the four options where the faculty taught.

Figure 5

Nursing Programs of Faculty

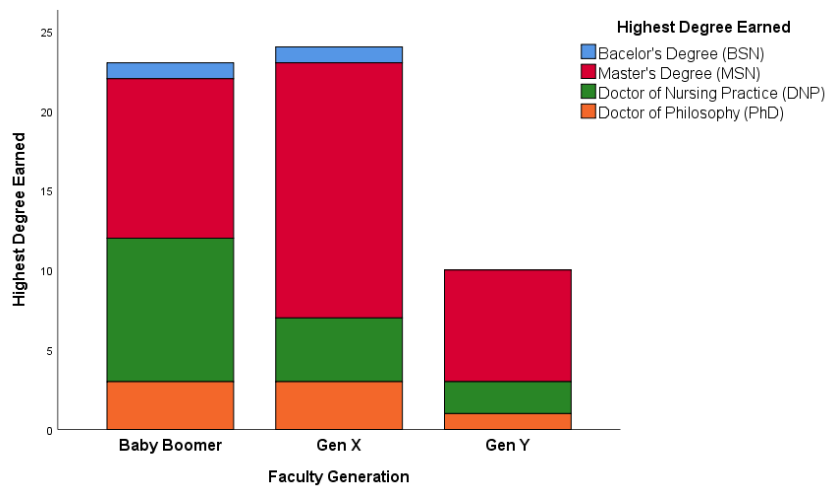


Faculty Highest Degree Earned

The faculty participants were asked to identify the highest degree they have earned from the following four choices: Bachelor's Degree (BSN); Master's Degree (MSN); Doctor of Nursing Practice (DNP); and, Doctor of Philosophy (PhD). Figure 6 displays the distribution of data for the highest degrees earned by nursing faculty. Over half of the faculty participants 58.1% ($n = 36$), indicated that their highest degree earned was an MSN. A total of 17 (27.4%) faculty have a DNP, and 7 (11.3%) have earned their terminal PhD degree. Only two (3.2%) faculty indicated their highest degree earned was a BSN.

Figure 6

Highest Degree Earned for Faculty



The faculty were given the opportunity to specify their specialty area for DNP or PhD. A total of thirteen out of 67 faculty chose the “other” option and submitted their specialty area for their highest earned degree. The following specialty areas were documented: EdD ($n = 5$); MSN in Executive Nursing Leadership ($n = 1$); MSN in Nursing Education ($n = 1$); MSN in Pediatrics ($n = 1$); PhD in Nursing Science ($n = 2$); PhD in Curriculum & Instruction ($n = 1$); and, PhD in Nursing ($n = 1$). One faculty participate documented a “DrPH.”

Faculty Years Taught

The faculty were asked to disclose the numbers of years they have taught in a nursing program. The number of years of the faculty participants ranged from one to thirty-five years with a mean of 11.1 years. Although more faculty from Gen X participated in the study, the faculty from the Baby Boomer generation ($n = 23$, 38.7%) had more years of teaching experience $M = 15.41$, than the Gen X faculty participants ($M = 9.06$) or the Gen Y faculty participants ($M = 4.8$).

Specific Aim I

Aim I: To compare the generational differences of undergraduate nursing students' learning style preferences.

H₁. There are statistically significant differences in the learning style preferences of undergraduate nursing students based on the generational cohort in which they belong.

H₀. There are no statistically significant differences in the learning style preferences of undergraduate nursing students based on the generational cohort in which they belong.

Using the *Index of Learning Styles*[®] survey (Appendix A), the student participants were asked to answer a 44-question survey designed to assess 11 items in four dimensions of preferred learning styles: *active-reflective*, *sensing-intuitive*, *visual-verbal*, and *sequential-global*. Each question had two possible answers which were coded as (a = 1; positive value) or (b = -1; negative value), from which the student had to choose the one that applied to them more frequently. In the first dimension, the learning style *active* was coded (a) and the learning style *reflective* was coded (b). In the second dimension, the learning style *sensing* was coded (a) and the learning style *intuitive* was coded (b). In the third dimension, the learning style *visual* was coded (a) and the learning style *verbal* was coded (b). And in the last dimension, the learning style *sequential* was coded (a) and the learning style *global* was coded (b).

Once the students answered the questions for each dimension, the numbers corresponding from each learning style were tabulated and the difference was calculated ranging from 11 to -11. The learning style with the largest value was identified as the learning style preference. The value was then used to determine if the student had a mild (or balanced) preference [score 1 to 3, or -1 to -3]) between the two learning styles in the dimension; a moderate preference [score 5 to 7, or -5 to -7]; or, a strong preference [score 9 to 11 or -9 to -11] for the identified learning style.

This study identified preferred learning styles following Felder and Solomon's (n. d.) recommendations which suggest that a score ranging from 1 to 3 indicates the learner has a mild (or balanced) preference for the two learning styles in one domain; and that scores ranging from 5 to 11 indicates a moderate or strong preference (higher preference) to the learning style in that particular domain. There was not an option for choosing "no preference."

The scores were entered into SPSS and examined a second time for verification. A one-sample Wilcoxon signed-rank test was performed to evaluate the difference between the medians of the two learning styles in each of the four dimensions of the ILS questionnaire using a $H_0 = Mdn = 0$. All four dimensions, with two learning styles in each dimension, showed statistically significant findings as illustrated in Table 5. In the first dimension, a statistically significant difference indicated that the *active* learning style was preferred to the *reflective* learning style among students across all generations ($Mdn = 1, Z = 4.77, p = < .001$). In the second dimension, a statistically significant difference indicated that the *sensing* learning style was preferred to the *intuitive* learning style among students across all generations ($Mdn = 6, Z = 9.75, p = < .001$).

Table 5

Students Learning Style Preference

| Learning Style | <i>n</i> | <i>T</i> | <i>Z</i> | <i>p</i> | <i>M</i> | <i>SD</i> | <i>Mdn</i> |
|---------------------|----------|----------|----------|----------|----------|-----------|------------|
| Active - Reflective | 174 | 10764.5 | 4.77 | <0.001 | 1.59 | 4.46 | 1 |
| Sensing - Intuitive | 174 | 14073.0 | 9.75 | <0.001 | 5.21 | 4.53 | 6 |
| Visual - Verbal | 174 | 12113.5 | 6.80 | <0.001 | 2.97 | 5.02 | 3 |
| Sequential - Global | 174 | 10387.0 | 4.20 | <0.001 | 1.46 | 4.55 | 3 |

The analysis also revealed a statistically significant difference in the third dimension indicating the *visual* learning style was preferred to the *verbal* learning style among students across all generations ($Mdn = 3, Z = 6.80, p = < .001$). In the fourth dimension, there was also a

statistically significant finding indicating that the *sequential* learning style was preferred to the global learning style among students across all generations ($Mdn = 3, Z = 4.20, p = < .001$).

A Kruskal’s-Wallis test was then performed to compare the learning style preference between Gen XY and Gen Z with the significance value set at $\alpha = .05$. Although there were no statistically significant differences in the learning style preferences of undergraduate nursing students based on the generational cohort in which they belong (see Table 6), the results of the survey did find some strong tendencies toward learning style preference between the generations.

Table 6
Generational Learning Style Preference

| Learning Styles | <i>n</i> | <i>T</i> | <i>p</i> |
|---------------------|----------|----------|----------|
| Active - Reflective | 167 | 0.004 | 0.952 |
| Sensing - Intuitive | 167 | 0.296 | 0.586 |
| Visual - Verbal | 167 | 3.394 | 0.065 |
| Sequential - Global | 167 | 0.179 | 0.672 |

While looking at the generational cohorts individually, we see similar results on all four dimensions. However, when assessing each learning style preference, there are some differences in the strength of the preference for the identified learning style as observed in Table 7. When evaluating the learning styles in the first dimension, over half ($n = 96, 55.1\%$) of the students indicated a mild preference between the *active* learning style and the *reflective* learning style. Most of the remaining students indicated a higher tendency for the *active* learning style (32.7%), than the *reflective* learning style (12%). There were no generational differences in the *active/reflective* learning style preference.

Table 7*Active-Reflective Learning Style*

| First Dimension | Entire Sample | | Gen XY | | Gen Z | |
|-------------------|---------------|------|----------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Active | 115 | 66.0 | 61 | 66.3 | 51 | 68.0 |
| Mild | 58 | 33.3 | 29 | 31.5 | 28 | 37.3 |
| Moderate | 46 | 26.4 | 27 | 29.3 | 18 | 24.0 |
| Strong | 11 | 6.3 | 5 | 5.4 | 5 | 6.6 |
| Reflective | 59 | 33.8 | 31 | 33.7 | 24 | 32.0 |
| Mild | 38 | 21.8 | 20 | 21.7 | 17 | 22.7 |
| Moderate | 15 | 8.6 | 7 | 7.6 | 6 | 8.0 |
| Strong | 6 | 3.4 | 4 | 4.3 | 1 | 1.3 |

When evaluating the learning style preferences in the second dimension, seventy-six percent of the students indicated a higher preference for the *sensing* learning style ($n = 133$, 76.4%), with the remaining 23.6% ($n = 41$) having a mild (balanced) preference between the *sensing* and *intuitive* learning style (see Table 8). There were no generational differences in the *sensing/intuitive* learning style preference; however, Gen XY ($f = 7$, 7.6%) had a slightly higher tendency for the *intuitive* learning style, and, Gen Z ($f = 16$, 21.3%) had a slightly higher tendency for the *sensing* learning style.

Table 8*Sensing-Intuitive Learning Style*

| Second Dimension | Entire Sample | | Gen XY | | Gen Z | |
|------------------|---------------|------|----------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Sensing | 154 | 88.5 | 79 | 85.9 | 68 | 90.7 |
| Mild | 32 | 18.4 | 15 | 16.3 | 16 | 21.3 |
| Moderate | 72 | 41.4 | 38 | 41.3 | 31 | 41.3 |
| Strong | 50 | 28.7 | 26 | 28.3 | 21 | 28.0 |
| Intuitive | 20 | 11.4 | 13 | 14.1 | 7 | 9.3 |
| Mild | 9 | 5.2 | 7 | 7.6 | 2 | 2.7 |
| Moderate | 9 | 5.2 | 5 | 5.5 | 4 | 5.3 |
| Strong | 2 | 1.1 | 1 | 1.1 | 1 | 1.3 |

Almost half of the students ($n = 83, 47.7\%$) indicated a higher preference for the *visual* learning style versus the *verbal* learning style ($n = 16, 9.2\%$) in the third dimension as seen in Table 9. The remaining 43.1% of the students indicated a mild (balanced) preference between the *visual/verbal* learning style. There were no generational differences in the *visual/verbal* learning style preference; however, Gen XY had a higher tendency for the *sensing* learning style, and Gen Z had a higher tendency for the *visual* learning style.

Table 9

Visual-Verbal Learning Style

| Third Dimension | Entire Sample | | Gen XY | | Gen Z | |
|-----------------|---------------|------|----------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Visual | 131 | 75.3 | 64 | 69.6 | 61 | 81.3 |
| Mild | 48 | 27.6 | 24 | 26.1 | 20 | 26.7 |
| Moderate | 52 | 29.9 | 25 | 27.2 | 25 | 33.3 |
| Strong | 31 | 17.8 | 15 | 16.3 | 16 | 21.3 |
| Verbal | 43 | 24.7 | 28 | 30.4 | 14 | 18.7 |
| Mild | 27 | 15.5 | 17 | 18.5 | 10 | 13.3 |
| Moderate | 11 | 6.3 | 8 | 8.7 | 2 | 2.7 |
| Strong | 5 | 2.9 | 3 | 3.3 | 2 | 2.7 |

When evaluating the learning style preferences in the fourth dimension, over half ($n = 97, 55.7\%$) of the students indicated a mild (balanced) preference between the *sequential* learning style and the *global* learning style (see Table 10). Most of the remaining students indicated a higher tendency for the *sequential* learning style (29.3%), than the *global* style (14.9%). There were no generational differences in the *sequential/global* learning style preference.

Table 10*Sequential-Global Learning Style*

| Fourth Dimension | Entire Sample | | Gen XY | | Gen Z | |
|-------------------|---------------|------|----------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Sequential | 118 | 67.8 | 59 | 64.1 | 52 | 69.3 |
| Mild | 67 | 38.5 | 32 | 34.8 | 31 | 41.3 |
| Moderate | 40 | 23.0 | 21 | 22.8 | 16 | 21.3 |
| Strong | 11 | 6.3 | 6 | 6.5 | 5 | 6.7 |
| Global | 56 | 17.2 | 33 | 35.9 | 23 | 30.7 |
| Mild | 30 | 17.2 | 15 | 16.3 | 15 | 20.0 |
| Moderate | 21 | 12.1 | 14 | 15.2 | 7 | 9.3 |
| Strong | 5 | 2.9 | 4 | 4.3 | 1 | 1.3 |

Specific Aim II

Aim II: To compare the generational differences of undergraduate nursing students' preferred teaching methods used in the classroom.

H₁. There are statistically significant differences in the preferred teaching methods used in the classroom of undergraduate nursing students based on the generational cohort in which they belong.

H₀. There are no statistically significant differences in the preferred teaching methods used in the classroom of undergraduate nursing students based on the generational cohort in which they belong.

Using the *Walker/Delahoyde Teaching Methods Student Survey* (Appendix B), the student participants were asked to answer 30 question, using a five-point Likert-Type data scale, to rank individual preferences for teaching methods used in the classroom. The student ranked each statement regarding preferred teaching methods using a five-point Likert-Type data scale ranging from: 1 = *None at all*; 2 = *Occasionally*; 3 = *Frequently*; 4 = *Always*; and 5 = *Not applicable*. The fifth option allowed students to denote if the teaching method was not applicable

to their classroom experience. If the fifth option was chosen by the students, that option was coded as “missing data” and was not included in the results.

Student Survey Part 1

Student Survey Results for Questions 1-23

Questions one through 23 on the student survey asked student participants to rank their preferences for specific teaching methods used by nursing faculty in the classroom. The teaching methods included: lecture and application of skills; working in groups versus individually; the use of case studies, visual aids, and drawings; participation in class discussion; web-based or combination class; the use of storytelling, technology, and games; reading before or after class; having handouts versus taking own notes; and, interaction with faculty and peers, classroom structure, and classroom environment.

The Likelihood-ratio Chi-square (LR χ^2) test for association was performed to test for differences in preferred teaching methods among generational cohorts. A LR χ^2 test, based on the ratio of the observed to the expected frequencies, was used to avoid problems with small cell counts due to low sample population (Polit & Beck, 2012). Table 11 reveals the results from the LR χ^2 test for questions one through 23 on the student survey for teaching method preferences based on a significance level of $\alpha = .05$. The “*never/occasionally*” results were omitted from the tables for clarity. There were five statistically significant differences identified.

Table 11*Student Survey Results Questions 1-23*

| Teaching Methods | <i>n</i> | Gen XY | Gen Z | χ^2 | <i>p</i> |
|-------------------------------|----------|-------------|-------------|----------|-------------|
| | | Freq/Always | Freq/Always | | |
| Q1- lecture | 156 | 87.2% | 81.4% | 0.99 | .321 |
| Q2- apply skills | 156 | 87.2% | 75.7% | 3.45 | .063 |
| Q3- work in groups | 156 | 18.6% | 31.4% | 3.43 | .064 |
| Q4- case study | 153 | 42.9% | 30.4% | 2.52 | .112 |
| Q5- visual aids | 156 | 84.9% | 88.6% | 0.46 | .500 |
| Q6- work individually | 156 | 77.9% | 62.9% | 4.25 | .039 |
| Q7- listen vs. participate | 156 | 45.3% | 62.9% | 4.79 | .029 |
| Q8- draw concepts | 154 | 69.4% | 69.6% | <0.001 | .984 |
| Q9- web-based course | 156 | 20.9% | 20.0% | 0.021 | .886 |
| Q10- storytelling | 156 | 83.7% | 91.4% | 2.12 | .146 |
| Q11- read prior to class | 156 | 86.0% | 80.0% | 1.01 | .315 |
| Q12- handouts | 155 | 71.8% | 72.9% | 0.02 | .880 |
| Q13- interaction | 156 | 52.3% | 37.1% | 3.61 | .057 |
| Q14- combo web & class | 156 | 48.8% | 40.0% | 1.22 | .269 |
| Q15- read, then listen | 154 | 52.9% | 40.6% | 2.34 | .126 |
| Q16- technology | 156 | 79.1% | 62.9% | 5.00 | .025 |
| Q17- lecture vs. group work | 156 | 66.3% | 42.9% | 8.63 | .003 |
| Q18- active participation | 155 | 58.8% | 61.4% | 0.11 | .742 |
| Q19- games | 155 | 40.7% | 53.6% | 2.58 | .109 |
| Q20- read after class | 157 | 78.2% | 94.3% | 8.82 | .003 |
| Q21- structure | 156 | 48.8% | 34.3% | 3.37 | .066 |
| Q22- own notes | 155 | 48.2% | 34.3% | 3.09 | .079 |
| Q23- variety teaching methods | 157 | 60.9% | 64.3% | 0.19 | .665 |

Note: Significant results at $\alpha=.05$ indicated in **boldface**; *df* =1; Freq/Always = Frequently/Always

The first statistically significant finding was the student's preference for working individually on assignments versus working in a group with peers, LR $\chi^2(1, n = 156) = 4.25, p = .0329$. The results of the survey found that Gen XY students (77.9%) had a higher preference for working individually then in a group on assignments, as compared to Gen X students (62.9%).

The second statistically significant finding was the student's preference to listen versus participate during class discussions, $LR \chi^2 (1, n = 156) = 4.79, p = .029$. The result of the survey found that students in Gen Z (62.9%) indicated a higher preference for listening to lecture versus participating in class discussion, as compared to students Gen XY (54.7%).

The third statistically significant finding between Gen XY and Gen Z, was participating in activities that involved the use of technology during class to help learn new concepts, $LR \chi^2 (1, n = 156) = 5.00, p = .025$. The results found that students in Gen XY (79.1%) indicated a higher preference than students in Gen Z (62.9%) for using technology for learning.

The fourth statistically significant finding was the students' preference for listening to the faculty lecture rather than working in groups with peers on in-class assignments, $LR \chi^2 (1, n = 156) = 8.64, p = .003$. Students in Gen XY (66.3%) revealed a higher preference for lecture over group work, as compared to the students in Gen Z (57.1%).

The fifth statistically significant finding in preferred teaching methods between students in Gen XY and Gen Z was the importance of reading the assignment after class versus reading prior to class, $LR \chi^2 (1, n = 157) = 8.82, p = .003$. The students in Gen Z (94.3%) expressed a higher preference for reading after class than the students in Gen XY (78.2%).

The results of the first 23 questions were further analyzed, and the top five teaching methods that the student participants indicated that they preferred "*frequently/always*" to be used in the classroom is illustrated in Table 12. Non-respondents were counted as never or occasionally. Storytelling ($n = 136, 87.2\%$) was identified as the preferred teaching method followed by using visual aids ($n = 135, 86.5\%$); reading after class ($n = 134, 85.4\%$); listening to lecture ($n = 132, 84.6\%$); and, reading before class ($n = 130, 83.3\%$).

Table 12*Students' Preferred Teaching Methods (Q1-23)*

| Teaching Methods | Entire Sample | | Gen XY | | Gen Z | |
|---------------------|---------------|------|----------|------|----------|------|
| | <i>n</i> | % | <i>f</i> | % | <i>f</i> | % |
| Storytelling | 136 | 87.2 | 72 | 83.7 | 64 | 91.4 |
| Visual Aids | 135 | 86.5 | 73 | 84.9 | 62 | 88.6 |
| Read after Class | 134 | 85.4 | 68 | 78.2 | 66 | 94.3 |
| Lecture | 132 | 84.6 | 75 | 87.2 | 57 | 81.4 |
| Read prior to Class | 130 | 83.3 | 74 | 86.0 | 56 | 80.0 |

When comparing generational cohorts, table 13 reveals the top five teaching methods from students in Gen XY: the application of skills in the classroom and lecture at 87.2%; reading before to class (86.0%); the use of visual aids (84.9%); and, storytelling (83.7%).

Table 13*Gen XY's Preferred Teaching Methods (Q1-23)*

| Gen XY | <i>f</i> | % |
|------------------------------------|----------|--------|
| Application of Skills in Classroom | 75 | 87.20% |
| Lecture | 75 | 87.20% |
| Read prior to class | 74 | 86.00% |
| Visual Aids | 73 | 84.90% |
| Storytelling | 72 | 83.70% |

The top five preferred teaching methods indicated by students in Gen Z was slightly different than students in Gen XY as seen in Table 14. Reading after class (94.3%) was identified as Gen Z students' preferred teaching method to be used in the classroom, followed by storytelling (91.4%); the use of visual aids (88.6%); listening to lecture (81.4%); and, reading prior to class (80.0%).

Table 14*Gen Z's Preferred Teaching Methods (Q1-23)*

| Gen Z | <i>f</i> | % |
|---------------------|----------|--------|
| Read after class | 53 | 94.30% |
| Storytelling | 64 | 91.40% |
| Visual Aids | 62 | 88.60% |
| Lecture | 57 | 81.40% |
| Read prior to class | 56 | 80.00% |

Student Survey Results for Questions 24-30

Questions 24 through 30 on the student survey were specific to the classroom environment. Student participants were asked to rank the importance of each of the following items: faculty knows my name; all papers and course work count toward grade; knowing the why behind learning new material; participating in group assignments during class; expecting faculty to tell me what I need to know; like learning for learning sake; and, that the grade is all that matters. Table 15 reveals the results from the LR χ^2 test for questions 24 through 30 on the student survey for teaching method preferences based on a significance level of $\alpha = .05$. Statistically significant findings were found.

Table 15*Classroom Environment Student Questions 24-30*

| Teaching Methods | <i>n</i> | Gen XY | | Gen Z | | χ^2 | <i>p</i> |
|---------------------------------|----------|---------|----------|---------|----------|----------|-------------|
| | | Nev/Occ | Freq/Alw | Nev/Occ | Freq/Alw | | |
| Q24- faculty knows my name | 156 | 27.9% | 72.1% | 31.4% | 68.6% | 0.23 | .632 |
| Q25- grade for all work | 165 | 20.7% | 79.3% | 27.5% | 72.5% | 0.99 | .319 |
| Q26- know why I am learning | 157 | 4.6% | 95.4% | 5.7% | 94.3% | 0.10 | .752 |
| Q27- participates in group work | 157 | 71.3% | 28.7% | 52.9% | 47.1% | 5.65 | .018 |
| Q28- told what I need to know | 157 | 6.9% | 93.1% | 2.9% | 97.1% | 1.38 | .239 |
| Q29- learning for learning sake | 155 | 24.4% | 75.6% | 39.1% | 60.9% | 3.87 | .049 |
| Q30- grade is all that matters | 156 | 70.1% | 29.9% | 55.1% | 44.9% | 3.75 | .053 |

Note: Significant results at $\alpha=.05$ indicated in **boldface**; *df*=1; Nev/Occ = Never/Occasionally, Freq/Always = Frequently/Always

The results of the study only found slight variations between the generational cohorts. Overall, all students in Gen XY and Gen Z expressed that they “*frequently/always*” preferred that the faculty know their name; all papers and course work count toward their grade; they are told why they are learning new material; expect faculty to tell them what they need to know; and, that they like learning just for learning sake. In addition, both generational cohorts shared indicated the same preference for “*never/occasionally*” wanting to participate in group assignments with my peers during class time and believing that the grade received is all that matters.

There were two statistically significant findings in questions 24-30 on the student survey. Participating in group assignments with peers during class time was the first statistically significant finding between students in Gen XY and Gen Z with $p = .018$. The Likelihood-ratio Chi-square value for this teaching method was $LR \chi^2 (1, n = 157) = 5.65$. Students in both generational cohorts expressed that they “*never/occasionally*” preferred this teaching method with students in Gen Z (52.9%) who preferred working with peers in groups during class more than students in Gen XY (71.3%).

The second statistically significant finding in preferred teaching methods between the students in Gen XY and Gen Z was learning just for learning sake. The Likelihood-ratio Chi-square value for this teaching method was $LR \chi^2 (1, n = 155) = 3.87, p = .049$. Students in Gen XY (75.6%) indicated a higher preference for the importance of learning than the students in Gen Z (60.9%).

Student Survey Part 2

Teaching Methods Most Preferred by Students

The student participants were asked to identify five teaching methods they prefer that helps them learn most. The students chose from twelve teaching methods which included: lecture; case studies; storytelling; hands on activities; activities with technology; worksheets; handouts; visual aids (video, pictures, diagrams, etc.); group activities (presentations, working with peers); diagramming (concept maps, Venn diagrams, drawings, etc.); games (Jeopardy, etc.); and, group discussions (participating in a classroom discussion on a topic).

The teaching methods that were chosen by students on the surveys were coded as a “1,” and those that were not chosen were coded as a “0.” A frequency test was performed, and the results in Table 16 illustrates the top five most preferred teaching methods of the student participants from the choices provided.

Table 16

Teaching Methods Most Preferred by Students

| Teaching Methods | Entire Sample | | Gen XY | | Gen Z | |
|---------------------|---------------|------|----------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Hands on Activities | 118 | 71.1 | 64 | 73.6 | 50 | 70.4 |
| Visual Aids | 118 | 71.1 | 62 | 71.3 | 49 | 69.0 |
| Lecture | 114 | 68.7 | 62 | 71.3 | 46 | 64.8 |
| Games | 89 | 53.6 | 49 | 56.3 | 36 | 50.7 |
| Storytelling | 70 | 42.2 | 26 | 29.9 | 39 | 54.9 |

The results identified four teaching methods chosen by more than 50% of the students. Both hands on activities and the use of visual aids were identified overall as the most preferred teaching methods to be used in the classroom, as they shared equally distributed results ($n = 118$, 71.1%). The students chose listening to lecture ($n = 114$, 68.7%), as the third most preferred teaching method, and the fourth was the use of games at 53.6% ($n = 89$). The fifth most preferred

teaching method, storytelling ($n = 70$) was only chosen by 42.2% of the student participants. The top four teaching methods were identified as the most preferred teaching methods by Gen XY as compared to Gen Z, however, the fifth most preferred teaching method, storytelling, was preferred by Gen Z over Gen XY.

Teaching Methods Least Preferred by Students

The remaining seven teaching methods that were identified included: group activities; worksheets; activities with technology; diagramming; the use of case studies; group discussion handouts; and storytelling. Table 17 illustrates the results from a frequency test for the least preferred teaching methods which student participants identified from the twelve choices provided.

Table 17

Teaching Methods Least Preferred by Students

| Teaching Methods | Entire Sample | | Gen XY | | Gen Z | |
|----------------------------|---------------|------|----------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Group Activities | 16 | 9.6 | 10 | 11.5 | 6 | 8.5 |
| Worksheets | 33 | 19.9 | 17 | 19.5 | 15 | 21.1 |
| Activities with Technology | 38 | 22.9 | 24 | 27.6 | 12 | 16.9 |
| Diagramming | 40 | 24.1 | 17 | 19.5 | 20 | 28.2 |
| Case Studies | 46 | 27.7 | 27 | 31.0 | 18 | 25.4 |
| Group Discussion | 58 | 34.9 | 31 | 35.6 | 24 | 33.8 |
| Handouts | 68 | 41.0 | 36 | 41.4 | 30 | 42.3 |

Only 9.6% of the student participants identified group activities ($n = 16$) as a preferred teaching method, making it the least preferred method. The second least preferred teaching methods was the use of worksheets ($n = 33$, 19.9%). The next three teaching methods not chosen by students as a top preferred method were almost evenly distributed: activities with technology ($n = 38$, 22.9%), diagramming ($n = 40$, 24.1%), and the use of case studies were at 27.7% ($n = 46$). The remaining teaching methods least preferred by the student participants included group

discussion ($n = 58$, 34.9%), handouts ($n = 68$, 41%), and storytelling ($n = 70$, 42.2%). Overall Gen XY identified group activities, activities with technology, case studies, and group discussion as their least preferred teaching methods. Whereas Gen Z, identified the use of worksheets, diagramming, handouts, and storytelling as their least preferred teaching methods.

Upon completion of the survey, the student participants were given the opportunity to write in any “other” teaching methods they preferred that were not included in the list of teaching methods provided. A total of twelve out of 184 students chose the “other” option and submitted the following teaching methods: applying concepts in clinical ($n = 1$); hearing experiences from professors ($n = 1$); learning objectives for note taking and outlining in my own ($n = 1$); medical models, how what we are studying applies to the body ($n = 1$); practice quizzes ($n = 1$); practice tests ($n = 1$); reading chapters ($n = 1$); reading textbook/Power Points ($n = 1$); reading and listening to the text ($n = 1$); simulation ($n = 1$); and, tactile application ($n = 1$).

Walker’s Teaching Methods Student Survey Results

The students were also asked to answer 30 questions, using a five-point Likert-Type data scale, to rank faculty teaching method preferences and classroom expectations (Appendix C). The findings from this tool was used to contribute to the validation of the WDTMS survey instrument and provide internal consistency. The student ranked each statement regarding preferred teaching methods using a five-point Likert-Type data scale ranging from: 1 = *None at all*; 2 = *Occasionally*; 3 = *Frequently*; 4 = *Always*; and 5 = *Not applicable*. The fifth option allowed students to denote if the teaching method was not applicable to their classroom experience. If the fifth option was chosen by the students, that option was coded as “missing data” and was not included in the results.

The Likelihood-ratio Chi-square (LR χ^2) test for association was performed between generational cohorts and preferred teaching methods in the classroom. Table 18 reveals the results from the LR χ^2 test for teaching method preferences based on a significance level of $\alpha = .05$; four statistically significant differences were identified.

Table 18

Results of Walker Teaching Method Survey

| Teaching Methods | n | Gen XY | Gen Z | χ^2 | p |
|---------------------------------------|-----|-------------|-------------|----------|-------------|
| | | Freq/Always | Freq/Always | | |
| Q1- lecture on unfamiliar subject | 136 | 82.1% | 72.4% | 1.78 | .182 |
| Q2- lecture on familiar subject | 137 | 73.1% | 76.3% | 0.18 | .671 |
| Q3- hands on activity | 137 | 96.2% | 94.9% | 0.12 | .727 |
| Q4- no need to practice skills | 134 | 2.6% | 8.9% | 2.65 | .103 |
| Q5- group work vs. lecture | 135 | 13.0% | 22.4% | 2.06 | .151 |
| Q6- lecture vs. group work | 136 | 78.2% | 67.2% | 2.04 | .153 |
| Q7- group assignments outside class | 136 | 10.4% | 23.7% | 4.36 | .037 |
| Q8- group work inside of class | 135 | 52.6% | 59.3% | 0.60 | .437 |
| Q9- read | 136 | 39.7% | 25.9% | 2.91 | .088 |
| Q10- read prior to lecture | 137 | 76.9% | 72.9% | 0.29 | .588 |
| Q11- self-directed learner | 137 | 62.8% | 50.8% | 1.97 | .160 |
| Q12- read & comprehend easily | 137 | 74.4% | 54.2% | 6.02 | .014 |
| Q13- struggle to read & comprehend | 137 | 20.5% | 37.3% | 4.69 | .030 |
| Q14- case studies | 135 | 23.7% | 25.4% | 0.05 | .816 |
| Q15- no case studies | 133 | 16.0% | 24.1% | 1.37 | .242 |
| Q16- web-based course | 137 | 16.7% | 16.9% | <0.01 | .965 |
| Q17- interaction with peers & faculty | 137 | 71.8% | 74.6% | 0.13 | .716 |
| Q18- combo web & class | 137 | 51.3% | 39.0% | 2.06 | .152 |
| Q19- storytelling | 137 | 83.3% | 83.1% | <0.01 | .965 |
| Q20- handouts | 137 | 78.2% | 76.3% | 0.07 | .789 |
| Q21- visual Aids | 134 | 75.6% | 73.2% | 0.10 | .751 |
| Q22- faculty knows my name | 137 | 67.9% | 59.3% | 1.09 | .298 |
| Q23- variety of teaching methods | 138 | 73.4% | 79.7% | 0.73 | .392 |
| Q24- grade for all work | 137 | 75.9% | 72.4% | 0.22 | .640 |
| Q25- structure | 138 | 83.5% | 91.5% | 1.98 | .160 |
| Q26- know end results first | 138 | 67.1% | 71.2% | 0.27 | .606 |
| Q27- know why I am learning | 138 | 88.6% | 83.1% | 0.87 | .351 |
| Q28- told what I need to know | 138 | 88.6% | 83.1% | 0.87 | .351 |
| Q29- learning for learning sake | 138 | 67.1% | 55.9% | 1.79 | .182 |
| Q30- grade is all that matters | 138 | 25.3% | 42.4% | 4.45 | .035 |

Note: Significant results at $\alpha=.05$ indicated in **boldface**; df=1; Freq/Always = Frequently/Always

The first statistically significant finding was the student's preference for working on group assignments outside of class, $LR \chi^2 (1, n = 136) = 4.36, p = .037$. Students in both Gen XY and Gen Z indicated they "*never/occasionally*" preferred to work on groups assignments outside of class. However, students in Gen Z (23.7%) had a higher preference for working on group assignments outside of class compared to students in Gen XY (10.4%).

The second statistically significant finding was the student's ability to read well and comprehend the material easily, $LR \chi^2 (1, n = 137) = 6.02, p = .014$. Students in Gen XY (74.4%) indicated they "*frequently/always*" was able to read well and comprehend the material easily as compared to only 54.2% of the students in Gen Z. The third statistically significant finding revealed students in Gen Z (37.3%) struggled to read and comprehend material more than the students in Gen XY (20.5%), $LR \chi^2 (1, n = 137) = 4.69, p = .030$. The results found that students in Gen XY (79.1%) indicated a higher preference than students in Gen Z (62.9%) for using *technology* for learning. The fourth statistically significant finding confirmed that students in both Gen XY (74.7%) and Gen Z (57.6%) believe that grades are not all that matters, $LR \chi^2 (1, n = 138) = 4.45, p = .035$.

In summary, the results of the data analysis found that students from Gen XY preferred a variety of teaching methods. The analysis from the WDTMS found seven statistically significant differences between the students in Gen XY and Gen Z students' preferred teaching methods used by faculty in the classroom. These include: working individually on an assignment versus in a group with peers; listening versus participating during class discussion; using activities that involve technology during class to learn new concepts; listening to the faculty lecture rather than work in groups with peers on an in-class assignment; reading the assignment after class versus prior to class; participating in group assignments with peers during class time; and, learning just

for learning sake. Although reading was not one of the twelve options for teaching method preferences that students could choose from, participants were given the opportunity to write in “other” teaching methods. There were three students who chose to add reading as their “other” teaching method option.

Specific Aim III

Aim III: To compare the generational differences of teaching methods nursing faculty use most frequently in undergraduate nursing programs.

Hypothesis III: Nursing faculty will have a difference in the teaching methods most frequently used in undergraduate nursing programs based on the generational cohort in which they belong.

H₁. There are statistically significant differences in the teaching methods that nursing faculty use most frequently in the classroom based on the generational cohort in which they belong.

H₀. There are no statistically significant differences in the teaching methods that nursing faculty use most frequently in the classroom based on the generational cohort in which they belong.

The questions on the *Delahoyde Teaching Methods Faculty Survey* (Appendix D) were the same as the student survey, but the focus was changed from the students’ preferred teaching methods to the actual teaching methods faculty were using in the classroom. The same five-point Likert-Type data scale used on the student survey was also used on the faculty survey: 1 = *None at all*; 2 = *Occasionally*; 3 = *Frequently*; 4 = *Always*; and 5 = *Not applicable*. If the fifth option was chosen by faculty, the answer to that question was coded as “missing data” and was not

included in the results. However, one notable result was that 17% of the faculty chose “not applicable” for teaching a web- based course.

Faculty Survey Part 1

Faculty Survey Results for Questions 1-23

Questions one through 23 on the faculty survey asked faculty participants to rank the specific teaching methods they use in the classroom. These teaching methods included: lecture and the application of skills; working in groups versus individually; the use of case studies, visual aids, and drawings; class discussion; teaching a web- based or combination of web and traditional on-ground classes; the use of storytelling, technology, and games; having students read before versus after class; providing handouts instead of students taking their own notes; encouraging interaction with faculty and peers; providing classroom structure, while maintaining an optimal learning environment.

The Likelihood-ratio Chi-square (LR χ^2) test was used to test the null hypothesis that faculty in different generational cohorts use different teaching methods in the classroom. Table 19 shows the results from the LR χ^2 test for questions one through 23 on the faculty survey for the specific teaching methods used in the classroom based on a significance level of $\alpha = .05$. The percentages of the faculty’s choices were also analyzed. Although there was only one statistically significant difference was identified, there were several strong tendencies toward a specific teaching method. The percentages of the faculty’s choices were also analyzed.

Table 19*Faculty Survey Results Questions 1-23*

| Teaching Methods | <i>f</i> | Baby Boomer | Gen XY | χ^2 | <i>p</i> |
|--------------------------------------|----------|-------------|-------------|----------|----------|
| | | Freq/Always | Freq/Always | | |
| Q1- lecture | 59 | 77.3% | 83.8% | 0.38 | .538 |
| Q2- apply skills | 58 | 77.3% | 66.7% | 0.76 | .384 |
| Q3- work in groups | 57 | 52.4% | 61.1% | 0.41 | .520 |
| Q4- case study | 58 | 66.7% | 64.9% | 0.02 | .890 |
| Q5- visual aids | 60 | 95.7% | 94.6% | 0.03 | .854 |
| Q6- work individually | 59 | 65.2% | 47.2% | 1.85 | .174 |
| Q7- participate in class discussions | 59 | 90.9% | 91.9% | 0.02 | .896 |
| Q8- draw concepts | 57 | 52.2% | 55.9% | 0.08 | .783 |
| Q9- web-based course | 50 | 15.8% | 9.7% | 0.41 | .524 |
| Q10- storytelling | 60 | 82.6% | 91.9% | 1.15 | .284 |
| Q11- complete work before class | 59 | 45.5% | 29.7% | 1.47 | .225 |
| Q12- handouts | 57 | 57.1% | 47.2% | 0.52 | .469 |
| Q13- encourage interaction | 60 | 100.0% | 97.3% | 0.98 | .323 |
| Q14- combo web & class | 57 | 70.0% | 56.8% | 0.98 | .323 |
| Q15- read before class | 60 | 87.0% | 78.4% | 0.72 | .395 |
| Q16- technology | 60 | 56.5% | 59.5% | 0.05 | .823 |
| Q17- lecture vs. group work | 58 | 52.4% | 62.2% | 0.53 | .468 |
| Q18- active participation | 59 | 81.8% | 86.5% | 0.23 | .633 |
| Q19- games | 58 | 28.6% | 45.9% | 1.73 | .189 |
| Q20- read after class | 59 | 4.5% | 10.8% | 0.76 | .383 |
| Q21- structure | 59 | 86.4% | 86.5% | <0.001 | .989 |
| Q22- own notes | 60 | 52.2% | 70.3% | 1.98 | .159 |
| Q23- variety teaching methods | 59 | 81.8% | 83.8% | 0.04 | .846 |

Note: Significant results at $\alpha=.05$ indicated in **boldface**; $df=1$; Freq/Always = Frequently/Always

The overall results of questions one through 23 on the faculty survey revealed that 98.3% ($n = 60$) of the faculty indicated encouraging classroom interaction among students and faculty as the most frequent teaching method used in the classroom. The use of visual aids when teaching new concepts ($n = 60, 95\%$) was identified as the second most frequent teaching method used in

the classroom by faculty, followed by encouraging students to participate in class discussions ($n = 59, 91.5\%$). A notable result revealed that 100% of the Baby Boomer faculty and 97.3% of the Gen XY faculty indicated the importance of encouraging classroom interaction among student and the faculty.

Other teaching methods used frequently in the classroom included: the use of personal stories about lecture concepts ($n = 60, 88.3\%$); providing classroom structure and guidance ($n = 59, 86.4\%$); encouraging active participation in classroom discussion ($n = 59, 84.7\%$); using a variety of teaching methods in the classroom ($n = 59, 83.1\%$); expecting students to read prior to class ($n = 60, 81.7\%$); and, lecturing on topics while the students take notes ($n = 59, 81.4\%$). Expecting students to read the assignment after class ($n = 59, 8.5\%$) and teaching an all web-based course ($n = 50, 12\%$), were the teaching methods identified as least used.

With regards to generational differences, the overall results revealed that faculty participants from all generations indicated they had a higher preference “*frequently/always*” for using the following teaching methods in the classroom were (see Table 11): lecture while students listen; having students apply skills in classroom; having students work in groups on assignments; using case studies; using visual aids; encourage students to participate in class discussions; drawing on the board to illustrate concepts; using storytelling to teach; encourage classroom interaction between students and faculty; teach a combination of web-based study and classroom study; expect students to read before class; use technology during class; spend more time lecturing than having students work in groups; facilitate participation in classroom discussions; provide classroom structure and guidance; have students take their own notes; and, using a variety of teaching methods.

The faculty participants from all generations indicated teaching methods that were “*never/occasionally*” preferred included: teaching web-based courses; having students’ complete assignments from reading prior to class; the use of games to teach content; and students reading assignments after class. There were only two teaching methods that the Baby Boomers and Gen XY did not agree on having the same preference. These methods were having students work individually on assignments and providing handouts. Baby Boomers indicated that they “*frequently/always*” used these methods, whereas Gen XY “*never/occasionally*” used them.

Faculty Survey Results for Questions 24-30

Questions 24 through 30 on the faculty survey were specific to the classroom environment. Faculty participants were asked to rank the importance of the following items: faculty knowing the student’s name; all papers and course work counting toward a grade; making sure students know the why behind learning new material; having students participate in group assignments during class; telling the students exactly what they need to know; stressing the value of learning just for the sake of learning; and, highlighting the grade as all that really matters.

Table 20 shows the results from the LR χ^2 test for questions 24 through 30 on the faculty survey for the specific teaching methods used in the classroom based on a significance level of $\alpha = .05$.

Table 20

Classroom Environment Faculty Questions 24-30

| Teaching Methods | <i>f</i> | Baby Boomer | Gen XY | χ^2 | <i>p</i> |
|---------------------------------|----------|-------------|-------------|----------|-------------|
| | | Freq/Always | Freq/Always | | |
| Q24- faculty knows my name | 60 | 91.3% | 91.9% | 0.01 | .936 |
| Q25- grade for all work | 58 | 33.3% | 45.9% | 0.89 | .346 |
| Q26- know why I am learning | 59 | 95.5% | 100.0% | 2.00 | .157 |
| Q27- participates in group work | 57 | 55.0% | 62.2% | 0.28 | .600 |
| Q28- told what I need to know | 58 | 54.5% | 72.2% | 1.87 | .172 |
| Q29- learning for learning sake | 58 | 36.4% | 69.4% | 6.14 | .013 |
| Q30- grade is all that matters | 57 | 0.0% | 2.8% | 0.93 | .335 |

The overall results of questions 24 through 30 on the faculty survey revealed that faculty felt that it was important to share with students the importance of learning new concepts ($n = 59$, 98.3%) and to know each student by their name ($n = 60$, 91.7%). Emphasizing that the grade each student received is all that really matters ($n = 57$, 1.8%) was identified as least important for the faculty to use. Placing an emphasis of learning just for learning sake was the only statistically significant finding, $LR \chi^2 (1, n = 58) = 6.14, p = .013$.

In addition, the percentages of the faculty's choices were also analyzed. The results show that faculty across all generations indicated that they "*frequently/always*" preferred to know each student's name; telling students what they need to know; having students participate in group assignments with peers; and, discussing why students need to learn new concepts. In contrast, faculty from all generations indicated *never/occasionally*, " that all papers and course work should count toward a grade, and the grade is all that really matters. However, when emphasizing learning just for learning sake, while Gen XY indicated "*frequently/always*," whereas, the Baby Boomers chose "*never/occasionally*." Although not statistically significant, Baby Boomer (100%) and Gen XY (97.2%) faculty, like students, do not believe that grades are all that matters.

Faculty Survey Part 2

Teaching Methods Most Used by Faculty

Similarly, with students, the faculty participants were asked to identify five teaching methods they use the most frequently in the classroom. The faculty chose from the following teaching methods: lecture; case studies; storytelling; hands on activities; activities with technology; worksheets; handouts; visual aids (video, pictures, diagrams, etc.); group activities (presentations, working with peers); diagramming (concept maps, Venn diagrams, drawings,

etc.); games (Jeopardy, etc.); and, group discussions (participating in a classroom discussion on a topic).

The teaching methods that faculty chose on the survey were coded as a “1,” and those that were not chosen, were coded as a “0”. A frequency test was performed, and the results in Table 21 illustrates the percentages for the top five teaching methods used most often in the classroom.

Table 21

Teaching Methods Most Used by Faculty

| Teaching Methods | Entire Sample | | Baby Boomer | | Gen XY | |
|------------------|---------------|------|-------------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Case Studies | 49 | 75.4 | 18 | 78.3 | 27 | 73.0 |
| Lecture | 49 | 75.4 | 17 | 73.9 | 30 | 81.1 |
| Visual Aids | 41 | 63.1 | 14 | 60.9 | 26 | 70.3 |
| Group Activities | 32 | 49.2 | 12 | 52.2 | 16 | 43.2 |
| Group Discussion | 32 | 49.2 | 10 | 43.5 | 19 | 51.4 |

The results identified three teaching methods chosen by 49% or more of the faculty. Case studies ($n = 49, 75.4\%$) and lecture ($n = 49, 75.4\%$) tied as the teaching method identified as the teaching methods most often used in the classroom. The use of visual aids ($n = 41, 63.1\%$) was the next most frequently used teaching method in the classroom, followed by using group activates (49.2%) and group discussion (49.2%). With regards to generational tendencies, the Baby Boomer faculty indicated they use case studies, and group activities more than the Gen XY faculty; whereas the Gen XY faculty use lecture, visual aids, and group discussion more than the Baby Boomer faculty.

Teaching Methods Least Used by Faculty

The results of the remaining seven teaching method choices illustrated in Table 22, were identified by less than 40% of the nursing faculty as the least preferred teaching methods used in

the classroom. Less than ten percent of the faculty indicated that they used worksheets to teach in the classroom, while only 12% used diagramming. The faculty also acknowledged they limited their use of handouts (21.5%) and hands on activities (27.7%) while teaching. From the teaching methods identified as least preferred, the Baby Boomers had a higher tendency for not using worksheets; diagramming; handouts; and storytelling than Gen XY. Gen XY had a higher tendency for not using hands on activities; activities with technology; and games.

Table 22

Teaching Methods Least Used by Faculty

| Teaching Methods | Entire Sample | | Baby Boomer | | Gen X Y | |
|----------------------------|---------------|------|-------------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Worksheets | 6 | 9.2 | 3 | 13.0 | 3 | 8.1 |
| Diagramming | 8 | 12.3 | 4 | 17.4 | 3 | 8.1 |
| Handouts | 14 | 21.5 | 7 | 30.4 | 7 | 18.9 |
| Hands on Activities | 18 | 27.7 | 5 | 21.7 | 9 | 24.3 |
| Activities with Technology | 21 | 32.3 | 6 | 26.1 | 11 | 29.7 |
| Games | 22 | 33.8 | 7 | 30.4 | 13 | 35.1 |
| Storytelling | 25 | 38.5 | 10 | 43.5 | 15 | 40.5 |

Upon completion of the survey, the faculty were given the opportunity to write in any “other” preferred teaching methods that they use in the classroom. The only additional teaching methods indicated by two faculty as a preferred teaching method used in the classroom were assessment practices and synchronous online conferencing.

Specific Aim IV

Aim IV: To compare the generational differences of undergraduate nursing students’ a) learning style preferences and preferred teaching methods, and b) students’ preferred faculty teaching methods to the actual teaching methods used by faculty.

H₁. There are statistically significant differences in the a) learning style preferences and preferred teaching methods, and b) students' preferred faculty teaching methods to the actual teaching methods used by faculty.

H₀. There are no statistically significant differences in the a) learning style preferences and preferred teaching methods, and b) students' preferred faculty teaching methods to the actual teaching methods used by faculty.

The *Index of Learning Styles*[®] survey (Appendix A) was used to determine the student participants learning style preference. The students were asked to answer a 44-question survey designed to assess 11 items in four dimensions of preferred learning styles: *active-reflective*, *sensing-intuitive*, *visual-verbal*, and *sequential-global*. Once the students answered the questions for each dimension, the numbers corresponding from each learning style were tabulated and the difference was calculated ranging from 11 to -11. The value was then used to determine if the student had a mild (or balanced) preference between the two learning styles in the dimension; a moderate preference; or, a strong preference for an identified learning style.

To determine the correlation between the students learning style preference and the preferred faculty teaching methods, a Pearson-r correlation was performed. The correlation results for the generational differences of learning styles are presented in Table 23. Statistically significant findings were found, some positive and some negative, at $\alpha = .05$.

Table 23*Generational Difference of Learning Styles*

| | | Entire Sample (<i>n</i> = 174) | | | Gen XY (<i>n</i> = 92) | | | Gen Z (<i>n</i> = 75) | | |
|----------|----------|---------------------------------|---------------|-------------|-------------------------|---------------|-------------|------------------------|---------------|-------------|
| | | Act/ Ref | Sen/ Int | Vis/ Vrb | Act/ Ref | Sen/ Int | Vis/ Vrb | Act/ Ref | Sen/ Int | Vis/ Vrb |
| Act/ Ref | <i>r</i> | | | | | | | | | |
| | <i>p</i> | | | | | | | | | |
| Sen/ Int | <i>r</i> | -0.024 | | | 0.094 | | | -0.165 | | |
| | <i>p</i> | 0.750 | | | 0.371 | | | 0.156 | | |
| Vis/ Vrb | <i>r</i> | .369** | -0.065 | | .346** | 0.077 | | .385** | -.238* | |
| | <i>p</i> | 0.000 | 0.396 | | 0.001 | 0.468 | | 0.001 | 0.040 | |
| Seq/ Glo | <i>r</i> | 0.070 | .470** | -0.008 | 0.033 | .564** | -0.047 | 0.135 | .319** | 0.042 |
| | <i>p</i> | 0.360 | 0.000 | 0.912 | 0.757 | 0.000 | 0.657 | 0.250 | 0.005 | 0.723 |

Note: *Significant results at $\alpha=.05$; **Significant results at $\alpha=.01$, all significant results indicated in **boldface**; *df*=1; Act/Ref = Active/Reflective; Sen/Int = Sensitive/Intuitive; Vis/Vrb = Visual/Verbal = Seq/Glo = Sequential/Global

Within the entire population, the results indicate a positive correlation between *active/reflective* and *visual/verbal* learning styles which indicates that students who are *active* tend to also be *visual*, and those who are *reflective* tend to also be *verbal*. There is a strong positive correlation between the *sequential/global* and *sensing/intuitive* learning styles. Students who are *sensing* tend to be *sequential*, and those who are *intuitive* tend to be more *global*. In addition to the correlation between *active/reflective* and *visual/verbal* learning styles, Gen Z has a negative correlation between *visual/verbal* and *sensing/intuitive* indicating that those who tend to be visual are less sensing and those who are more verbal are less intuitive.

The correlation results between the learning style preferences and preferred faculty teaching methods are presented in Table 24. Statistically significant findings were found, some positive and some negative at $\alpha = .01$ or $\alpha = .05$. Within the entire sample of students, there were eight weak, but statistically significant correlations between *active/reflective* learning styles and preferred teaching methods; five were positive (activities with technology, games, group activities, group discussion, hands on activities) and three were negative (handouts, lecture, worksheets).

Table 24*Correlation between Learning Style and Teaching Methods*

| | | Entire Sample (n = 161) | | | | Gen XY (n = 86) | | | | Gen Z (n = 69) | | | |
|----------------------|----------|-------------------------|---------------|----------------|-------------|-----------------|-------------|---------------|--------------|----------------|---------------|----------------|-------------|
| | | ACT/ REF | SEN/ INT | VIS/ VRB | SEQ/ GLO | ACT/ REF | SEN/ INT | VIS/ VRB | SEQ/ GLO | ACT/ REF | SEN/ INT | VIS/ VRB | SEQ/ GLO |
| Activities with Tech | <i>r</i> | .162* | 0.038 | 0.027 | 0.114 | 0.195 | 0.110 | 0.043 | .225* | 0.084 | -0.034 | 0.029 | -0.019 |
| | <i>p</i> | 0.040 | 0.636 | 0.737 | 0.151 | 0.072 | 0.312 | 0.693 | 0.037 | 0.494 | 0.784 | 0.814 | 0.879 |
| Case Studies | <i>r</i> | -0.057 | -0.046 | -0.077 | -0.078 | -0.053 | -0.081 | -0.013 | -0.142 | -0.138 | -0.015 | -0.148 | 0.013 |
| | <i>p</i> | 0.474 | 0.565 | 0.333 | 0.324 | 0.628 | 0.461 | 0.903 | 0.193 | 0.257 | 0.904 | 0.226 | 0.913 |
| Diagramming | <i>r</i> | -0.101 | -.161* | .159* | -0.060 | -0.072 | -0.074 | .274* | -0.093 | -0.055 | -.267* | 0.031 | -0.036 |
| | <i>p</i> | 0.202 | 0.042 | 0.044 | 0.448 | 0.513 | 0.499 | 0.011 | 0.396 | 0.652 | 0.026 | 0.800 | 0.769 |
| Games | <i>r</i> | .250** | -0.141 | 0.059 | -0.002 | 0.183 | -0.173 | -0.111 | 0.103 | .295* | -0.128 | .303* | -0.159 |
| | <i>p</i> | 0.001 | 0.073 | 0.458 | 0.976 | 0.091 | 0.112 | 0.307 | 0.344 | 0.014 | 0.296 | 0.011 | 0.192 |
| Group Activities | <i>r</i> | .226** | -0.018 | 0.117 | 0.063 | 0.167 | 0.008 | 0.200 | 0.107 | .346** | -0.045 | 0.008 | 0.012 |
| | <i>p</i> | 0.004 | 0.824 | 0.141 | 0.428 | 0.125 | 0.941 | 0.065 | 0.325 | 0.004 | 0.712 | 0.945 | 0.925 |
| Group Discussion | <i>r</i> | .286** | 0.067 | -0.022 | 0.025 | .280** | -0.041 | 0.050 | -0.049 | .291* | 0.162 | -0.104 | 0.106 |
| | <i>p</i> | 0.000 | 0.398 | 0.785 | 0.749 | 0.009 | 0.711 | 0.649 | 0.651 | 0.015 | 0.182 | 0.396 | 0.388 |
| Handouts | <i>r</i> | -.273** | 0.111 | -0.129 | 0.062 | -.300** | 0.126 | -0.118 | 0.116 | -.243* | 0.116 | -0.181 | 0.011 |
| | <i>p</i> | 0.000 | 0.163 | 0.103 | 0.434 | 0.005 | 0.248 | 0.279 | 0.286 | 0.044 | 0.341 | 0.136 | 0.928 |
| Hands on Activities | <i>r</i> | .198* | 0.028 | .271** | -0.102 | .236* | 0.137 | 0.183 | -0.141 | 0.153 | -0.055 | .374** | -0.017 |
| | <i>p</i> | 0.012 | 0.724 | 0.001 | 0.200 | 0.029 | 0.209 | 0.091 | 0.194 | 0.210 | 0.651 | 0.002 | 0.888 |
| Lecture | <i>r</i> | -.233** | .169* | -.270** | 0.137 | -0.158 | 0.195 | -0.205 | 0.121 | -.312** | 0.107 | -.328** | 0.158 |
| | <i>p</i> | 0.003 | 0.032 | 0.001 | 0.082 | 0.147 | 0.072 | 0.059 | 0.266 | 0.009 | 0.381 | 0.006 | 0.195 |
| Storytelling | <i>r</i> | 0.034 | -0.086 | -0.106 | -0.039 | -0.083 | -0.114 | -.271* | -0.068 | 0.162 | -0.064 | 0.013 | -0.074 |
| | <i>p</i> | 0.668 | 0.279 | 0.179 | 0.623 | 0.445 | 0.295 | 0.011 | 0.534 | 0.184 | 0.599 | 0.916 | 0.547 |
| Visual Aids | <i>r</i> | -0.035 | 0.022 | .274** | 0.069 | 0.027 | 0.009 | .348** | 0.014 | -0.056 | 0.041 | 0.218 | 0.164 |
| | <i>p</i> | 0.657 | 0.777 | 0.000 | 0.381 | 0.802 | 0.934 | 0.001 | 0.897 | 0.645 | 0.738 | 0.073 | 0.179 |
| Worksheets | <i>r</i> | -.219** | -0.126 | -0.012 | -0.147 | -.320** | -0.061 | -0.098 | -0.129 | -0.111 | -0.190 | 0.090 | -0.167 |
| | <i>p</i> | 0.005 | 0.112 | 0.882 | 0.062 | 0.003 | 0.579 | 0.371 | 0.236 | 0.365 | 0.117 | 0.462 | 0.171 |

Note: * Correlation is significant results at $\alpha=.05$; ** Correlation is significant results at $\alpha=.01$
Significant results indicated in **boldface**; $df=1$

There were two weak, but statistically significant correlations between *sensing/intuitive* learning styles and preferred teaching methods. Students who preferred the *sensing* learning style, were more likely to prefer lecture; and *intuitive* students were more likely to prefer the use

of diagramming to learn. There were four weak, but statistically significant correlations were found between the *visual/verbal* learning styles and preferred teaching methods. Diagramming, hands on activities, and the use of visual aids all had a positive relationship with the *visual* learning style; while lecture resulted in a negative relationship indicating students who preferred the *verbal* learning style preferred the lecture teaching method more than students with a *visual* learning style. There were no significant findings with the *sequential/global* learning styles and preferred teaching methods.

With regards to generational differences, there were eight statistically significant correlations between the learning style preferences and Gen XY students' preferred faculty teaching methods. There were four statistically significant correlations between *active/reflective* learning styles and preferred teaching methods; two (group discussions, hands on activities) were positive, and two (handouts, worksheets) had a strong negative relationship. No significant findings were identified between the *sensing/intuitive* learning styles and preferred teaching methods. Three statistically significant correlations between *visual/verbal* learning styles and preferred teaching methods were found. Two correlations (diagramming, visual aids) were positive, and one, storytelling had a negative correlation. One weak, but statistically significant correlation was identified between the *sequential/global* learning styles and activities with technology.

A total of eight statistically significant correlations were identified between the learning style preferences and preferred faculty teaching methods from the Gen Z students. There were five statistically significant correlations between *active/reflective* learning styles and preferred teaching methods; three (games, group activities, group discussions) had a positive relationship; and two (handouts, lecture) had a negative relationship. There was one weak, statistically

significant finding between the *sensing/intuitive* learning styles and preferred teaching methods, that had a negative relationship; and that was diagramming. Students who were intuitive, were more likely to prefer the use of diagramming to learn. Two statistically significant correlations between *visual/verbal* learning styles and preferred teaching methods were revealed. The use of hands on activities was strongly positive, whereas the use of lecture was strong negative. There were no significant findings with the *sequential/global* learning styles and preferred teaching methods.

To determine preferred teaching methods, student participants identified the top five teaching methods they prefer faculty to use in the classroom; and the faculty participants identified the top five teaching methods they used most frequently in the classroom. Both student and faculty participants identify their top five preferred teaching methods from the following list: lecture; case studies; storytelling; hands on activities; activities with technology; worksheets; handouts; visual aids; group activities; diagramming; games; and group discussions. There were only two teaching methods that both the students and the faculty chose as being one of their top five preferred teaching methods was lecture and the use of visual aids.

A frequency test was performed, and the results in Table 25 depicts the top five teaching methods most preferred to be used in the classroom by the students. Sharing the highest percentage and being equally distributed at 71.1% ($f = 118$), hands on activities and the use of visual aids, were identified as the students most preferred teaching methods to be used in the classroom. Lecture ($f = 114$, 68.7%) was chosen as the third most preferred teaching method used in the classroom, with the use of games ($f = 89$, 53.6%), and storytelling ($f = 70$, 42.2%) being the fourth and fifth choices.

Table 25*Student's Top Five Teaching Methods*

| Students Preferred Teaching Methods | Entire Sample | | Gen XY | | Gen Z | |
|-------------------------------------|---------------|------|----------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Hands on Activities | 118 | 71.1 | 64 | 73.6 | 50 | 70.4 |
| Visual Aids | 118 | 71.1 | 62 | 71.3 | 49 | 69.0 |
| Lecture | 114 | 68.7 | 62 | 71.3 | 46 | 64.8 |
| Games | 89 | 53.6 | 49 | 56.3 | 36 | 50.7 |
| Storytelling | 70 | 42.2 | 26 | 29.9 | 39 | 54.9 |

Table 26 shows the top five teaching methods that faculty participants use most often in the classroom. Sharing the highest percentage and being equally distributed at 75.4% ($f= 49$), the use of case studies and lectures were identified by faculty as being the teaching methods most often used in the classroom. The use of visual aids ($f= 41$, 63.1%) was identified as third teaching method most often used in the classroom, followed by group discussion and group activities (equally distributed at 49.2% ($f= 32$)) as the fourth and fifth choices.

Table 26*Faculty's Top Five Teaching Methods*

| Teaching Methods Used by Faculty | Entire Sample | | Baby Boomer | | Gen XY | |
|----------------------------------|---------------|------|-------------|------|----------|------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % |
| Case Studies | 49 | 75.4 | 18 | 78.3 | 27 | 73 |
| Lecture | 49 | 75.4 | 17 | 73.9 | 30 | 81.1 |
| Visual Aids | 41 | 63.1 | 14 | 60.9 | 26 | 70.3 |
| Group Discussion | 32 | 49.2 | 10 | 43.5 | 19 | 51.4 |
| Group Activities | 32 | 49.2 | 12 | 52.2 | 16 | 43.2 |

To examine the relationship between each of the teaching method preferences and students in Gen XY and Gen Z, a Chi-square test of independence was performed. The only statistically significant finding from the twelve teaching methods was between storytelling and students in Gen XY and Gen Z (see Table 27).

Table 27*Rank of all 12 Teaching Methods*

| Teaching Methods | Entire Sample | | Gen XY | | Gen Z | | χ^2 | <i>p</i> |
|----------------------------|---------------|------|----------|------|----------|------|----------|------------------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % | | |
| Hands on Activities | 114 | 72.2 | 64 | 73.6 | 50 | 70.4 | 0.19 | .661 |
| Visual Aids | 111 | 70.3 | 62 | 71.3 | 49 | 69.0 | 0.10 | .758 |
| Lecture | 108 | 68.4 | 62 | 71.3 | 46 | 64.8 | 0.76 | .384 |
| Games | 85 | 53.8 | 49 | 56.3 | 36 | 50.7 | 0.50 | .481 |
| Handouts | 66 | 41.8 | 36 | 41.4 | 30 | 42.3 | 0.01 | .912 |
| Storytelling | 65 | 41.1 | 26 | 29.9 | 39 | 54.9 | 10.13 | <0.001 |
| Group Discussion | 55 | 34.8 | 31 | 35.6 | 24 | 33.8 | 0.06 | .810 |
| Case Studies | 45 | 28.5 | 27 | 31.0 | 18 | 25.4 | 0.62 | .431 |
| Diagramming | 37 | 23.4 | 17 | 19.5 | 20 | 28.2 | 1.62 | .203 |
| Activities with Technology | 36 | 22.8 | 24 | 27.6 | 12 | 16.9 | 2.54 | .111 |
| Worksheets | 32 | 20.3 | 17 | 19.5 | 15 | 21.1 | 0.06 | .805 |
| Group Activities | 16 | 10.1 | 10 | 11.5 | 6 | 8.5 | 0.40 | .528 |

Note: Significant results at $\alpha=.05$ indicated in **boldface**; $df=1$

The relationship between these variables was strongly significant, $\chi^2 (1, f=65) = 10.13, p < .001$ with Gen Z preferring the storytelling ($f=39, 54.9\%$) teaching method almost twice as much as Gen XY ($f=26, 29.9\%$). Gen XY preferred eight of the twelve teaching methods more than Gen Z with one teaching method, activities with technology, preferred almost twice as much. A Kendall's tau-b (τ_b) correlation was performed to determine the relationship between the twelve preferred faculty teaching methods for students in Gen XY and students in Gen Z. Results found a significant positive correlation ($\tau_b = 0.769, p < .001$), therefore, the null hypothesis was rejected. Using the Kendall's tau-b there is no significant differences overall in the rankings between Gen XY and Gen Z; even though, there are individual differences, the general patterns are the same ($\tau_b = .769, p < .001$). Both Gen XY and Gen Z ranked storytelling as the sixth most preferred faculty teaching method to be used in the classroom.

To examine the relationship between each of the teaching methods used most frequently in the classroom and faculty in the Baby Boomer and Gen XY, a Chi-square test of independence was performed, and results depicted in Table 28. Although there were no significant findings among the twelve teaching methods, additional analysis revealed that the Baby Boomers preferred case studies; group discussion; storytelling; handouts; diagramming; and worksheets more than Gen XY. In comparison, Gen XY preferred lecture; visual aids; group activities; games; activities with technology; and hands on activities more than the Baby Boomers.

Table 28

Teaching Methods Ranked by Entire Sample

| Teaching Methods | Entire Sample | | Baby Boomer | | Gen XY | | χ^2 | <i>p</i> |
|----------------------------|---------------|------|-------------|------|----------|------|----------|----------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % | | |
| Lecture | 47 | 78.3 | 17 | 73.9 | 30 | 81.1 | 0.43 | 0.512 |
| Case Studies | 45 | 75.0 | 18 | 78.3 | 27 | 73.0 | 0.21 | 0.646 |
| Visual Aids | 40 | 66.7 | 14 | 60.9 | 26 | 70.3 | 0.56 | 0.453 |
| Group Activities | 29 | 48.3 | 10 | 43.5 | 19 | 51.4 | 0.35 | 0.553 |
| Group Discussion | 28 | 46.7 | 12 | 52.2 | 16 | 43.2 | 0.46 | 0.500 |
| Storytelling | 25 | 41.7 | 10 | 43.5 | 15 | 40.5 | 0.05 | 0.822 |
| Games | 20 | 33.3 | 7 | 30.4 | 13 | 35.1 | 0.14 | 0.707 |
| Activities with Technology | 17 | 28.3 | 6 | 26.1 | 11 | 29.7 | 0.09 | 0.761 |
| Handouts | 14 | 23.3 | 7 | 30.4 | 7 | 18.9 | 1.05 | 0.305 |
| Hands on Activities | 14 | 23.3 | 5 | 21.7 | 9 | 24.3 | 0.05 | 0.818 |
| Diagramming | 7 | 11.7 | 4 | 17.4 | 3 | 8.1 | 1.19 | 0.276 |
| Worksheets | 6 | 10.0 | 3 | 13.0 | 3 | 8.1 | 0.38 | 0.536 |

Note: *df* = 1

A Kendall's tau-b (τ_b) correlation was performed to determine the relationship between the twelve teaching methods that Baby Boomer and Gen XY faculty use more frequently in the classroom. Results found a significant positive correlation ($\tau_b = 0.853$, $p < 0.001$); therefore, the null hypothesis was rejected. Using the Kendall's tau-b there is no significant differences overall in the rankings between Baby Boomer and Gen XY faculty; even though there are individual differences, the general patterns are the same.

A Kendall's tau-b (τ_b) correlation was performed to determine the relationship between the students preferred faculty teaching methods, and the teaching methods used most often by faculty in the classroom. The null hypothesis was retained; there was no significant correlation ($\tau_b = 0.137, p = .536$) between the students and faculty.

Further analysis was conducted to eliminate any unobserved heterogeneity, the preferred teaching methods of Gen XY students and Gen XY faculty was compared. A Chi-square test of independence was performed resulting in several significant findings for teaching methods between the Gen XY students and Gen XY faculty (see Table 29).

Table 29

Teaching Methods Compared by Generation

| Top Teaching Methods | Total Sample | | Gen XY Students | | Gen XY Faculty | | χ^2 | <i>p</i> |
|----------------------------|--------------|------|-----------------|------|----------------|------|----------|------------------|
| | <i>f</i> | % | <i>f</i> | % | <i>f</i> | % | | |
| Lecture | 92 | 74.2 | 62 | 71.3 | 30 | 81.1 | 1.307 | 0.253 |
| Visual Aids | 88 | 71.0 | 62 | 71.3 | 26 | 70.3 | 0.012 | 0.911 |
| Hands on Activities | 73 | 58.8 | 64 | 73.6 | 9 | 24.3 | 25.994 | <0.001 |
| Games | 62 | 50.0 | 49 | 56.3 | 13 | 35.1 | 4.681 | 0.031 |
| Case Studies | 54 | 43.5 | 27 | 31.0 | 27 | 73.0 | 18.573 | <0.001 |
| Group Discussion | 47 | 37.9 | 31 | 35.6 | 16 | 43.2 | 0.639 | 0.424 |
| Handouts | 43 | 34.7 | 36 | 41.4 | 7 | 18.9 | 5.781 | 0.016 |
| Storytelling | 41 | 33.1 | 26 | 29.9 | 15 | 40.5 | 1.332 | 0.248 |
| Activities with Technology | 35 | 28.5 | 24 | 27.6 | 11 | 29.7 | 0.059 | 0.808 |
| Group Activities | 29 | 23.4 | 10 | 11.5 | 19 | 51.4 | 23.016 | <0.001 |
| Diagramming | 20 | 16.1 | 17 | 19.5 | 3 | 8.1 | 2.508 | 0.113 |
| Worksheets | 20 | 16.1 | 17 | 19.5 | 3 | 8.1 | 2.508 | 0.113 |

Note: Significant results at $\alpha=.05$ indicated in **boldface**; $df=1$

A Kendall's tau-b (τ_b) correlation was performed to determine the relationship between the twelve preferred faculty teaching methods of Gen XY students, and the teaching methods Gen XY faculty use most often in the classroom. The null hypothesis was retained. There was no significant correlation ($\tau_b = 0.248, p = .269$), indicating that the overall ranking of the twelve

teaching method preferences is different between the two groups. There were no significant differences overall in the rankings between Gen XY and Gen Z even though there are individual differences, the general patterns are the same. However, the students and faculty both ranked visual aids as the third most preferred teaching method to be used in the classroom.

Broadly speaking, both groups rank lecture highly, visual aids were ranked number three in both groups, hands on activities for the students was ranked number one, but faculty ranked it ninth. Handouts were ranked number five for students and number ten for faculty. Diagramming and worksheets not preferred by either group. Students have group activities last and for faculty they ranked fourth. Case studies number seven for students and number two for faculty. While there are some areas of agreement, there are notable areas of disagreement. The ones the two groups agree on are lecture surprisingly, visual aids, activities with technology,

In summary, the results of the data analysis found that out of twelve teaching method preferences, both students and faculty indicated a preference for lecture, and the use of visual aids, to be used more frequently in the classroom. Therefore, hypothesis number four; stating there is a teaching method used more frequently than others in the classroom, was supported by the research data. Lecture and group discussion were both found in the data analysis as being used in the classroom by faculty more frequently than other teaching methods. However, the results of the data analysis also indicated the utilization of a variety of teaching methods in the classroom by nursing faculty.

Chapter 5. Discussion

Nursing education continues to face the ongoing challenge of creating innovative learning environments that are inclusive of students across four generations. The combination of Baby Boomers, Gen X, Gen Y, and Gen Z undergraduate nursing students have created a multi-generational classroom, where each generation has a “unique set of characteristics shaped by values, trends, behaviors, and events in society; creating vast opportunities to learn, but also unique challenges” (Delahoyde, 2009, p. 170). This chapter explores: the results from Chapter 4; providing a summary and discussion of each of the three specific aims; correlating the results to the literature review and theoretical context; as well as, providing limitations of the study; implications for nursing education; and, recommendations for further research.

Summary of Results

The purpose of this study was to compare the generational differences of undergraduate nursing students' learning preferences; the students' preferred faculty teaching methods, to the teaching methods nursing faculty use most often in the classroom. This study used a non-experimental survey design to collect data from undergraduate nursing students and their faculty from non-traditional undergraduate nursing programs in the Southeastern United States. Four separate instruments were used in this study. First, the *Index of Learning Styles*[®] questionnaire was used to assess the students' learning style preferences. Second, the *Walker/Delahoyde Teaching Method Survey* was used to measure the generational differences of the students' preferred faculty teaching methods. Third, the *Walker Teaching Method Survey* was used to provide additional support for the internal consistency of the WDTMS. Fourth, the *Delahoyde's Teaching Method Faculty Survey* was used to determine the teaching methods faculty use most often in the classroom.

This research study was comprised of 251 participants: 184 nursing students and 67 nursing faculty from colleges and universities across ten Southeastern states. The students' generational cohorts consisted of one Baby Boomer, 17 Gen X students, 77 Gen Y students, and 79 students from Gen Z. There were slightly more undergraduate nursing students from Gen Z; with more than half of the students enrolled in an ADN program. This finding is consistent with findings in the literature. Since there was only one student from the Baby Boomer generation, this generational cohort was not included in the analysis. Due to low numbers of Gen X and Gen Y undergraduate students, they were combined into the group, Gen XY, prior to data analysis.

Faculty generational differences were comprised of 24 Baby Boomers, 28 Gen X, and ten from Gen Y. More than half of the faculty taught from an ADN program. The years of faculty teaching experience ranged from one year to thirty-five years, with a mean of 11.11 years. These findings were almost identical to the findings in Delahoyde's (2009) study where the faculty's experience ranged from one to thirty-eight years with a mean of 11.14 (p. 171). As anticipated, there were no faculty from Gen Z. Additionally, due to the low numbers of Gen X and Gen Y faculty, they were also combined into one group, Gen XY, prior to data analysis.

The specific statistical tests used include the following: descriptive analysis and frequencies; Chi-Square (χ^2); One-sample Wilcoxon signed-rank test; Likelihood-ratio Chi-square (LR χ^2) test; Kruskal-Wallis; Kendall's tau-b; and, the Pearson-r correlation. A summary of the results of the data analysis are offered in relation to each specific aim.

Specific Aim I

Specific Aim I was to compare the generational differences of undergraduate nursing students' learning style preferences. **H₁**. There are statistically significant differences in the

learning style preferences of undergraduate nursing students based on the generational cohort in which they belong. H_0 . There are no statistically significant differences in the learning style preferences of undergraduate nursing students based on the generational cohort in which they belong. There were no significant differences between the generational cohorts, therefore, the null hypothesis was retained.

The majority of the student participants were balanced across the *active/reflective* and *sequential/global* learning style dimension. From the remaining two dimensions, the findings found *sensing* and *visual* as the two most preferred learning styles among the student participants. There was only a small proportion of students who preferred the *reflective*, *intuitive*, *verbal*, or *global* learning style. However, with regards to generational differences, both Gen XY and Gen Z, preferred the *active* learning style more than the *reflective*; the *sensing* more than the *intuitive*; *visual* over *verbal*; and, the *sequential* over the *global* learning style.

This study found most of the students to be balanced across the *active/reflective* and *sequential/global* learning style dimension. Although existing literature found one study with similar results; the population was registered nurses, not nursing students. McCrow et al. (2014) examined the preferred learning styles of acute care nurses with hopes of identifying ways to decrease barriers to continuing education, “develop and strengthen professional hospital-based educational programs” (p. 170). McCrow et al. (2014) found the nurse participants were balanced across *the active/reflective* ($n = 77, 54\%$), and *sequential/global* ($n = 96, 68\%$) learning style dimensions.

This study found that the two most preferred learning styles was *sensing* and *visual* is consistent with several studies. For example, Zang and Lambert’s (2008) international study found that undergraduate BSN students in China preferred *sensing* (86%) and *visual* (76%)

learning. Gonzales et al. (2017), investigating the learning styles of graduate nursing students upon entry into the nursing programs, found the predominate learning styles to be *sensing* (82.7%) and *visual* (78.7%). Although the focus of McCrow et al. (2014) was registered nurses as opposed to nursing students, the results of their study, identical to this study, indicated a preference for the *sensing* ($n = 97$, 68%) and *visual* ($n = 76$, 53%) learning style. Another study, Brannan et al. (2016), found *sensing* and *sequential* learning as most preferred learning style while examining the impact of learning styles on confidence and knowledge in traditional and high-fidelity simulation with nursing students.

While the results of the study found significant differences in the learning style preferences among undergraduate nursing students collectively, no significant differences were found between the students in Gen XY and Gen Z. Furthermore, the results show distinct differences and similarities among the learning styles between the generations with *sensing*, identified as the most preferred learning style. This study suggests that undergraduate nursing students in the Southeastern U.S. are concrete thinkers who prefer facts, are attentive to details, and likes to problem solve using practical and real-world applications.

Specific Aim II

Specific Aim II was to compare the generational differences of undergraduate nursing students' preferred teaching methods used in the classroom. **H₁**. There are statistically significant differences in the preferred teaching methods used in the classroom of undergraduate nursing students based on the generational cohort in which they belong. **H₀**. There are no statistically significant differences in the preferred teaching methods used in the classroom of undergraduate nursing students based on the generational cohort in which they belong. The significant findings

support the hypothesis that there are generational differences, as well as similarities among the undergraduate nursing students preferred teaching methods.

The results of the survey found similarities and statistically significant differences between Gen XY and Gen Z students and their preferred teaching methods. Two similar studies were conducted comparing generational differences among nursing students and their preferred teaching methods. Using BSN students as the sample, Delahoyde (2009) found six statistically significant findings: “lecture; lecture versus group work; active participation in group discussion; and the importance of participating in group discussion” (p 174). Another used study by Kitko (2011), used ADN students for the sample and found eight statistically significant differences: “lecture, self-directed learners and requires a little motivation to study, preference for a totally web-based course of study without class meeting; importance for faculty to learn my name; preference to have a highly structured classroom structure and guidance from faculty; the importance to know why I am learning material; learning just for the sake of learning; and, importance of grade received is all that really matters” (p. 149).

The seven statistically differences between the generations and their preferred teaching preferences included: work individually; listen vs. participate in discussions; technology; lecture vs. group work; reading after class; participating in group work; and learning for learning sake.

Work Individually

The first statistically significant finding between Gen XY and Gen Z was the preference for working individually on assignments versus in a group with peers ($p = .0329$). The results found that students from Gen XY (77.9%) had a higher preference for working individually than in a group on assignments compared to students in Gen X (62.9%). These results are consistent with the generational characteristics noted in the literature for Gen X who prefer working

independently (Cook, 2016; Johnson & Romanello, 2005). This is also supported with the statistically significant finding from the Walker Teaching Methods Student survey regarding the student's preference for working on group assignments outside of class, LR $\chi^2 (1, n = 136) = 4.36, p = .037$. Students in both Gen XY and Gen Z indicated they “*never/occasionally*” preferred to work on groups assignments outside of class.

Listen vs. Participate

The second statistically significant finding between Gen XY and Gen Z was the preference to listen versus participate during class discussions ($p = .029$). The results found that students in Gen Z (62.9%) had a higher preference for listening to lecture versus participating in class discussion compared to the students in Gen XY (45.3%). These results contradict the current literature which suggests that Gen Z prefers more of a hands-on approach to learning, rather than listening to PowerPoint® presentations (Loveland, 2017). Further research regarding generational characteristics for Gen Z is needed.

Technology

The third statistically significant finding between Gen XY and Gen Z was using technology during class to help learn new concepts ($p = .025$). The results found that students in Gen XY (79.1%) indicated a higher preference than students in Gen Z (62.9%) for using technology for learning. Although the literature recognizes Gen Z as having been exposed to a lifelong immersion of technology, identified as being the most technologically savvy of all generations, these results indicate otherwise.

Lecture vs. Group Work

The fourth statistically significant finding between Gen XY and Gen Z was listening to the faculty lecture, rather than working in groups with peers on in-class assignments ($p = .003$).

The results found that the students in Gen XY (66.3%) had a higher preference for lecture over group work, while students in Gen Z (42.9%).

The results of this variable are similar to Delahoyde (2009), who found statistically significant findings between Gen X and Gen Y where they indicated a preference for listening to the professor lecture versus working in groups with their peers ($p = .021$). Additionally, the results revealed that this teaching method was preferred more by Gen X students with a mean of 2.92 ($SD = .838$), compared to Gen Y students with a mean of 2.60 ($SD = .904$).

The results of this study and Delahoyde (2009) differ from the results of Walker et al. (2006), who found no difference between Gen X and Gen Y and their preference for lecture versus group work. The results of Walker et al. (2006), found that the majority of both generations did not prefer any type of group work inside or outside of class.

Reading after Class

The fifth statistically significant finding between Gen XY and Gen Z was the importance of reading the assignment after class versus reading prior to class ($p = .003$). The students in Gen Z (94.3%) expressed a higher preference for reading after class than the students in Gen XY (78.2%). Perhaps the students prefer to hear new information presented in class prior to reading to determine if it is worthwhile for them to invest the time with reading. The literature shows that Gen X students value time and have little regard for wasted time or non-relevant information (Delahoyde, 2009; Johnson & Romanello, 2005).

Participating in Group Work

The sixth statistically significant finding between Gen XY and Gen Z was participating in group assignments with peers during class time ($p = .018$). The students in Gen XY (71.3%) and Gen Z (52.9%) expressed that they did not prefer to work with peers in groups during class.

Perhaps these findings confirm what the literature states about students thinking they learn more from lecture, when in actuality, they scored higher on tests following active learning sessions.

(Deslauriers et al., 2019)

Learning for Learning Sake

The seventh statistically significant finding between Gen XY and Gen Z was learning just for learning sake ($p = .049$). The students in Gen XY (75.6%) indicated a higher preference for the importance of learning than the students in Gen Z (60.9%). The results of this variable are similar to Kitko (2011), who found statistically significant findings between Gen X ($M = 2.91$, $SD = 0.668$) and Gen Y ($M = 2.72$, $SD = 0.899$), with their preference for learning just for the sake of learning. Similarly, Delahoyde (2009) found that the students from Gen X students also ranked learning just for learning sake higher than the students from Gen Y. These results support the literature's discussion of adult learners' desire for lifelong learning and to know why they are learning what they are learning (Knowles, 1984).

Specific Aim III

Specific Aim III was to compare the generational differences of teaching methods nursing faculty use most frequently in undergraduate nursing programs. **H₁**. There are statistically significant differences in the teaching methods that nursing faculty use most frequently in the classroom based on the generational cohort in which they belong. **H₀**. There are no statistically significant differences in the teaching methods that nursing faculty use most frequently in the classroom based on the generational cohort in which they belong. There was one significant finding in the teaching methods used most often in the classroom, therefore, the null hypothesis was rejected.

Although the results of the study only found one significant difference, the data found specific teaching methods used more often than others by faculty in the classroom. The results of the first 23 questions on the survey revealed that encouraging classroom interaction among students and faculty, was the teaching method used most often in the classroom; followed by the use of visual aids when teaching new concepts; and encouraging students to participate in class discussions. The faculty teaching methods used least often in the classroom were: teaching a web-based course and encouraging students to wait until after class to read the assignment. The results of the last seven questions regarding classroom environment indicated the importance of communicating to the students the value of learning new concepts, as well as knowing each student by their name.

The second part of the faculty survey allowed the nursing faculty to rank the top five teaching methods that they use most often in the classroom. The findings identified the exact same result for the use of case studies and lecture as the teaching method used most often in the classroom. The Baby Boomer faculty indicated a higher preference for the use of case studies, whereas the Gen XY faculty expressed a higher preference for the use of lectures in the classroom. These results add to the current literature which identified lecture as being the faculty teaching method used most often in the classroom (Delahoyde, 2009; Felder & Silverman, 1988; Kitko, 2011). Bradshaw and Lowenstein (2014) also support these results of lecture being one of the faculty teaching methods used most often in the nursing classroom.

Specific Aim IV

Specific Aim IV was to compare the relationship of undergraduate nursing students in different generational cohorts learning style preferences and preferred teaching methods used in the classroom to the actual teaching methods used by faculty. **H₁**. There are statistically

significant differences in the a) learning style preferences and preferred teaching methods, and b) students' preferred faculty teaching methods to the actual teaching methods used by faculty. H_0 . There are no statistically significant differences in the a) learning style preferences and preferred teaching methods, and b) students' preferred faculty teaching methods to the actual teaching methods used by faculty. There were significant findings in the students' learning style preferences and teaching methods; and with the students' preferred faculty teaching methods to the actual teaching methods used by faculty; therefore, the null hypothesis was rejected.

There is ongoing debate whether faculty should use teaching methods in the classroom that match the students' preferences and their learning style. Based on the results from the learning style survey, the student and faculty teaching methods survey were compared to analyze the data for this specific aim.

Initially, the learning styles preferences of the students were examined. The correlation results between the learning style preferences and preferred faculty teaching methods found statistically significant findings at $p < .05$ for the student participants as a whole. There were eight weak, but significant correlations between the *active/reflective* learning styles and preferred teaching methods. The *active* learner indicated a preference for activities with technology; games; group activities; group discussion; and hands on activities as teaching method preferences. Whereas, the *reflective* learner indicated a preference for handouts, lecture, and worksheets. The *sensing* learner indicated a preference for lecture, and the *intuitive* learner was more likely to prefer the use of diagramming to learn. For the *visual/verbal* learners, diagramming, hands on activities, and the use of visual aids were preferred by the *visual* learners, while the *verbal* learner preferred lecture. There were no significant findings with the *sequential/global* learner and preferred teaching methods.

With regards to generational differences, statistically significant correlations were found for the Gen XY students learning style preferences and their preferred faculty teaching methods. The Gen XY *active* learner indicated a preference for group discussions and hands on activities for teaching methods in the classroom, whereas the *reflective* students showed a preference for using handouts and worksheets. There were no significant findings identified between the *sensing/intuitive* learning styles and preferred teaching methods. The Gen XY *visual* learner expressed a desire to use diagramming and visual aids as preferred teaching methods, while the Gen XY *verbal* learners preferred storytelling. For Gen XY *sequential/global* learners, the only significant finding was for Gen XY *sequential* learners who identified their preferred teaching style as activities with technology.

Gen Z had some similar results as Gen XY. For Gen Z, there were eight statistically significant correlations identified between the learning style preferences and preferred faculty teaching methods. The Gen Z *active* learner indicated a preference for using games, group activities, and group discussions for classroom learning, while Gen Z *reflective* learners preferred the use of handouts and lecture. For the *sensing/intuitive* Gen Z learners, the only significant finding was for the Gen Z *intuitive* learners who preferred the faculty diagramming while teaching. For the Gen Z *visual/verbal* learners, Gen Z *visual* learners preferred the use of hands on activities, while Gen Z *verbal* learners preferred lecture. There were no significant findings with the *sequential/global* learning styles and preferred teaching methods.

Although there were significant findings in Gen XY and in Gen Z, there were two teaching method preferences that were significant for both Gen XY and Gen Z, and that was the teaching methods of group discussions and the use of handouts.

Next, the relationship between the student and faculty participants teaching method preferences in the classroom were compared. Students indicated a preference for teaching methods they believe helped them learn, and the faculty chose the teaching methods they used most frequently in the classroom. The students' result revealed the following five teaching methods: hands on activities; the use of visual aids; lecture; games; and storytelling. The faculty results indicated the use of case studies; lectures; visual aids; group discussions; and group activities as the teaching methods they used most often in the classroom. From the students' top five preferred teaching methods, and the top five teaching methods used by faculty in the classroom, there was an agreement on the use of lecture and visual aids.

The Chi-square for independence test was used to look at the individual teaching method variables that were identified by both the student and faculty participants. One statistically significant finding was found from the preferred teaching methods for students in both Gen XY and Gen Z, and that was storytelling, $\chi^2 (1, n = 65) = 10.13, p < .001$; with Gen Z preferring the storytelling (54.9%) almost twice as much as Gen XY (29.9%). There were no significant findings for Baby Boomer and Gen XY faculty individual teaching method variables. Several significant findings were found for teaching methods between the Gen XY students and Gen XY faculty; these include hands on activities; games; case studies; handouts; and group activities.

Further analysis was conducted to eliminate any unobserved heterogeneity between the preferred teaching methods of Gen XY students and Gen XY faculty. Although there were several significant findings for teaching methods between the Gen XY students and Gen XY faculty, none were statistically significant. Additionally, both students and faculty ranked the use of visual aids as their third preferred teaching method to be used in the classroom.

Broadly speaking, both groups highly ranked lecture highly; visual aids were ranked number three in both groups; hands on activities for the students were ranked number one, although faculty ranked it ninth. Handouts were ranked number five for students and number ten for faculty. Diagramming and worksheets were not preferred by either group. Students ranked group activities last, while faculty ranked them fourth. Students ranked the use of case studies number seven, while faculty ranked them number two. While there are some areas of agreement, there are notable areas of disagreement.

Limitations of the Study

There were several limitations of this study. First, recruitment of survey participants was challenging during the COVID-19 global pandemic. Not only did the pandemic delay distribution of the online survey, but it also reduced the number of survey participants. The survey was distributed at the end of the academic year when students were taking final exams, or who were already on summer recess. The pandemic also shifted participation recruitment from a national, to a regional sample of undergraduate Diploma, ADN, and BSN nursing students and nursing faculty.

Second, a contributing factor to the low sample size resulted from having to rely on almost 500 different individuals to distribute the online survey to nursing students in their respective programs; which could have also contributed to the extremely small number of participants, especially with the male participants ($n = 17$). Third, due to the time restraint of the study, a test-retest was not completed. Regardless, the ability to utilize the same participants for the retest would have been extremely difficult to accomplish for this research study design.

Fourth, the students had 116 items on three separate tools to complete. Although the average time to complete the entire survey was less than 13 minutes; 26% of the students in Gen

Z exited the survey after completing the second tool, as compared to 16% of the students in Gen XY. Finally, the study was potentially limited by the wording of the questions related to preferred teaching methods. The terminology used to describe the teaching methods on the survey tool are outdated. For example, the term web-based course does not specify if it is an asynchronous, synchronous or hybrid delivery method. Another example would be the vagueness of the use of storytelling.

Implications for Nursing Education

Although there were few statistically significant findings, the results of this research study provide several implications for nursing education. First, the findings from this study adds new knowledge to the increasing body of nursing education literature especially regarding information on Gen Z. The results afford nursing faculty the opportunity to expand their knowledge regarding the generational differences of undergraduate nursing students learning styles, in addition to the teaching methods that they indicate help them learn best.

Second, the results of the study offer support for Knowle's theory of andragogy that purports adult learners tend to be more self-direct, internally motivated, and are ready to learn. The results of this study identified hands on activities and the use of visual aids to be the most preferred teaching methods for undergraduate nursing students; as well as 95% of the students wanting to know the "why" behind what they were learning. These results support the assumptions of Knowles's theory. Understanding the learning preferences of nursing students can help guide nursing faculty to engage students in practical, reality-based educational activities that will help bridge the gap between theory and practice.

Third, this study provides a strong support for nursing faculty to incorporate the NLN's eight core competencies into curriculum design. To ensure the individual learning styles of

nursing students across generations are incorporated into the effective, and innovative learning environments; nursing faculty are encouraged to use a variety of evidenced-based teaching modalities in the classroom.

Recommendations for Future Research

There were several recommendations for future research. First, since this study focused on survey participants from the Southeast Region, further research is needed for each educational pathway across all regions on a national, as well as international level. Second, another recommendation would be to repeat the study using either qualitative and/or a mixed-method design to gain a better understanding of why students affirm their preference for specific teaching methods. Third, future research should expound on the effectiveness of teaching methods, not merely the teaching method preference or the teaching methods most frequently used in the classroom. Fourth, when exploring generational differences in undergraduate nursing students, future research should include the micro-generations, since few studies have investigated these generational cohorts.

Summary

Today's nursing faculty are responsible for creating learning environments that are inclusive of students from four, diverse generational cohorts, spanning six decades who are enrolled in multiple nursing educational pathways. Being one of the first studies to explore the preferred teaching method preferences of undergraduate nursing students from Gen Z, these results provide new information for nursing educators to utilize in various academic settings; which can help bridge the gap in literature between theory and practice.

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APPENDICES

Appendix A: Felder's Learning Style Inventory

INDEX OF LEARNING STYLES*

Richard M. Felder and Barbara A. Soloman

Directions: Enter your answers to every question on the ILS scoring sheet. Please choose only one answer for each question. If both “a” and “b” seem to apply to you, choose the one that applies more frequently.

1. I understand something better after I
 - a. try it out.
 - b. think it through.
2. I would rather be considered
 - a. realistic.
 - b. innovative.
3. When I think about what I did yesterday, I am most likely to get
 - a. a picture.
 - b. words.
4. I tend to
 - a. understand details of a subject but may be fuzzy about its overall structure.
 - b. understand the overall structure but may be fuzzy about details.
5. When I am learning something new, it helps me to
 - a. talk about it.
 - b. think about it.
6. If I were a teacher, I would rather teach a course
 - a. that deals with facts and real-life situations.
 - b. that deals with ideas and theories.
7. I prefer to get new information in
 - a. pictures, diagrams, graphs, or maps.
 - b. written directions or verbal information.
8. Once I understand
 - a. all the parts, I understand the whole thing.
 - b. the whole thing, I see how the parts fit.
9. In a study group working on difficult material, I am more likely to
 - a. jump in and contribute ideas.
 - b. sit back and listen.
10. I find it easier
 - a. to learn facts.
 - b. to learn concepts.
11. In a book with lots of pictures and charts, I am likely to
 - a. look over the pictures and charts carefully.
 - b. focus on the written text.
12. When I solve math problems
 - a. I usually work my way to the solutions one step at a time.
 - b. I often just see the solutions but then have to struggle to figure out the steps to get to them.
13. In classes I have taken
 - a. I have usually gotten to know many of the students.
 - b. I have rarely gotten to know many of the students.

14. In reading nonfiction, I prefer
 - a. something that teaches me new facts or tells me how to do something.
 - b. something that gives me new ideas to think about.
15. I like teachers
 - a. who put a lot of diagrams on the board.
 - b. who spend a lot of time explaining.
16. When I'm analyzing a story or a novel
 - a. I think of the incidents and try to put them together to figure out the themes.
 - b. I just know what the themes are when I finish reading and then I have to go back and find the incidents that demonstrate them.
17. When I start a homework problem, I am more likely to
 - a. start working on the solution immediately.
 - b. try to fully understand the problem first.
18. I prefer the idea of
 - a. certainty.
 - b. theory.
19. I remember best
 - a. what I see.
 - b. what I hear.
20. It is more important to me that an instructor
 - a. lay out the material in clear sequential steps.
 - b. give me an overall picture and relate the material to other subjects.
21. I prefer to study
 - a. in a study group.
 - b. alone.
22. I am more likely to be considered
 - a. careful about the details of my work.
 - b. creative about how to do my work.
23. When I get directions to a new place, I prefer
 - a. a map.
 - b. written instructions.
24. I learn
 - a. at a fairly regular pace. If I study hard, I'll "get it."
 - b. in fits and starts. I'll be totally confused and then suddenly it all "clicks."
25. I would rather first
 - a. try things out.
 - b. think about how I'm going to do it.
26. When I am reading for enjoyment, I like writers to
 - a. clearly say what they mean.
 - b. say things in creative, interesting ways.
27. When I see a diagram or sketch in class, I am most likely to remember
 - a. the picture.
 - b. what the instructor said about it.
28. When considering a body of information, I am more likely to
 - a. focus on details and miss the big picture.
 - b. try to understand the big picture before getting into the details.
29. I more easily remember
 - a. something I have done.
 - b. something I have thought a lot about.

30. When I have to perform a task, I prefer to
 - a. master one way of doing it.
 - b. come up with new ways of doing it.
31. When someone is showing me data, I prefer
 - a. charts or graphs.
 - b. text summarizing the results.
32. When writing a paper, I am more likely to
 - a. work on (think about or write) the beginning of the paper and progress forward.
 - b. work on (think about or write) different parts of the paper and then order them.
33. When I have to work on a group project, I first want to
 - a. have “group brainstorming” where everyone contributes ideas.
 - b. brainstorm individually and then come together as a group to compare ideas.
34. I consider it higher praise to call someone
 - a. sensible.
 - b. imaginative.
35. When I meet people at a party, I am more likely to remember
 - a. what they looked like.
 - b. what they said about themselves.
36. When I am learning a new subject, I prefer to
 - a. stay focused on that subject, learning as much about it as I can.
 - b. try to make connections between that subject and related subjects.
37. I am more likely to be considered
 - a. outgoing.
 - b. reserved.
38. I prefer courses that emphasize
 - a. concrete material (facts, data).
 - b. abstract material (concepts, theories).
39. For entertainment, I would rather
 - a. watch television.
 - b. read a book.
40. Some teachers start their lectures with an outline of what they will cover. Such outlines are
 - a. somewhat helpful to me.
 - b. very helpful to me.
41. The idea of doing homework in groups, with one grade for the entire group,
 - a. appeals to me.
 - b. does not appeal to me.
42. When I am doing long calculations,
 - a. I tend to repeat all my steps and check my work carefully.
 - b. I find checking my work tiresome and have to force myself to do it.
43. I tend to picture places I have been
 - a. easily and fairly accurately.
 - b. with difficulty and without much detail.
44. When solving problems in a group, I would be more likely to
 - a. think of the steps in the solution process.
 - b. think of possible consequences or applications of the solution in a wide range of areas.

Appendix B: Walker/Delahoyde Teaching Methods Survey

An adaptation of the Walker Teaching Methods Survey (WTMS), 2004, this survey is designed to determine student preferences for teaching methodologies in the classroom.

Please answer the following questions by choosing the most appropriate response.

1. I prefer to listen to my professor lecture (speak) on a topic.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
2. I prefer to apply skills in the classroom that were covered in the reading assignment.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
3. I prefer to work in groups with my peers versus individually on an assignment.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
4. I prefer a case study in order to apply new concepts learned.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
5. I prefer visual aids when learning new concepts (video, pictures, diagrams, etc.).
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
6. I prefer to work individually on an assignment versus in a group with my peers.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
7. I prefer to listen versus participate during class discussions.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
8. I prefer to have the professor draw out new concepts on the board so I can visualize them.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
9. I prefer a web-based course of study without class meetings.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
10. I prefer to hear stories of actual events and experiences from my professor.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

11. I prefer to read the assignment prior to class.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
12. I prefer handouts to follow along while I listen to my professor lecture (speak).
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
13. I prefer to have classroom interaction with my peers and my professors.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
14. I prefer to have a combination of web-based study and classroom study.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
15. I read the assignment prior to class and then hear the professor discuss key points and share his/her experience on the topic.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
16. I prefer activities that involve technology during class to learn new concepts.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
17. I prefer to listen to my professor lecture rather than work in groups with my peers on an in-class assignment.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
18. I prefer to actively participate in class discussion with my professor and peers.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
19. I prefer to play games to learn new material (Jeopardy, etc.).
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
20. I prefer to read the assignment after class versus prior to class.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
21. I prefer to have a lot of classroom structure and guidance from my professor.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable

22. I prefer to take my own notes during class versus having handouts from the professor.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

23. I prefer to learn with a variety of teaching methods, such as lecture, group work, case studies, diagramming, etc.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

24. It is important for my professor to know my name.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

25. It is important to have all papers and course work count toward a grade.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

26. It is important to know why I am learning new material.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

27. It is important to me to participate in group assignments with my peers during class time.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

28. I expect my professor to tell me what I need to know.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

29. I like learning just for learning sake.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

30. The grade I receive is all that really matters.

| | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

Check the top five teaching methods that you prefer the most to help you learn:

- lecture
- case studies
- storytelling
- hands on activities
- activities with technology
- worksheets
- handouts
- visual aids (video, pictures, diagrams, etc.)
- group activities (presentations, working with peers to accomplish an activity)
- diagramming (concept maps, Venn diagrams, drawings, etc.)
- games (Jeopardy, etc.)
- group discussion (participating in classroom discussion on a topic)
- other – please specify _____

End of Survey

Thank you very much for participating!

Appendix C: Walker's Teaching Methods Survey

This survey is designed to determine your preferences in teaching methodologies.

Please answer the following questions by choosing the most appropriate response.

1. I prefer to hear an expert lecture on subjects that I am not familiar with.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
2. I prefer to hear a lecture on subject matter that I already have some knowledge about.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
3. I enjoy practicing skills or hands on material that I have learned.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
4. I do not need to practice skills that I have learned about in lecture.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
5. I prefer group work to lecture.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
6. I prefer lecture to group work.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
7. It is important to me to perform group assignments outside of class time.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
8. It is important to me to perform group work inside of class time.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
9. I am able to read new material and gain all that I need to know.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable
10. I am able to read material and then prefer to hear an expert share their opinion or experience on the subject.
1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

11. I am a self-directed learner and require little motivation to study.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
12. I read well and comprehend material easily.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
13. I struggle to read and comprehend material.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
14. I prefer a case study in order to learn.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
15. I do not learn from case studies.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
16. I prefer a totally web-based course of study without class meetings.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
17. I need to have classroom interaction with peers and faculty.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
18. I prefer a combination of web-based study along with classroom study.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
19. I learn from hearing stories of actual events from faculty.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
20. In the classroom, I prefer handouts to follow along with the lecture.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
21. In the classroom, I prefer faculty lecture from the outline posted on the overhead or visual screen.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable

22. It is important for faculty to learn my name.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
23. If material is difficult to understand, I prefer to have lecture along with other teaching strategies, such as group work, or case study.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
24. It is important to have a grade attached to papers, case studies, and other outside work.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
25. I prefer to have a great deal of classroom structure and guidance from faculty.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
26. It is important to know the bottom-line or end-result before I learn.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
27. It is important to know why I am learning material.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
28. I trust faculty to tell me what I need to know.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
29. I like learning just for learning sake.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |
30. The grade I receive is all that really matters.
- | | | | | |
|------------|--------------|------------|--------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not at all | Occasionally | Frequently | Always | Not applicable |

Check the top five teaching methods that you prefer the most to help you learn:

- lecture
- case studies
- storytelling
- hands on activities
- activities with technology
- worksheets
- handouts
- visual aids (video, pictures, diagrams, etc.)
- group activities (presentations, working with peers to accomplish an activity)
- diagramming (concept maps, Venn diagrams, drawings, etc.)
- games (Jeopardy, etc.)
- group discussion (participating in classroom discussion on a topic)
- other – please specify _____

Appendix D: Delahoyde Teaching Methods Faculty Survey

Questions adapted from the Walker/Delahoyde Teaching Methods Survey (2008) and the Walker Teaching Methods Survey (2004), this survey is designed to determine faculty preferences for teaching methodologies in the classroom.

Please answer the following questions by choosing the most appropriate response.

1. I lecture (speak) on topics while my students listen, take notes, and answer questions.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

2. I have students apply skills in the classroom that were covered in the reading assignment.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

3. I have students work in groups with peers on an assignment.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

4. I use case studies to help students apply new concepts learned.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

5. I use visual aids when teaching new concepts (video, pictures, diagrams, etc.).

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

6. I have students work individually on an assignment.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

7. I encourage all students to participate in class discussions.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

8. I draw on the board to help students visualize new concepts.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

9. I teach a web-based course of study without class meetings.

1 2 3 4 5
Not at all Occasionally Frequently Always Not applicable

10. I tell personal stories of my experience on the topic I am teaching.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
11. I have students complete an assignment over the reading prior to class.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
12. I provide handouts for students to take notes on while listening to me lecture (speak).
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
13. I encourage classroom interaction among students and myself as the professor.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
14. I use a combination of web-based study and classroom study.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
15. I expect students to read the assignment prior to coming to class where I discuss key points and share my experience on a topic.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
16. I provide activities that involve the use of technology during class to teach new concepts.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
17. I spend more time lecturing than having students work in groups with their peers.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
18. I facilitate active participation of all students in classroom discussion.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
19. I use games to teach and/or review new material (Jeopardy, etc.).
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
20. I expect students to wait and read the assignment until after class has been held.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable

21. I provide a lot of classroom structure and guidance for students.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
22. I expect students to take their own notes during class versus providing handouts.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
23. I use a variety of teaching methods in the classroom, such as lecture, group work, case studies, diagramming, etc.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
24. It is important for me to know each of my students' names.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
25. It is important to have all papers and course work count toward a grade.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
26. It is important to discuss with my students why they need to learn each new concept.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
27. It is important to have students participate in-group assignments with their peers during class time.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
28. I tell students what they need to know.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
29. I emphasize learning just for learning sake.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable
30. I emphasize the grade each student receives is all that really matters.
 1 2 3 4 5
 Not at all Occasionally Frequently Always Not applicable

Check the five teaching methods you utilize the most often in your classroom:

- lecture
- case studies
- storytelling
- hands on activities
- activities with technology
- worksheets
- handouts
- visual aids (video, pictures, diagrams, etc.)
- group activities (presentations, working with peers to accomplish an activity)
- diagramming (concept maps, Venn diagrams, drawing, etc.)
- games (Jeopardy, etc.)
- group discussion (participating in classroom discussion on a topic)
- other – please specify _____

End of survey

Thank you very much for participating!

Appendix E: Demographic Data

Student Demographics:

1. In what year were you born? (enter 4-digit birth year; for example, 1976)
2. What is your gender? Female Male Other (specify)
3. What race/ethnicity best describes you? (Please choose only one.)
 - Asian or Asian American American Indian or Alaska Native
 - Black or African American Hispanic or /Latino
 - Native Hawaiian or other Pacific Islander
 - White or Caucasian Another race
4. What is the ZIP code where you live? (enter 5-digit ZIP code; for example, 94305)
5. In what state is your nursing school located?
6. What type of nursing program are you enrolled in? Diploma
 - Associate Degree in Nursing (ADN) Bachelor's Degree in Nursing (BSN)
7. The number of nursing courses completed.
8. Other degree(s).

Faculty Demographics:

1. In what year were you born? (enter 4-digit birth year; for example, 1976)
2. What is your gender? Female Male Other (specify)
3. What race/ethnicity best describes you? (Please choose only one.)
 - Asian or Asian American American Indian or Alaska Native
 - Black or African American Hispanic or /Latino
 - Native Hawaiian or other Pacific Islander
 - White or Caucasian Another race
4. What is the ZIP code where you live? (enter 5-digit ZIP code; for example, 94305)
5. In what state do you teach nursing?
6. What type of nursing program do you teach? Diploma
 - Associate Degree in Nursing (ADN) Bachelor's Degree in Nursing (BSN)
7. The number of years you have taught nursing.
8. Highest Degree Obtained: Bachelors Masters DNP PhD Other

Appendix F: Permission to Use Index of Learning Study

Letter Seeking Permission to Use Survey/Questionnaire Tool

2/19/2020

Dr. Richard M. Felder
North Carolina State University
College of Engineering
Page Hall
Raleigh, NC 27695-7901

Dear Dr. Felder:

I am a doctoral student from East Tennessee State University (ETSU) writing my dissertation titled *A Study of Undergraduate Nursing Students Differences in Learning Preferences and Students' Preferred Teaching Methods Compared to the Actual Methods Used by Faculty* under the direction of my dissertation committee chaired by Dr. Lisa Haddad, who can be reached at haddadl@etsu.edu.

I would like your permission to use Index of Learning Styles (ILS) Learning Style Questionnaire in my research study. I would like to use your survey under the following conditions:

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

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail: simpsonlc@etsu.edu

Sincerely,

Cathy Simpson

L. Cathy Simpson, MSN, RN
Doctoral Candidate

From: Richard Felder <rmfelder@mindspring.com>
Sent: Wednesday, February 19, 2020 7:29 PM
To: Simpson, Linda <SIMPSONLC@mail.etsu.edu>
Subject: [EXTERNAL] Re: Request to use the Index of Learning Styles (ILS) Learning Style Questionnaire

Dear Ms. Simpson,

You are welcome to use the Index of Learning Styles in your dissertation research. How are you planning to use Survey Monkey to administer it?

Sincerely,

Richard M. Felder
Vice President, Education Designs, Inc.
Hoechst Celanese Professor Emeritus of Chemical Engineering, North Carolina State University
<https://www.engr.ncsu.edu/stem-resources/legacy-site/>
Coauthor of Teaching and Learning STEM: A Practical Guide, <https://educationdesignsinc.com/book/>

Appendix G: Permission to Use WDTMS and DTMS

Permission to Use Survey/Questionnaire Tool

Nov. 21, 2019

Name: Dr. Theresa Delahoyde
Institution: Bryan College of Health Science
Department: Nursing
Address: 1535 S. 52nd St.
City/State/Zip: Lincoln, NE 68506

Dear Dr. Delahoyde:

I am a doctoral student from East Tennessee State University (ETSU) writing my dissertation titled *Generational Differences in Undergraduate Nursing Students' Preferred Teaching Methods, Learning Preferences, and the Teaching Methods Used by Faculty* under the direction of my dissertation committee chaired by Dr. Lisa Haddad, who can be reached at haddadl@etsu.edu.

I would like your permission to use both the Walker/Delahoyde Teaching Methods Survey (adapted from the Walker Teaching Methods Survey (WTMS), 2004) and the Delahoyde Teaching Methods Faculty Survey (adapted from the Walker/Delahoyde Teaching Methods Survey, 2008 and the Walker Teaching Methods Survey (WTMS), 2004) instruments in my research study. I would like to use, print, or email your survey under the following conditions:

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

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail: simpsonlc@etsu.edu

Sincerely,

Cathy Simpson

L. Cathy Simpson, MSN, RN
Doctoral Candidate

Theresa Delahoyde <Theresa.Delahoyde@bryanhealth.org>

Wed 11/27/2019 12:29 PM

To: Simpson, Linda



Dear Ms. Simpson,

Thank you for your email. I grant you permission to use, print, or email my surveys titled "Walker/Delahoyde Teaching Methods Survey" and the "Delahoyde Teaching Methods Faculty Survey" for your dissertation work. I am in agreement with the terms you identified in your letter. I would also request that Dr. Walker and I be given credit for our tools and cited in your dissertation work.

I wish you the very best and look forward to hearing the results of your study.

Happy Thanksgiving!

Dr. Theresa Delahoyde

Appendix H: Permission to Use WTMS

Permission to Use Survey/Questionnaire Tool

Nov. 21, 2019

Name: Dr. Jean T. Walker
Institution: The University of Mississippi Medical Center, School of Nursing
Department: Nursing
Address: 2500 North State St.
City/State/Zip: Jackson, MS 39216

Dear Dr. Walker:

I am a doctoral student from East Tennessee State University (ETSU) writing my dissertation titled *Generational Differences in Undergraduate Nursing Students' Preferred Teaching Methods, Learning Preferences, and the Teaching Methods Used by Faculty* under the direction of my dissertation committee chaired by Dr. Lisa Haddad, who can be reached at haddadl@etsu.edu.

I would like your permission to use both the Walker/Delahoide Teaching Methods Survey (adapted from the Walker Teaching Methods Survey (WTMS), 2004) and the Delahoide Teaching Methods Faculty Survey (adapted from the Walker/Delahoide Teaching Methods Survey, 2008) and the Walker Teaching Methods Survey (WTMS), 2004) instruments in my research study. I would like to use, print, or email your survey under the following conditions:

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

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail: simpsonlc@etsu.edu

Sincerely,

Cathy Simpson

L. Cathy Simpson, MSN, RN
Doctoral Candidate

Jean Walker <jwalker@umc.edu>

Wed 11/27/2019 7:54 AM

To: Simpson, Linda



Hello Cathy, What a delight to hear from you and that you are moving forward with your research. Exciting times for you! Yes, you have my permission to use my instrument in your research and I look forward to hearing about your results. Happy Thanksgiving~jw

Appendix I: Sample Recruitment Letter

RECRUITMENT LETTER FOR DEANS/DIRECTORS

Hello, my name is L. Cathy Simpson, and I am a PhD in Nursing student at East Tennessee State University (ETSU). I am doing a research study that is comparing undergraduate nursing students' differences in learning preferences and the students' preferred teaching methods to the actual teaching methods used by faculty. I am looking for **students** and **faculty** who are over 18 years of age who are enrolled in, or teach in a Diploma, ADN or BSN nursing program to participate. The study involves completing an online survey which should only take about 15-20 minutes.

My initial plan was to use the National Student Nurses' Association (NSNA) membership database to recruit my study participants. However, due to the COVID-19 crisis, that option has been suspended indefinitely. In order to continue with my study, I have changed my sample population to nursing students and nursing faculty enrolled in, **or** teach in Diploma, ADN or BSN nursing programs in the Southeastern U.S.

In order to complete my research study in a timely manner, I would greatly appreciate it if you would forward the attached email to nursing students and nursing faculty in your Diploma, ADN, or BSN program.

Thank you again for your assistance. If you have any questions, please feel free to contact me at (ETSU e-mail address) or (cell phone number). I would be happy to answer any questions that you might have.

Sincerely,

L. Cathy Simpson, PhD(c), RN

Appendix J: Recruitment Letter for Participants

RECRUITMENT LETTER FOR PARTICIPANTS

Hello, my name is L. Cathy Simpson, and I am a PhD in Nursing student at East Tennessee State University (ETSU). I am doing a study that is comparing undergraduate nursing students' differences in learning preferences and the students' preferred teaching methods to the actual teaching methods used by faculty. I am looking for people who are over 18 years of age who are enrolled in, or teach in a Diploma, ADN or BSN nursing program to participate.

The study involves completing a survey which should take about 15-20 minutes of your time. The survey will take place online using the electronic device of your choice and participation is completely voluntary. Thank you for considering this invitation. If you have any questions, please contact me at my (ETSU e-mail address) or (cell phone number). I would be happy to answer any questions that you might have.

If you would like to learn more about the survey or participate in the research, click the link below to go to the informed consent page:

[Undergraduate Nursing Students Preferred Learning Styles and Teaching Methods](#)

Sincerely,

L. Cathy Simpson, PhD(c), RN

VITA

L. CATHY SIMPSON

- Education: Ph. D. Nursing, East Tennessee State University,
Johnson City, Tennessee, 2020
M. S. Nursing, Indiana Wesleyan University,
Marion, Indiana, 2001
B. S. Nursing, University of Alabama at Birmingham,
Birmingham, Alabama, 1990
B. A. Christian Education, Asbury College,
Wilmore, Kentucky, 1987
- Professional Experience: Nursing Instructor, Calhoun Community College,
Tanner, Alabama, 2018 – present
Associate Professor of Nursing, Motlow State Community
College, Smyrna, Tennessee, 2008-2018
Registered Nurse, Case Manager, StoneCrest Medical Center,
Smyrna, Tennessee, 2005-2012
Perinatal Nurse Manager, Nashville General Hospital,
Nashville, Tennessee, 2004-2005
Instructor of Nursing, Cumberland University,
Lebanon, Tennessee, 2002–2004
Registered Nurse, 1990-2001
- Honors and Awards: National Institute for Staff and Organizational Development
(NISOD) Excellence Award, 2013
Faculty Excellence Award, Motlow State Community College, 2012