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The relationship between learning styles and nursing students' satisfaction with online education

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THE RELATIONSHIP BETWEEN LEARNING STYLES AND NURSING STUDENTS' SATISFACTION WITH ONLINE EDUCATION

BY

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THESIS

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ABSTRACT

THE RELATIONSHIP BETWEEN LEARNING STYLES AND NURSING STUDENTS' SATISFACTION WITH ONLINE EDUCATION

By

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University of New Hampshire, May, 2010

A descriptive correlation study was conducted to investigate the relationship between nursing students' satisfaction with online education and their preferred learning style. Eighty-nine nursing students from a Northeast university completed the Visual (V), Auditory (A), Read/Write (R), and Kinesthetic (K), (VARK) learning style inventory tool, Online Course Satisfaction Survey (OCSS) and demographic questionnaire. Findings revealed an overall 67% satisfaction rate with online education but dissatisfaction in the areas of communication and interaction. The study showed the majority of nursing students possess the combination of all four learning preferences, VARK. No statistical significant relationship between a student's learning style and satisfaction with online education was identified, but a relationship between course satisfaction and instructor satisfaction was found. Findings of this study have the potential to influence online nursing curriculum by providing nurse educators with insight into students' learning styles and the different attributes of satisfaction with online education.

CHAPTER I

PROBLEM AND SIGNIFICANCE

The nursing profession is continuously changing in order to meet the demands of the healthcare industry. One of the largest challenges posed to the nursing profession is the continuously growing nursing shortage. There are currently 135,000 vacant nursing positions in the United States making that an 8.1% vacancy rate (Burea of Labor Statistics, 2008). That is a staggering number of nurses when one takes into consideration the continuous advancement of technology within healthcare and the progressively growing numbers of the aging population. In order to meet the demands of the nursing shortage nursing schools have begun offering online education which tends to be more flexible and convenient for adult students that are returning to school (Andrusyszyn, Cragg, & Humbert, 2001; DeBourgh, 2003; Fearing & Riley, 2005; Kenny, 2002).

Online education can be offered completely through the computer or in a hybrid format. The hybrid format incorporates classroom sessions and online learning activities. Hybrid classes allow for the convenience of online education without losing the face-to-face contact (Salamonson & Lantz, 2004). Online education can be ideal for Associate Degree in Nursing (ADN) nurses returning to school for their bachelor's degree and also for Bachelor of Science in Nursing (BSN) nurses pursuing a graduate degree. Another positive aspect of online education is that it enables nurses who live in rural areas to further their education (Britt, 2006). Rural areas of the United States are often in need of nurses from all backgrounds. Enabling nurses in rural areas to obtain a graduate degree

will aide in the development of both nursing education and staff nursing on the local level. The quality of nurse graduates is as important as the quantity; therefore it is essential that online nursing education provide nursing students, across degree programs with an excellent education. One measurement of a quality education is student satisfaction rate (Bolliger & Martindale, 2004; Donohue & Wong, 1997).

High student satisfaction is a direct indicator of motivation for academic achievement (Donohue & Wong, 1997). Motivation for academic achievement is vital if nursing students are going to succeed in nursing school. Nursing school is a very demanding venture for students to undertake, and it is in the best interest of the student and the university to promote student satisfaction. Student satisfaction motivates nursing students to be successful in the classroom, which in turn may inspire students' self-confidence (Donohue & Wong, 1997). Confidence and motivation are very important to cultivate in nursing students in hope that it will prepare them to be successful in graduating from nursing school and in their future profession.

The literature has shown the largest determining factor of student satisfaction is the instructor and the instruction (DeBourgh, 2003; Paechter, Maier, & Macher, 2010). The single largest responsibility of any nursing instructor is to present and relay information to students. Instructors have the power to greatly influence students' academic success. Teachers utilize their expertise and knowledge to stimulate students to learn and peak their interest (Paechter et al., 2010). This can be accomplished through a variety of different teaching strategies, which take into consideration student learning styles to help instructors individualize pedagogy, which in turn may enhance student satisfaction of the learning experience.

Effective instructors tailor educational activities to learning styles of their students. Learning styles are personal qualities that influence the way students interact with their learning environment, peers, and teachers (Alkhasawe, Mrayyan, Docherty, Alashram, & Yousef, 2008). Information that is delivered in a style that matches the students' learning style is more likely to be retained and understood on a deeper level (Bastable, 2008). Deep learning happens when students understand new information at the conceptual level rather than surface learning that only requires remembering facts and regurgitating them back (Wittmann-Price & Godshall, 2009). Discounting learning styles can lead to bored, unresponsive class participants, which will in turn effect grades and attendance rate, therefore leading to a loss in satisfaction (Alkhasaweh etal., 2008).

Knowledge of nursing students' learning styles is valuable when evaluating nursing students' satisfaction with online education. Since online learning requires independent student participation it is plausible to explore the relationship between nursing students' satisfaction with online education and learning styles. Unfortunately studies investigating nursing students' satisfaction with online education are scant (DeBourgh, 2003; Sit, Chung, Chow, & Wong, 2005). An even smaller amount of research has taken learning styles into consideration when studying nursing students' satisfaction with online education (Fearing & Riley, 2005). Researching the relationship between learning styles and nursing students' satisfaction with online education will give insight to nurse educators for future curriculum development.

Purpose

The purpose of this study was to explore the relationship between nursing students' preferred learning styles and satisfaction with online education. The variables of

interest within this study are the preferred learning style and the level of satisfaction with online education amongst BSN and Masters in the Science of Nursing (MSN) nursing students.

The study terms are described as follows:

1. online education, where student and instructor are separated by distance but communicate, collaborate and instruct online (Bolliger & Martindale, 2004)
2. hybrid course, use both online and traditional classroom teaching (Salamonson & Lantz, 2004)
3. learning styles are personal qualities that influence the way students interact with their learning environment, peers, and teachers (Alkhasawe, Mrayyan, Docherty, Alashram, & Yousef, 2008)
4. satisfaction with online education is "an essential link to student outcomes, with greater enjoyment associated with higher levels of student engagement, which in turn is associated with increased student learning" (Sahin & Shelley, 2008, p. 217).

The study aims are to:

1. describe the learning styles of a cohort of nurses in an online and hybrid course.
2. describe student satisfaction with online learning.
3. examine the difference in satisfaction with online learning by learning style typology.
4. test the following hypothesis: Learning styles are associated with satisfaction of online learning.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The student population that is entering nursing is becoming more diverse, encompassing a wide range of students who have just graduated from high school to established professionals who are returning to school (Meehan-Andrews, 2009). Each student comes to college with a unique set of educational needs. For example, the younger students recently graduating from high school generally require more guidance due to lack of experience in higher education. In contrast, adult students know how they learn best and what study techniques are most effective (Meehan-Andrews, 2009). This large diverse student population poses new challenges for nurse educators. It is essential that educators take into consideration the unique learning characteristics of their student audience. One such characteristic is student learning styles.

Learning styles can easily be assessed and educators should be inclined to change their instruction based upon knowledge of a student's learning style. By taking into consideration a student's learning style, the instructor is individualizing education which will facilitate a student's ability to reach maximum academic potential (Fleming, 2001; Fleming & Baume, 2006; Fleming & Mills, 1992).

Learning style identification is especially important when instructors will be teaching in the online venue. In online education instructors do not have the advantage of visual cues such as body language or facial expressions for guidance during lectures.

Instead they must find alternative forms of guidance to evaluate if online teaching strategies are effective. Assessment of learning styles will provide the instructor with information regarding how the student audience learns best, in turn guiding the instructor on which teaching strategies to utilize. Learning styles can easily be determined by having each student complete a learning style questionnaire. There are multiple different types of learning style inventory tools available to educators that can easily be utilized (Briggs-Myers & McCaulley, 1992; Fleming & Bonwell, 2006; Honey & Mumford, 2001; Kolb, 1984). Instructors can share their learning style findings with students. Fleming and Mills (1992) found that students' knowledge of their own learning style helped them to reach full academic potential.

Learning Styles

Learning styles indicate a particular way that students organize, experience, and retain new information that is being taught (An & Yoo, 2008). Learning styles are complex and multifactorial. According to Fleming (2001) learning styles can be categorized into four different groups depending upon the learning style model being used. The first category of personality characteristics identifies the difference between an extrovert and introvert. The second, information processing, relates to how new information is processed in the brain. The third category of social interaction consists of describing the students' interaction with their learning environment. Lastly is the student's instructional preference. For example some students learn best by listening while others learn best by visualizing new ideas. Learning styles are not stagnant and can change depending upon the student's learning environment (Fleming & Baume, 2006).

This diversity makes it necessary for instructors to assess students' learning styles at the beginning of every course.

Gaining insight into nursing students' learning styles is important when designing curriculum. Curriculum can be designed to complement students' learning style by utilizing teaching strategies that will promote understanding of course content (Bastable, 2008; Meehan-Andrews, 2009). Matching teaching strategies to a students' preferred learning style not only promotes understanding but information is more likely to be retained leading to a deeper level of understanding (Wittmann-Price & Godshall, 2009).

Expanding knowledge of nursing students' learning styles can also help teachers understand why it may be easier for one student to grasp a concept in comparison to another student who may be struggling to understand (Bastable, 2008). This is where it is helpful for both the student and the instructor to know the students' learning style. If a student informs the instructor they are having difficulty grasping a new concept being taught, the instructor can then refer to the student's preferred learning style when relaying information to them. Ideally this should aid the student in understanding new information (Bastable, 2008).

While it is important for instructors to take a students' learning style into consideration it is just as important for students to become an active participant in the education process (Fleming & Mills, 1992). By making nursing students aware of their own learning styles it will empower them to take responsibility for their education and reach their full academic potential (Fleming & Mills, 1992). Once students become aware of their preferred learning style they can begin to study in a manner that complements their learning style; this creates ownership and responsibility for their education (Fleming

& Mills, 1992). Fostering a sense of responsibility for their education is important especially in nursing. Nurses are expected to be lifelong learners throughout their careers. It is important for nurses to continue to learn new technology and theories that will help them deliver the best care to their patients. Establishing a healthy aptitude for new knowledge in college will only help produce better nurse graduates.

The literature shows that nursing students tend to be concrete, realistic, emotional learners (Ali, Hodson-Carlton, &Ryan, 2004; Andrusyszyn et al., 2001; Fearing & Riley, 2005; Fountain & Alfred, 2009; Meehan-Andrews, 2009). Concrete learners prefer to learn by focusing on tangible examples compared to theoretical concepts. An and Yoo (2008) utilized the Kolb Learning Style Inventory (LSI) tool (Kolb, 1984) to classify nursing students learning styles into four different learning styles, converger, diverger, assimilator, and accomidator. The majority of nursing students were found to be diverging learners who are best known for their sensitive and emotional qualities giving them the ability to understand people and recognize problems (An & Yoo, 2008). These findings seem plausible when considering that most nurses are drawn to the profession to help people. The nursing profession is composed of men and women that typically enjoy being sociable and interacting with people. Fountain and Alfred (2009) found, from the results of a university developed nurse entrance exam, that 77% of all nursing students were social learners. Social learners learn best through listening, networking, and interacting with others. As a result nursing instructors could incorporate teaching strategies that promote social interaction, which tends to be highly difficult in an online environment.

Two other studies evaluated nursing students' learning styles utilizing the Visual, Auditory, Read/Write, and Kinesthetic (VARK) learning preference tool developed by Fleming (2001) and Fleming & Baume (2006). The VARK Questionnaire determines learning preferences by evaluating how someone interacts with their learning environment and takes in new information from it. There are four different classifications of learning styles, which are visual, auditory, read/write and kinesthetic. Visual learners understand new information best when explain through charts, graphs and flow charts. The visual portion of a presentation is very important, such as the layout, heading, coloring, patterns and design. Aural learners understand information best when it is spoken or heard and excel when information is presented to them through discussion, oral feedback, oral presentations, classes, tutorials, and conversing with other students and the instructor. Read/write learners understand information best when it is written or read and have great respect for words and generally excel in the academia setting. Information should be presented via text, lists, books, manuals, and quotes. Lastly, the kinesthetic learner understands information best when it is connected to reality. Kinesthetic learners grasp information best during practice and simulation sessions. Most importantly, the connection to reality must be maintained for the kinesthetic learner to gain a full understanding of information (Fleming, 2001; Fleming & Baume, 2006; Fleming & Mills, 1992). It is possible for students to have more than one learning style preference according to VARK; these learners are referred to as multimodal. Fleming cites a total of 15 possible learning preference combinations (2001). Multimodal learners are thought to be even more challenging to teach than the single mode learner. The reason for this is that

educators must utilize teaching strategies that touch upon each learning style for the student to develop a true understanding of a concept (Fleming, 2001).

A study utilizing VARK was performed by Meehan-Andrews (2009), which investigated teaching mode and learning styles of 86, first year undergraduate nursing students enrolled in an anatomy and physiology course. A total of 13 different learning style combinations were found, which were classified into unimodal (54%), bimodal (20%), trimodal (10%) and quadmodal (16%). Unimodal, have one learning style; bimodal contain a combination of two learning styles; trimodal contain a combination of three learning styles; and quadmodial is VARK, all four learning styles. The majority of unimodal learners were kinesthetic (68 %), followed by read/write (17%), visual (11%) and aural (4%). Of the multimodal students 84% included the kinesthetic learning style.

A study by Fearing and Riley (2005) using the VARK tool explored 28, graduate nursing students' perceptions of online education in relation to preferred learning style. A total of 6 different learning combinations were found with the majority (46.4%) being kinesthetic. Other students were auditory (14.3%); auditory and kinesthetic (14.3%); visual and kinesthetic (14.3%); visual (7.1%); and visual and auditory (3.5%).

Nursing instructors should take into consideration that the majority of nursing students are emotional, social, concrete and kinesthetic learners while making lesson plans. One teaching strategy that has been discussed in the literature was the use of practical classes such as labs (Meehan-Andrews, 2009). Meehan-Andrews (2009) found that 85% of nursing students felt that practical classes were the most useful. More than 80% of students felt they developed good working habits and an increase in confidence

during practical sessions. This shows the importance of incorporating practical, hands on classes into nursing curriculum.

Andrusyszyn et al. (2001) utilized a questionnaire designed by study authors to investigate nursing students' learning preferences and found that nursing students preferred to learn in small groups, on their own, or by looking at the big picture rather than focusing on details. The preferred way of learning by observing and doing supports the previous literature findings that nursing students are apt to be kinesthetic learners. To educate kinesthetic learners, information should be presented in a manner that is going to complement their learning style, which may not be easily done in an online environment compared to a traditional classroom setting. Examples of online teaching strategies that have been utilized were student lead discussions; group projects; critical thinking activities; content presentations; question and answer session; and reflective journaling (DeBourgh, 2003).

It is even more important for instructors to utilize multimodal instructional design when teaching an online course due to the lack of social interaction. As reviewed earlier social interaction is a very important aspect to the nursing students learning experience. Therefore it is reasonable to ponder if nursing students are very satisfied with online education, and if a relationship exists between satisfaction with online education and their preferred learning styles.

Satisfaction with Online Education

Student satisfaction is crucial to learner success. Since online education is now prevalent in nursing education, student satisfaction with it must be reviewed. For example, Sit et al. (2005) found that 57% of nursing students were satisfied with online

education; while 33% of nursing students' were dissatisfied with online education. In addition, Fearing and Riley (2005) discovered nursing students' were more satisfied than dissatisfied with online education. A greater understanding of satisfaction with online education is essential.

Student satisfaction rate is a vital component of academic success. One way satisfaction has been operationalized is through a reliable and valid online course satisfaction survey. Bolliger and Martindale (2004) designed an Online Course Satisfaction Survey (OCSS). They reviewed all of the different aspects that influenced student's satisfaction in online education for the purpose of developing the (OCSS). There were six possible factors that influenced student satisfaction: instructor, communication, technology, course management, course website, and interaction. A research study performed by Donohue and Wong (1997) examined the relationship between achievement motivation and satisfaction with college between traditional and nontraditional students. The study revealed a positive relationship between satisfaction with college education and a student's motivation for academic achievement. The higher satisfaction rate positively correlates with greater student motivation in the classroom. These results should greatly compel education to take into consideration student satisfaction when considering course curriculum revisions.

Regardless of whether a course was offered online or in the traditional classroom setting, the largest determinant for student satisfaction was the instructor and instruction (DeBourgh, 2003; Peacheter, et al., 2010). Studies reviewing the different aspects of student satisfaction revealed the instructor as the most significant factor in determining student satisfaction (DeBourgh, 2003; Paechter et al., 2010). Interaction between student

and instructor strongly contributed to learning achievements and course satisfaction (Paechter et al., 2010). An instructor's counseling and support are important aspects to academic development and the acquisition of new knowledge.

The online environment can pose difficulties for instructors trying to establish positive student relationships. Setting clear expectations and providing organized content at the beginning of class in hopes of avoiding any undue confusion are examples of methods used by instructors to promote a positive learning experience through an online venue (Sit et al., 2005). Timely feedback on assignments is also essential to student development because it should help guide them in developing new knowledge. If feedback and guidance are not given promptly confusion will arise likely to increase a student's anxiety level, which in turn may cause undue frustration with online education (Ali et al., 2004; DeBourgh, 2003; Fearing & Riley, 2005; Sit et al., 2005).

Student involvement and interaction in an online course is essential for a student's academic success and course satisfaction. Discussion boards provide opportunities for student involvement (Ali et al., 2004). Online discussion boards allow each student an equal opportunity to state their opinions and views as opposed to the classroom setting where some students tend to monopolized discussions taking place (Kenny, 2002). As students participated more online their confidence with online education and computer skills improved (Kenny, 2002). The online environment also became more comfortable and suitable for them to learn as time passed (Kenny, 2002). Participation and interaction are also essential in order to develop strong online communities (Fearing & Riley, 2005). Some studies revealed online education encouraged frequent student-to-student

interaction (Kenny, 2002; Sit et al., 2005). One study actually found that students participated more online than in the traditional classroom setting (Thiele, 2003).

On the contrary some studies revealed students' dissatisfaction with the lack of personal connection in the online venue (Ali et al., 2004; Thiele, 2003). Student relationship with peers ranged from increased to no socialization at all (Ali et al., 2004). Thiele (2003) found that students lacked social interaction with peers and they felt more involved in the traditional classroom setting compared to online classes. In the same study students expressed the need for in person lectures and live discussion with fellow classmates to feel connected to the educational community. They stated that lectures were necessary for them to fully understand material that was being taught because it was difficult to grasp concepts through online courses. These findings lend support to explore satisfaction with social interaction in the educational experience for nursing students.

Throughout the literature flexibility and convenience were commonly found as satisfying attributes to online education (Fearing & Riley, 2005; Kenny, 2002; Lim, Kim, Chen, & Ryder, 2008; Sit et al., 2005). Flexibility allows students to complete assignments at his or her own pace and time, while convenience permits taking classes in the comfort of their own home, which is very appealing to many students. Online education has also been shown to meet the needs of adult learners who often hold full-time jobs during the day. The flexibility of online education allows them to complete schoolwork in the evening while at home (Fearing & Riley, 2005).

A review of attributes regarding online education revealed student complaints towards technology (DeBourgh, 2003; Fearing & Riley, 2005; Kenny, 2002). Faulty equipment and poor Internet connection were identified as negative aspects of online

education (DeBourgh, 2003; Fearing & Riley, 2005; Kenny 2002). The lack of technological support surrounding Internet and equipment issues impacted the learning experience greatly. Students felt dissatisfied with the amount of support services available to them (Fearing & Riley, 2005; Kenny, 2002). Without support services that assure connection to the Internet, students are essentially unable to "attend class." Student computer skills were also found to be enhanced or hindered (Kenny, 2002). Some students felt as though their computer skills improved while others became more frustrated and dissatisfied with technology. One study suggested there should be an online tutorial session given at the beginning of a course to assess student's computer competency (DeBourgh, 2003).

Some other dissatisfying points that became apparent throughout the literature were feelings of being overwhelmed, frustrated and anxious with the online learning experience (Kenny, 2002). A component of the anxiety was due to the heavy course assignments students were receiving. Students believed they were being assigned large amounts of work in relation to the time allowed to complete it (Fearing & Riley, 2005). It was also noted that 45% of students stated they did more work in an online course than compared to a traditional course (Lim et al., 2008). In addition some students did not feel as though they learned as much in the online course compared to the traditional classroom setting (Sit et al., 2005).

Salamonson and Lantz (2005) investigated nursing students perceptions of the hybrid course format. Hybrid courses are composed of both the classroom and online settings. Traditionally hybrid classes are conducted mostly online with multiple classroom meetings throughout the semester. In their study students had a high

satisfaction rate with the hybrid course format but preferred the traditional classroom setting. It was also noted that students who had a higher preference for the traditional classroom setting had higher grades as well. Students preferred to have online education used as an enhancement to the classroom. One recommendation made by Salamonson and Lantz (2005) was to use support services during transitioning students from the traditional classroom to online courses to promote the opportunity to ask questions and workout any possible technical issues.

Learning Style and Satisfaction with Online Education

Only one study was identified that explored the relationship between nursing students' satisfaction with online education and learning styles. Fearing and Riley (2005) evaluated nursing students' perceptions of online education in comparison to learning styles. Fearing and Riley (2005) utilized a basic satisfaction survey in conjunction with a learning style inventory tool to evaluate graduate nursing students' perceptions of online education. Findings indicated there were no significant difference between student satisfaction with online education and preferred learning styles. One major limitation of this study was the small sample size of 28 graduate nursing students. It was recommended by the study authors to replicate the study including a larger sample size and utilization of the VARK learning style tool (Fleming & Bonwell, 2006). It was this research study by Fearing and Riley (2005) that motivated the current research study that was conducted by this author.

While online education is shown to have a high satisfaction rate in areas of flexibility and convenience it still appears to lack satisfaction with communication, interaction and technological support (DeBourgh, 2003; Fearing & Riley, 2005; Kenny,

2002; Lim, Kim, Chen, & Ryder, 2008; Sit et al., 2005). It is also important to remember nursing students are social, emotional and concrete learns (Ali, Hodson-Carlton, &Ryan, 2004; An & Yoo, 2008; Andrusyszyn et al., 2001; Fearing & Riley, 2005; Fountain & Alfred, 2009; Meehan-Andrews, 2009). With only one study examining the relationship between nursing students' satisfaction with online education and learning styles it is essential to further investigate a possible relationship between these two variables. The knowledge gained from this study will provide nursing faculty insight into nursing students' learning styles and their satisfaction towards online education.

CHAPTER III

METHODOLOGY

Design

This is a quantitative descriptive correlation study performed to answer the study aims of:

1. describe student satisfaction with online learning.
2. describe the learning styles of a cohort of nurses in either an online or hybrid course.
3. examine the difference in satisfaction with online learning by learning typology.
4. test the following hypothesis: Learning styles are associated with satisfaction of online education.

A convenience sample of undergraduate and graduate nursing students attending a land, sea and air grant university in the Northeastern United States were invited to participate in this research project. The purpose of this study was to describe learning styles and satisfaction with online learning and examine whether learning styles affect satisfaction with online learning

Setting and Sample

The convenience sample was comprised of 345 nursing students enrolled in three different nursing degree programs. Programs of enrollment were the Bachelor of Science (BSN), Masters of Science in Nursing (MSN), and Direct Entry Masters in Nursing

(DEMN) at a large Northeastern university. A BSN degree is a bachelors in nursing achieved by students who already have a nursing licenses returning to school for the bachelors as well as four year undergraduate students with no prior degrees. The MSN degree is a masters program that allows for three different concentrations, family nurse practitioner (FNP); clinical nurse leader (CNL); and evidence-based nursing (EBN). The DEMN program is designed for students who carry a bachelors or masters in any other concentration than nursing. It is an accelerated nursing program allowing students to begin with a prior degree other than nursing and upon completion of the program receive an MSN and be eligible to sit for their nursing boards.

Online and hybrid courses are offered mostly to the MSN and DEMN student population, but BSN students are allowed to choose online or hybrid courses as electives. All nursing students that have previously taken either an online or hybrid course were eligible to participate in this research study. Statistical power analysis revealed the need for 280 participants; by inviting nursing students that have taken either online or hybrid courses decreased the possibility of a type II error.

Instrumentation

The variables of interest in this study were learning styles and satisfaction with online education. A demographic questionnaire incorporated the variables of age, gender, program of enrollment, length of time in current program, previous degrees, enrollment status, number of previous hybrid courses, number of previous online courses, and rating of computer literacy on a 0 to 10 scale, with 0 being no computer literacy and 10 is a computer expert (Appendix A).

Learning styles can be defined both conceptually and operationally. Conceptually, learning styles are personal characteristics and preferences that influence the way we gather, organize, and think about information (Fleming, 2001). Operationally, learning styles were defined through the use of The Visual, Auditory, Read/Write and Kinesthetic (VARK) Questionnaire (Fleming & Bonwell, 2006). The VARK Questionnaire is a 16-item instrument developed by Fleming and Bonwel (2006), which determines a person's learning style (Appendix B). Permission to use the instrument was obtained (Appendix C).

Each VARK item has a possibility of four responses representing one of the four major learning styles: visual (V), auditory (A), read/write (R), or kinesthetic (K) preference. The participant is instructed to select all answers that apply to them. When completed the amount of V's, A's, R's, and K's are totaled and placed through a mathematical equation, which determines a student's learning preference(s). The researcher purchased the VARK Research and Standard analytical spread sheet for $55.00 from the VARK website (Fleming, 2009) that determined learning styles once the number of V's, A's, R's and K's for each student were entered into the spread sheet. This spread sheet was developed by Fleming the same person that developed the VARK Questionnaire, which assured accuracy of the scoring results (Fleming, 2001; Fleming & Baume, 2006; Fleming & Mills, 1992).

VARK Questionnaire is popular because it allows students to select more than one answer, which may reveal if they are multimodal (Rogers, 2009). There are 15 total possible learning preference combinations (Fleming, 2001). In a research study by Rogers (2009) investigating how students learn, he noted there were multiple learning

style inventory tools, but no gold standard tool. Therefore Rogers (2009) chose to utilize the VARK Questionnaire. VARK Questionnaire has also been utilized in a number of other research studies including some nursing research studies and it appears to be a valid tool (Alkasaweh et al., 2008; Fearing & Riley, 2005; Meehan-Andrews, 2009; Rogers, 2009). Other similar tools were reviewed but with the lack of a gold standard tool the VARK questionnaire was chosen for its simplicity and real life questions.

Satisfaction with online education as the second variable of interest in this study can be conceptually defined as, "an essential link to student outcomes, with greater enjoyment associated with higher levels of student engagement, which in turn is associated with increased student learning" (Sahin & Shelley, 2008, p. 217). Operationally, student satisfaction with online education was defined by the Online Course Satisfaction Survey (OCSS), originally developed by Biner (1993) for televised courses and modified by Bollinger and Martindale (2004) for online courses. It is a 60-item questionnaire that was modified, with the permission of the authors (Appendix D), to suit the needs of this research study. Items that were removed were either not applicable to this study or appeared to be redundant. The OCSS was modified to a 40-item multiple-choice questionnaire (Appendix E). One question had two specific choices for answers. Three questions were yes, no, maybe. Four questions were multiple-choice with specific answers. The remaining 32 questions had four choices, which were, strongly agree, agree, disagree, and strongly disagree.

Validity of the original OCSS was reported by Biner (1993) and reliability was tested by Bolliger and Martindale (2004) revealing a .99 Cronbach alpha coefficient. A Pearson correlation coefficient analysis was also performed on the survey with

correlation coefficients exceeding .50 leading Bollinger and Martindale (2004) to conclude that each variable was independent. Bollinger and Martindale (2004) adapted the tool and made significant modifications to measure the following attributes of online course satisfaction: instructor issues; communication; technology; course management; course website and interactivity. Of the 32 questions that were strongly agree, agree, disagree, and strongly disagree each answer was respectively scored using the following numerical value 2, 1, -1, -2 representing a four point Likert-type scale. As for the other eight questions that were seeking specific answers they were evaluated individually in comparison to the overall satisfaction score. This tool can be scored in a number of different manners, but in this study each question's answers were summed throughout the entire survey and then percentages were reviewed, which allowed the researcher to review each question individually and look for a trend in satisfaction.

Risks and Benefits to Human Subjects

Approval was granted to conduct this research project through the University's Institutional Review Board for Human Subjects (Appendix F). Invitation and explanation of the study was explained through an invitation letter (Appendix G) describing that the study was anonymous and participation was voluntary. Data was collected online using SurveyMonkey ™ and only the investigator had access to the stored data. The Internet Protocol address was blocked during collection of data ensuring anonymity. All data was deleted from the site at the completion of the study.

There were minimal risks to students involved in this study. As with communication via the Internet, there is minimal risk for loss of confidentiality. Subjects also had the opportunity to enter a raffle for one of two gift certificates after submitting a

completed questionnaire. Contact information that was collected for the raffle was never stored with survey results and destroyed after the prizes were distributed. There were no known immediate benefits from participating in the survey. Findings from this study may help faculty members understand the relationship between learning styles and nursing student's satisfaction with online education, which as a result will give insight to nurse educators for future curriculum development.

Procedure

An invitation letter (Appendix G) was sent out to 345 potential student participants by the nursing department administration. In the invitation letter there was a link to SurveyMonkey ™ that once clicked prompted students to begin the survey. The survey consisted of the demographic questionnaire (Appendix A), the OCSS (Appendix E), and the VARK questionnaire (Appendix B). Once students clicked the "done" button at the end the survey they were assigned a random number by SurveyMonkey, and data was stored on the secure website. Data collection took place over a three-month period.

The first invitation letter sent yielded 66 responses, or 19% of possible participants. Six weeks later the same invitation letter was sent out to the same 345 potential student participants yielding 55 additional responses, or a 16% response rate for the second attempt. Of the 121 surveys started, 89 or a 35% response rate, were completed and utilized in the data analysis section of this research study.

Data Analysis

All data were downloaded from SurveyMonkey ™ and organized in a master Excel ™ (2007) spreadsheet, then deleted from the online platform. The VARK questionnaire was analyzed first. For each completed VARK questionnaire the number of

V's, A's, R's, and K's were summed and entered into the VARK statistical analysis spreadsheet that was purchased through the VARK website (Fleming, 2009) resulting in each student's learning preference.

The OCSS results were downloaded into the Excel ™ spreadsheet from SurveyMonkey ™, and the correct numerical value was applied to each answer. Answers to every question of the OCSS were counted and broken down into percentages allowing for a view of answer distribution. All of the data from the demographic, OCSS, and VARK questionnaire were then entered into the Statistical Packages for the Social Sciences (SPSS) Version 17 (2008).

Basic descriptive analysis of the all surveys was completed. Every individual question of the OCSS had the number of 2's, 1's, -1's, and -2's counted and then broken down into percentages. A Cronbach's alpha analysis and a Pearson correlation matrix were completed for OCSS data. Due to the high correlation coefficients found throughout the matrix with the question "Overall I was satisfied with the online course," this was the item selected to measure overall student satisfaction with online education.

A total of eight possible learning preferences were identified using the VARK. Basic analysis of learning styles was performed by breaking down learning styles into different categories, counting them and finding the different percentages of each learning style. Each learning style was assigned a number as followed: A = 1, K = 2, R = 3, RK = 4, V = 5, VA = 6, VARK = 7, and VK = 8 for statistical analysis. Due to the small number of participants in some of the learning style categories and for statistical purposes the following modifications were made: RK and R were combined to make the R category; V's, VA's, and VK's were collapsed creating the V category; and the A

category was eliminated due to the small number. After condensing the groups the four different learning style groups were: K, R, V and VARK. Lastly, an ANOVA was performed between the four learning styles and student satisfaction with online learning. The ANOVA was chosen for its ability to compare means and test for significance between multiple groups (Lim et al. 2008).

CHAPTER IV

FINDINGS

Sample

Of the 345 potential nursing students that were invited to participate 122 began the survey and 89 completed the survey. The sample consisted of 83 (93 %) females and 6 (7 %) males. Age ranged from 20 to 60 with an average of 33.5 years. Program of enrollment included 37 (42 %) BSN students, 21 (24%) DEMN students, and 31 (35 %) MSN students. Number of years enrolled in current programs consisted of, one year, 22 (25 %), two years, 32 (36 %), three years, 9 (10 %), four years, 22 (25 %) and greater than four years, 4 (5 %). There were three different categories of enrollment status, less than 6 credits, 14 (16 %), 6-12 credits, 40 (45 %), and over 13 credits, 34 (38 %). Please see Table 1 for an overview of these findings.

The number of online courses previously taken ranged from 0 to 10 with the majority having taken 0 to 4 (84 %) online courses in the past. As for hybrid courses the distribution was similar ranging from 0 to 15 with the greater part ranging from 0 to 3 (90 %) previous hybrid courses taken. See Table 2 for further detail and summary of these results. On a 0 to 10 scale, personal assessment of computer literacy ranged from 3 to 10 with the largest part in the 7-8 (57 %) range. See Table 3 for further detail and summary of these results. The class chosen by participants for review during the OCSS was evenly distributed between the strictly online course 46 (52 %), and the hybrid course, 43 (48 %).

Table 1

Demographics of Student Nurses (N=89)

Variable	n	Percentage
Gender		
Female	83	93
Male	6	7
Program of Enrollment		
BSN	37	42
MSN	21	24
DEMN	31	35
Previous Degrees		
Bachelor of Arts	6	7
Bachelors of Science	39	44
Bachelors of Arts and Science	1	1
Masters of Arts	1	1
Masters of Science	3	3
No prior degrees	38	43
Unreported	1	1
Length of Enrollment		
1 year	22	25
2 years	32	36
3 years	9	10
4 years	22	25
Over 4 years	4	5
Enrollment Status		
Less than 6 credits	14	16
6 – 12 credits	40	45
Over 13 credits	34	38
Unreported	1	1

Table 2

Number of Online and Hybrid Courses Taken by Students (N=89)

Variable	Frequency	Percentage
Online courses taken		
0	22	25
1	13	15
2	12	14
3	12	14
4	14	16
5	6	7
6	3	3
8	1	1
9	1	1
10	1	1
Unreported	4	4
Hybrid courses taken		
0	7	8
1	43	48
2	18	20
3	12	14
4	4	5
5	3	3
15	1	1
Unreported	1	1

Table 3

Self-Assessed Computer Literacy (N = 89)

Computer Literacy	Frequency	Percentage
0	0	0
1	0	0
2	0	0
3	1	1
4	2	2
5	6	7
6	13	15
7	26	29
8	24	27
9	14	16
10	2	2

Satisfaction With Online Education

The question "Overall I was satisfied with the online course," in the OCSS, resulted in a 67% satisfaction rate. The question "Overall I was satisfied with the instructor," yielded a 74% satisfaction rate. Questions in the negative direction were related to participation, interaction and comparing online to traditional classroom setting. These questions were: "I participated more in the online/hybrid course compared to the traditional classroom setting,"(76% disagreed); "There was more interaction between all involved parties in this course compared to the traditional face-to-face course," (81% disagreed); "Compared to classroom-based course I was more satisfied with this online course," (83 % disagreed).

Reliability of the OCSS resulted in a .955 Cronbach's alpha .Out of the 40 item satisfaction survey 25 of the questions resulted in a Pearson correlation coefficient of r = .225 to .797 and a significance of p = .035 to .000, in reference to the question "Overall I was satisfied with the online course." While also reviewing the Pearson correlation matrix the question "Overall I was satisfied with the instructor" yielded a correlation coefficient of r = .797 and a significance of p = .000.

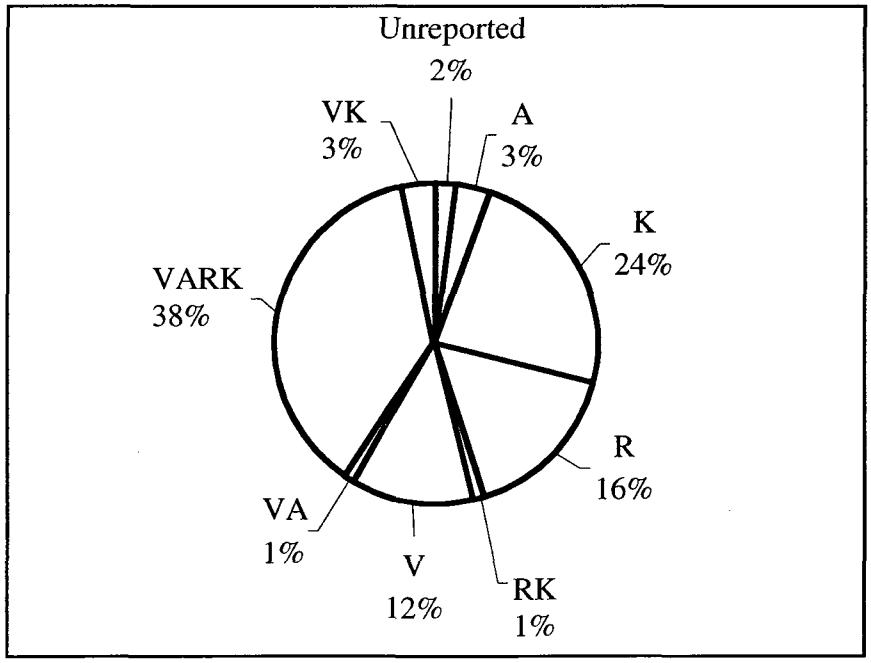
Learning Styles

A total of eight different learning preferences resulted from the VARK questionnaire. The most frequent (38%) were multimodal VARK's and following that were kinesthetic (K) (24%) participants. Next were read/write (R) (16%) and then visual (V) (12%) participants. The other four types of learning styles were: auditory (A) (3%), visual and kinesthetic (VK) (3%), read/write and kinesthetic (RK) (1%), visual and auditory (VA) (1%), and unreported (2%). See figure 1 for detail.

Learning Styles and Satisfaction with Online Learning

Figure 1

Learning Styles



Learning Styles and Satisfaction with Online Learning

A one-way ANOVA was performed between satisfaction with online education and learning styles resulting in a significance level of $p = .763$. No significance was found between learning styles and satisfaction with online education. See Table 4 for further detail. The following groups were included in the ANOVA: VARK's (33); K's (21); R's (15); and V's (15).

Table 4

Analysis of Variance Between Satisfaction with Online Education and Learning Styles

Source	Sum of Squares	df	Mean Square	F	*p*
Between Groups	1.81	3	0.60	0.39	.76
Within Groups	124.61	80	1.59		
Total	126.42				

CHAPTER V

DISCUSSION

The study findings did not support the hypothesis that learning styles were associated with student satisfaction of online education. This is consistent with Fearing and Rileys' (2005) findings, which did not show a relationship between satisfaction with online education and nursing students' learning styles. This suggests that no relationship exists between learning styles and student satisfaction with online education. This study did replicate literature results suggesting that satisfaction with the instructor is highly correlated with overall student satisfaction (DeBourgh, 2003; Paechter et al., 2010). Students were likely to be satisfied with the class they were attending if they were satisfied with the instructor regardless of learning style.

Since course satisfaction appears to be associated with satisfaction of the instructor; and satisfaction has shown to be directly related to student motivation for academic achievement (Donohue & Wong, 1997), it is essential for nursing instructors to realize how important the student-teacher relationship is to a students' academic success. Although not identified in this study, perhaps instructors with favorable satisfaction ratings intuitively adapt their teaching methods to the students' learning style.

The findings of this study reveal the largest group of nursing students' learning styles possess all four learning preferences of visual, auditory, read/write and kinesthetic. Nurses' multimodal learning styles may be required by their multifaceted role responsibilities. Nurses learn a variety of interventions, from listening to their patients,

learning to write notes and document, as well as learning to perform psychomotor interventions. Perhaps different styles of learning are needed to access knowledge from varying sources. Kinesthetic learners were the next largest group, which is not surprising due to the large amount of psychomotor interventions that are performed on a daily basis by nurses. Therefore it would appear that possessing the ability to learn in a kinesthetic manner would be very beneficial for nursing students. Read/write learners where the third largest group, which aids those nursing students in the ability to write notes and document well. Next were visual learners, this is important when nursing students assess a patient's physical condition. Although a visual learning style is helpful in some situation it could pose challenges during note writing or psychomotor interventions. This is similar for the auditory learners who where the smallest group. If a nursing student only possesses the ability to learn by listening the nursing profession maybe very challenging for them, possibly forcing them to develop new learning styles.

Learning style distribution was different in this study than previous literature (Fearing & Riley, 2005; Meehan-Andrews, 2009). Fearing and Riley (2005) found the most prevalent learning style to be kinesthetic learners, while this study revealed the largest group to be multimodal VARK's. Differences may be explained by the use of different instruments. In Fearing and Rileys' (2005) study the Free Assessment Summary Tool (FAST) was utilized to measure student perception of online learning and the Visual (V), Auditory (A) and Kinesthetic (K) (VAK) survey derived from Fleming's (2006) VARK survey was used to determine learning styles. Since there is not a read/write (R) learning style option within Fearing and Rileys' (2005) learning style tool, it is possible those that would have been read/write learners where classified as kinesthetic learners

causing the difference in results. The difference in learning style findings between this study and previous studies, which could be the result of the learning style inventory tool, indicates the need for a gold standard learning style inventory tool. A standardized tool would allow for better comparison and generalization of learning styles across education and research.

Further reviewing the OCSS results, student satisfaction with online learning was high except for the areas of interaction, communication and comparison between online and the classroom setting. This is consistent with previous findings by Ali (2004) and Thiele (2003) who both found that students perceived a decrease in communication and interaction with online courses. It appears that this sample of nursing students prefer to learn in the classroom setting compared to the online venue. It seems the classroom setting offers a more tangible social experience for students. In the classroom students and faculty are readily available for instant feedback, while online students must wait for a reply to their questions or comments. For students who have never taken online courses this can be quite frustrating and disappointing. Salamonson and Lantz (2005) made a good point when they suggested the use of support services for students transitioning from the classroom to the online setting. Support services that provide students with live online chatting or phone conversations, may possibly lower the levels of dissatisfaction in the areas of communication and interaction. Findings from this study reiterate the importance of developing a course that promotes interaction with peers and good communication with the instructor.

Limitations of the Study

Sample size is one major limitation to this study. In order to avoid a type II error and increase power to the study, the necessary sample size would have been 280 participants. Unfortunately there were only 89 participants, therefore increasing the risk for a type II error. Other limitations include a sample of convenience. This was not a randomized study, which inhibits the ability to generalize the results to all nursing students. Students evaluated either an online or hybrid course, which allowed for a larger sample size but possibly allowed for student bias to influence satisfaction rates. It was beyond the scope of this study to examine statistical differences between online and hybrid groups. The last limitation was the absence of reported reliability and validity for the VARK survey. Therefore the tool could also be a weak point within the study resulting in the lack of relationship between learning styles and satisfaction with online learning.

Implications for Future Nursing Practice

Findings of this study have the potential to influence online nursing curriculum by providing nurse educators with insight into students' learning styles, the student-teacher relationship, and the different attributes of satisfaction with online education. It would be beneficial for nursing instructors to seek further education regarding teaching in the online venue to better their communication with students. This could be accomplished by instructors pursuing education that would aid them in developing and incorporating different strategies in communication and relationship building in online courses. When designing course curriculum it should take into consideration the venue in which the course will be taught. This information is not only important to nursing education but to

the nursing profession as a whole. It is essential that we provide nursing students with the best education possible in order to produce outstanding nurses. This can only be achieved through continual efforts to improve the manner in which nursing students are taught.

Future Research

Further research is warranted in the relationship between nursing students' learning styles and satisfaction with online learning on a larger more diverse scale. The lack of a large sample sizes within Fearing and Rileys' (2005) study and this study has seriously hindered the ability to find statistical significance, therefore the possibility of a relationship between the two variables cannot be ruled out. Research should be conducted investigating any possible change in nursing students' learning styles once they have entered the nursing profession. This would allow insight between learning styles and possible effects of the professional nursing environment. Also, there is a need to further investigate the validity and reliability of the VARK questionnaire (Fleming & Bonwell, 2006) through statistical means. Additional research should also be conducted in the area of student satisfaction with online education to gain a greater understanding of how we can better support students online.

Conclusion

Although this research study did not discover a relationship between nursing students' learning styles and satisfaction with online education, it did reveal a diverse range of learning styles amongst nursing students. This study also found high satisfaction levels in all areas except for relationship building and social environment. These findings are of particular interest when considering the instructor significantly influences student satisfaction. If relationship building and social environment are lacking in online

education this suggests a lack of communication between student and instructor, which could potentially lead to dissatisfaction with the instructor and online education. Dissatisfaction may possibly decrease academic motivation resulting in the loss of a nursing student and an increase to the nursing shortage.

Therefore it is essential that we examine new ways to better online nursing education. Students rely on their nursing instructors to guide them through their educational process. By cultivating new knowledge in the area of online nursing education we are providing nursing students with the best education possible. This benefits not only nursing schools but also the nursing profession and society at large.

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APPENDICES

APPENDIX A

DEMOGRAPHIC SURVEY

1. In what year where you born?

2. What is your gender?

    A. Male

    B. Female

3. In what program are you enrolled?

    A. DEMN

    B. Masters

    C. Baccalaureate

4. How long have you been enrolled in your educational program?

    A. 1 years

    B. 2 years

    C. 3 years

    D. 4 years

    F. Over 4 years

5. Did you have any previous degrees before entering nursing school?

    A. Bachelor of Arts

    B. Bachelor of Science

    C. Masters of Science

    D. Masters of Arts

    F. No prior degrees

6. Are you enrolled:

A. Over 13 credits

B. 6-12 credits

C. Less than 6 credits

7. How many online courses have you taken? (online courses do not have any face-to-face interaction.)

_____ courses

8. How many online hybrid courses have you taken? (Hybrid course are online courses with some face-to-face class time.)

_____courses

9. On a scale of 0 – 10 how would you rank your computer literacy? (0 is no computer literacy and 10 is a computer expert.)

APPENDIX B

VARK QUESTIONAIRRE

How do you learn best? Select the answer, which best explains your preference. Select more than one if a single answer does not match your preference. You may leave a question blank if none of the answers match your preference.

1. You are helping someone who wants to go to your airport, town centre or railway station. You would:

A. go with her

B. tell her the directions.

C. write down the directions.

D. draw, or give her a map.

2. You are not sure whether a word should be spelled `dependent' or `dependant'. You would:

A. see the words in your mind and choose by the way they look.

B. think about how each word sounds and choose one.

C. find it in a dictionary.

D. write both words on paper and choose one.

3. You are planning a holiday for a group. You want some feedback from them about the plan. You would:

A. describe some of the highlights.

B. use a map or website to show them the places.

C. give them a copy of the printed itinerary.

D. phone, text or email them.

4. You are going to cook something as a special treat for your family. You would:

A. cook something you know without the need for instructions.

B. ask friends for suggestions.

C. look through the cookbook for ideas from the pictures.

D. use a cookbook where you know there is a good recipe.

5. A group of tourists want to learn about the parks or wildlife reserves in your area. You would:

A. talk about, or arrange a talk for them about parks or wildlife reserves.

B. show them internet pictures, photographs or picture books.

C. take them to a park or wildlife reserve and walk with them.

D. give them a book or pamphlets about the parks or wildlife reserves.

6. You are about to purchase a digital camera or mobile phone. Other than price, what would most

influence your decision?

A. Trying or testing it.

B. Reading the details about its features.

C. It is a modern design and looks good.

D. The salesperson telling me about its features.

7. Remember a time when you learned how to do something new. Try to avoid choosing a physical

skill, eg. riding a bike. You learned best by:

A. watching a demonstration.

B. listening to somebody explaining it and asking questions.

C. diagrams and charts - visual clues.

D. written instructions – e.g. a manual or textbook.

8. You have a problem with your knee. You would prefer that the doctor:

A. gave you a web address or something to read about it.

B. used a plastic model of a knee to show what was wrong.

C. described what was wrong.

D. showed you a diagram of what was wrong.

9. You want to learn a new program, skill or game on a computer. You would:

A. read the written instructions that came with the program.

B. talk with people who know about the program.

C. use the controls or keyboard.

D. follow the diagrams in the book that came with it.

10. I like websites that have:

A. things I can click on, shift or try.

B. interesting design and visual features.

C. interesting written descriptions, lists and explanations.

D. audio channels where I can hear music, radio programs or interviews.

11. Other than price, what would most influence your decision to buy a new non-fiction book?

A. The way it looks is appealing.

B. Quickly reading parts of it.

C. A friend talks about it and recommends it.

D. It has real-life stories, experiences and examples.

12. You are using a book, CD or website to learn how to take photos with your new digital camera. You would like to have:

A. a chance to ask questions and talk about the camera and its features.

B. clear written instructions with lists and bullet points about what to do.

C. diagrams showing the camera and what each part does.

D. many examples of good and poor photos and how to improve them.

13. Do you prefer a teacher or a presenter who uses:

A. demonstrations, models or practical sessions.

B. question and answer, talk, group discussion, or guest speakers.

C. handouts, books, or readings.

D. diagrams, charts or graphs.

14. You have finished a competition or test and would like some feedback. You would like to have

feedback:

A. using examples from what you have done.

B. using a written description of your results.

C. from somebody who talks it through with you.

D. using graphs showing what you had achieved.

15. You are going to choose food at a restaurant or cafe. You would:

A. choose something that you have had there before.

B. listen to the waiter or ask friends to recommend choices.

C. choose from the descriptions in the menu.

D. look at what others are eating or look at pictures of each dish.

16. You have to make an important speech at a conference or special occasion. You would:

A. make diagrams or get graphs to help explain things.

B. write a few key words and practice saying your speech over and over.

C. write out your speech and learn from reading it over several times.

D. gather many examples and stories to make the talk real and practical.

APPENDIX C

VARK PERMISSION LETTER

From: flemingn@ihug.co.nz

Subject: VARK and Copyright

Date: July 9, 2009 1:15:33 AM EDT

To: jmeyersrn@gmail.com

Dear Jamie

Thank you for seeking permission to use VARK. We rely on the honesty of people to act in a professional way when using our materials. Many don't know that businesses, government agencies and professional sports groups must obtain permission or be licensed to use the VARK copyright materials. VARK is free only for universities, colleges and high schools. You may not place VARK copyright materials on an open-access website, or place the VARK questionnaire on your intranet without contacting us. If you want to use VARK on a site you need special permission.

You are welcome to use the VARK materials by linking to our online website, or in paper format, for your nursing research, providing suitable acknowledgement is made.

This is the acknowledgement I prefer:

© Copyright Version 7.0 (2006) held by Neil D. Fleming, Christchurch, New Zealand and Charles C. Bonwell, Green Mountain Falls, Colorado 80819 U.S.A.

If you are using VARK for research please note that we have two scoring systems and one is designed for those doing research. You should also see our research page for

advice about using VARK for research. It is at this address: www.vark-learn.com/english/page.asp?p=advice

You may be interested in our new VARK Subscription service which does not need any installation on your system. You can capture the VARK scores for your class or classes, work team or colleagues and the results are available to you using your own password. The Subscription Service is demonstrated on our website in a working example. There is also sophisticated and specialised VARK software that allows you to capture and use the data from your own students on your own intranet.

To comply with copyright laws, trainers should consider purchasing an inexpensive VARK Licence with a once-only lifetime or annual fee. We also have a VARK PowerPoint presentation, a Resource Kit and a VARK Spreadsheet for large numbers of respondents.

You may find the two VARK books helpful for your work. There is also a book that teachers use for widening their repertoire of strategies. It is titled - "55 Strategies for Teaching" and has 55 practical ideas.

VARK principles are being applied to coaching elite athletes in our book titled "Sports Coaching and Learning" available on the same site.

To purchase any of these resources (above) you can use a personal check/cheque, an institutional Purchase Order or buy from our secure website with your credit card.

Best wishes for your work.

Neil

Neil Fleming

Designer of the VARK Questionnaire

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New Zealand

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fax: (64) 3 3519939

APPENDIX D

OCSS PERMISSION LETTER

From: dorisbolliger@gmail.com

Subject: Online Student Satisfaction Survey

Date: July 21, 2009 3:52:47 PM EDT

To: jmeyersrn@gmail.com

Dear Jamie,

Dr. Martindale contacted me in order to follow up on your inquiry regarding our online student satisfaction survey. I am attaching a word document that contains all survey questions. You have our permission to modify the survey and use it in your research. Feel free to contact me if you have any questions. Good luck with your research.

Kind regards,

--

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APPENDIX E

ONLINE COURSE SATISFACTION SURVEY

1. The class that you have chosen to evaluate for this survey is a

   Strictly online course

   Hybrid online course

2. Where was your primarily computer access to do your coursework?

   Home

   Work

   UNH computer lab

   Friend

   Other

3. Class assignments were clearly communicated to me.

   Strongly disagree

   Disagree

   Agree

   Strongly agree

4. The prepared weekly lessons were of quality for learning

   Strongly disagree

   Disagree

   Agree

   Strongly agree

5. Feedback and evaluation of papers, tests, and other assignments were given in a timely manner.

Strongly disagree

Disagree

Agree

Strongly agree

6. The instructor made me feel that I was part of the class and belonged.

Strongly disagree

Disagree

Agree

Strongly agree

7. I was satisfied with the instructor's communication online skills.

Strongly disagree

Disagree

Agree

Strongly agree

8. The instructor was well organized and prepared.

Strongly disagree

Disagree

Agree

Strongly agree

9. I was satisfied with the instructor's course content knowledge.

Strongly disagree

Disagree

Agree

Strongly Agree

10. I was satisfied with the instructor's use of various teaching methods and techniques (e.g. group discussions, case studies, etc.).

Strongly disagree

Disagree

Agree

Strongly Agree

11. I was satisfied with the instructor's use of various teaching methods and techniques (e.g. group discussions, case studies, etc.).

Strongly disagree

Disagree

Agree

Strongly Agree

12. I was satisfied with the computer competence of the course instructor.

Strongly disagree

Disagree

Agree

Strongly agree

13. I was satisfied with the instructor's encouragement in the course.

Strongly disagree

Disagree

Agree

Strongly Agree

14. I was satisfied with the opportunities given to me by the instructor to participate in the course.

Strongly disagree

Disagree

Agree

Strongly Agree

15. I was satisfied with the accessibility and availability of the instructor.

Strongly disagree

Disagree

Agree

Strongly agree

16. I was satisfied with the professionalism of the instructor.

Strongly disagree

Disagree

Agree

Strongly agree

17. Overall, I was satisfied with the instructor.

Strongly disagree

Disagree

Agree

Strongly agree

18. I was satisfied with the reliability of the computer equipment I personally used during the course.

Strongly disagree

Disagree

Agree

Strongly agree

19. I was satisfied with my ability to navigate the BlackBoard platform.

Strongly disagree

Disagree

Agree

Strongly agree

20. I was satisfied with the use of online discussion boards.

Strongly disagree

Disagree

Agree

Strongly agree

21. The Internet service provider (ISP) I primarily used in this course was reliable.

Strongly disagree

Disagree

Agree

Strongly agree

22. The speed of my Internet connection was adequate for this course.

Strongly disagree

Disagree

Agree

Strongly agree

23. Approximately, how many times during the course did you experience difficulties accessing the Internet?

Never

1 – 2 times

3 – 4 times

More than 4 times

24. I was satisfied with my access to supporting external resources needed for assignments (e.g. books, articles, etc.).

Strongly disagree

Disagree

Agree

Strongly agree

25. I was satisfied with how I acquired required materials and textbooks used in the course.

Strongly disagree

Disagree

Agree

Strongly agree

26. I was satisfied with the organizational structure of the course site.

Strongly disagree

Disagree

Agree

Strongly agree

27. The external hyperlinks were relevant to the course.

Strongly disagree

Disagree

Agree

Strongly agree

28. I was satisfied with download times of course pages and resources.

Strongly disagree

Disagree

Agree

Strongly agree

29. I participated more in the online/hybrid course compared to the traditional classroom setting.

Strongly disagree

Disagree

Agree

Strongly agree

30. There was more interaction between all involved parties in this course compared to traditional face-to-face courses.

Strongly disagree

Disagree

Agree

Strongly agree

31. Compared to classroom-based courses, I was more satisfied with this online course.

Strongly disagree

Disagree

Agree

Strongly agree

32. Would you have taken this course if it had not been offered online or hybrid?

No

Yes

No answer

33. Would you enroll in another online course?

No

Yes

Maybe

34. Would you enroll in another hybrid course?

No

Yes

Maybe

35. I was satisfied with student-faculty communication in the course.

Strongly disagree

Disagree

Agree

Strongly agree

36. I was satisfied with the workload required in this course.

Strongly disagree

Disagree

Agree

Strongly agree

37. Approximately, how many hours per week did you spend working on this course?

0 – 3 hours per week

4 – 7 hours per week

8 – 11 hours per week

More than 12 hours per week

38. I was satisfied with my final grade in the course.

Strongly disagree

Disagree

Agree

Strongly agree

39. What was your final grade in this course?

F

D

C

B

A

No answer

40. Overall, I was satisfied with the online course.

Strongly disagree

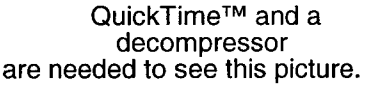
Disagree

Agree

Strongly agree

APPENDIX F

INSTITUTIONAL REVIEW BOARD PERMISSION LETTER



APPENDIX G

STUDY INVITATION LETTER

You are invited to participate in a nursing research study to investigate nursing students satisfaction with online learning. The principle investigator of this project is Jamie L Meyers, RN, a nursing graduate student at the University of New Hampshire. You are being invited because you are currently a BSN or MSN nursing student. The purpose of this study is to determine your satisfaction with online education.

You are eligible to participate in this online research survey if you have taken either an online course or hybrid course. The online survey will take approximately thirty minutes to complete, and at the end, if you are one of the first 50 students to complete the study, you will have the option of entering your name for a raffle for one of two gasoline gift cards. All information collected for the raffle will be confidential and destroyed once raffle prizes have been distributed. Contact information collected for the raffle will be stored separately from responses to the survey which is anonymous. The results of the survey will be securely kept and accessed only by the principle investigator.

This study involves minimal risk to you. Since the survey will be conducted online there is a slight risk for your privacy, but no more than your everyday internet use, such as sending emails or browsing the web.

If you have any questions regarding your rights as a human subject in this research study please contact Julie Simpson, Manager of UNH Office of Sponsored Research, 603-862-2003. You may also contact myself, Principle Investigator, Jamie L Meyers, RN, BS, UNH Graduate Student, jmeyersrn@gmail.com, 603-817-1837; and

Supervising Faculty Member: Susan Fetzer, RN, PhD, MBA, Associate Professor, sfetzer@unh.edu, 603-862-4714.

If you have read the following and fully understand the purpose of this research project, the risks and benefits associated with it and agree to participate then click on this link: http://www.surveymonkey.com/s.aspx?sm=zY_2fN3IFD429UKG5SvkrYRg_3d_3d By clicking on the link, you are consenting to participate in this research study.