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Learning Differences in E-Commerce I Online Classes in Public Secondary Schools in
North Carolina

A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education

by

Pamela S. Pitman

August 2008

Dr. James Lampley, Chair

Dr. Louise MacKay

Dr. Harold L. Daniels

Dr. Eric Glover

Dr. Pam H. Scott

Keywords: Blackboard, E-Commerce I, Gender-Based Education, Online Education,
VoCats, WebCT

ABSTRACT

Learning Differences in E-Commerce I Online Classes in Public Secondary Schools in

North Carolina

by

Pamela S. Pitman

The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. Students' observations and achievements were evaluated by gender, grade level, course of study, online experience, and expected grade. This type of study could identify relationships between the online model and the four areas evaluated. This information may aid designers of online curricula as well as the teachers.

The literature review covered several topics including technology, online learning, gender-based education, learning styles, maturity, and expectations. Each topic was related to the success of students in an online environment.

This quantitative study was conducted using a survey-design method. The survey was designed using online survey software. Specifically, the survey concentrated on the differences and successes in an online class. With online education growing in popularity, educators need to evaluate the reasons behind success or failure.

Independent sample *t* tests and a one way ANOVA were used to determine the significance of each research question. The survey dealt with 3 different dimensions, the learning style dimension, the experience dimension, and the opinion dimension.

Findings showed significant differences in 2 areas, age and expected grade. The data showed a significant difference between juniors and seniors in all 3 dimensions of the survey. The findings also showed significant findings in all 3 dimensions of the survey in regard to expected grade. Recommendations for future research, conclusions, and recommendations for practice are also included.

DEDICATION

I dedicate this work to my family at home and work. Without their patience and understanding, this would not have been possible. Each one of you has played a significant role in my life. Mom, Dad, and Steve, thank you for looking over my mood swings and days of frustration.

Finally and most importantly, I want to thank God for giving me the opportunity and grace to complete this task. “I can do all things through Christ who strengthens me” (Philippians 4:13).

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CHAPTER 1

INTRODUCTION

Education is a much-discussed topic in society today. It seems as though every one from parents to politicians has become an advocate for change in our present educational system. Many United States citizens have stated their belief that America's educational system is inferior to other industrialized nations. As a result, new and innovative instructional methods are being researched and used. One such method is computer-based learning. This approach provides an alternative to the traditional classroom and appeals to students who may give up in the traditional setting. Consequently, computer-based learning may improve the level of education among certain student populations.

Another current topic in education is based on gender-related issues. Gender-based education, specifically single-gender classes, is drawing increasing attention. With so much emphasis placed on improving test scores in kindergarten- through 12th-grade schools, educators have been examining all facets of the classroom. Although the *No Child Left Behind* Act, signed into law in 2001, allows single-gender education, there have been some conflicts involving regulations of Federal Law Title IX. Federal Law Title IX states that there will be no discrimination in education based on gender. To clarify this, the Department of Education proposed changes that would allow public schools more freedom to create single-gender classes ("Time for Kids," 2004). The number of schools using this type of setting has grown from single digits to nearly 250 in the last year (Vu, 2006). As with all changes in education, there have been both successes and failures. There are advantages cited both for and against this type of classroom. For example, in Louisiana, a school system shut down a pilot program on

single-gender education because one parent threatened a lawsuit (Vu). In contrast, Frey (2006) stated:

We have organized our middle school classes by gender for the past 5 years. The girls have demonstrated amazing growth in all academic areas, but especially in math and science. The girls are now outperforming the boys in every subject. The boys test scores have shown no change since we have gone to same sex classes. The teachers complain that all boys' classes are harder to discipline; however, the benefit to the girls outweighs the problem! (n. p.)

Statement of the Problem

Regardless of the various opinions on this subject, gender issues remain an active topic in public schools. This topic cannot be ignored simply because online education does not present the same gender problems as a classroom does. Clearly, the Internet is being used to deliver instruction in all parts of the world. When students' test scores are added to the equation, the value of this topic increases dramatically.

This was a quantitative study designed to investigate the relationship between online learning and gender-based issues in education. This study was conducted using a survey that examined three different dimensions. These dimensions were learning styles in an online environment, online experiences, and students' opinions and perceptions. Scores on each of the three dimensions of the survey were also studied in regard to grade level, course of study, online experience, and expected grade.

The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. Student observations and achievements were also evaluated by gender, grade level, course of study, online experience, and expected grade. This type of study could identify possible problems with the online model based on gender. This information might aid designers of online curricula, as well as the teachers.

Research Questions

The following research questions were formulated to guide this study.

1. Are there significant differences between grade levels (junior or senior) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?
2. Are there significant differences in regard to gender in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?
3. Are there significant differences between the two different courses of study (college-university prep and college-tech prep) in the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?
4. Are there significant differences between students' online learning experience (with online learning experience and those without) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?
5. Are there significant differences in each of the three dimensions, the learning style, the experience dimension, and the opinion dimension in regard to expected grade (A, B, or C and below)?

Significance of the Study

One of the latest trends in education has dealt with gender and how male and female students learn best. At present, there are several schools in the United States piloting single-gender classrooms, primarily middle schools. Punjabi and Rege (2005) stated:

Gender is the most pervasive form of inequality, as it operates across all classes, castes and communities....schooling actually reinforces the gender inequality of

socialization and social control; in fact schools themselves create boundaries that limit possibilities. (p. 69)

Another trend in education is online learning. As technology becomes more available and affordable, larger numbers of people are taking advantage of the opportunity. With society needing fewer blue-collar workers, knowledge of technology has become a fundamental component in today's work force. As a result, high schools are beginning to follow colleges and universities by offering additional training in various technologies as well as online classes.

The relationship between gender and the use of technology was examined in hope of uncovering valuable information to aid educators and students. Among the reasons to study gender in connection with online learning would be to discover any possible relationship and to provide all students with equal learning opportunities as well as an optimal learning environment.

Delimitations

1. The research was limited to E-Commerce I classes that are composed mainly of 11th- and 12th-grade students.
2. The research was limited to North Carolina's public high schools.
3. The data collected were limited to 2 semesters of the public school calendar.
4. The survey instrument was designed to measure students' attitudes and perceptions in E-Commerce I.
5. Students' achievement was measured using the North Carolina VoCats Test administered during the last 3 days of the semester.
6. Results of this study may not be generalized to other populations.

Assumptions

The following assumptions were made in this study:

1. All of the statistical procedures used in the research were appropriate for analyzing the data.
2. The survey was valid and met the purpose of this study.
3. The VoCats test scores were adequate indicators of students' performance and achievement in the E-Commerce I online class in North Carolina.

Definitions of Terms

1. *Blackboard*: This is a web-based software system that is used to support flexible teaching and learning in face-to-face and distance courses. It provides tools and facilities for online course management, content management and sharing, assessment management, and online collaboration and communication (Blackboard, 2007).
2. *E-Commerce I*: This online course is designed to help students master skills in the design and construction of complex web sites used to conduct business electronically. Emphasis is on skill development in advanced web page construction and entrepreneurial applications of conducting business electronically as well as economic, social, legal, and ethical issues related to electronic business. Students are expected to plan, design, create, publish, maintain, and promote an electronic business web site. Communication skills and critical thinking are reinforced through the software applications (North Carolina Department of Public Instruction, 2007).
3. *Gender-based education*: This is sometimes called single-sex education when a class is made up of girls only or boys only (Alvine & Cullum, 1999).
4. *Online education*: This is credit-granting courses or education training delivered primarily via the Internet to students at remote locations, including their homes (U.S. News and World Report, 2007).

5. *VoCats*: This is the competency-based, computer-supported system encompassing course planning, lesson planning, test-assessment items, and aggregated and disaggregated reports by students, by class, by teacher, by school, and by Local Education Authority (North Carolina Department of Public Instruction, 2007).
6. *WebCT*: This online management software aids students in their classes by creating, managing, organizing, and housing a web-based learning environment. On the site, professors can post lecture notes and information, grades, and quizzes and use a chat area and a bulletin board. Its largest advantage is that it allows students access to information at any time of the night or day (Burgess, 2003).

Organization of the Study

The research study contains five chapters. The first chapter contains the introduction, the statement of the problem, five research questions, the significance of the study, delimitations, assumptions, and important terms defined for better understanding. The second chapter contains a review of related literature and is divided into five sections: (a) history of computers, (b) computers in education, (c) gender-based education, (d) online learning, and (e) learning styles. Chapter 3 introduces the procedures and methods used to collect, analyze, and report the findings. Chapter 4 presents the results and analysis of the data. Chapter 5 contains a summary of the findings, conclusions, and recommendations for further research and practice.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

Because technology is making the world smaller, American citizens are faced with competing in a global economy. Education and student preparation are essential in ensuring America retains its place in the world economy. According to Marzano, Pickering, and Pollock (2001):

We educators stand at a special point in time. This is not because a new decade, century, and millennium have begun (although this phenomenon certainly brings new opportunities and complexities). Rather, it is because the “art” of teaching is rapidly becoming the “science” of teaching, and this is a relatively new phenomenon. It may come as a surprise to some readers that up until 30 years ago, teaching had not been systematically studied in a scientific manner. (p. 1)

Throughout the past 30 years, educators have developed new strategies for teaching by focusing on more individualized instruction. Education has incorporated teaching strategies that take into account the different learning styles of students. Educators have also included more complex programs to help deal with students’ disabilities.

All of these strategies were meant to increase students’ achievement. Along with new strategies for teaching, educators are also being asked to incorporate new technologies and to provide students with more learning opportunities. This is designed to improve student achievement and to better prepare students for higher education or work.

Technology

Technology, specifically computers, has made online education possible. Computers have been around longer than most people realize. The beginning of

computers can be traced back to the abacus in about 3000 B. C. Although the abacus was not a computer as we think of it today, it performed calculations nonetheless. The abacus was different from any type of previous counting device in that it allowed individuals to manipulate data by using wooden beads to keep track of numbers and place values (Sharp, 2005).

Several other inventions aided calculations. According to Sharp (2005), these included the Napier's Rods and Bones in 1617, Blaise Pascal's Pascaline in 1642, and Baron Gottfried Wilhelm Von Leibniz's Stepped Reckoner in 1674. The first invention based on computer-like logic was Jacquard's Loom in 1804. The loom used punch cards to create patterns that were then woven. This was the forerunner of the keypunch machine. Sharp reported that in the early 1820s, Babbage was working on inventing a machine that would perform error-free calculations. He called his machine the Difference Engine. His later version was called the Analytical Engine. Although Babbage failed to complete the Analytical Engine, he is still known as the father of computers (Sharp). In 1887, Herman Hollerith invented the Tabulating Machine. With this success, Hollerith decided to form his own company called the Tabulating Machine Company. This company is now known as International Business Machines or IBM (Sharp,). The modern computer age, as we know it, began in the 1940s. It was aided by World War II and the need for better data handling systems and code deciphering technology. The first advance came in 1943 with the Mark I invented by IBM. This machine weighed approximately 5 tons and consisted of 750,000 parts and 500 miles of wire; it was 51 feet long and 8 feet high (Hoyle, 2007).

The next milestone in computer history was the Electronic Numerical Integrator and Calculator, (ENIAC). The ENIAC was created by John Mauchly and Presper Eckert. The ENIAC could solve a problem in 3 minutes that had previously taken 30-32 hours to calculate. Although the Mark I was thought to be enormous, it did not compare to the

ENIAC. This machine weighed nearly 30 tons and generated tremendous heat from 18,000 vacuum tubes (Weik, 1961).

In 1951, the first commercial computer, the Universal Automatic Computer, or UNIVAC, was developed. However, only 2 years later, three computer companies introduced commercial computers, the IBM 701, the Burroughs E101, and the Honeywell Datamatic 1000. Although the original UNIVAC was used by the United States Census Bureau, it was not until UNIVAC I was introduced that this era in computer use really exploded. This computer was a major improvement because it used mercury delay lines as opposed to vacuum tubes. This allowed the machines to be smaller, more compact, and more reliable (Sharp, 2005).

The second generation of computers consisted of the transistor. John Bardeen, Walter Brattin, and William Shockley, the inventors, received the Nobel Prize in 1956. This was a major improvement because the transistor was electrically efficient, used less energy, required less space, and generated less heat. It was also made from silicone, which came from common sand (Sharp, 2005).

The third generation began with the introduction of the IBM 360 in 1964. This invention was a critical accomplishment because it used integrated circuits on a chip, allowing computers to become even smaller, more user-friendly, and easier to produce and sell commercially. One might state that this was “literally the beginning of the personal computer” (Sharp, 2005, p. 10).

The fourth generation of computers was launched with the development of the microprocessor, incorporating the complete “brains” of the computer to fit on a single chip that was smaller than the tip of a finger. This microprocessor was developed in 1968 by Edward Hoff. The original chip was marketed by Intel as the Intel 4004. This particular chip was designed for handheld calculators because it was too small for machines that are more complicated. In 1977, the Apple II was introduced and became the first computer to be widely used by the business community. This was mainly

because of its spreadsheet simulation program, VisiCalc. This computer cost about \$1,300 (Bellis, 2007).

At present, we are in the fifth generation of computers. This generation began in the mid 1980s. Today's computers are very different from their predecessors. They are capable of completing thousands of operations simultaneously. They can produce results faster and store more information than ever thought possible. They employ various types of input devices such as voice recognition, touch screens, and handwriting recognition (Pfaffenberger, 1988).

The development and growth of the Internet has also played a major role in technology and improvements to computers since the 1990s. Although the Internet began in the 1960s when the Advanced Research Projects Agency created ARPANET, it did not become popular until much later. In 1986, the National Science Foundation funded NSFNet as a cross-country 56 kilobytes per second backbone for the Internet. During this time, the standards for emails, FTP, and telnet were established. This made the Internet more user-friendly for people who were not computer experts (Howe, 2007).

Even though the Internet was becoming easier to use with web browsers such as Mosaic created by Netscape, it was not until 1985 when Microsoft introduced the graphical user interface that the Internet truly exploded. This type of user interface allowed people to interact with a computer and computer-controlled devices that employed graphical icons, visual indicators, or special graphical elements along with text, labels, and text navigation to represent the information and actions available to a user (Sharp, 2005). Since this time, computer use in the United States has increased dramatically. In 1984, the proportion of households with a computer was only 8%. However, American households that have personal computers and Internet access now number over 70 million (U.S. Census Bureau, 2005).

Computers in Education

Although teachers began integrating computers into their classrooms around the time the microprocessor appeared, computers have actually been used in the educational setting since the 1950s. As one would assume, the first computers used in education dealt with mathematics, science, and engineering. Computers replaced the slide rule for calculating (Sharp, 2005).

In 1950, the Massachusetts Institute of Technology was one of the first universities to use computers for instructional purposes. Aviation students were training using a computer flight simulator. Nearly 9 years later, the first computer showed up in an elementary school in New York City. It was used to help teach arithmetic. However, this was not the norm. Scarcity of software and accessibility issues, generally because of low funding, forced many schools to abandon the idea of using computers in education (Sharp, 2005).

Another problem faced by educators at this time was the cost. The equipment was simply too high and software was very limited. Although there were a few programs being developed, the larger computer companies such as IBM and Apple did not enter the educational computing field until the late 1970s and early 1980s. Apple began donating Apple I personal computers to schools, but many colleges refused them. They did not want to change from their mainframes and minicomputers (Murdock, 2004).

Until this point, software had been developed and distributed mainly by hardware companies. With the growing popularity of the microcomputer, new software companies entered the market; some were even driven by teachers. One such group was the Minnesota Educational Computing Consortium (MECC). This nonprofit group played a major role in educational technology. MECC was created by the state legislature and was given the task to study and to coordinate computer use in schools. In 1978, Apple II computers were chosen by MECC for state schools. Any school in the state could buy

these computers through MECC. As a result, most schools used the Apple II (MECC, 2007).

Computer Aided Instruction

Various learning theories have been used to evaluate the effect of the computer on teaching and learning. Among these were behaviorism, cognitive theory, constructivism, and situated cognition. Theorists from each area disagreed on exactly which strategies were most useful in achieving educational goals. As a result, two different approaches emerged: teacher-directed and constructivism. The teacher-directed approach is based on behaviorist theory whereas the constructive approach comes from various types of cognitive learning theories (Sharp, 2005). According to Gonzalez (2006), behaviorists theorize that one's behavior is a product of his or her environment. As a result, behaviorists are concerned with the changes in a student's behavior associated with learning. The behaviorist theory emerges in the form of operant conditioning, using reinforcement. The cognitive-learning theorists have stated that changes in a student's behavior are a direct result of learning; therefore, learning must consist of meaningful cognitive development changes by the process of assimilation and accommodation (Gonzalez).

According to Sharp (2005), the teacher-based approach was derived from the behavioral theories of B.F. Skinner, Edward Thorndike, Richard Atkinson, David Ausubel, Robert Gagné, and Lee Cronbach. In the teacher-directed classroom, the teacher is responsible for creating and presenting lessons (Fowler, 1983). Using the teacher-based approach, large numbers of software programs were developed. Many are still being used today, such as *High School Advantage 2004*, *Quarter Mile*, *Math Blaster: Ages 6-9*, and *Kaplan SAT, PSAT, and ACT Prep*. According to Sharp, "Critics of this approach argue its lack of flexibility in that it only uses one type of educational

technology. They contend it completely ignores multimedia and telecommunication” (Sharp, p. 25).

The constructivist approach came from the work of developmental theorists including Jerome Bruner, Jean Piaget, Lev Vygotsky, Seymour Papert, and Howard Gardner. This particular approach states that learning occurs when the learner controls his or her own acquisition of knowledge (Sharp, 2005). Simulation software is based on the constructive approach. One of the first simulations was the program, *Lemonade Stand*. This program was created by MECC and designed to be used on the Apple II computer. It taught such concepts as budgeting and supply and demand (Gecawich, 2004).

Regardless of the approach chosen, education will continue to use technology and computers. As citizens become more and more dependent on technology, computer skills are becoming more important. In 1992, North Carolina instituted a state-wide computer competency test that each student must pass before graduating from high school. The test is given in the fall of the 8th-grade year. It combines knowledge and skills questions from societal-ethical issues, database, spreadsheet, keyboard use, word processing, desktop publishing, Multimedia-Presentation, and telecommunications-Internet (North Carolina Public Schools, 1992).

Although most educators agree that computer skills need to be taught, there has been much debate over when instruction should actually begin. Picciano (2002) stated that it should not begin before middle school because of the physical limitations of young students' hands. Despite these arguments, educators and public leaders continue to demand more technology in schools to be taught at earlier ages. Examples of this can be found in small, rural school systems. One school, Westmeade Elementary, is one of six Metro schools in Nashville, Tennessee, chosen to pilot such a program. These six schools will share \$85 million dollars to upgrade technology. The federal law, *No Child*

Left Behind Act, requires schools to create technology plans and to develop ways to use technology as a means of increasing students' achievement (Mielczarek, 2007a).

Online Education

In the past 20 years, education has changed dramatically. One of the major changes has been the use of technology. Until recently, technology was so expensive that few people had access to it. Now, almost every householder has a computer and Internet connection. In some instances, every family member has his or her own computer. According to Maeroff (2004), 75% of Americans use the Internet an average of 3 hours a day. With more people using technology, educators have naturally turned to technology to reach more students.

Prensky (2001) stated that our students have changed so dramatically from previous years that we are now comparing apples to oranges. Technology and the present digital age have been called a discontinuity, or a singularity--an event that changes things so fundamentally that there is absolutely no going back. Students now spend a major portion of their childhood surrounded by computers, video games, and cell phones. As a result, today's students think and process information differently from their predecessors. Prensky argued that today's students are "digital natives"; they grew up on technology. Their teachers, on the other hand, are "digital immigrants" or people who are struggling with technological changes.

Such a fundamental change did not happen over night. Picciano (2002) said the introduction of technology into the world of education was a slow process. Several reasons were given for this. As mentioned earlier, cost played a large role in the purchasing of computers. Often small schools could not afford to spend money on technology. They had to purchase textbooks and desks. Another problem dealt with limited availability of classroom appropriate software. Even though software was improving, it still had a long way to go. In the early 1990s, most software programs were

designed to reinforce basic concepts instead of teaching them. Many administrators and teachers were not convinced of the benefits of technology. Computers were relatively new and had not proven their longevity in education or in the workforce.

Educators did not begin to embrace technology until the late 1980s and 1990s. During this time, over 15,000 school districts in the United States began spending large sums of money on technology. In the 1980s alone, these schools spent approximately \$2 billion on computer technology. This number increased to over \$6 billion in 2000. At the same time, the student-computer ratio was dropping dramatically. In 1983, this ratio was 125 students to 1 computer. By 2000, this ratio had dropped to six students per one computer (Picciano, 2002).

In spite of these changes, technology still was primarily being used as a teaching aid only. Heerema and Rogers (2001) stated that educators had not considered it as a medium to provide instruction. Although distance education was not a new topic, it was new to this type of technology. The predecessor to distance education was correspondence courses. These programs failed to realize their potential because of fundamental trade-offs between quality--personal instruction and quantity--the widespread communication of the message to large numbers of students.

Despite all of the setbacks, educators did not give up on distance education as a viable medium for delivering classroom instruction. One reason for their determination was its potential to reach so many students who otherwise would not have had the opportunity to receive instruction. Distance education has emerged as a viable option for delivering educational material. In later years, the radio, mail, and satellite television were replaced by digital communications, networking, and improved Internet (Picciano, 2002).

Colleges and universities today use numerous types of technology to deliver distance learning or online learning courses. These technologies include two-way interactive video, one-way prerecorded video, one-way live video, two-way audio and

one-way video, two-way audio (e.g. audio/phone conferencing), one-way audio (e.g. radio, audiotapes), Internet using synchronous computer-based instruction, Internet using asynchronous computer-based instruction, and multimode packages (Lewis, Alexander, & Ferris, 1997).

With these changes in education and technology, numerous online universities emerged. Some of these had poorly designed programs that actually harmed the reputation of online education. Although there are still several of these universities, regulations and requirements have restored their reputations. In 2003, the online education market had more than 4 million students and generated over \$5.1 billion in revenue (Lewis, 2003). This online learning trend has taken hold, especially in higher education. Over 90% of 4-year public schools and more than half of 4-year private schools offered some form of online education in 2004 (Botelho, 2004). More recently, the *2007 Distance Education Survey Results* (Instructional Technology Council, 2008) showed that students' demand for distance education was up more than 9% over the year before. This far exceeds the 1.5% growth that was projected.

Although critics of online education continue to question its worth, more and more schools, both secondary and postsecondary, are adding it to their current program of studies. Heerema and Rogers (2001) stated that high-quality instruction is best achieved when students receive an "educational experience customized to their individual learning abilities" (p. 22). Online education can be easily changed and adapted to meet this criterion.

In the past 5 years, kindergarten- through 12th-grade administrators have begun to research online environments in addition to their traditional systems. School systems could benefit from online classes in many ways. Most of the school systems having online classes use them as supplements only. According to Maeroff (2004), the federal government funded one such model called the Virtual High School. This was a 5-year pilot project based in several states throughout the country. By 2001, the Virtual High

School had enrolled “more than 2000 students in 200 high schools in 26 states in 125 full term E-courses” (Maeroff, p. 62). Students enrolled in virtual courses that were not available in their schools. This allowed the local schools to provide a fuller, more diverse curriculum. It also saved the schools money because they did not have to provide teachers or additional classrooms.

Online education has had numerous benefits for the student as well. Students find this type of class appealing for several reasons including time, opportunities, diversity, and economics. As noted by Kramarae (2001), online classes allow the students more time to work, participate in sports, or spend time with their families. Kramarae reported the advantages pointed out by an adult student:

My own time, my own pace. I can go to my son’s football games; I can see my daughter play basketball for the first time in her life...I can spend much needed time with my husband. I can do my own thing, when I choose to do it and still work 10 hours a day. What more can you ask for? (p. 12)

Online classes also offer students in small schools a chance to take classes when their schools cannot afford to offer advanced placement classes in chemistry, statistics, or specialized classes such as microbiology and music composition. In addition, many community colleges allow high school students to take online classes without paying tuition. This model not only allows the students to save money, but it also provides the opportunity to interact with people from different geographical regions (Maeroff, 2004).

Another benefit to online education has been the anonymity it allows the students. According to Kramarae (2001), disadvantaged students, especially those with physical handicaps, have stated, “Working online often alleviates problems of access” (p. 15). This type of environment also could diminish instances of prejudice. In most online settings, one never sees a face to put with a name. Every student is anonymous in this type of environment, at least in the beginning. It is up to each individual student to control how much personal information is shared.

Online education is not for everyone; much depends on the learning style and motivation of the student. Many who have taken online classes did not have a positive experience. The major complaints of online education were lack of interaction and social aspects, lack of structure and pacing, and lack of immediate feedback or tutoring (Kramarae, 2001, p. 10). Although men and women both have noted these complaints, women seemed to have more difficulties in these areas than did men. Women preferred face-to-face encounters. Kramarae pointed out that women viewed interaction online as a less satisfying, immediate, or authentic form of human contact. The lack of pacing and structure also has posed a problem for some students. Without a teacher standing over them, procrastination becomes a problem for many students. This leads to feelings of frustration and a lower success rate for some students. Some institutions have addressed these problems by creating combination traditional and online classes. In this type of arrangement, classes meet face-to-face periodically throughout the course. Although much of the work is still completed over the Internet, it allows for more social contact. It also allows students time to put faces and names together, which is very important to females. According to Kramarae, one female college student stated, "I prefer a combination of both. I live in a rural area ... the nearest college is one hour away. With distance learning, I could experience uninterrupted instruction--but it's nice to listen to a live person once in a while" (p. 14).

According to Kramarae, (2001), to be successful in online classes, students need to be highly motivated and independent with good organizational and time management skills, be able to study without external reminders, and adapt well to new learning environments. Although this is a good beginning, at least two more requirements should be added: students should be mature and have knowledge of technology. Students must be mature enough to be self-motivated. Without self-motivation, success is not possible in this type of environment. Knowledge of technology is also one of the main indicators of success in an online class. Being devoid of this knowledge seems to make students

anxious and frustrated. Combined with lack of immediate feedback, this could spell disaster (Kramarae).

Flowers' (2001) found, through an online learning survey, that a standard on-campus class was rated slightly lower in appeal to students (3.15 as compared to 3.54 out of 5) than did an online class. Although this survey included over 900 respondents, the researcher cautioned the reader that the results might not be generalized to a larger population. He noted, "At a minimum, 505 members found the idea of taking an online course appealing or very appealing" (p. 5).

Pauls (2003) pointed to another challenge with online education: dealing with the instructor. Not all traditional teachers are successful as online instructors. To be successful in an online environment, the instructor must be willing and able to change completely his or her role. Traditional instructors must progress from "sage on the stage" to "guide on the side" or "mentor in the center" (Pauls, p. 3). To be truly successful teaching in an online environment, a teacher must be willing to forgo the traditional lecture and note taking and to facilitate interaction both with and between the students.

Pauls (2003) maintained it is not the location of education that determines "learning" but the transaction between the learner and the instructor. Five areas of research cover this topic when discussing online education. These areas were: (a) adult education models, (b) transactional distance, (c) student expectations, (d) interactive tools, and (e) ways to encourage interaction (Pauls, p. 3).

According to the U.S. Department of Education (1997), most students who take online classes are adults. Many adults cannot afford to quit work and attend traditional classes, whereas others simply do not want to take the time and money to commute. Simply stated, online education has become more convenient and flexible. Because the majority of online education students are adults, it is imperative that adult education concepts be incorporated into online courses. The Collis Model (Collis, 1998) for adult learning included six basic principles:

1. both learner and educator play an active and unique role in the educational process;
2. the process of creativity acquiring knowledge involves human interaction and learner competence that are developed and evaluated within a communication oriented education model;
3. contemporary models of learning support learner centered instruction that encourages self-assessment, personal reflection, and elicits learner articulation of their own ideas;
4. the learning environment should maximize meaningful and reflective interaction while providing a variety of opportunities for feedback;
5. creating instruction that promotes learner self-regulation and individual responsibility is the product of educators who are academically well prepared and monitor the students' work; and
6. adult educators recognize that students want to move efficiently through their studies, in both time and energy; students do not automatically have good study skills, discipline, or motivation. (pp. 3-5)

Based on these six principles of adult learning, it is easy to see how important interactivity would be to adult learners especially in an online environment.

Transactional distance theory has been defined as “the pedagogical relationships that exist in a distance education environment where the teaching behaviors are executed apart from the learning behaviors” (Moore, 1972, p. 77). Based on this theory, there are three elements that all distance education or online education programs must contain. These are dialogue, structure, and learner autonomy. Dialogue refers to the different types of communication that can take place with online education. This includes student-teacher communication, student-student communication, and student-content communication. Structure refers to the amount of flexibility in an online class to meet

the learner's needs. Finally, learner autonomy gives the student control of what is to be learned and how (Moore).

Students enrolled in online courses have several unique expectations. These students expect the content of the courses to be applicable, the courses to be flexible and innovative, and the results to enhance their profession or career. They are not taking courses simply to occupy their mind and time. These students expect every one to take part, discussions to be concise and meaningful, and the instructor's feedback to be specific and timely (Pauls, 2003).

When dealing with online education, several tools are available to an instructor that can easily make the class more interactive and personal. Some of these tools include email, instant messaging, voice conferencing, and discussion boards. Instructors can also use regular telephones to compensate for technical problems that usually occur. For an online course to be successful, both the student and instructor must stay involved and focused. Using various delivery methods helps to accomplish this by keeping the instruction interesting for both the student and the instructor (Pauls, 2003).

The last area of research focused on various ways to encourage interaction in an online course. One unique idea for encouraging interaction is to create a virtual student. This fictitious student "Joe" serves several purposes. He can start discussions and collaboration in teams. He can serve as a second facilitator. He can even challenge the instructor. Often students are reluctant to talk to the real instructor but will readily interact with Joe (King, 2002).

Role playing can also be helpful in starting dialogue in an online course. When students are asked to role play, they often gain a deeper understanding of a situation, material, or character. This is true in a traditional classroom as well as an online class. Frequently, students are reluctant to role play face-to-face. However, the anonymity provided by the online scenario could completely remove their apprehension (King, 2002).

Final suggestions for increasing interaction might include online office hours, online field trips, and even debates among the various members of the class. Online office hours allow the students a set time to “chat” with the instructor and receive immediate feedback. This is very important. Online field trips might be a possibility for some online classes; however, they probably would not be an ideal option for every class. Online field trips would probably work best with history or geography classes. On the other hand, debates would work in almost any subject area (Pauls, 2003).

Current examples of online learning in education were found in most school systems from small, rural systems to larger, urban systems. One example was found in Williamson County Schools in Tennessee. Beginning in the fall of 2007, Williamson County’s high schools and middle schools began offering online classes. Advanced placement classes and world language courses only were offered online. Assuming the program is successful, the school plans to use online classes to offer remediation as well as credit recovery in the near future according to Lynn Heady, director of teacher learning and assessment (as cited in Giordano, 2007). If a student enrolls in a class such as Japanese, Chinese, or physics that is not offered at his or her local high school, this class is free for the student. However, if a student chooses to enroll in an online class that is offered at his or her high school in a traditional format, the cost is \$450.00 per course. This fee is designed to ensure that students with the greatest needs are served first.

Another example of online learning is taking place in Wilson County, Tennessee. The new director of Wilson County Schools, Mike Davis, is planning to institute a distance learning program with a \$500,000 federal grant. Davis instituted a similar program at his previous school system, Scott County Schools, Tennessee, in 2000. Davis’ plan was to “...give students access to the same curriculum online, especially advanced placement courses” (as cited in Mielczarek, 2007b, ¶ 18).

Finally, several Metro Nashville and Sumner County schools instituted single-gender classrooms in August 2007. Another school system, Cheatham County, has had

same-gender classes for 3 years. The overall results have been positive in Cheatham County. According to DeVille, Young, and Mielczarek (2007), teachers stated, “Boys improved their grades in math and had fewer discipline problems” (¶ 3). Goodlettsville Elementary, another Metro school, implemented two fourth-grade, single-gender classrooms this year. If results are positive, Mike Westveer, principal, said he would support more classes of this type in the future (Overstreet, 2007).

For the last several years, there has been a push in North Carolina to create a virtual high school. This demand began in 2002 with the creation of the Business Education Technology Alliance (BETA). The BETA commission established the E-Learning Commission and charged it with establishing the North Carolina Virtual Public School. At present the North Carolina Virtual High School (NCVHS) offers over 70 classes including honors classes, advanced placement, language classes, advanced science and mathematics, general studies, career tech, life skills, art, and test preparation (NCVPS, 2008) This program is free to all students in North Carolina who are enrolled in North Carolina’s Public Schools, Department of Defense schools, and schools operated by the Bureau of Indian Affairs (NCVPS).

Its purpose, according to NCVPS’s chairperson of the E-Learning Commission, Lt. Governor Bev Perdue, is to provide students with options. As stated in NCVPS (2008):

Virtual learning is about options. To compete in a global economy, kids need to learn in the classroom, on a computer, and through other technologies. A virtual public school means students have access to high quality teaching and learning regardless of their zip code. (n. p.)

Several states have virtual schools already in place and many more are beginning to evaluate the possibility of starting them. Virtual schools in kindergarten- through 12th-grade are growing by approximately 30% each year. Several states that already have virtual schools are Florida, Wisconsin, Tennessee, North Carolina, and Michigan (North American Council for Online Learning, 2006).

Any type of acquired technology skill should benefit the student in the future. We live in a technological age and that is not going to change. According to Weber and Custer (2005), prominent United States economists and education leaders have argued, “Citizens must become technologically literate to maintain economic growth. All students of both genders need to acquire the skills necessary to become consumers capable of critically assessing the technologies they use, resulting in the ability to make informed decisions” (p. 1).

Online Experiences

According to the National Education Association (2008), over 30,000 high school students have taken an online course and another 25,000 students are enrolled in teacher-led online courses this academic year alone. With this large number, it is evident that students enjoy the online environment. Many school systems are partnering with a virtual high school to add more classes; this is the case in North Carolina. According to the NCVPS (2008), a virtual high school alumni stated:

VHS helped me further my education greatly. Not only were they some of my favorite classes in high school, they aided in my choice of a career path. VHS allowed me to take classes that my high school did not offer. As a result, I feel that it was one of the reasons I got into my first choice college. Most colleges look for independent study and VHS is a great example of this. VHS allows you to work independently and learn how to manage your time before you get to college. (n. p.)

Maturity and Online Success

As the demand for online classes continues, many schools are beginning to develop guidelines for taking an online class. The National Education Association (2008) has developed and published a guide to online high school courses. In this guide, there are many suggestions for success in this type of class based on age, teacher recommendation, and grades. Age raises a difficult question. How appropriate is online

education for younger students? According to the National Education Association, the research base for online courses and educational programs offered to preschool, elementary school, and middle school students has been extremely limited; therefore, they suggested caution in the use of the online environment to deliver instruction to younger students. This guide also included questions that prospective online students should ask themselves before proceeding. These questions included maturity, time management, skills necessary, access to technology, and support (National Education Association).

Gender-Based Education

For centuries, women have fought for equality. They have strived to attain the same treatment as men, the same jobs, and the same pay. Stearman and Gaag (1997) illustrated this point very well by stating, “Women are half the world’s population, yet they do two-thirds of the world’s work, earn less than one half of the world’s income, and own less than one-hundredth of the world’s property” (p. 37). According to an article in the *New York Times* by Levin (2006), women make up more than half of the college population. If so, why is there still such inequality?

A defining work that fueled the current debate over gender-based education was Gilligan’s work, *A Different Voice*, published in 1982. Gilligan was a psychologist at Harvard University. Even though this was a study on moral development, it set the stage for gender research and had a profound effect on education. In this study, Gilligan pointed out differences between males and females and their approach to morality:

The male approach to morality is that individuals have certain basic rights and we have to respect the rights of others. In other words, morality restricts what we do. The female approach to morality is that people have responsibilities towards others and morality is an imperative to care for others. (p. 17)

This theory outraged some academic feminists while it pleased others. According to Salomone (2003), some felt this suggested women had a higher moral standard than men.

This argument sparked the beginning of gender differences studies through the cognitive styles rather than cognitive abilities.

Gender-based education has continued to be a topic of discussion among educators. Madigan (2003) pointed out, “There is a growing body of literature documenting the benefits of single-gender schooling in general education settings” (n. p.). Various studies have been completed on this subject. One such study, *How Schools Shortchange Girls*, was commissioned by the AAUW Educational Foundation (2001). This study, completed in 1992, analyzed over 1,000 articles on girls in kindergarten through 12th grade. The results determined that girls received an “inequitable education, both in quality and quantity, compared to that of boys” (Ford, 1998, p. 2).

Since 1992, research on this topic has grown tremendously. The AAUW Educational Foundation (2001) followed up on their original report with a second report in 1998: *Gender Gaps: Where Schools Still Fail Our Children*. This study determined that, although the gap was narrowing, it was still present. Girls consistently made better grades than did boys; however, the boys out performed girls on standardized tests such as SAT, PSAT, and ACT (Ford, 1998). Although the reason for this outcome is unclear, it has been a problem because the standardized tests are used as gateways for college acceptance. At present, there is no gap between boys’ and girls’ scores on standardized tests.

Many problems of bias that were present in previous years have been removed and no longer pose a problem. One such problem was that various tests appealed more to boys than to girls. For example, multiple-choice tests seemed to be easier for boys. This was eliminated by using a number of testing methods, including multiple choice, short answer, and essay-type questions. This was known as test “unfairness” not test bias. Bailey (1995) noted, “Biased tests, those that favor one sex or one group, are specifically prohibited by Title IX of the Education Amendments of 1972. Discrimination in the use of tests is also forbidden” (p. 91).

Bailey (1995) explained that to ensure this problem was corrected, researchers looked for bias on standardized tests. Researchers compared gender performance on each test item. Next, researchers compared these data to the overall test performance data. If the item in question had a greater difference than the test as a whole, the test item was considered biased.

Lott (1994) suggested that gender bias is learned through what we read, hear, experience, and see modeled. In school settings, males typically hold positions of authority and power, whereas women are primarily teachers. Of all teachers, 75% are women; however, only 34.5% of all principals are women and only 8.2% are directors of schools. Both male and female teachers have been observed responding differently to boys and girls. Lott reported that in a study conducted in 1978, teachers consistently perceived girls and boys differently in a stereotypical manner in kindergarten through the 12th grade. If such perception is continued, this belief becomes accepted and validated through social agreement.

Because education has played a large role in perpetuating this stereotype, it makes sense that educators should help change it. Hansen, Walker, and Flom (1995) suggested five ways education could help girls thrive. These five suggestions were: (a) celebrate girls' strong identity, (b) respect girls as central players, (c) connect girls to caring adults, (d) ensure girls' participation and success, and (e) empower girls to realize their dreams. Celebrating girls' strong identity deals with recognizing girls of all races, cultures, disabilities, and social status. One way to promote this is to have accomplished professionals from various backgrounds talk with the girls. By having real people discuss the importance of identity and perceptions of women in today's world, the girls should be able to gain a clearer understanding of themselves and society. Respecting girls as central players means to accept and include each one of the girls as an important participant in the academic and social life of the school. This step is particularly important in middle school and high school. This approach makes allowances for

numerous types of differences including physical disabilities, mental problems, physical imperfections, and the academically gifted. Treating girls as equals is particularly important in math, science, and technology classes because these are the areas in which girls tend to lag behind boys. One researcher has shown that girls in a single-gender class excelled in math (Vu, 2006). An explanation for this improvement could be that girls learned more because they were without fear of harassment, marginalization, or inequality. In this situation, the girls might have felt more at ease asking questions because the “smarter” male students were not part of the class. Many young girls do not have caring adults in their personal lives; therefore, educators should take time to initiate the steps girls need in order to help them make these valuable connections. These connections do not have to be with people outside of the school, although it is very meaningful when community leaders help. Teachers, school nurses, counselors, administrators, or anyone who makes the student feel comfortable can be a good mentor. The final two steps ensuring girls’ participation and success and empowering girls to realize their dreams are closely connected. Girls can realize their dreams only when they are successful. Teachers can help ensure girls’ success by arranging for them to have equal learning opportunities and acquire the skills to take advantage of these opportunities. Participation is a key. Girls can no longer afford to sit on the sideline and watch the boys. They must play an active role in their education and development; only then can they be truly successful.

Gender issues play a role in instituting computer education at the primary level. According to Young (2001), sex refers to basic physiological differences between men and women; gender refers to the roles that each is taught. Most computer games and gaming consoles are designed for males. As a rule, girls are not interested in playing sporting- or war-type games. Consequently, males generally have more exposure using computers at an early age. Without computer knowledge and experience, girls are going

to fall further behind in today's technology-based environment. Because girls lack experience, many tend to shy away from online classes.

McDonald's (2007) research centered on girls and their benefits from single-gender classes; however, there is also research that shows boys benefit as well. Some researchers have shown that many educational systems are leaving boys behind, especially in the area of literacy. According to McDonald, a 2004 study from the Ontario Ministry, Literacy for Learning, found that boys were more likely to have difficulties with writing and that the literacy gap between girls and boys tends to increase with age.

McDonald (2007) cited another study, the Program for International Student Assessment, that determined girls did significantly better than did boys in reading, whereas boys outperformed girls in science and math. McDonald maintained that this difference could be attributed to different learning styles between the genders. Advocates for single-gender schools contend that girls and boys learn differently; therefore, to be successful, they need to be taught differently (McDonald).

Sneed (2007) suggested that single-gender classes could have several benefits. These were:

...broadening educational opportunities and experiences; students are more likely to enroll in courses, play instruments, and participate in extracurricular activities they would otherwise not have; removes distractions; improves classroom performance; improves behavior; improves post-K12 academic performance; allows teachers to adapt their curriculum to gender-specific learning styles; improves self-concept and self-esteem and diminishes the strength of harmful youth culture values. (Slide #6)

Opponents have equal numbers of arguments against single-gender education. These arguments are: (a) separate is inherently unequal, (b) single-gender classes are segregation, (c) single-gender classes violate the social and educational goal for diversity, (d) single-gender classes do not prepare students for real world or interactions with the opposite sex, and (e) single-gender class success stories can be traced to pedagogy instead of gender issues (Sneed, 2007).

The opponents of single-gender classes also have research findings to support their arguments. Smithers and Robinson (2006) examined single-gender schools in Australia, United States, Canada, New Zealand, Ireland, and the United Kingdom. Opponents to gender education have viewed this report as evidentiary support; however, its findings were not an attack on single-gender education. It simply stated, "...little evidence of consistent advantages in either single-gender or co-education has been found (Smithers & Robinson, p. i).

Zwerling (2001) studied 12 single-gender schools over 3 years from 1998 to 2000. Zwerling found that although separating boys and girls solved some problems, it also created others. Some of the problems were boys were seen as "bad" and girls were seen as "good" and traditional gender stereotypes were often reinforced even in the single-gender environment.

One expert on the subject of gender education was Sax (2005). He has not only written books on the subject, but he is also the founder and executive director of the National Association for Single-Sex Public Education. Sax suggested that educators should rethink gender differences. He stated that genders have more differences than simply different levels of competition and collaboration. He maintained there were four profound differences between boys and girls. These were brain development, brain "wiring," hearing, and response to stress. Sax stated that a male's brain tissue is different from a female's brain tissue. The second difference Sax cited was how each brain is wired. Females' emotions are processed in the area of the brain that processes language. Males' emotions are processed elsewhere. As a result, girls appear to be more comfortable expressing their emotions than do males. The third difference was hearing. According to Sax, researchers have shown that teenage girls hear about 7 times better than do teenage boys. This can have a profound effect in the classroom. Females are more easily distracted by noise levels than are males. Sax suggested that females will not learn as well if there is noise in the classroom. The last difference listed by Sax was

response to stress. Males and females handle and respond to stress in different ways. Sax pointed to studies showing that every mammal, not just humans, displayed these gender related differences in handling stress. Males tend to perform well under pressure, while females do not. For males, learning is enhanced by stress. Females prefer a more supportive, nonconfrontational approach (Sax).

According to Ballew (2003), there are several instructional strategies that can be incorporated into primary and elementary classrooms that will help overcome these differences. In early grades, teachers can use more visual aids and less auditory instructions to help boys whose language skills are not as developed as girls. Class size and number of teachers can also improve students' learning. In elementary school, it is recommended that there be no more than 15 students per class with one teacher. Cooperative learning and group work also plays a major role in brain development of both genders (Ballew).

Ballew (2003) also wrote that middle school discipline problems might be eliminated if schools were single-gender institutions. Proponents of this argument cite puberty and hormonal changes in both genders for this reason. Boys often find themselves with feelings of anger and aggression. They feel very awkward and have a hard time expressing their feelings to others. Girls, on the other hand, experience mood swings, self-confidence issues, and unexpected attention because of their body changes. Both genders are apt to display extreme behaviors from time to time. These behaviors are often a deterrent to learning and discipline (Ballew).

Finally, Ballew (2003) applied his findings to the high school environment. Although gender still plays a major role in student success, numerous strategies can be employed to benefit both genders. Class size plays an important role in learning and discipline. Team teaching can also be a productive strategy because it allows students to build closer relationships with the teachers. According to Ballew, some researchers also suggested that homerooms be implemented in high school. Because the brain learns best

in a group or team, homeroom is a good environment to deal with both academic and social issues through small group discussions where every one knows one another. Another strategy for high school has centered on the time of day school starts. According to Ballew, brain researchers have found a relationship between sleep cycles and learning. Most high school classes currently start between 7:00 to 7:50 a.m. Because most teenagers need about 9 hours of sleep per night, this early starting time could be cutting their sleep time. One expert on the subject, Michelle Kipke, director of The National Academy of Science's Board of Children, Youth, and Families, wrote, "Sleep experts feel strongly that high school timings are out of sync with the natural circadian rhythms of adolescents" (as cited in Ballew, p. 165). This notion has been supported by teachers. Teachers have stated that students learn less and are more difficult to teach in the early morning hours. Many people would argue that this could be solved by having students go to bed earlier. However, researchers have shown that during adolescence, hormones and brain chemicals are assaulting the system. Parts of the brain are experiencing accelerated growth that is natural to late evenings. Forcing a student to go to bed earlier is an unnatural solution (Ballew).

Sandler, (1997) stated that simply dividing the students by gender is not enough; the curriculum and teaching methods also need to be adapted for each gender. This does not mean that math should be taught to girls through shopping examples and taught to boys through automotive examples. This type of approach reinforces stereotypes that present day educational systems are trying to avoid. Sandler stated that the purpose of schools is not only to teach skills and knowledge for the future, but to also remove, as much as possible, the stereotypes and trends that hinder boys and girls from learning.

At present, single-gender education is gaining respect among educators across the country. One example of this was found in Metropolitan Nashville Public Schools in Tennessee. According to Sarrio (2007), Pedro Garcia, the Metro school director, announced plans to pilot single-gender schools at the start of the 2007 school year.

Benjamin Wright, Metro school system's newest high-ranking administrator, had no problems with this plan. Wright helped create two new single-gender high schools in his previous employment. He also helped develop five small academies with single-gender units (Sarrío).

According to Gray (1992), educators and individuals in society must never forget the differences in men and women. We must always recognize and respect the differences between boys and girls in order to communicate efficiently with each other. We are all different and react differently; therefore, we should make accommodations for the diversity.

As online learning continues to gain popularity, there is another concurrent trend: the increasing proportion of women in the postsecondary student population. In 1999–2000, women were the majority of those earning postsecondary degrees, obtaining 56.3% of bachelor's degrees and 57.8% of master's degrees during the 10-year period of 1988–1998 (Anderson & Haddad, 2005).

Regardless of one's position on this issue, it is clear that researchers have not yielded definite answers. Nonetheless, there are several logical and practical conclusions that can be drawn. First, there is no indication that single-gender classes have a negative impact on either gender. The idea that the social development of boys is negatively affected appears to be just speculation. There also is evidence to support the notion that single-gender schools and classes help develop a more positive experience in traditional subjects, such as math for girls. There is also a growing body of evidence that states disadvantaged minorities might benefit from single-gender education (Salomone, 2003).

Learning Styles

According to Bogod (2008), learning styles can play a significant role in the success of students enrolled in an online environment. Learning styles vary from person to person. Each student prefers certain types of instruction and dislikes other types.

There are three main learning styles: visual learners, auditory learners, and tactile-kinesthetic learners. Visual learners are students who need to see the teacher's body language and facial expression to understand fully the content of the class. They tend to prefer sitting at the front of the classroom to avoid visual obstructions. Bogod noted they usually think in pictures and learn best from visual displays including diagrams, illustrated textbooks, overhead transparencies, videos, flipcharts, and handouts. This type of learner might perform well in an online class. The material is usually presented in a visual manner such as printed instructions, PowerPoint presentations, and emails. On the other hand, this student would miss the personal face-to-face contact of the traditional classroom (Bogod).

Auditory learners learn through listening. They learn best through verbal lectures, discussions, talking things through, and listening to what others have to say. Auditory learners interpret the underlying meanings of speech through listening to tone of voice, pitch, speed, and other nuances. For auditory learners, written information might have little meaning until it is heard. This type of learner might have problems in an online environment. Most of the information presented in an online class is written; therefore, an auditory learner would have to read the material aloud to get its full benefit (Bogod, 2008).

The final learner, according to Bogod (2008), the tactile-kinesthetic learner, learns best through the hands-on approach. These learners want to explore actively the physical world around them. They might find it hard to sit still for long periods and could become distracted by their need for activity and exploration. These students could become easily bored with the online environment, unless they are interested in computers. Although most online classes have very few "hands-on" assignments, the use of the computer to communicate might be enough to hold their interest depending on their likes and dislikes (Bogod). Regardless of the learning style, it is important for students to know which style works best for them so they can choose accordingly and be successful.

Courses of Study

The North Carolina Department of Public Instruction (2007) has developed four different courses of study. Three of these courses end with a diploma. The fourth course is the occupational track reserved for students with disabilities. Students enrolled in the occupational track must have Individual Education Plans in place and are excluded from all end of course proficiency level tests. The three other courses of study are the college-university prep track, the college-tech prep track, and the career track. The college-university prep track is reserved for the most academically gifted students who plan to attend a 4-year institution of higher learning. It contains the most rigorous set of course work. The college-tech prep track is designed for students who plan to attend a community college or some sort of technical school. The course work involved in this track is less rigorous especially in the areas of math and foreign languages. The career diploma is designed for students who are not planning to further their education after graduation. This course of study is the least challenging and requires the least amount of effort for students. The E-Commerce I class is only available to college-university prep students and college-tech prep students.

Expectations

Students' expectations and their success rate go hand in hand. According to Cotton (1989), students' achievement is greatly affected by their own expectations, the teacher's expectations, and even the expectations of the entire school system. When students expect to fail, they are creating a self-fulfilling prophesy. The same is true when a student expects to succeed. The student will do almost everything in his or her power to meet expectations. Self-fulfilling prophecies are the most dramatic form of teacher

expectations when the teacher fails to see students' potential and hence does not respond in a way to encourage them.

Summary

Over the past 20 years, technology has changed the world in ways we could previously only imagine. Today's students are facing technology that is changing on a daily basis, a more global economy, and numerous pressures to perform. Public school systems are struggling to find ways to improve education and reach more students. Some alternatives being considered are single-gender education classes and more online or distance education classes, especially in high schools.

CHAPTER 3

METHODOLOGY AND PROCEDURES

Introduction

The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. Student observations and achievements were also evaluated by gender, grade level, course of study, online experience, and expected grade. This chapter describes in detail the methods and procedures that were used to conduct this research. The sample is identified in this chapter, as well as the design of the study. The instrument that was used to collect the data is identified and presented.

Research Design

This research was a quantitative study using a survey-design method and secondary data. The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. Student observations and achievements were also evaluated by gender, grade level, course of study, online experience, and expected grade. These results should permit inferences to be made about the population (American Psychological Association, 2001). A survey design was chosen for three reasons: (a) the economy of design, (b) the rapid turnaround in data collection, and (c) the anonymity of the respondents (Creswell, 2003). Students being surveyed were asked specific questions about their gender, instructors, curriculum issues, and method of delivery. The survey was cross-sectional and the data were collected during the last week of an 18-week semester. The surveys were designed to be self-administered Internet questionnaires through a hyperlink added to the online

curriculum. There were no appropriate survey instruments available for use. As a result, I created the survey instrument (see Appendix E).

Population

The North Carolina Public Education System consists of 364 high schools in 100 counties. Data for this study were collected in the spring semester of 2008. During this period, there were 899 students enrolled in E-Commerce I in 45 schools. This class is the highest level taught in Business Education; therefore, the majority of the students were seniors. The sampling design for this population was single-staged. The survey involved stratification. Deborah Seehorn, chairperson of the Business Education Division of the North Carolina Department of Public Instruction, granted access to the E-Commerce I students and all the demographic information and End of Course test scores allowed me to add the survey to the online curriculum. Every student enrolled in this class had the opportunity to participate in this study.

Instrumentation

I created the survey instrument because an appropriate one could not be found. I studied several survey instruments including Noel Levitz's instrument. After much research, I adapted some questions taken from the *Noel Levitz Survey, "Priorities Survey for Online Learners for College Students"* to be applicable to high school students. I was given permission to use this survey by Noel Levitz (see Appendix A).

The survey instrument consisted of 22 questions divided into three dimensions. These dimensions were: (a) learning style in an online environment, (b) online experiences, and (c) students' opinions and perceptions. A continuous Likert scale was used for the three dimensions. A cover letter to the teachers and students was used to explain the reason for the survey, to indicate how the results would be used, and to assure anonymity (see Appendix C).

The 22 questions of the survey were divided into four categories as shown in Table 1.

Table 1

Categories of Survey Questions

E-Commerce I – Online Learning Survey

Category	Description	Items
1	Dimension 1: Learning style in online environment	4, 6a, 6b, 6c, 6d, 6e
2	Dimension 2: Online experiences	7a, 7b, 7c, 7d
3	Dimension 3: Student perceptions/opinions	5, 8a, 8b, 8c, 8d, 8e
4	Demographics	1, 2, 3,

Because I created the instrument, the survey instrument was field tested prior to full distribution. I used three E-Commerce I classes located in Mitchell, Yancey, and Avery Counties. I chose these three counties because of the ease of location and communication with the instructors. I also added a section asking the students to make suggestions and improvements in the survey. The number of participants in the sample was 23. For purposes of the pilot study, this survey was mailed to each instructor and then given to the students. The instructors then mailed the completed surveys back to a third party at my school. The entire process took approximately 2 weeks.

The North Carolina VoCats Tests was used to measure students' achievement. Currently more than 300 business representatives, 150 local administrators, and thousands of teachers have been involved in developing these curricula materials and tests. All high schools and middle schools in North Carolina are required to use these

tests. Although these tests have been in place for over 10 years, they are constantly being updated to ensure both validity and reliability. These tests were recognized by the United States Department of Education as a national instructional model in Workforce Development Education (North Carolina Department of Public Instruction, 2007).

Scores from these tests are used to show competency in a specific area. In order to be competent, a student must have at least a level 3 on the end of course test. To obtain a level 3, the student must get a minimum of 85% of the test correct (North Carolina Department of Public Instruction, 2007). Scores are reported by student, by class, by teacher, by school, and by local educational agency.

Data Collection

A cover letter, student assent, and a copy of the survey were given to the North Carolina Business & IT Education Consultant and E-Commerce I coordinator (see Appendices C, D, & E). With the coordinator's permission, the cover letter, the student assent, and a hyperlink for the survey were added to the online E-Commerce I curriculum through LearnNC. The actual survey resided on a server at East Tennessee State University. It was also explained on the email discussion group, North Carolina Business Education (NCBE) teachers. All business education teachers are required to join this discussion group to receive updates from the North Carolina Department of Public instruction as well as to exchange teaching tips.

To protect the anonymity of all participants, access to all surveys was restricted to the researcher. There was no personal contact between the researchers and the participants. Participation was voluntary. Individual survey results were never used; only collective answers to survey questions were used. Individual students or schools could not be identified, further ensuring respondents' anonymity. The coordinator was given the option to receive an executive summary of the results upon completion of the

study. All statistical analyses were presented in summary form and no participant or school was identified.

Data Analysis

Research Question #1: Are there significant differences between grade levels (junior or senior) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

Research question 1 was analyzed using an independent sample *t* test that compared mean scores of the online learning style dimension, the experience dimension, and the opinion dimension. The following hypotheses are based on research question #1:

Ho₁₁: There are no differences between grade levels (junior or senior) in the online learning style environment dimension of the survey.

Ho₁₂: There are no differences between grade levels (junior or senior) in the experience dimension of the survey.

Ho₁₃: There are no differences between the grade levels (junior or senior) in the opinion dimension of the survey.

Research Question #2: Are there significant differences in regard to gender in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

To analyze this research question, an independent sample *t* test was used to compare mean scores of the online learning style dimension, the experience dimension, and the opinion dimension of boys and girls. The following hypotheses were tested:

Ho₂₁: There is no difference in regard to gender in the mean online learning style environment dimension scores of the survey.

Ho₂₂: There is no difference in regard to gender in the mean experience dimension scores of the survey.

Ho2₃: There is no difference in regard to gender in the mean opinion dimension scores of the survey.

Research Question #3: Are there significant differences between the two different courses of study, (college-university prep and college-tech prep) in the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

To analyze this research question, an independent sample *t* test was used to compare mean scores of the online learning style dimension, the experience dimension, and the opinion dimension between college-tech prep students and college-university prep students. The following hypotheses were based on research question #3:

Ho3₁: There are no differences between the means of the two different courses of study in the online learning style environment dimension of the survey.

Ho3₂: There are no differences between the means of the two different courses of study in the experience dimension of the survey.

Ho3₃: There are no differences between the means of the two different courses of study in the opinion dimension of the survey.

Research Question #4: Are there significant differences between students' online learning experience (with online learning experience and those without) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

This question was analyzed using an independent sample *t* test to compare mean scores of the online learning style dimension, the experience dimension, and the opinion dimension. The following hypotheses were tested:

Ho4₁: There are no differences in the mean scores between those with previous online learning experience and those without experience in the online learning style environment dimension of the survey.

Ho4₂: There are no differences in the mean scores between those with previous online learning experience and those without experience in the experience dimension of the survey.

Ho4₃: There are no differences in the mean scores between those with previous online learning experience and those without experience in the opinion dimension of the survey.

Research Question #5: Are there significant differences in each of the three dimensions, the learning style, the experience dimension, and the opinion dimension in regard to expected grade (A, B, or C and below)?

This question was analyzed with a one-way ANOVA. For the purpose of this research question, the grades were grouped as A, B, and C or below. The following hypotheses were considered:

Ho5₁: There are no differences in the mean score of students in the online learning style environment dimension of the survey among the three expected grade groups, (A, B, C or below).

Ho5₂: There are no differences in the mean score of students in the experience dimension of the survey among the three expected grade groups, (A, B, C or below).

Ho5₃: There are no differences in the mean score of students in the opinion dimension of the survey among the three expected grade groups, (A, B, C or below).

Summary

This chapter included a description of the study, research design, population, instrumentation, data collection procedures, and analysis of data. This was a quantitative study designed to investigate the relationship between online learning and gender-based issues in education. Differences in scores on each of the three dimensions of the survey

were also studied in regard to grade level, course of study, online experience, and expected grade. Chapter 4 presents in detail the results of the data, analysis of the data, and all relevant findings.

CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. Students' observations and achievements were also evaluated by gender, grade level, course of study, online experience, and expected grade. This type of study could possibly identify problems with the online model based on gender and uncover valuable information to aid instructional leaders, curricula designers, and teachers. The data were gathered from students enrolled in E-Commerce I classes across North Carolina. Students could choose whether to take the survey in class or any other location with Internet access. The data were analyzed using descriptive statistics, independent sample *t* tests, and a one-way ANOVA.

The study's population consisted of all the students (899) enrolled in E-Commerce I classes in the spring semester of 2008. The survey (see Appendix E) was included in the E-Commerce I curriculum. I also emailed the North Carolina Business Educators forum periodically reminding them to complete it. At the beginning of the semester, I informed the online instructors about the survey and its purpose. Toward the end of the semester, I emailed the instructors several reminders to give their students an opportunity to complete the survey. I also recruited help from the Business Department's chairperson in Raleigh, North Carolina. As a result, she emailed each Career and Technical Education director and personally asked that teachers stress the importance of completing the survey. Because the survey was online, an individual school's response rate could not be identified. The overall response rate was 50.3%.

The *E-Commerce I – Online Learning Survey* (see Appendix E) is an instrument designed to help identify barriers to learning in an online environment. The instrument is

composed of 22 questions that can be divided into 8 different categories. Table 2 shows the categories.

Table 2

Online Learning Survey Categories

Category	Questions
1. Grade Level	1
2. Gender	2
3. Course of Study	3
4. Previous Online Experience	4
5. Expected Grade	5
6. Learning Style	6-10
7. Personal Experiences	11-15
8. Personal Opinions	16-22

Table 3 shows the demographics of the participants in the study. The participants were made up of mostly seniors, 67.3%. The participants were also almost evenly split between males, 50.7%, and females, 49.3%. A majority of the participants were in the college tech prep course of study, 58%, and almost all had no previous online experience, 91.4%.

Table 3

Demographics

Categories	#	%
Juniors	148	32.7
Seniors	304	67.3
Males	229	50.7
Females	223	49.3
College-University Prep	190	42.0
College-Tech Prep	262	58.0
Online Experience	39	8.6
No Online Experience	413	91.4
Expected Grade of A	226	50.0
Expected Grade of B	177	39.2
Expected Grade of C or below	49	10.8

Analysis of Research Questions

Data for this study were compiled from the results of the survey instrument and various statistical methods were used to analyze the data. The organization of this chapter follows the order of the research questions as presented in Chapters 1 and 3.

Research Question #1

Are there significant differences between grade levels (junior or senior) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

This research question was answered using three independent sample *t* tests. I compared the mean scores of juniors and seniors for each of the three dimensions, the learning style dimension, the experience dimension, and the opinion dimension. The three dimensions were the test variables and the grouping variable was the grade level, junior or senior. When looking at the learning style dimension, the test was significant, $t(412) = 2.94, p = .013$. Therefore, H_0 was rejected. Juniors, ($M = 4.26, SD = .60$), had a lower mean on the learning style dimension. This indicates that the juniors enrolled in E-Commerce I were not as confident in their ability to perform well in an online class as were the seniors, ($M = 4.40, SD = .51$). The 95% confidence interval for the difference in the means was .25 to .02. The $\eta^2 = .02$, which indicated a small effect size. Juniors' learning style was not as compatible with online learning as was the seniors' learning style. Figure 1 shows the distributions for the learning style dimension of the two groups.

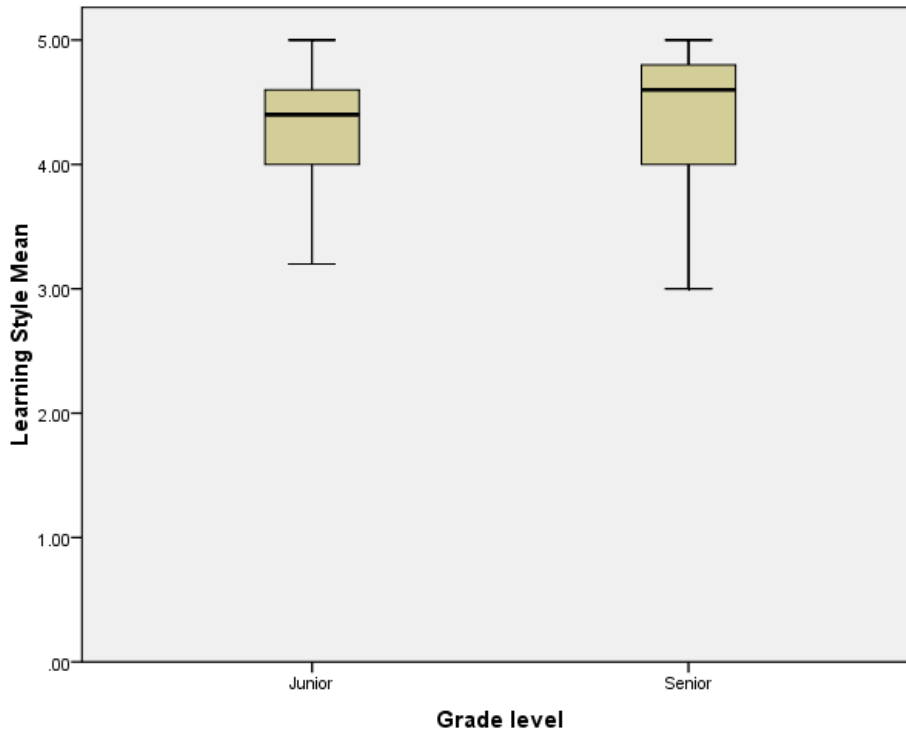


Figure 1. Distribution of Learning Style Mean for Juniors and Seniors

For the experience dimension, the test was significant $t(412) = 3.18, p = .002$. Therefore, H_{012} was rejected. Juniors ($M = 4.39, SD = .67$) had a lower mean on the experience dimension. This indicates that the juniors enrolled in E-Commerce I did not experience the level of fulfillment in an online class as did the seniors, ($M = 4.57, SD = .46$). The 95% confidence interval for the difference in the means was .29 to .05. The $\eta^2 = .02$, which indicated a small effect size. Figure 2 shows the distributions for the learning style dimension of the two groups.

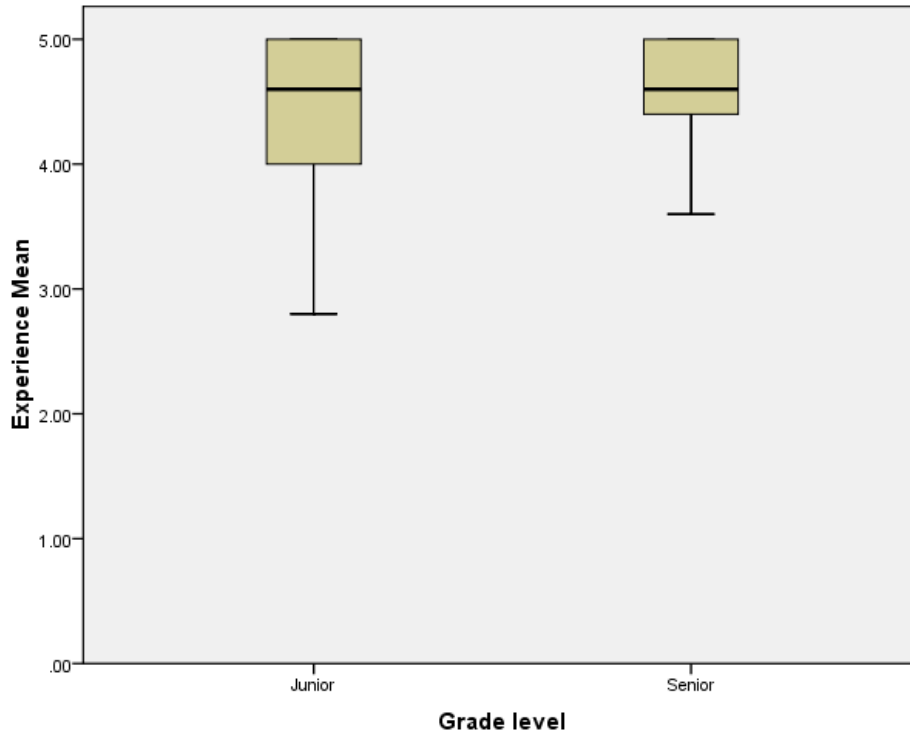


Figure 2. Distribution of Experience Mean for Juniors and Seniors

For the opinion dimension of the survey, the test was also significant, $t(412) = 2.27, p = .023$. Therefore, H_{013} was rejected. Juniors ($M = 3.99, SD = .53$) had a lower mean on the opinion dimension. This indicates that the juniors enrolled in E-Commerce I did not experience the same level of gratification in an online class as did the seniors ($M = 4.10, SD = .43$). The 95% confidence interval for the difference in the means was .20 to .01. The $\eta^2 = .01$, which indicated a small effect size. Figure 3 shows the distributions for the opinion dimension of the two groups.

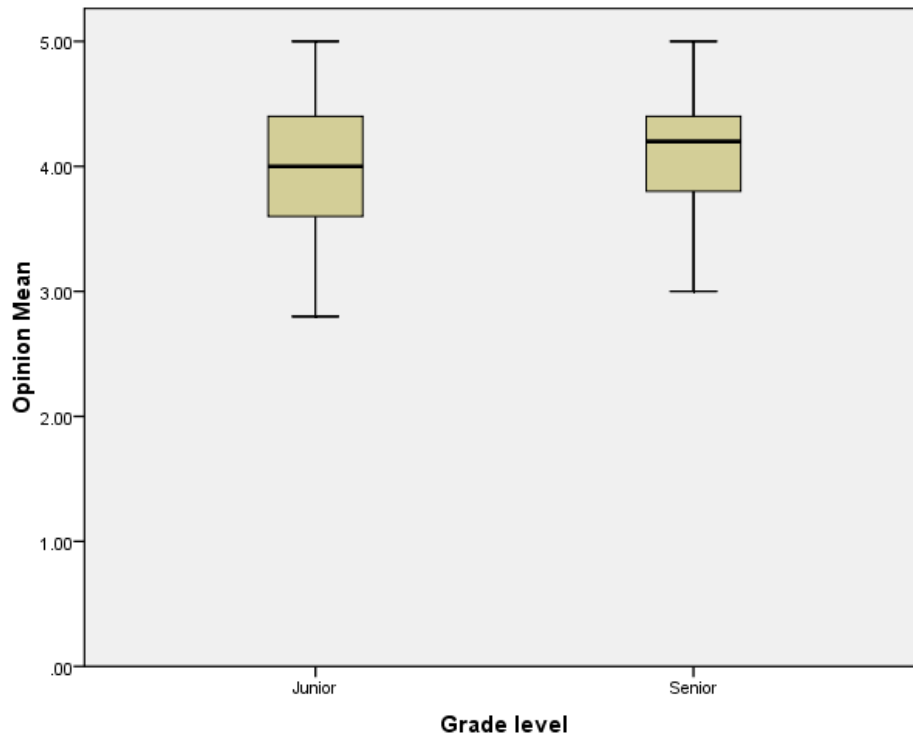


Figure 3. Distribution of Opinion Mean for Juniors and Seniors

Research Question #2

Are there significant differences in regards to gender in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

Research question #2 was answered using three independent sample *t* tests. I compared the mean scores of males and females for each of the three dimensions, the learning style dimension, the experience dimension, and the opinion dimension. The three dimensions were the test variables and the grouping variable was gender, male or female. For the learning style dimension, the test was not significant $t(412) = 1.35, p = .018$. Therefore, H_{02_1} was rejected. The males' ($M = 4.23, SD = .59$) mean for learning

style was just slightly lower than that of the females, ($M = 4.39, SD = .49$). The 95% confidence interval for the difference in the means was .29 to .05. The $\eta^2 = .02$, which indicated a small effect size. Figure 4 shows the distributions for the learning style dimension of the two groups.

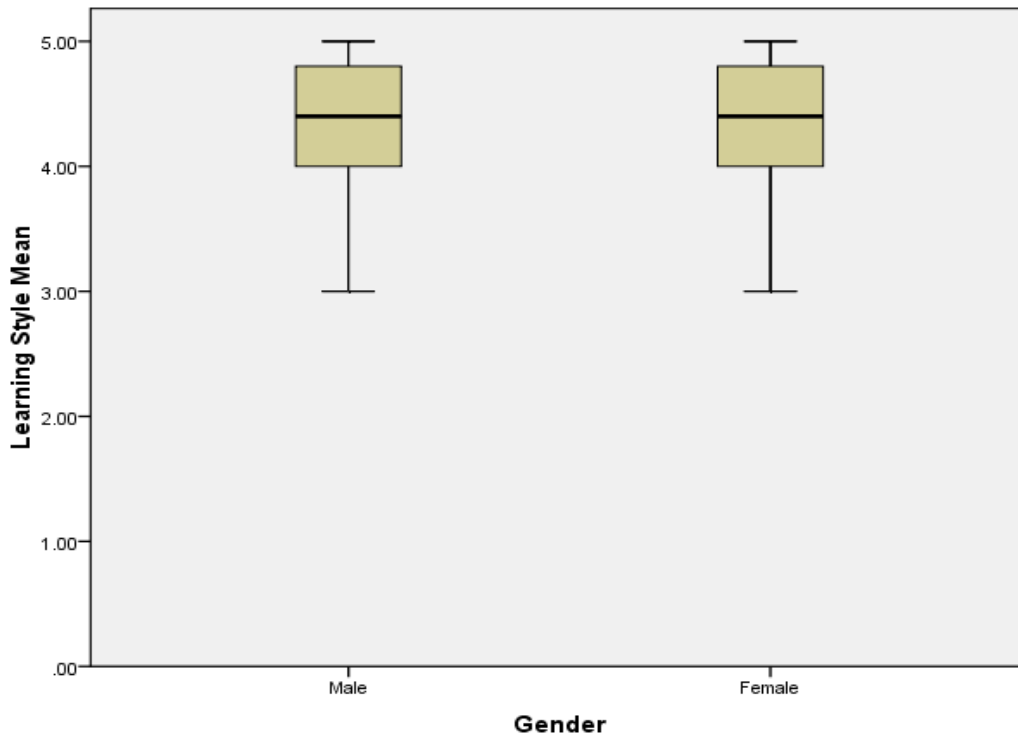


Figure 4. Distribution of Learning Style Mean for Males and Females

For the experience dimension, the test was not significant $t(412) = 1.06, p = .29$. Therefore, H_0 was retained. The males ($M = 4.49, SD = .56$) had a slightly lower mean on the experience dimension than did the females ($M = 4.54, SD = .52$). The 95% confidence interval for the difference in the means was .16 to -.05. The $\eta^2 = <.01$, which

indicated a small effect size. Figure 5 shows the distributions for the experience dimension of the two groups.

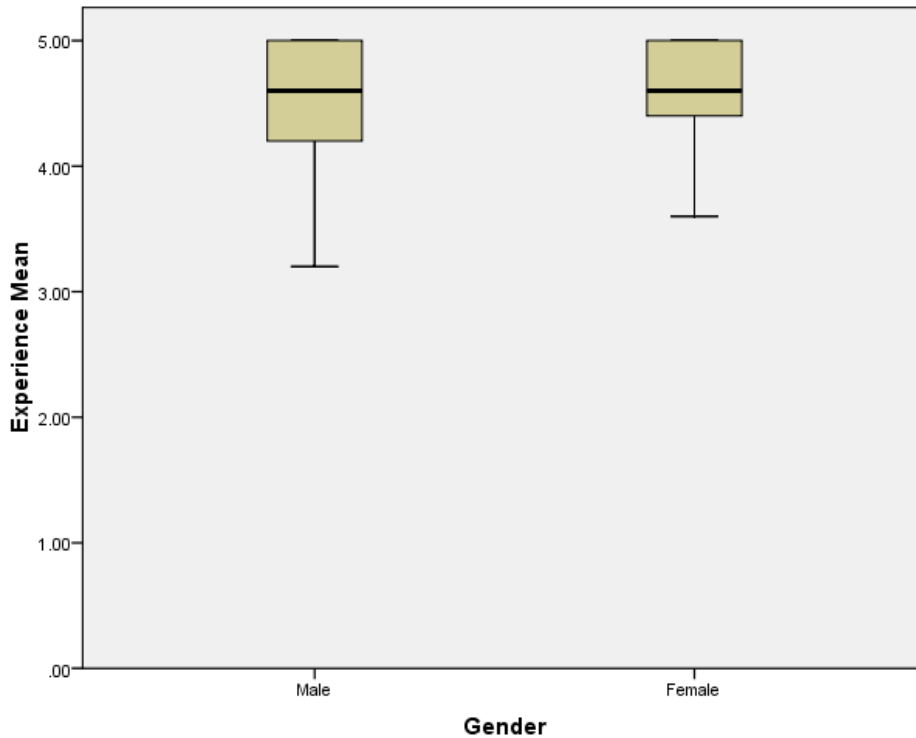


Figure 5. Distribution of Experience Mean for Males and Females

For the opinion dimension, the test was not significant $t(412) = .041, p = .98$. Therefore, H_{023} was retained. The males ($M = 4.07, SD = .45$) had almost equal means on the opinion dimension as did the females ($M = 4.07, SD = .48$). The 95% confidence interval for the difference in the means was $-.09$ to $.09$. The $\eta^2 = <.01$, which indicated virtually no effect size. Figure 6 shows the distributions for the opinion dimension of the two groups.

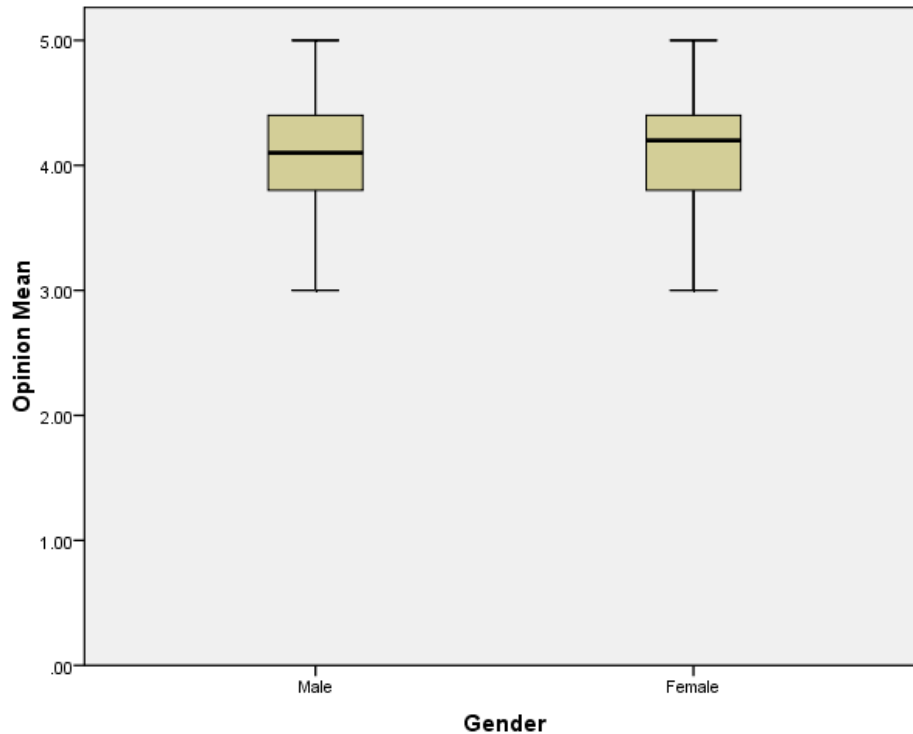


Figure 6. Distribution of Opinion Mean for Males and Females

Research Question #3

Are there significant differences between the two different courses of study (college-university prep and college-tech prep) in the three dimensions of the survey, the learning style dimension, the experience dimension, and the opinion dimension?

Research question #3 was answered using three independent sample t tests. I compared the mean scores of the two courses of study for each of the three dimensions, the learning style dimension, the experience dimension, and the opinion dimension. The three dimensions were the test variables and the grouping variable was college-university prep students and college-tech prep students. When looking at the learning style dimension, the test was not significant $t(412) = .923, p = .356$. Therefore, H_{o3_1} was retained. College-university prep students' ($M = 4.39, SD = .55$) mean for learning style

was just slightly lower than that of the college-tech prep students ($M = 4.34, SD = .54$). The 95% confidence interval for the difference in the means was $-.06$ to $.16$. The $\eta^2 = .002$, which indicated a small effect size. Figure 7 shows the distributions for the learning style dimension of the two groups.

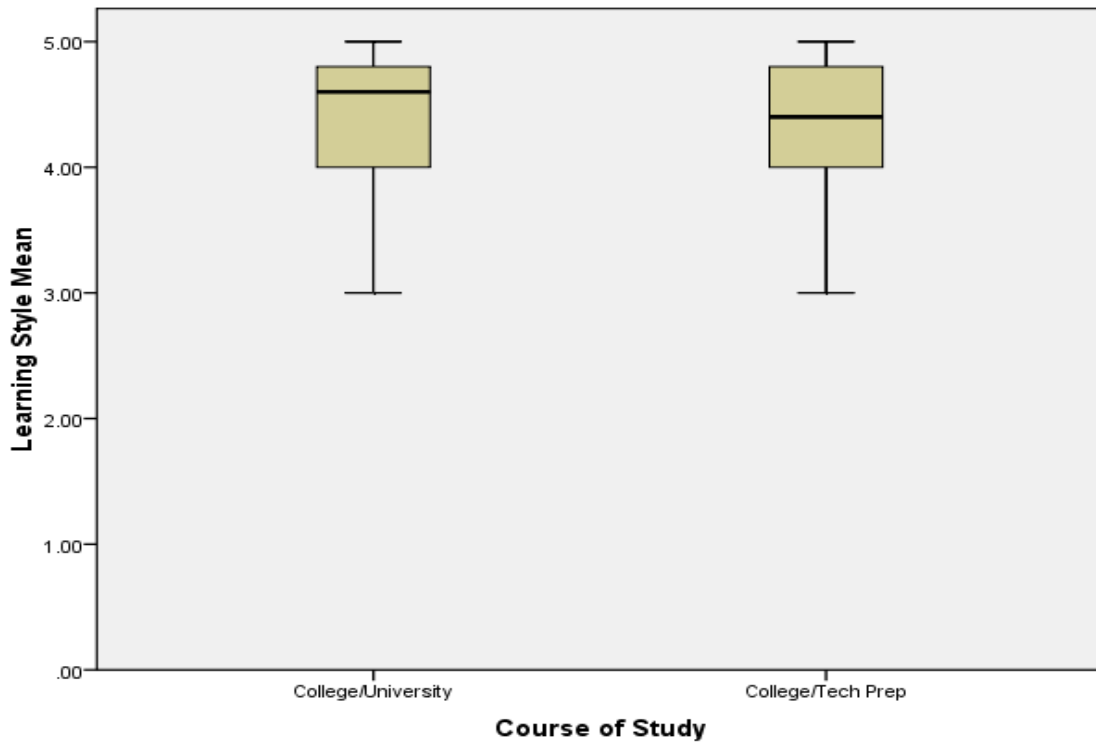


Figure 7. Distribution of Learning Style Mean for Course of Study

For the experience dimension, the test was not significant $t(412) = .744, p = .46$; therefore, H_{o3_2} was retained. College-university prep students ($M = 4.49, SD = .61$) had a slightly lower mean on the experience dimension than did the college-tech prep students ($M = 4.53, SD = .49$). The 95% confidence interval for the difference in the

means was .15 to -.07. The $\eta^2 = <.01$, which indicated a small effect size. Figure 8 shows the distributions for the experience dimension of the two groups.

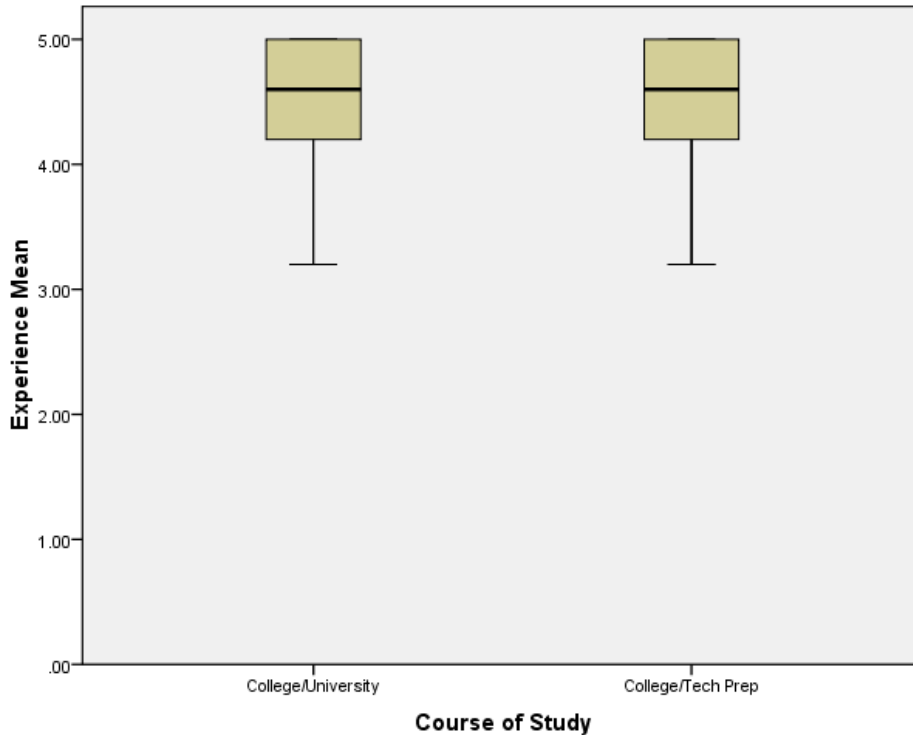


Figure 8. Distribution of Experience Mean for Course of Study

For the opinion dimension, the test was not significant $t(412) = .283, p = .78$. Therefore, H_{032} was retained. College-university prep students' ($M = 4.06, SD = .50$) had a slightly lower mean on the experience dimension than did the college-tech prep students ($M = 4.07, SD = .44$). The 95% confidence interval for the difference in the means was .11 to -.08. The $\eta^2 = .02$, which indicated a small effect size. Figure 9 shows the distributions for the experience dimension of the two groups.

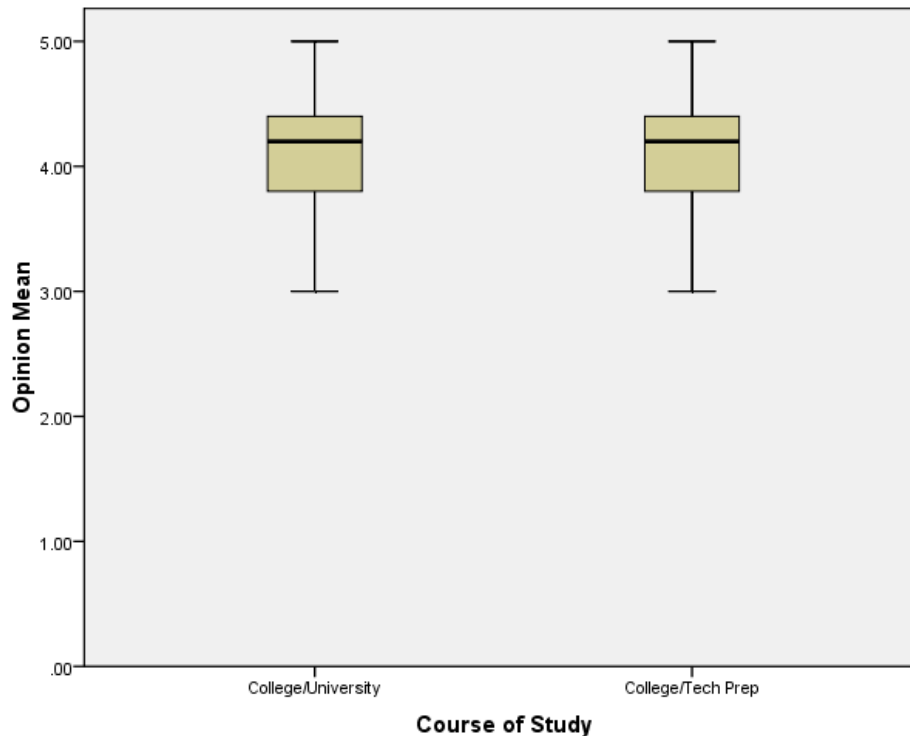


Figure 9. Distribution of Opinion Mean for Course of Study

Research Question #4

Are there significant differences between students' online learning experience (with online learning experience and those without) in each of the three dimensions of the survey, the learning style dimension, the experience dimension, and the opinion dimension?

Research question #4 was addressed using three independent sample t tests. I compared the mean scores of online experiences for each of the three dimensions, the learning style dimension, the experience dimension, and the opinion dimension. The three dimensions were the test variables, and the grouping variable was whether the student had taken an online class previously. For the learning style dimension, the test was not significant $t(412) = 1.790, p = .074$. Therefore, H_{04_1} was retained. Students'

with online experience ($M = 4.53, SD = .61$) mean for learning style was lower than that of the students' without online experience ($M = 4.34, SD = .54$). The 95% confidence interval for the difference in the means was .02 to .42. The $\eta^2 = .01$, which indicated a small effect size. Figure 10 shows the distributions for the learning style dimension of the two groups.

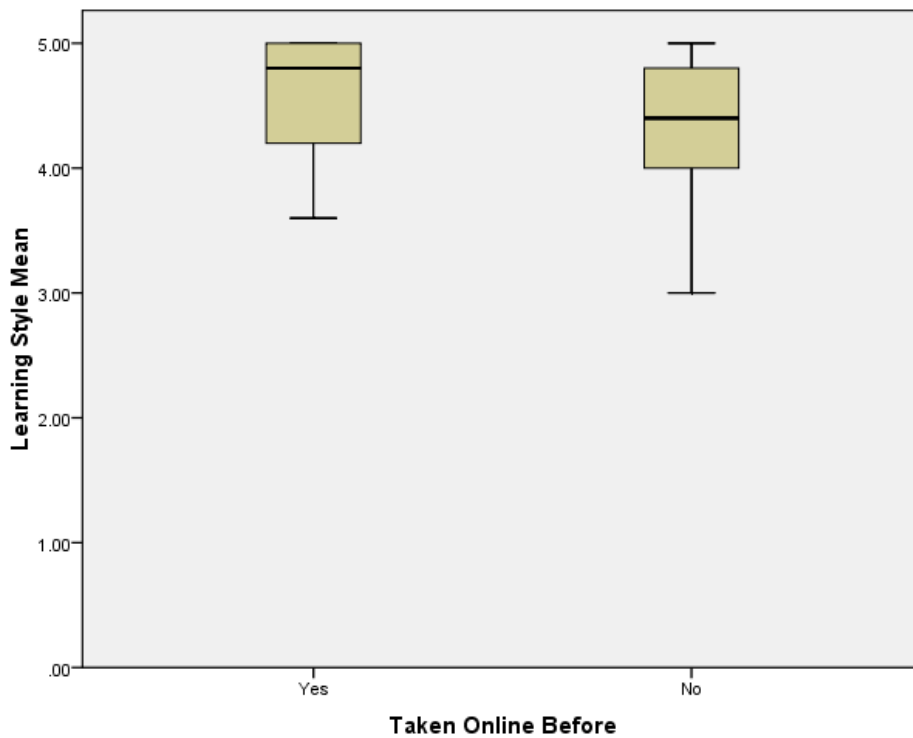


Figure 10. Distribution of Learning Style Mean for Previous Online Experience

For the experience dimension, the test was not significant $t(412) = .283, p = .78$. Therefore, H_{032} was retained. Students with online experience ($M = 4.61, SD = .59$) had a slightly higher mean on the experience dimension than did the students without online experience ($M = 4.51, SD = .53$). The 95% confidence interval for the difference in the

means was .10 to .33. The $\eta^2 = <.01$, which indicated a small effect size. Figure 11 shows the distributions for the experience dimension of the two groups.

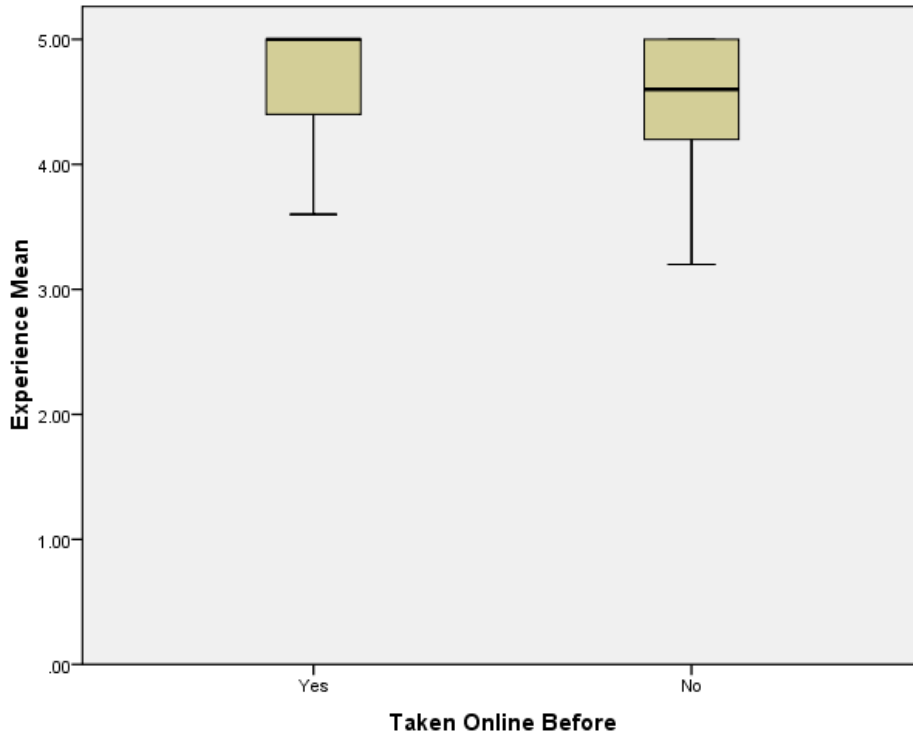


Figure 11. Distribution of Experience Mean for Previous Online Experience

For the opinion dimension, the test was not significant $t(412) = .952, p = .34$. Therefore, H_{03} was retained. Students with online experience ($M = 4.15, SD = .51$) had a slightly higher mean on the experience dimension than did the students without online experience ($M = 4.06, SD = .46$). The 95% confidence interval for the difference in the means was $-.09$ to $.28$. The $\eta^2 = <.01$, which indicated a small effect size. Figure 12 shows the distributions for the experience dimension of the two groups.

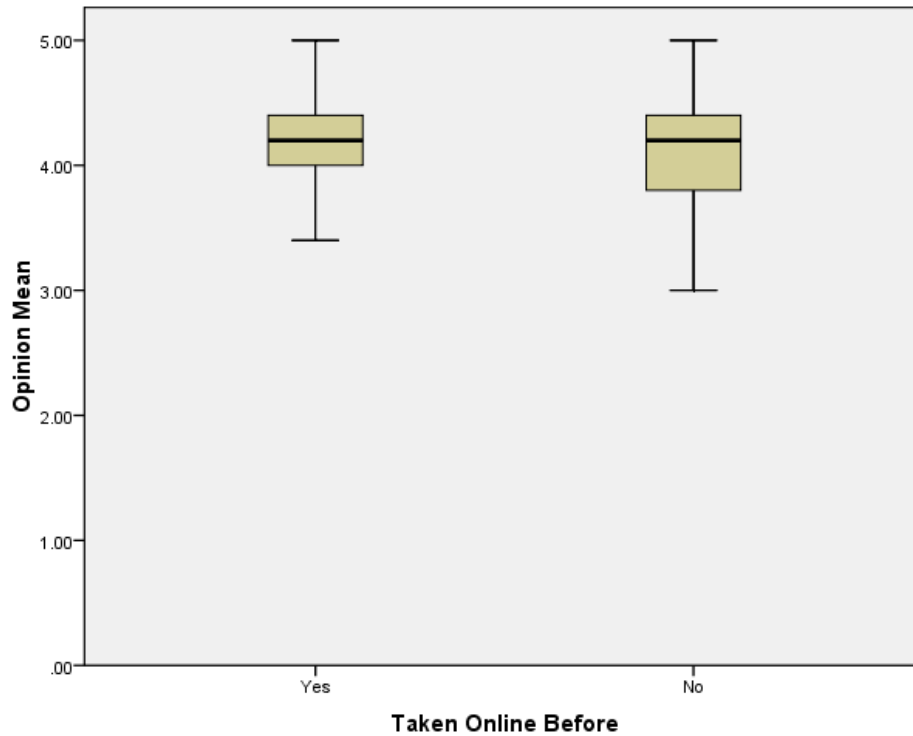


Figure 12. Distribution of Opinion Mean for Previous Online Experience

Research Question #5

Are there significant differences in each of the three dimensions, the learning style dimension, the experience dimension, and the opinion dimension in regard to expected grade (A, B, or C and below)?

Three one-way analysis of variances were conducted to evaluate the relationship among expected grades and the three dimensions of the survey. The factor variable, the expected grades, included three levels: A, B, and C or below. The dependent variable was the mean score of each of the three dimensions. The ANOVA was significant $F(2, 411) = 85.6, p < .001$. Therefore, H_0 was rejected. The strength of the relationship between the grade earned and the learning style dimension, was assessed by η^2 , which was large (.29).

Because the overall F test was significant, post hoc multiple comparison were conducted to evaluate pairwise difference among the means of the three groups. A Tukey procedure was selected for the multiple comparisons because equal variances were assumed. In the learning style dimension, there was a significant difference in the means between the group of students who expected an A and the group who expected a C or below ($p = <.001$) and between the group who expected a B and the group who expected a C or below ($p = <.001$). There was also a significant difference between the group of students who expected an A and the group who expected a B ($p = <.001$).

In the experience dimension, there was a significant difference in the means between the group of students who expected an A and the group who expected a C or below ($p = <.001$) and between the group who expected a B and the group who expected a C or below ($p = <.001$). However, there was not a significant difference between the group who expected an A and the group who expected a B ($p = .583$).

In the opinion dimension, there was a significant difference in the means between the group of students who expected an A and the group who expected a C or below ($p = <.001$) and between the group who expected a B and the group who expected a C or below ($p = <.001$). However, there was not a significant difference between the group who expected an A and the group who expected a B ($p = .312$). It appears that most students expected to earn either an A or a B. The 95% confidence intervals for the pairwise differences as well as the means and standard deviations for the three dimensions are shown in Table 4.

Table 4

Means and Standard Deviations With 95% Confidence Intervals of Pairwise Differences

Three Dimensions	Grade Expected	N	M	SD	95% CI	
					Lower	Upper
Learning Style	A	204	4.57	.44	4.51	4.63
	B	168	4.30	.43	4.23	4.36
	C or below	42	3.56	.63	3.37	3.76
Experience	A	204	4.62	.48	4.55	4.68
	B	168	4.57	.40	4.51	4.63
	C or below	42	3.80	.74	3.57	4.03
Opinion	A	204	4.14	.45	4.08	4.21
	B	168	4.08	.43	4.01	4.14
	C or below	42	3.67	.49	3.52	3.82

The findings of these research data analyses are summarized in Chapter 5. In addition, conclusions drawn from the study, recommendations to improve current practice, and recommendations for further research are presented.

CHAPTER 5

SUMMARY AND DISCUSSION OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter provides the conclusions and recommendations based on the findings of this study. The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. Students' observations and achievements were also evaluated by gender, grade level, course of study, online experience, and expected grade using a self-made survey.

This quantitative study's population consisted of all 899 students enrolled in E-Commerce I in public secondary schools located in North Carolina. These students were contacted through a letter placed on the online curriculum provided by LearnNC. Each E-Commerce I teacher was contacted through a business education discussion group set up by the North Carolina Department of Public Instruction. Of the students, 452 responded for a response rate of 50.3%. Of those responding, 229 were males with 75 juniors and 154 seniors. Within the male population, 82 were college-university prep students and 147 were college-tech prep students; 19 had taken an online course previously. The females numbered 223 with 73 juniors and 150 seniors. Within the female population, 108 were college-university prep students and 115 were college-tech prep students; 20 had taken an online course previously. The results from the survey were analyzed using SPSS.

The survey questionnaire (see Appendix E) was developed by modifying questions from a questionnaire developed by Noel Levitz with permission from the author. The questionnaire elicited information from high school juniors and seniors related to their experiences as students enrolled in an online E-Commerce I course.

The survey instrument consisted of 22 questions designed to address three dimensions. These dimensions were (a) learning style in an online environment, (b) online experiences, and (c) students' opinions and perceptions. Five questions addressed each dimension. The three dimensions used a continuous Likert scale.

Summary and Discussion of Findings

The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. This section provides a discussion of findings in reference to each of the three dimensions of the survey. Questionnaires were completed by 452 (50.3%) students enrolled in this online class. A discussion of the survey results in each of the three dimensions follows.

Learning Style Dimension

In comparing data for the learning style dimension and the five research questions, statistically significant differences were found in two of the five research questions. Findings for two research questions were statistically significant.

Research Question #1: Are there significant differences between grade levels (junior or senior) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

Research Question #5: Are there significant differences in each of the three dimensions, the learning style, the experience dimension, and the opinion dimension in regard to expected grade (A, B, or C and below)?

In comparing the learning style answers reported by the students in E-Commerce I in North Carolina by grade level, the analysis indicated that for this dimension, the mean score for juniors ($M = 4.26$) was lower than for the seniors ($M = 4.40$), a mean difference of .14. This finding suggests that the learning styles of juniors are not as compatible with the online environment as that of the seniors. One reason for this might be that the

juniors' learning styles were less mature than the learning styles of the seniors. The online environment works best with a learning style that thrives on self-motivation and independence.

In comparing the learning style answers reported by the students in E-Commerce I in North Carolina by expected grade, the analysis indicated for this dimension there were three significant differences. One significant difference occurred between the means of the group of students who expected an A ($M = 4.57$) and the group who expected a C or below ($M = 3.56$). This was a mean difference of 1.01. Another significant difference occurred between the means of the group who expected a B ($M = 4.30$) and the group who expected a C or below. ($M = 3.56$). This was a mean difference of .74. In both instances, $p = <.001$. The final significant difference occurred between the means of the group who expected an A ($M = 4.57$) and the group who expected a B ($M = 4.30$). This is a mean difference of .27. In all three instances, $p = <.001$. This finding suggests that even though the majority of the students expected to earn an A or B (89.2%), nearly 11% of the students responding to the survey expected a C or below. There are two plausible explanations for this result. One is that the criteria to take this class might be too lenient. It is very difficult to communicate to the students the type of learning style that is needed to be successful in an online environment. Another possibility could be that some of the students who enrolled in this course were not really prepared for the rigors of an honors curriculum.

Experience Dimension

In comparing data for the experience dimension of the survey and the five research questions, there were statistically significant differences found in two responses of the five research questions. The two research questions were:

Research Question #1: Are there significant differences between grade levels (junior or senior) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

Research Question #5: Are there significant differences in each of the three dimensions, the learning style, the experience dimension, and the opinion dimension in regard to expected grade (A, B, or C and below)?

In comparing the experience dimension answers reported by the students in E-Commerce I in North Carolina by grade level, the analysis indicated that for this dimension, the mean score for juniors ($M = 4.39$) was lower than for seniors ($M = 4.57$), a mean difference of .18. This finding suggests that the experiences of the juniors taking E-Commerce I were not as positive as that of the seniors. Students' age and maturity might be a factor here as well. Perhaps the juniors were not mature enough to handle the self-directed curriculum. Kramarae (2001) has shown that it takes a certain kind of student to be successful in an online class. These students need to be highly motivated, independent learners with excellent time management and organizational skills. They need to be able to study without being prompted and adapt well to different learning environments and teaching styles. Perhaps the juniors in this class had not yet developed all of these skills.

In comparing the experience dimension responses reported by the students in E-Commerce I in North Carolina by expected grade, the analysis indicated that for this dimension there were two significant differences. One significant difference occurred between the means of the group of students who expected an A ($M = 4.62$) and the group who expected a C or below ($M = 3.80$). This was a mean difference of .82. Another significant difference occurred between the means of the group who expected a B ($M = 4.57$) and the group who expected a C or below. ($M = 3.8$) This was a mean difference of .77. In both instances, $p = <.001$. The juniors' experiences in this online class were less favorable than that of the seniors. The percentage of juniors ($M = 77.1$) who reported

they learned just as much in an online class as in a traditional class was much smaller than the percentage of seniors ($M = 89.75$). This is a difference of 12.65%. One possible reason for this could be the differences in teaching methods between the two types of classes. Some of the major complaints of online education were lack of interaction and social aspects, lack of structure and pacing, and no immediate feedback or tutoring (Kramarae, 2001, p. 10) Another explanation could be that the juniors did not feel as comfortable in the online environment. When comparing the responses to “I enjoyed the online environment,” 88.6% of the juniors agreed with this statement. However, 96.1% of the seniors agreed with this statement. This is a difference of 7.5%.

Opinion Dimension

In comparing data for the opinion dimension of the survey and the five research questions, there were statistically significant differences found in two responses of the five research questions. The two research questions were:

Research Question #1: Are there significant differences between grade levels (junior or senior) in each of the three dimensions of the survey, learning style dimension, experience dimension, and opinion dimension?

Research Question #5: Are there significant differences in each of the three dimensions, the learning style, the experience dimension, and the opinion dimension in regard to expected grade (A, B, or C and below)?

In comparing the opinion dimension answers reported by the students in E-Commerce I in North Carolina by grade level, the analysis indicated that for this dimension, the mean score for juniors ($M = 3.99$) was lower than for the seniors ($M = 4.10$), a mean difference of .11. There are several explanations for this finding. When responding to question A, (the online environment removes instructor bias), the juniors' responses were much lower ($M = 81.7\%$) as compared to the seniors' responses ($M = 95.8\%$) Nearly all of the seniors agreed that the online environment removed instructor

bias. One reason for this finding could be that the juniors were less satisfied with the class; therefore, they might have felt that the teacher was biased in some way.

When comparing the responses about the online environment removing student bias, (question B), the juniors' mean scores were also lower ($M = 83.2\%$). Nearly all of the seniors said they felt that the online format did remove student bias ($M = 96.1\%$). One explanation for this could be that the juniors were intimidated by the seniors. Seniors are more mature and might feel more comfortable in the environment; as a result, the juniors may have perceived this confidence as something else.

Question C pertained to whether the instructor responded to all questions equally. Again, the juniors had a lower percentage in agreement, ($M = 86.3\%$), as compared to the seniors' responses ($M = 96.5\%$). Because this class is not segregated by grade level, the juniors and seniors shared the same instructors. However, their perceptions on this issue varied greatly. There was a difference of 10.2%. There could be several reasons for this difference. Educators are only human and some bias could have entered into the scenario. Students' perceptions could have been slightly slanted also. Finally, the juniors could have felt that their questions were not being answered completely because they were not as comfortable in the online environment.

In comparing the opinion dimension responses reported by the students in E-Commerce I in North Carolina by expected grade, the analysis indicated that for this dimension there were two significant differences. One significant difference occurred between the means of the group of students who expected an A ($M = 4.14$) and the group who expected a C or below ($M = 3.67$). This was a mean difference of .47. Another significant difference occurred between the means of the group who expected a B ($M = 4.08$) and the group who expected a C or below ($M = 3.67$). This was a mean difference of .41. In both instances, $p = <.001$. The juniors' opinions of this online class were less favorable than that of the seniors. The possible reasons for this could include the juniors' level of satisfaction with this class as compared to the seniors' level. Again, the juniors

might not be mature enough to handle the added pressure of the online environment; therefore, their opinion responses were much lower than the seniors were. I found this particularly interesting because 56.1% of the juniors expected an A whereas only 47% of the seniors expected to earn an A. This might be explained by the fact that more juniors were college-university prep (58.8%) as compared to the seniors with only 33.9%. The juniors probably had higher academic expectations of themselves than did the seniors as a whole.

Early Hypotheses

Five informal hypotheses served as the basis for the research questions developed in this study. The study confirmed some but not all of these early hypotheses. The hypotheses were:

1. I believed that the research would show that the younger students would not be as successful in an online class. I thought that maturity would play a large role in completing any online class and achieving either an A or B. As a result, I assumed that the juniors would have lower grades and be less satisfied with the online experience.
2. I believed that there would be a significant difference between males and females in several areas. I felt that the females would be less successful in an online environment because of less social interaction and physical contact. Therefore, I presumed that the females' grades might be slightly lower than the males.
3. I believed that there would be very little difference between the two courses of study, college-university prep and college-tech prep. Students enrolled in E-Commerce I, regardless of their course of study, would have met the prerequisites for this class. Therefore, I assumed that every student would be equally prepared.

4. I believed that there would be a significant difference between the students with online experience and those without. However, I also felt there would be very few students who had taken an online course previously. Students with online experience would probably have a more mature attitude and would be familiar with the demands of an online class.
5. I believed that students who expected a high grade, A or B, would also score high on the three dimensions of the survey. High scores on the three dimensions of the survey indicate agreement with the survey questions. This, in turn, means that the student was satisfied with his or her online learning experience.

The research data confirmed my first hypothesis. There was a statistically significant difference between the mean scores of the juniors and the mean scores of the seniors in all three dimensions. The greatest difference was found in the experience dimension, ($p = .002$), followed by the learning styles dimension ($p = .013$), and finally the opinion dimension ($p = .023$). Therefore, it is reasonable to make the conjecture that the age of the student was an important factor for success in an online class.

The research data did not confirm my second hypothesis. There was not a statistically significant difference between the mean scores of the males and the mean scores of the females in any of the three dimensions. Therefore, it is reasonable to make the assumption that gender is not an important factor for success in an online class.

The research data confirmed my third hypothesis. When analyzing the mean scores for each dimension, there was not a statistically significant difference between the mean scores of the college-university prep students and the mean scores of the college-tech prep students. The learning style dimension had the greatest difference in mean scores and it was only .05. The opinion dimension had the smallest difference with a mere .01 difference in mean scores. This indicates that the students' course of study was not important to their success in an online class.

The research data did not confirm my fourth hypothesis. There was not a statistically significant difference between the mean scores of the students with online experience and the mean scores of those without online experience. This could be because only 8.6% of the students answering the survey had taken an online class previously. The learning style dimension was the closest to being significant, ($p = .07$). This might signify that the students with online learning experience were developing a learning style more suited to the online environment.

The research data confirmed my fifth hypothesis. There was a statistically significant difference in the means between the group of students who expected an A and the group who expected C or below ($p = <.001$) in all three dimensions. There was also a statistically significant difference in the means between the group who expected a B and the group who expected C or below ($p = <.001$) in all three dimensions. However, there was not a statistically significant difference between the means of the students who expected an A and the means of those who expected a B in any of the three dimensions. This would suggest that the students who earned an A or a B had a better learning experience and were more satisfied in this type of class than were the students who expected to earn a C or below.

Conclusions

Based on the analyses of findings from this study, the following conclusions emerged.

Conclusion #1

The purpose of this study was to measure differences in learning styles in an online E-Commerce I class in public secondary schools in North Carolina. The research question that addressed this was: Are there significant differences in regards to gender in each of the three dimensions of the survey, learning style, experience, and opinion?

There appears to be no difference between the males and the females in any of the three dimensions. The mean differences ranged from a low of 0 for the opinion dimension to a high of .16 for the learning style dimension. None of the three dimensions was statistically significant.

Conclusion #2

The data reflected that the age of the students, either junior or senior, showed a statistically significant difference in the mean scores of each dimension. Seniors scored higher in all three dimensions of the survey. This could suggest that the age of the student does contribute to success and satisfaction in an online course.

Conclusion #3

There appears to be little difference between the responses of students pursuing a college- university prep program and students pursuing a college-tech prep program on the three dimensions of the survey. The mean differences ranged from a low of .01 for the opinion dimension to a high of .05 for the learning style dimension. None of the three dimensions proved to be statistically significant.

Conclusion #4

The data indicated that previous online experience was not statistically significant. There was little to no difference between the mean scores of students with online experience as compared to those without any online experience. The mean differences ranged from a low of .09 in the opinion dimension to a high of .19 in the experience dimension.

Conclusion #5

There was a statistically significant difference between the group of students who expected an A and the group who expected a C or below in all three dimensions. The data also suggest a statistically significant difference between the group of students who expected a B and the group who expected a C or below in all three dimensions. There was not a significant difference between the group who expected to earn an A and the group who expected to earn a B in any of the dimensions. This could suggest that the learning styles of students expecting to earn a high grade (A or B) were more compatible with the online environment. It might also imply their experiences in the class were more satisfactory than those of the students who were expecting a C or below.

Recommendations for Future Research

Recommendation #1

Because the scope of this research was limited to only one class, I would recommend that additional studies be conducted to include other online classes that are offered to high school students.

Recommendation #2

This study may not generalize to other populations; however, it would be useful to conduct this same study in a variety of classroom settings and various states and schools systems to verify the accuracy of these findings. All states operate under *No Child Left Behind*, and therefore their curricula are all standards-based and include high academic expectations for all students, rigorous tests, and accountability systems as set in 1996 by the National Educational Summit (Brackett, 1996). Such research could provide guidance for developing online policies and procedures for the improvement of online instructional programs.

Recommendation #3

There were many interesting responses to the open-ended question at the end of the survey. This information could be valuable if analyzed using a qualitative study. There were several suggestions for improving this class that could be implemented easily. Several of the students said they felt that there was too much busy work involved and not enough practice in actually coding web sites. The students said they needed more practice to feel competent using Hypertext Markup Language. Another suggestion was to use software packages such as Dreamweaver and Microsoft FrontPage to create the web sites, thus eliminating the tedious coding. A qualitative study could provide insight into areas that are disregarded by a quantitative study.

Recommendation #4

This study was conducted using a survey that I created because I could not find one that applied directly to high school students. Additional studies in this area could lead to the development of surveys that assess students' online learning skills and readiness thereby serving as a guide for schools and teachers in assisting students in meeting their online learning needs.

Recommendations for Practice

As several researchers in the review of literature have pointed out (Moursund, 1983; Murdock, 2004; Sharp, 2005), educators will continue to use technology and computers. As our society becomes more and more dependent on technology, computer skills are becoming more important every day. The following recommendations are made in the sincere hope of advancing online education as well as professional practice of online teachers.

Recommendation #1

As opportunities for online learning increase, perhaps a learning styles assessment should occur for all students as well as provision of counseling for students so they may engage in course delivery systems most suited for their individual learning styles. In this study, the mean for the juniors in the learning style dimension was 4.26. The mean for seniors, on the other hand, was 4.40.

Recommendation #2

As opportunities for online learning increase for high school students, perhaps the teachers should receive more formal training including methods of delivering educational material using this type of media.

Recommendation #3

This study was conducted using a survey that I created because I could not find one that applied directly to high school students. Additional studies related to this topic could lead to the development of surveys that assess K-12 students' online learning skills and readiness.

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APPENDICES

APPENDIX A

Permission From Noel Levitz

To: pitmanpam@netscape.net

From: julie-bryant@noellevitz.com

Sent: Wednesday, January 30, 2008 7:41 AM

Subject: Re: Noel-Levitz Survey

Typically, we do not give permission to use the survey items independently. This is a copyrighted survey available for purchase. However, I can give you special permission to use the survey with a limited number of students, especially since you are focusing on high school students which we do not have a corresponding survey for. Please provide me with details on the number of students you plan to survey, the timeframe of the survey's availability and please provide me with a copy of survey to review.

Pam – you have my permission to proceed with this survey. I would appreciate your letting me know the number of students and the timeframe, as requested below.

Julie Bryant
Senior Director of Retention Solutions
Noel-Levitz
Phone: 800-876-1117

APPENDIX B

IRB Approval Letter



East Tennessee State University

Office for the Protection of Human Research Subjects • Box 70565 • Johnson City, Tennessee 37614-1707 • (423) 439-6053
Fax: (423) 439-6060

IRB APPROVAL - Initial Expedited Review Waiver or Alteration Requirement to Obtain Informed Consent for Parental Permission

April 17, 2008

Pamela Pitman
PO Box 292
Bakersville, TN 28705

Re: Differences in gender-Learning in E-Commerce I Classes in Secondary Public Schools in North Carolina

IRB#: c07-143sw
ORSPA #: None

The following items were reviewed

- FORM 103 with Assurance Statement
- *Narrative (2/1/2008)
- Parental Permission (3/18/2008)
- *Child Assent
- Questionnaire/Survey
- CV
- Conflict of Interest Form (no potential conflict of interest identified)
- Permission Letter from Mitchell high School
- Waiver of Parental Permission granted 3/27/08

The item with an asterisk (*) above needed changes requested by the convened board

The following documents with the incorporated requested changes have been received by the IRB Office:

- Narrative (4/14/2008)
- Child Assent (4/14/2008)

The Narrative (4/14/2008) and Child Assent (4/14/08) incorporating the requested changes were reviewed and approved by an expedited process on April 17, 2008 by Gail Gerding, Ph.D., Chair, ETSU IRB.



Accredited Since December 2005

APPENDIX C

Cover Letter For Teachers on LearnNC Curriculum

Mitchell High School

416 Ledger School Road
Bakersville, NC 28705
929-688-2101 Ext.18

Date _____

Fellow Teachers:

Thank you for taking the time to encourage your students to answer my survey. I am a business education teacher at Mitchell High School. I also teach E-Commerce I. I am currently working on my doctorate through East Tennessee State University. My dissertation is on differences in gender education and online classes. This information will be entirely confidential and private. Students may choose to participate or not. Regardless of their decision, they will not be contacted at any time. I will only use this information to complete my research; however, I will make my findings available to Deborah Seehorn at the department of education.

Thank you again for all of your help. If I can be of any assistance to any of you, please email me at pitmanpam@netscape.net.

Sincerely,
Pam Pitman

APPENDIX D

Student Assent Form

PI: Pamela S. Pitman

Title of Study: Learning Differences in E-Commerce I Online Classes in Public Secondary Schools in North Carolina

Name of Participant _____ Age _____

Here are answers to some questions that you may have. Please ask any questions that you have about what is written on this page.

Also ask any other questions that you have about this research. You will be given a copy of this assent form.

1. Why are you doing this research? The purpose of this study was to identify, understand, and measure learning differences in an online E-Commerce I class in public secondary schools in North Carolina. Student achievement was also evaluated by gender. This type of study could identify possible problems with the online model based on gender. This information might aid designers of online curricula as well as the teachers.
2. What will I do if I am in this research? You will simply fill out the survey.
3. How long will it take? Approximately five minutes.
4. Can this research help me or other people? Yes, your responses and suggestions will be incorporated may be incorporated into this class.
5. Can bad things happen to me in this research? No, your responses will be completely anonymous. No one can identify you or will attempt to contact you.
6. Do I have to be in this research study and can I stop if I want to? This research is totally voluntary and you may stop at any time.
7. Who will know that I am in this research? No one
8. Can I do something else instead of this research? Yes, you can choose not to participate.
9. Who do I talk to if I have questions? You may talk to your E-Commerce I teacher or you may email me at ppitman@mcsnc.org.

APPENDIX E

Survey Instrument

E-Commerce I – Online Learning Survey

Dissertation survey: Online Learning

Please take a few minutes and complete the following survey to evaluate your experiences in this online class.

This survey is completely anonymous. Your answers will only be used as research for improving instruction. Please feel free to be completely honest. Thank you for taking the time to do this.

1. Which grade are you currently a member?

2. What is your gender? Male Female

3. What is your current course of study?

4. Have you ever taken an online class before this one? Yes No

5. What grade do you expect to make in this class?

6. Using the Likert Scale below, please rate the following statements about your learning style in an online environment.

	*1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
A. I can do my assignments, stay focused on the course, and finish coursework ahead of time without being reminded by an instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. Before taking this class, my comfort level with using a computer to learn was above average.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. I have no problems with corresponding and discussing coursework online with my instructor and fellow students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. When an instructor gives instructions for an assignment, I prefer written over oral.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E. When it comes to assessing my own progress, I think I can keep tabs on myself, even without frequent feedback from my instructor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Using the Likert Scale below, please rate the following statements about your experiences in this class.

	*1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
A. I enjoyed the online learning environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. In my opinion, I learned just as much in this class as in a traditional classroom setting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. I felt comfortable posting questions to my teacher and classmates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. I felt comfortable posting my opinions online.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E. The instructor responded to all questions posted online equally.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

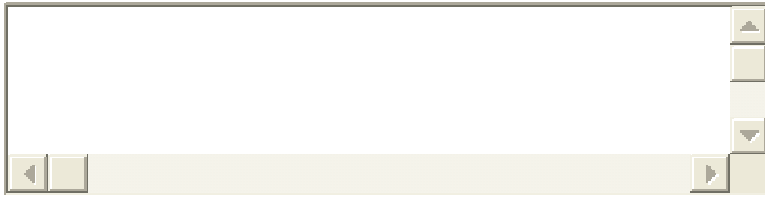
8. Using the Likert Scale below, please tell us your opinions regarding the following statements.

	*1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly Agree				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
A. In my opinion, the online environment removed instructor bias	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. In my opinion, the online environment removed student bias.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. In my opinion, the instructor responded to all questions posted online equally..	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. In my opinion, the end of course test adequately covered the material covered in this class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E. In my opinion, to be successful in this class, you need Internet access at home as well as at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. What characteristics do you think students need to possess to be successful in an online class? Check all that apply.

- | | | |
|--------------------------------------|--------------------------------------|---|
| <input type="checkbox"/> Academic | <input type="checkbox"/> Intelligent | <input type="checkbox"/> Positive |
| <input type="checkbox"/> Confident | <input type="checkbox"/> Leader | <input type="checkbox"/> Responsible |
| <input type="checkbox"/> Honest | <input type="checkbox"/> Mature | <input type="checkbox"/> Self-motivated |
| <input type="checkbox"/> Independent | <input type="checkbox"/> Meticulous | <input type="checkbox"/> Other: _____ |

10. List any recommendations or changes that you think should be made to this class.



Complete Survey

VITA

PAMELA S. PITMAN

Personal Data: Date of Birth: February 15, 1963
 Place of Birth: Spruce Pine, North Carolina
 Marital Status: Single

Education: Mars Hill College, Mars Hill, NC;
 Bachelor of Science in Business Administration;
 1981-1985

 Western Carolina University, Cullowhee, NC;
 Bachelor of Arts in Business Education;
 1990-1993

 Western Carolina University, Cullowhee, NC;
 Masters of Arts in Education/Secondary Business;
 1994-1997

 Western Carolina University, Cullowhee, NC;
 Education Specialist Degree in School Leadership;
 2003-2005

 East Tennessee State University, Johnson City, Tennessee;
 Educational Leadership and Policy Analysis, Ed.D.;
 2008

Professional
Experience:

 Head Teller, First Commercial Bank
 Bakersville, NC;
 1985-1988

 Adm. Assistant to Associate Superintendent, Mitchell Co. BOE
 Bakersville, NC;
 1988-1991

 Teacher, Bowman Middle School,
 Bakersville, NC;
 1991-1993

 Head of Business Department, Mitchell High School
 Bakersville, NC;
 1993-Present

Honors and
Awards:

- National Board Certification
- Curriculum Committee
- School Improvement Team
- Profile Committee for Southern Association Accreditation
- Graduation Committee
- Student Teacher Supervisor
- School Safety Team
- North Carolina Association of Educators
- Pi Lambda Theta
- Phi Beta Lambda
- National Education Association
- North Carolina Department of Public Instruction Level M Teaching Certificate
- National Board Certified Teacher in Career and Technical Education/ Early Adolescence Through Young Adulthood
- North Carolina Department of Public Instruction Principal's License