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## **Factors that Impact Successful Student Achievement in Post-Secondary Online Courses**

Meranda Lychelle Esters

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Factors that impact successful student achievement in post-secondary online courses

By

Meranda Lychelle Esters

A Dissertation  
Submitted to the Faculty of  
Mississippi State University  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy  
in Instructional Systems and Workforce Development  
in the Department Instructional Systems and Workforce Development

Mississippi State, Mississippi

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2015

Factors that impact successful student achievement in post-secondary online courses

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The purpose of this study was to determine if there was a significant differences in students based of education demographics and what factors contributed to the successful completion of online courses for postsecondary education students. Specifically, this study sought to determine if there was a significant difference between certain educational demographics (gender, race, classification, course, and professor) and grade; a significant relationship between specific online course features (availability of chat, videos, discussion boards, and video conferences) and grade; a significant relationship between certain student behaviors (location of access, time to complete assignments, interaction with content, frequency of access, interaction with instructor, and interaction with students) and grade; and students' perception and grades.

A Kruskal-Wallis analysis was conducted to analyze differences within and between groups by educational demographics. Spearman Rho's Correlations were computed to examine if a significant relationship existed between the aforementioned independent variables and the dependent variable of students' grades. After the data were collected and analyzed, the findings showed that there were no statistically significant

differences among students who completed online courses. There was no statistically significant relationships between the independent variables and students' grades.

## DEDICATION

I would like to dedicate this research to my family, especially my parents and son, whose continued support and encouragement has helped me reach this milestone in my life. You are the reason I pressed on through the many challenges while conducting this research. I dedicate this research to my many church members, friends, sorority sisters, co-workers and other loved ones for their many words of encouragement, support, and prayers. I thank each and every one of you for the role you have played, and I appreciate everything that you did to ensure that my educational goals were achieved.

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## CHAPTER I

### INTRODUCTION

Distance education provides an alternative education option for students throughout the United States. The growth of technology has fueled the notion of online learning in post-secondary education and has expanded opportunities for students to complete post-secondary education online. Distance education can be valuable in encouraging individuals with family and work obligations to pursue and obtain post-secondary degrees (Radford, 2011). Therefore, understanding if there are variables that relate to successful completion of online courses will assist course designers and administrators of online programs in providing more effective learning experiences in distance education programs.

Distance education has been defined differently by many researchers. Picciano (2001) suggested that online learning is “distance teaching, distance learning, open learning, distributed learning, asynchronous learning, telelearning, and flexible learning” (p. 4). Picciano (2001) further defined online learning as “the educational process in which the teacher and students are physically separated, any type of learning that takes place where there is a physical distance between the instructor and the student” (p. 4). Additionally, Yates and Bradely (2000) defined distance education as “an educational process in which, for the majority of the time, the learning occurs when the teacher and learner are removed in space and/or time from each other” (p. 7). All definitions for

distance education located by this researcher include one commonality, the separation of teacher and student during the learning process.

Distance education has evolved over the last several decades. Distance education started out as correspondence courses that were mailed to students to enhance their skills in shorthand. The first successful correspondence program was Isaac Pitman's shorthand course in 1837 (Casey, 2008). Participants would complete their course exercises; mail them in to the institution; and upon completion of all course requirements, would receive a certificate verifying their proficiency in shorthand (Casey, 2008).

Distance education evolved in the 20<sup>th</sup> Century with the accompanying growth in technology, especially the Internet and World Wide Web (Moore & Kearsley, 2005). Today, nearly all distance education programs have a portion of their programs online, and many programs are entirely online. The University of Phoenix is one example of a standalone program (Casey, 2008).

The flexibility offered by distance education provides students the opportunity to work more hours, spend more time with their families, or meet other obligations without the restriction of a fixed school schedule. According to Mehotra, Hollister, and McGahey (2001) "barriers of mobility and transportation" (p. 6) are no longer issues for students not obtaining or furthering their education. Pape (2005) in reference to the availability of post-secondary online education to students, stated "online courses provide access to instruction that is not otherwise available to them" (p. 13) due to school size and resources.

In contrast to the many benefits distance education has to offer, there are many disadvantages as well. One major issue with distance education is the lack of computer

experience for some individuals, especially those who have never taken a distance learning course before (Block, Felix, Undermann, Reineke, & Murray, 2008). Issues with technology cause students to have high anxiety levels which prevents many students from successfully completing their online course. In addition to the lack of technology experience, some individuals may experience isolation or disconnect with other students as well as the instructor. Wighting, Liu, and Rovai (2008) asserted that all learners need to have some sense of community in any educational format. Due to the nature of distance education, interaction is a critical component that is essential for student success and education achievement. Hannay and Newvine (2006) found in their study that the notion of isolationism was “a major threat to student persistence in online courses” (p. 40). These issues must be addressed if distance education is to be successful.

Student motivation in online courses is an important component in student satisfaction of the course and student achievement. Several characteristics of online students help contribute to student success. Students of online courses must be self-motivated and self-disciplined. According to Stanford-Bowers (2008), “students must have a different level of initiative and self-discipline” (p. 42). Students who lack the motivational characteristics needed to succeed in online learning may not have much success.

In a study conducted by Hughes, McLeod, Brown, Maeda, and Choi (2005; as cited in Smith, Clark, & Blomeyer, 2005), students reported that there was less cooperation, less student cohesiveness, and less involvement in their online courses. Online students did, however, report that they had more support from their teacher than those in a traditional classroom setting. Hannay and Newvine (2006) reported in a study



on student perceptions of online learning that some students indicated they were overwhelmed by the course content or technology and became dissatisfied and dropped out of the course.

Online learning is rapidly growing with more educational organizations offering alternatives to the traditional face-to-face education. Because the mode of learning is different for online learning, teaching practices must also be different to meet the needs of the students and learning environment. According to Cavanaugh, Gillan, Kromrey, Hess, and Blomeyer (2004), best practices for online learning should be unique to this mode of learning. Therefore, understanding what factors lead to academic success for online students is vital to the students' educational growth as well as the growth for online education.

### **Statement of Problem**

The current trend of using technology to achieve educational goals has rapidly grown with today's learners. Information technology along with Internet access is readily accessible to individuals in the home, school, libraries, and businesses. Colleges and students are using the resources available through distance education to overcome many of the shortcomings of traditional education such as limitations caused by distance from the school and time constraints of the traditional school schedule. The effectiveness of instruction in education is very important, especially in distance learning. Numerous studies have been conducted to compare the effectiveness of online learning when compared to traditional face-to-face classroom instruction (Lim, Kim, Chen, & Ryder, 2008). However, many of these studies provide contradictory findings. Furthermore, according to Merisotis and Phipps (1999), as cited in Block et al. (2008), most articles on

distance education are based on opinions, guides on how to carry out certain tasks in online learning environment, and reports of second hand knowledge.

Very few studies have been conducted to provide insight on the best practices that are related to online learning (Black, Ferdig, Di Petro, & Preston, 2008). For this reason, many instructors in the online setting adapt their current instructional practices for face-to-face classrooms to online instruction, ignoring the unique characteristics of online learning. Online instructors must recognize this uniqueness and adapt their teaching styles accordingly. Cavanaugh et al. (2004) asserted that autonomy and student responsibilities set the traditional educational student apart from the online student. These authors further emphasized that the characteristics of the learner need to be addressed in the online learning instructional setting. Adapting practices from different learning environments to the online setting may not be the best instructional practice for online learners because some traditional practices may not be effective in the online learning environment. With online learning becoming a common avenue for post-secondary education, it is very important to gain a better understanding of what factors have a positive impact on achievement in an online learning environment.

According to Swan (2003), if online learning does not prove as effective as traditional, face-to-face classroom instruction, other important issues related to distance education such as “access, student and faculty satisfaction, and . . . cost effectiveness” (p. 1) are not important to investigate. To make distance education more effective, leaders must know what factors contribute to the effectiveness of learning online (Cavanaugh et al., 2004). The proposed study will investigate the impact of online (distance education)

instruction on academic achievement and the variables that might impact achievement, thus providing additional data related to this important educational instructional mode.

### **Purpose of the Study**

The purpose of this study was to determine if there was a significant differences in students based of education demographics. A secondary purpose of this study was to determine if any meaningful relationships existed between specific online course features such as interaction with content (how much time the student spent with assignments), frequency of access, student perception, interaction with instructor, interaction with students, and student academic achievement as measured by the students' final grade in the course.

### **Research Questions**

The following research questions were developed to guide the study:

1. Is there a significant difference in students grades based on demographics in their online class?
2. Is there a relationship between specific online course features (availability of chat, videos, discussion boards, and video conferences) and student achievement in online courses as measured by students' course grade?
3. Is there a relationship between student behaviors (where students accessed the course and content, how much of the course they completed, how often they logged into the course, when they began working on assignments, interaction with professor, classmates, and interaction with content) and student achievement as measured by students' course grade?

4. Is there a relationship between students' perception of the online course and student achievement as measured by students' course grade?

### **Delimitations**

This study is limited to online post-secondary education students who take online courses at a public university in the south eastern region of the United States. The participants in this study were undergraduate and graduate students enrolled in online courses during the spring, summer, and fall 2014 semesters. Further delimitations of this study resulted from students' self-reported time spent in the online course as well as self-reporting of their prospective final grade because the researcher has no control over students accurately reporting data regarding time spent in the course as well as their grade. Additionally, the researcher did not have access to the course management system for this information.

This study was narrowed by selecting undergraduate and graduate students who were enrolled in online courses at a public university in the south eastern region of the United States. The students who attend this university came from various ethnic and socio-economic backgrounds.

### **Limitations of the Study**

The researcher used students who were currently taking courses at the university. The researcher invited 122 students to participate in the study; however, only 39 students (31.96%) completed the survey for this study. Generalization from this study should be limited to the population described in this research and cannot be applied to any other group.

## Definition of Terms

Terms that are unique to this study, technical in nature, or subject to multiple interpretations are defined as follows for this study:

*Achievement* for this study will be measured by students' final grade in the course where a grade of 70 is considered passing.

*Distance education* refers to “any formal approach to instruction in which the majority of the instruction occurs while educator and learner are not in each other's physical presence” (Mehrotra et al., 2001, p. 1).

*Distance learning* is an approach to education that replaces the requirement for students to be in the same location at the same time (Volery & Lord, 2000 as cited in Block et al. 2008).

*Face-to-Face* is synonymous with traditional education.

*Instruction format* refers to the mode in which students completed the course, online learning or traditional, face-to-face learning.

*Interaction with content* on average how much time the student spent completing each assignment: less than 30 minutes, 30 minutes to 1 hour, 1.1 to 1.5 hours, or more than 1.5 hours.

*Online learning* synonymous with distance learning.

*Socioeconomic status* determined by students' financial aid status: grants recipients, scholarship recipients, or self-funded.

*Traditional learning* is synonymous with face-to-face instruction.

## **Justification of Study**

Online learning is rapidly growing as standalone programs and within existing traditional schools. Colleges and universities can provide a much needed expanded curriculum for students in their schools by offering courses that would have otherwise been unavailable (Clark & Berge, 2005). Additionally, research has shown that online learning can be just as effective as traditional face-to-face learning (Tucker, 2007). Tucker asserts that online learning extends student choices beyond the traditional school setting. These extended choices allow students to follow a curriculum that best meet each one's individual needs.

The results of this study provide more insight related to the variables that affect academic success in online learning. Additionally, this study provides more insight on which factors that contribute to the success of post-secondary online learning students. After reading this study, course designers and professors will have a better understanding of how these factors affect students' success in online classes, allowing online educators to help students become more successful in learning course content.

## **Summary**

Educational entities are continually working to improve education for students. Additionally, some students and parents continually seek alternate ways to access quality classes in order to advance in their education and career or to make receiving a quality education easier. For this alternative education, students are turning to distance education. Consequently, colleges and universities are seeking ways to ensure that the education its students receive is of high quality. To ensure that students are successful in online learning, it is imperative that professors are aware of what factors lead to academic

success. This study attempts to identify factors related to successful completion of online classes. This chapter provided the need for this study as few studies have been found that examined which factors led to the success of students in an online learning environment.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### **Distance Education Overview**

The idea of distance education is deeply rooted in America's history. The history of distance education can be traced back to the mid 1800s. Distance education can take on many forms: "mail correspondence, open- and closed-circuit audio and video presentations, telephone communications, and the increasingly popular Internet" (Block et al., 2008, p. 58). Distance education began with the inception of vocational courses that were delivered by mail in 1852 (Casey, 2008). During this time, more people were learning to read and write; and postal services systems were being developed (Picciano, 2001). According to both Picciano and Casey, the most successful correspondence course during that time was Isaac Pittman's shorthand course. Participants would complete their course exercises, mail them in to the institution, and upon completion of all exercises, received a certificate verifying their proficiency in shorthand skills upon course completion.

#### **Colleges and Universities**

The first known college to offer a correspondence program was in Chautauqua, NY. According to Picciano (2001) this program was designated to oversee the State of New York's authorization of correspondence courses. It was during the later years of the nineteenth century that distance learning achieved academic recognition. This recognition



came when the University of Chicago created a distance learning program at the post-secondary level. The invention of new technology improved this system of distance learning during the twentieth century.

The twentieth century saw tremendous growth in distance education for college students. This growth in distance education can be credited to the “[accelerated] pace of technological inventions” (Mehrotra et al., 2001, p. 2). Afterwards, many schools followed; and by 1930s hundreds of correspondence programs were established throughout the world providing students with many more options for distance learning (Picciano, 2001).

During the 1920s and 1930s the invention of radio allowed for educational institutions to offer distance learning courses more efficiently. Some areas where the population was small relied on two-way radios for delivering distance education courses (Mehrotra et al., 2001, p. 2). Radios were beneficial to the delivery of content in those years because “Live educational radio shows reduced instructional delivery time and increased classroom immediacy by allowing distant students to hear their instructor” (Casey, 2008, p. 46). Instructors could now depend on another medium for relaying course content to their students. Consequently, universities could offer correspondence programs via radio, or they could use the radio to supplement programs that were already in place (Picciano, 2001). Buckley and Dye (1991) as cited in Picciano (2001) reported that “at least 176 radio stations were established at educational institutions during this period for the purpose of delivering distance learning courses” (p. 9).

The first school credited for using radio technology to deliver distance education courses was Latter Day Saints’ University in Utah in 1921. A few years later, the State

University of Iowa also began offering courses via radio (Moore & Kearsley, 2005). Even with this increasing usage of the radio for distance learning courses, it was not without fault. Using radio to deliver distance learning courses only provided one-way communication, broadcasters were not committed, there was no ability to include advertisements; and instructors were not enthusiastic (Moore & Kearsley, 2005). Therefore, radio broadcasting was not as efficient as initially thought; and use began to decline with the invention of the television.

Most radio systems for distance education were replaced with television technology during the 1930s. The use of television for distance education began in 1934. The University of Iowa was one of the first education institutes to “broadcast courses by television” (Casey, 2008, p. 46). In addition to the University of Iowa, Purdue University and Kansas State University also began using television as a medium to use in distance learning. By the 1950s, more extensive programs were being developed such as the Sunrise Semester at New York and Continental College at John Hopkins University. These schools had the assistance of Columbia Broadcasting System (CBS) and the National Broadcasting Company (NBC) in broadcasting these programs on television (Picciano, 2001) which resulted in “some of the best educational television” programs being broadcast (Moore & Kearsley, 2005, p. 31).

During the early 1960s, federal legislation was passed to help in the growth of distance education through television programs. The federal Educational Television Facilities Act was passed which allowed for the development of educational television stations. In 1965, after the publishing of a report by Carnegie Commission on Educational Television, Congress passed the Public Broadcasting Act of 1967. This act

established the Corporation for Public Broadcasting (CPB; Moore & Kearsley, 2005). The main purposes of CPB were to provide “high quality programs, establish a system of national interconnection to distribute programs, and strengthen and support local public TV and radio stations” (Casey, 2008, p. 47). Additionally, the Federal Communications Commission (FCC) in 1963 “created the Instructional Television Fixed Service (ITFS), a band of 20 television channels available to educational institutions” (Casey, 2008, p. 46). ITFS provided a less expensive way for educational institutes to provide distance education courses to students. Consequently, in November 1969, with the assistance of AT&T, the Public Broadcasting Service was established.

By 1970, new innovations with distance education were being made with the use of television. In 1970, the first college courses to be delivered solely online were developed by Coastline Community College. Coastline Community College “created, licensed, and implemented” these courses (Casey, 2008, p. 47). Additionally, they broadcasted these courses to other schools in California. This led to an evolution of colleges offering full courses by television. In 1972, the FCC required all cable television companies to dedicate one channel for education. These courses were called telecourses (Moore & Kearsley, 2005). They were developed by either educational institutions or by CPB. By the start of 1980, more educational facilities were signing up for or developing these telecourses (Moore & Kearsley, 2005).

The late 1970s and early 1980s brought many innovative forms of offering distance education courses especially with the development of computers and the Internet. Throughout the 1980s and 1990s, the growth of technology had a positive impact on distance education. Block et al. (2008) state “Advances in computer

technology, particularly the development of the Internet, have improved the delivery of distance education” (p. 58). Many colleges and universities began to offer degree programs online. According to Casey (2008), “The University of Phoenix. . . emerged on the education for-profit scene in 1989. . . [which] is credited in large part to the utilization of the Internet” (p. 48).

Later in 1991, the creation of the World Wide Web provided a way to link all computers throughout the world. The World Wide Web drastically changed distance education around the world. Consequently, this led to nearly all distance education programs having some online component (Moore & Kearsley, 2005). In the United States, many of the distance learning programs are not stand alone programs. They are an “extension of a traditional college programs” (Picciano, 2001, p. 10). Many virtual schools and universities were also launched as a result of the invention of the Internet and World Wide Web.

Since its inception in the late 1800s, distance education has drastically changed with the change in technological advances, especially in the late 20<sup>th</sup> Century. The development of the Internet and World Wide Web sparked a tremendous increase in the number of courses and programs offered through this particular distance education format. In 1998, according to Mehrotra et al. (2001) “44% of all two-year and four-year higher education institutions offered distance education courses compared with 33% who did in 1995” (p. 4). Additionally, the number of programs nearly doubled from 1995 to 1998. Allen and Seamen (2005) as cited in Block et al. (2008) state “from 2003 to 2004, online learners in the United States increased from 1.98 million to 2.35 million” (p. 58). These distance education programs now provided more flexibility for potential students

who could work more hours, spend more quality time with their families, and complete advanced educational programs at the same time (Mehrotra et al., 2001). According to Hofmann (2002) there is no longer a conflict of time with “work schedules and finding time for the family. . . [because] students [can] access their courses at times most convenient for them” (p. 28).

### **Advantages of Distance Education**

Distance education has been growing rapidly during recent years because of its many benefits. Initially, people were drawn to distance education as a means of cutting back on travel costs to and from the main campus of a university (Hannay & Newvine, 2006). More recently, individuals have been choosing distance education over traditional education for a variety of reasons. Distance education can provide access to opportunities not previously available to individuals due to travel distance, time constraints, family commitments, or even financial issues (Hofmann, 2002). Through distance education, access to education and training has been accessible to all individuals (Grill, 1999). Students now have access to course information any day at any time allowing them to be more flexible with their time (Li & Irby, 2008). This flexibility allows students to complete course requirements at their convenience.

One primary reason for enrolling in distance education courses is the lack of necessity to attend or inability to attend “scheduled lectures” (Block et al., 2008, p. 58). Full-time jobs and other responsibilities are inconsequential deciding factors for furthering one’s education. Furthermore, students with disabilities are also provided with an alternative form of obtaining an education because the “barriers of mobility and transportation” are nullified (Mehrotra et al., 2001, p. 6). Hoffman (2002) stated “Long

driving distances. . . are no longer a barrier to receiving a good education” when distance education is involved (p. 29).

Another benefit of distance education courses is the ability to complete course assignments at a time convenient to the learner. Students are able to learn at their own pace with the ability to move on to the next topic when they are ready. Students are also able to complete their coursework in environments that may not be so stressful (Hoffman, 2002). Students can complete the assignments at home, on weekends, at their work office, or in a multitude of places that will allow them to focus, relax and make the most use of their time.

When course offerings at a preferred educational institution do not include desired courses, distance education provides a viable alternative. Students can enroll in distance education courses at institutions that may not be local to them but offer the desired courses to attain the education they desire (Block et al., 2008, p. 58). Students no longer have to pack up and pay out-of-state fees to attend a college or university that offers their program of study. This benefit makes obtaining a post-secondary education more affordable to the student.

Distance education can also be used as a medium to offer instruction to accommodate the various learning styles of students. According to Mehrotra et al. (2001), “Various modes of distance education offer alternative ways of learning that can help level the playing field for those students whose learning styles are not compatible with the traditional classroom” (p. 6). For example, students who may shy away from openly asking questions in a traditional class in front of other students or who do not want to appear unintelligent may be more apt to ask questions in a distance education

setting (Hoffman, 2002). This provides students the chance to have their questions answered, gain more knowledge of student expectations or the topic being covered, and feel more confident about their learning.

### **Disadvantages of Distance Education**

While distance education is an excellent means for individuals to continue their education, it is not without fault. One major weakness related to distance education programs is the lack of appropriate computer experience of some students taking their first online course (Block et al., 2008, p. 58). Many web-based students fear taking online courses because of their heightened sense of anxiety over the use and idea of technology (Block et al., 2008). This anxiety is intensified by the lack of technological support students may have. Most adult learners who seek to further their education tend to be those who are “well-educated, white, and middle class” (Grill, 1999, p. 32). Conversely, individuals who do not fit into that category and wish to further their education may also have issues with the type of technology used in distance education formats. Hara and Kling (in press) as cited in Hoffman (2002) note “the absence of technical support personnel to help with problems is an issue” in distance education (p. 29). Discouraged students may quickly give up and stop attending the course or even drop out of the program altogether because of this negative experience.

Distance education, to some, also lacks the structure of a traditional classroom. Because of this, Block et al. (2008) assert that many students struggle in these courses. These authors also state “there are many disadvantages in online courses for those [students] who need a great deal of structure . . . [because] online courses are frequently self-paced and those lacking self-discipline may struggle” (p. 58). Li & Irby (2008) cited

Taylor (2003) stating that “online education is not for everyone” (p. 455). The appeal of distance education attracts students who are not self-motivated nor self-disciplined enough to enroll in an online course. The result is many of these same students stop attending or participating halfway through the semester and, then perhaps, not even complete the course requirements.

Some critics of distance education believe distance learning does not provide many of the learning opportunities that are afforded in the traditional classroom.

Mehrotra et al. (2001) state “Distance learning lacks the richness of experience afforded in a classroom (p. 11). Additionally, in some distance education classes, students may not have immediate access to the instructor if questions arise that need a quick response.

Hoffman (2002) states, “when students have problems, they typically have no one to turn to for help . . . [and] some problems are more readily resolved in person than . . . [in an] asynchronous communication method [if provided]” (p. 29). When students don’t have this immediate access to their instructors, their anxiety level may heighten because they are unsure if they are meeting the teacher’s expectations for the course.

Depending on the amount of student to student interaction in a distance education environment and students’ preferred learning mode, limited amount of student to student interaction might pose a major problem for some individuals. Some students lack the ability to make “new friends” in the distance learning environment (Hoffman, 2002).

Wighting et al. (2008) explain that all learners need to have a sense of community regardless of the format of education being used, online or traditional. Students need to have a sense of belonging and that they matter to the group. Most students enjoy the opportunity to interact with their instructor and classmates for both academic and



emotional reasons (Moore & Kearsley, 2005). Many students might see a lack of interaction among the participants in an online course as a factor that justifies dropping the class.

Because technology changes so quickly, one major issue for distance education is the cost it takes to keep the infrastructure up to par. When comparing a multimedia online class to a traditional one, the costs to design, develop, and produce a high quality and effective distance education course must be considered. Setting up a distance education program is a major investment (Moore & Kearsley, 2005). Fees can include the cost to “set up production facilities and pay for materials produced in publishing departments, Web production, broadcasting and recording, production of other media, as well as instructional design” (Moore & Kearsley, 2005, p. 250). Additionally, faculty need extra time to prepare for instruction, especially if this is their first attempt at teaching an online course, if the course or software is new, or if anything changes in the realm of distance education from one year to the next (Mehrotra et al., 2001). It is possible that many educational institutions will argue the cost and time necessary to deliver quality on-line courses outweighs the benefits.

## **Education Demographics**

### **Ethnicity**

Research concerning ethnicity and online learning is lacking. Most research regarding ethnicity and academic achievement has been conducted at the post-secondary level and is contradictory. Webb (2002) asserts that reports indicate ethnicity does play an important role in how well students perform in online courses. Online learning is available to many students across the nation who come from various ethnic backgrounds.

According to Yang, Olesova, and Richardson (2010), being knowledgeable of cultural differences in online classes and understanding how to deal with cultural differences are key to a successful course. These authors assert that these culture differences pose a problem with social interaction in the course and the differing of views. Students in the courses must learn to respect and appreciate the differing views of fellow classmates. Furthermore, ethnicity is important to study because ethnicity plays a role in which individuals have access to technology (Webb, 2002) as well as use technology (Enoch & Soker, 2006).

Koch (2005) found in his study of distance learning that ethnic background is a factor that should be evaluated when determining student success in online courses. He states that even though faculty members may not be privileged to see their students, students at certain schools may see or know other students in the online course and have a negative reaction based on what they are seeing which will cause a difference in achievement among ethnic groups. Conversely, Aragon and Johnson (2008) found that no significant differences were found among ethnic groups in distance learning courses and that ethnicity was not a consistent factor in examining factors that led to students dropping their online course. However, Clark (2001) found in his study that most people who are behind in their coursework were minorities. Both studies contradict each other. Therefore, understanding how ethnic backgrounds influence learning and achievement is essential in the success of students from various backgrounds in online courses.

## **Gender**

Rovai and Baker (2005) assert that gender is an important consideration of online learning because in its early years, distance education was marketed towards women.

They state that ignoring gender in distance education makes its access less equitable. Studying the role of gender on student achievement does not seek to confirm if males or females are at a disadvantage in online courses. It seeks to explain how these two groups learn differently given the different experiences they bring to the course (Taplin & Jegede, 2001).

Females tend to be more sociable in online courses than male students. Chyung (2007) asserts that male students posted more messages in a formal online learning environment than females. Females posted more interactive social messages than males. These differences can be attributed to, according to Yukselturk and Bulut (2009), how the life responsibilities of males and females differ while enrolled in the course. Several researchers, Chyung (2007), Gunn et al. (2003), Price (2006), Rovai and Baker (2005), Sullivan (2001), and Taplin and Jegede (2001) report that male and female students differ in the online learning environment in several ways such as “performance, motivation, perception, study habits, and communication behaviors” (Yukselturk & Bulut, 2009, p. 13). Additionally, Gunn et al. (2003) also stress that male and female students differ in their participation and contribution in the online learning environment. Understanding the differences between male and female students’ learning preferences can be used by course developers and instructors to develop instructional materials and to provide a learning environment that address these concerns and also provide a learning environment tailored to meet the needs of the different students enrolled in online courses (Sullivan, 2001).

## **Student Achievement**

Success in education has been predicted using different variables. Colleges use “grades in high school, performance on standardized measures..., study skills, motivation to succeed, demographic variables, and timeliness of educational experiences” to gauge student success in college courses (Deka & McMurry, 2006, p. 2). These variables have also been used in an attempt to determine student success in distance learning classes; however, with very little success (Deka & McMurry, 2006). Student achievement in online classes is not very much different from traditional classrooms. Therefore, there were “no significant differences between overall results of combined face-to-face versus combined online achievement scores” (Smith et al., 2005). Researchers have concluded that students taking courses online demonstrated the same or more gains in learning than students in traditional classrooms (Smith et al., 2005).

## **Best Practices**

Online learning can provide students with educational experiences that can be different yet as effective as traditional learning. The quality of online learning is important in assessing its effectiveness. Most practices for online learning have been an adaptation of traditional learning. This approach to teaching online courses does not account for the uniqueness of teachers of online classes, thus making it necessary to conduct research that focuses on the instructional strategies of online learning (Di Pietro et al., 2008). Some factors to be considered when analyzing the effectiveness of online learning are best practices (Di Pietro et al., 2008), student interaction (Thorpe & Godwin, 2006), and student perception and satisfaction (Barbour, 2006).

Online education has been said to be just as effective as traditional classroom instruction. Cavanaugh indicated that little research has been conducted to provide information regarding what instructional strategies or practices foster student success in online learning (Cavanaugh et al., 2004), and simply transferring best practices from the traditional face-to-face educational environment is not always the best strategy for teaching in the online setting (Davis & Roblyer, 2005).

### **Student Interaction**

Interactivity within an online course is considered to be a significant component in online learning (Thorpe & Godwin, 2006). Thorpe and Godwin further state that interaction goes beyond interpersonal communication. Student interaction in the online learning setting is important in assessing the quality of the distance education programs. Therefore, students in online learning environments should have plenty of opportunities to interact with the teacher, other students, as well as the content.

In online courses, the online instructor must make an effort to foster communication and interaction with and among the students (Cavanaugh et al., 2004). Volroy (2001) asserts that teachers using tools to foster student interaction in the online learning environment is important to student learning and achievement. Di Pietro et al. (2008) found in their study that teachers of online courses with greater student success engaged students in conversations that were content related as well as non-content related. This allowed for the students and instructor to form a relationship and also recognize that the instructor was interested in the students' lives outside of the course. This also provides the instructor with the opportunity to make the class more meaningful and personal, to the students.

The capability of interacting with course content through technology media is equally important as person-to-person interaction. Effective online teachers provide students with various ways to interact with content that suit different learning styles. Di Pietro et al. (2008) found that students desired several opportunities to interact with the course content. They state, “The integration of different mediums to deliver the same content . . . were discussed as means for encouraging students’ active participation in a course and maintaining their engagement with content” (p. 23). Furthermore, they provide several strategies to assist in keeping students engaged with the course content such as, providing deadlines that motivate students to complete requirements, having content that is organized and structured, establishing relationships that support positive interactions with students, and accommodating different learning styles.

Interaction in the online course not only promotes in the understanding of content, it can be examined when assessing the quality of online education. According to Hirumi (2002) as cited in Ward, Shelly, and Peters (2010), there are only a few components of online learning interaction that lead to higher achievement: “[prompting] intellectual insight, [calling for] analysis, and [deepening one’s] commitment to instructional activities.” High quality interaction can be closely associated with performance and satisfaction (p. 61). Examining interaction can assist in examining the quality of distance education. It is these interaction components that create an effective online learning environment (Ward, et. al, 2010). Chang and Smith (2008) assert that the concern regarding the quality of distance education can be addressed by examining and understanding students’ perception of interaction within the course.

## **Student Perception and Satisfaction**

Distance education has become a more prominent choice of education for many post-secondary education students. For this reason, studying student perceptions is very important in understanding online learning from students' perspective (Barbour, 2008). According to Barbour, examining how students view their distance education classes provides instructors with information that can aid them in determining how best to deliver instruction in the online learning environment. Additionally, one way instructors and institutions can examine the effectiveness of their program is by surveying the students who take the courses (Walker & Kelly, 2007). Educational institutions and instructors can examine which components of the online learning environment are important and most beneficial to students and which components of the online environment are nuisances to students. According to Smart and Chappel (2006), studying student perceptions of online learning will lead to a better understanding of the best ways to implement and use online instruction effectively.

When studying students' attitudes of online learning, researchers have reported conflicting findings. Hannay and Newvine (2006) found that the attitudes of students are very different from those of their instructors. Hannay and Newvine (2006) found that the attitudes of instructors and teachers in online learning conflicted with each other. Instructors perceived online instruction as being less effective as or of lesser quality than traditional courses. Students were very satisfied with their instructors and their distance education courses. Additionally, Wyatt (2005), as cited in Dobbs, Waid, and Carmen (2009), found that 87% of the students surveyed regarding student perceptions were

generally satisfied with their online learning experience and 77% of the students were satisfied with the quality of education they received.

Students often felt frustrated in their online courses due to a sense of not belonging which led to dissatisfaction of their online course. Lofstrom and Nevig (2006), discovered that students who felt isolated during their online courses perceived this isolation as being a major obstacle in their success. Lofstrom and Nevig also found that teachers generally perceived online learning to be more meaningful than the students, contradicting Hannay and Newvine (2006). Understanding student perception of online learning is crucial to ensuring academic success in online classes.

### **Online Course Features**

#### **Instant Messaging (Chat) and Email**

Synchronous communication, such as instant messenger, can be used in a variety of ways. Levine, White, and Bowman (2007) explain that instant messaging is a form of communication that allows individuals to communicate with several people at once using typed conversations in real time. Instant messaging is unique because users can view the on- or offline status of their friends. When the instant message software is activated on the computer, the user is able to send and receive messages from other users who are online. Additionally, some instant messaging interfaces allow for individuals to even receive messages while idle (Levine et al., 2007). These perks further enhance the capabilities of instant messaging in online classes.

Instant messaging is seen to be a much more popular form of the idea of email in today's society because it requires students to be online at the same time to in order to work effectively. Researcher Cross (2004) has noted that instant messaging is a much



more limited form of current email; and in today's society, its use has been popularized by individuals communicating with multiple individuals at once in real time. Individuals are most often times multitasking and using instant message while completing other tasks when on the computer. Cross (2004) said, "It is similar to being on the telephone, but with many people at once" (p. 15). Students often use this medium while completing homework tasks therefore implying that incorporating this feature in the distance learning environment is very beneficial (Cross, 2004). This shows students' ability to use this feature to seek help or social support in the online learning environment.

Instant messenger seems to be a popular communication feature among today's young people. One reason for this, according to Tremayne, Chen, Figur, and Huang (2008) is "[Instant messaging] distinguishes itself from other text-based communication by users' predominant messaging with known others in real time" (p. 179). Instant message communication allows for instantaneous feedback almost like face-to-face communication. However, instant messaging has not become vital to the student-teacher relationship. This is partially due to instructors feeling less comfortable interacting with students using instant messenger. Instant messenger is seen to be more informal and instructors feel that their authority will be lessened if they communicate with students via instant messaging (Tremayne et al., 2008).

Online learning environments are structured in such a way that instructors and students are not physically in the same location. Because of this, "computer-mediated communication (CMC) [can be] widely [used] to promote interaction in distance education" (Maushak & Ou, 2007, p. 161). Maushak and Ou (2007) noted that synchronous communication, such as instant messenger, allowed students to receive

immediate feedback from the instructor or other students in the class further fostering collaboration within work groups. They further found that students not only met online to divide tasks that needed to be completed; they also provided each other with resources and information through their discussions. They believe that instant communication is always better because students do not have to wait for replies because instant messaging is similar to face-to-face contact. Furthermore, some students felt as if they could retain the information better because they were able to “bounce” ideas off of each other (Maushak & Ou, 2007, p. 165). This capability of immediate feedback and sharing of ideas is what makes instant messaging a great tool in successfully improving student interaction and achievement in distance education.

Little research has been located related to the success or failure of instant messaging features in online learning; however, much research has been conducted on the benefits of synchronous communication in the online learning environment. The nature of online courses presents numerous opportunities for students to work together to discuss course content, and consequently, increase faculty and student satisfaction of the course (Conaway, Easton, & Schmidt, 2005). Maushak and Ou (2007) conducted a study to examine how synchronous communication fostered graduate students’ collaboration in online courses. Additionally, they explored these same graduate students’ perception of synchronous communication. These researchers noted that it was a consensus among several researchers, Berge (1999), Kearsley (1995), and Moore (1993) that interactivity is the key to success in online learning. Therefore, distance education teachers should acknowledge “the need to foster social interaction for the purpose of knowledge construction” (Beldarrain, 2006, p. 142). Having social interaction in an online

environment is not only beneficial to the teacher but also to the students. Students are able to develop a deeper understanding of course content when they can communicate with others about course materials.

Instant messaging in online learning can be very beneficial to educational institutions and college students. In today's society, more and more colleges are offering online education opportunities to their students. Brinkerhoff and Koroghlanian (2007) noted that most higher education institutions view online classes as being a necessary survival tool to their success. Some educational institutions even provide entire degree programs through distance education. Additionally, Morgan and Cotten (2003) studied the relationship between Internet activities and depressive symptoms in college freshmen. What they found was that Internet usage among colleges' and universities' students has increased within the last several years, and that getting male students to communicate in online classes decreased their depression levels. An increase in the use of the Internet for e-mail, chat rooms, and instant messaging can be associated with a decrease in symptoms of depression. Because of these findings, it is safe to assume that incorporating these features in online courses can help lessen the symptoms of depression and anxiety in distance education students.

In addition to improving student interaction, instant messaging has been shown to have a positive correlation with course satisfaction and student to teacher interaction. Contreras-Castillo, Perez-Fragoso, and Favela (2006) studied the use of instant messaging in online learning environments to determine if there was a positive correlation with course satisfaction and interaction among students and between the students and their teacher. They state, "The structuring of the spaces and behaviors in

mediated learning environments can reinforce the practices and social conducts considered appropriate within the traditional contexts of education” (p. 206). Providing the instant messaging features in online courses give students a means of communicating informally, which, consequently, increased student interaction and course satisfaction. Instant messaging has been found successful in establishing social bonds and improving communication within groups of individuals. Therefore, distance education instructors can use this tool to help reach their own instructional goals.

The idea of instant messaging is very familiar to students in this technology rich environment. Therefore, instant messaging has great potential in the educational setting (Hrastinski, 2006). The results of Hrastinski’s (2006) study indicated that the groups that conversed through instant messaging had a higher level of course participation than other students. He also suggested that instant messaging did not take the place of emailing but complemented it. Hrastinski finally found that instant messaging was used mostly for support and an exchange of information instead of social support. Therefore, instant messaging offers many great opportunities for instructors of online courses.

Excluding forms on synchronous communication in an online class can be unfortunate. Hrastinski (2006) notes that not having informal and social communication is unfortunate because it is a necessity for creating bonds of community and as well as a requirement for participating in learning communities. Furthermore, Nicholson (2002) notes that instant messaging systems enable informal and social communication among students in online classes. Instant messaging does this by “providing the ‘virtual hallways’ for students and instructors to meet” (Hrastinski, 2006, p. 138). In traditional classes students and instructors often see each other in hallways or lounges and often

communicate with each other informally. Students can visit the instructor's office when needed. Due to the nature of online classes, the physical hallway is not present for this type of interaction, and providing instant messaging can help students communicate informally and immediately throughout the course.

## **Video**

Students are very unique and different. Therefore, one mode of disseminating information may not be effective for all students and using video in an online class can help engage "more areas of working memory" (Hughes, 2009, para. 5). An additional advantage of incorporating video in online courses is it helps to build students' motivation as they often times perceive online classes as boring (Choi & Johnson, 2005). Students will be more motivated and more enthused about learning the content. Furthermore, Choi and Johnson found that there was a statistically significant difference in the motivation of students regarding their attention in both online learning and traditional learning settings.

In addition to increasing students' motivation, utilizing video in the online classroom allows for teachers to create a consistent presence in the course. Cole and Kritzer (2009) explain that an online instructor needs to be as present in the online classroom as they would be in the traditional classroom. The reason is that students want and need to have a relationship and constant interaction with their instructor in some form. To accomplish building this relationship, Cole and Kritzer (2009) suggest incorporating weekly video messages in the online course.

## Summary

Distance education has become a viable option for obtaining a post-secondary education, and its popularity continues to grow due to the flexibility and accessibility of taking online courses (Deka & McMurry, 2006). Students' successful completion of their online course is vital to the continued success of online instruction. According to Carr (2000), the failure rate in online courses is much higher than in traditional courses due to many reasons. According to Willin and Johnson (2009), dropout decisions can be due to "issues of isolation, disconnectedness, and technological problems" (p. 115). As educators and course designers improve "course design, instructional practice, support services, and student screening" the rates of successful completion of online courses will increase (NACOL, 2007).

Much research has been conducted to determine if distance learning is an effective mode of educating students. However, little research has been found that examines exactly which factors contribute to effective online learning. Taking classes online presents many obstacles for students (Deka & McMurry, 2006). Therefore, it is important to look at which factors of online learning are linked to students' academic achievement. It is important to identify factors that impact student success and lower the dropout rate in online courses for continued improvement and success in distance education.

### CHAPTER III

#### METHODOLOGY

The purpose of this study was to determine if there was a significant differences in students based of education demographics and what factors contributed to the successful completion of online courses for postsecondary education students. This study sought to first determine if specific educational demographics and specific online course features affect academic success in online courses. Secondly, this study sought to determine if there was a difference among participants based on educational demographics (gender, race, classification, course, and professor) and student achievement. Lastly, this study sought to determine if there is a statistically significant and meaningful relationship between specific online course features (availability of chat, videos, discussion boards, and video conferences), interaction with content (how much time the students spent learning course content), frequency of access, student perception, interaction with instructor, and interaction with students) and student achievement as measured by the students' grade in the course. The courses that were examined in this study were taught at a public university in the south eastern region of the United States. This chapter describes the research design, variables of the study, population and sample, instrumentation, data collection, and data analysis that were used in this study.

## **Research Design**

This study was conducted using a descriptive and correlational research design. Descriptive research is best used to “describe a given state of affairs as fully and carefully as possible” (Fraenkel & Wallen, 2006, p. 14). The correlational research design was appropriate for this study because the researcher was seeking to determine if a relationship existed between specific demographic characteristics and students’ academic achievement as well as between specific online course features and students’ academic achievement. According to Fraenkel and Wallen (2006), correlational research seeks to examine if there is a possible relationship between two variables. More specifically, “a correlational study describes the degree to which two or more quantitative variables are related . . . by using a correlation coefficient” (Fraenkel & Wallen, 2006, p. 335). Additionally, correlational designs are suitable for examining relationships where the variables are either not manipulated or cannot be manipulated (Fitzgerald, Rumrill, & Schenker, 2004). Because the researcher sought to determine if a relationship existed between variables, correlational research design was appropriate for this study as well.

## **Variables in Study**

The variables that were examined in this study included: gender, race, classification, course, professor, interaction with content, frequency of access, student perceptions, interaction with instructor, interaction with students, and students’ self-reported grade.

For purposes of analyzing the data, the researcher categorized gender, race, professor, and course as categorical data while classification and letter grade are categorized as ordinal data. Course and professor were assigned a generic label to



remove identifying characteristics. The generic label, i.e. Course A or Professor A, was randomly assigned and does not correlate to the level of the course. Course A had multiple levels due to different professors teaching the same course. Student classification was ranked least to greatest with freshmen being considered the lowest level classification and graduate student being considered the highest level classification. Letter grade was ranked from least to greatest with a letter grade of F being the lowest grade and a letter grade of A being the highest grade. Table 1 shows the labeling of data for letter grade. A copy of the survey instrument can be found in Appendix A.

Table 1

*Coding of Data for Letter Grade*

Letter Grade	Coding of Data
A	4
B	3
C	2
D	1
F	0

The independent variables for the study included the availability of chat, videos, discussion boards, video conferences, interaction with content, frequency of access, interaction with instructor, interaction with students, and student perception which were criterion and predictor variables. Students' self-reported grade was the dependent variable.

Interaction with Content with content was determined by analyzing the amount of time students spent learning course content per assignment: less than 30 minutes, 30 minutes to 1 hour, 1.1 to 1.5 hours, or more than 1.5 hours.

Frequency of access was determined by the number of times per week a student logged into the course for purpose of completing assignments.

Student perception was determined by analyzing how students felt about the course in response to questions to gauge student satisfaction.

Interaction with the instructor and students was determined by the reason in which students contacted the instructor and/or other students.

Student achievement was dependent upon students' self-reported grade in the course by letter grade. Letter grades of A-D are considered successful completion of the course.

### **Description of Participants**

The researcher was granted access to distance learning students who took courses during the spring, summer, and fall semesters of 2014. The participants in this study consisted of undergraduate and graduate students enrolled in distance education courses at public university in the south eastern region of the United States. For the purpose of this study, these courses were classified according to the instructor teaching the course: Professor A, Professor B, Professor C, Professor D, Professor E, Professor F, and Professor G. A total of 12 professors were invited to have their students participate in this study. Ten of the 12 professors invited (83.33%) allowed their students to participate in the study giving the researcher access to 122 students across three semesters. Of the 122 students who received invites to participate in the study, 39 students (31.96%) completed the survey for this study. The researcher asked the professors to send out the survey a second time encouraging students to complete the survey. One survey response was

removed from the data because the participant's response was related to a course in a different department than the one approved to complete the study.

### **Description of Instrumentation**

A survey instrument was used in this study to examine student outcomes in relation to educational demographics and online course features. Furthermore, a survey instrument is best used when summarizing the characteristics of an individual or group of individuals. This instrument was an adaptation of an instrument developed by Smart and Chappel (2006) at Central Michigan University with their permission to adapt the survey for the needs of this study. The original survey was developed for use at the post-secondary level. This survey consisted of one section that only assessed students' perceptions of their online courses and did not correlate their perceptions with academic achievement. For this current study, the researcher arranged the survey into three categories: student demographics, student behavior, and student perception.

Section one of the adapted survey consisted of questions to gather information about the students' demographics: gender, race, classification, course, professor, access to Internet, and letter grade. The original grading scale in section one reflects the grading scale used by the university.

Items for sections two and three contained questions from the original survey as well as questions developed by the researcher to address the research questions. This section of the survey for course features and student behavior in the online course assessed how students accessed course information, interacted with the instructor, other students, and the content. The answer items for these questions were formulated for the amount of time spent completing tasks and how often interactions occurred. Participants

selected answers from all of it, most of it, less than half of it, or none of it in relation to how much of the course was completed. Participants also answered questions related to the method used to learn course content, i.e. chat, videos, discussion boards, and video conferences. Participants selected answers of none, once a week, twice a week, three times a week, or four or more times a week to answer questions relating to interacting with the instructor, students, or content. Additionally, students indicated the average amount of time spent on completing each assignment by selecting less than 30 minutes, 30 minutes to 1 hour, 1.1 to 1.5 hours, or more than 1.5 hours.

The third section of the instrument examined students' perceptions of the online course in which they were enrolled and consisted of questions to be answered on a Likert Scale with answers of strongly agree, moderately agree, slightly agree, don't know/no opinion, slightly disagree, moderately disagree, and strongly disagree. A copy of the survey can be found in Appendix A.

### **Validity for Survey Instrument**

The validity of a survey instrument determines how appropriate the instrument is for the research being conducted (Fraenkel & Wallen, 2006). The developers of the original survey instrument offered no validity evidence for the original survey instrument. The researcher sought content validity of this instrument by using a panel of experts, professors in related content areas, for feedback which was used to improve the survey instrument.

### **Reliability of Instruments**

The developers of the survey offered no reliability evidence to check the internal consistency of the survey instrument. For this study, the researcher checked for internal consistency by calculating a Cronbach's alpha coefficient. The Cronbach's alpha for this survey was .718 on the 45 non educational demographic items suggesting that there was acceptable internal consistency.

### **Data Collection**

Data for this study was collected from students enrolled in courses at a public university in the south eastern region of the United States. The researcher gained the approval through the university's Office of Regulatory Compliance to conduct her research. Upon approval from the university, the researcher then gained approval from the department as well as seven professors. Once approval was granted, the researcher worked with the professors to email a link for the survey to their online course students. Students were given one month to complete the survey during each semester.

The researcher did not use students' nor the professors' names during any part of her research to ensure the students' and professors' privacy rights were not violated. All surveys were anonymous. The researcher used students who took online courses during the spring, summer, and fall 2014 semesters from several professors to ensure the sample size was adequate to answer the research questions.

### **Data Analysis**

The data for this study was analyzed using Statistical Package for the Social Sciences (SPSS) 16.0 software. A confidence level of  $\alpha$  equal to or less than .05 was used

for this study. A descriptive statistical analysis using frequencies, percentages, and median scores was used to describe the demographic variables and answer question one. The researcher used charts and tables to display this descriptive data of students. A Kruskal-Wallis test based on students' final grade in the course was used to determine if a statistically significant difference existed in students' successful completion of the online course due to any demographic characteristics. A Spearman's Rho correlation was used to determine if a statistically significant relationship existed between online course features and students' grade, students' perception and grade, nor student interactions' and grade.

### **Research Questions**

Research question one is: When students are grouped based on demographic differences, is there a significant difference in achievement (grade in the class) in their online class?

Data analyses for this question includes summary descriptive statistics, Kruskal-Wallis, and any necessary post hoc test. A confidence level of  $p \leq .05$  was set a priori to test for significant differences. Table 2 provides the survey items and possible responses to educational demographics questions.

Table 2

*Educational Demographics*

Educational Demographic	Response
Gender	Male Female
Ethnicity	African American Asian Caucasian Hispanic Native American Other
Classification	Freshman Sophomore Junior Senior Graduate Student
Professor	Professor A Professor B Professor C Professor D Professor E Professor F Professor G
Course	Course A Course B Course C Course D Course E Course F Course G

Research question two was: Is there a statistically significant relationship between specific online course features and student achievement in online courses as measured by the students' final grade in the course? Data analyses for this question include: summary descriptive statistics and Spearman's Rho Correlations. According to Gravetter and Wallnau (2007), a Spearman's Rho correlation is best used to measure the relationship between data that is on the ordinal scale. Because the course grade data were ordinal, a Spearman's Rho Correlation was used to identify any statistically significant

relationships between demographic variable and education achievement. A correlation of  $r_s = .60$  or greater was considered to be a strong association. Table 3 provides the survey items and possible responses to determine if certain online course features have an impact on student achievement in online courses.

Table 3

*Course Features*

Course Features	Response
Was instant chat available in your online course? Were content related videos available in your online course? Was a student lounge available in your online course? Was any form of video conferencing available in your online course? Did you use instant chat to assist in completing assignments? Did you use instant chat for socialization? Did you use video conferencing for completing assignments? Did you use video conferencing for socialization?	Yes No

Research question three was: Is there a statistically significant relationship between student behaviors (location of access, time to complete assignment, interaction with content, frequency of access, student perception, interaction with instructor, and interaction with students) and student achievement as measured by students' course grade? Data analyses for this question includes summary descriptive statistics and Spearman's Rho. A correlation of  $r_s = .60$  was considered a strong association. Table 4 provides the survey items and possible responses to determine if certain student behaviors have an impact on student achievement in online courses.



Table 4

*Student Behavior*

Student behavior	Response
What method did you use to connect to the online course?	On Campus Off Campus (home, public library, restaurant, other)
How much of your course did you complete?	All of it Most of it Less than half of it None of it
How often did you log in to complete course requirements?  How often did you contact the instructor for content related questions?  How often did you contact fellow classmates for content related questions?  How often did you contact the instructor for non-content related questions?  How often did you contact fellow classmates for non-content related questions?  How often did you post a discussion board for content related purposes?  How often did you post to a discussion board for non-content related purposes?  How often did you communicate with your instructor using a different mode of communication other than the discussion board for content related purposes?  How often did you communicate with your instructor using a different mode of communication other than the discussion board for non-content related purposes?  How often did you communicate with your classmates using a different mode of communication other than the discussion board for content related purposes?  How often did you communicate with your classmates using a different mode of communication other than the discussion board for non-content related purposes?	None Once a week Twice a week Three times a week Four or more times a week
When did you typically begin working on assignments?	On due date 1 day before due date 2 days before due date 3 days before due date Four or more days before due date
In total, about how long did it take you to complete one assignment in the online course?	Less than 30 minutes 30 minutes-1 hour 1.1-1.5 hours More than 1.5 hours

Research question four was: Is there a statistically significant relationship between students' perception and student achievement as measured by students' course grade? Data analyses for this question includes summary descriptive statistics and Spearman's Rho. A correlation of  $r_s = .60$  or greater was considered a strong association. Table 5 provides the survey items and possible responses to determine if students' perceptions have an impact on student achievement in online courses.

Table 5

*Students' Perceptions*

Perception	Student Response
<p>The information provided in the discussion board gave a better understanding of the content being discussed.</p> <p>When communicating with your instructor using a different mode of communication other than the discussion board, the information provided gave a better understanding of the content being discussed.</p> <p>When communicating with your classmates using a different mode of communication other than the discussion board, the information provided gave a better understanding of the content being discussed.</p> <p>When communicating with your instructor for content related topics, you felt a greater sense of community and belonging.</p>	<p>Strongly agree Moderately agree Slightly agree Don't know Slightly disagree Moderately disagree Strongly disagree</p>
<p>When communicating with your classmates for content related topics, you felt a greater sense of community and belonging.</p> <p>When communicating with your instructor for non-content related topics, you felt a greater sense of community and belonging.</p> <p>When communicating with your classmates for non-content related topics, you felt a greater sense of community and belonging.</p> <p>When communicating with your instructor for content related topics, you felt a sense of isolation.</p> <p>When communicating with your classmates for content related topics, you felt a sense of isolation.</p> <p>When communicating with your instructor for non-content related topics, you felt a sense of isolation.</p>	<p>Strongly agree Moderately agree Slightly agree Don't know Slightly disagree Moderately disagree Strongly disagree</p>

Table 5 (continued)

<p>When communicating with your classmates for non-content related topics, you felt a sense of isolation.</p> <p>Completing this online course was an effective way to learn about the assigned course.</p> <p>The assignments in the assigned online course were too difficult.</p> <p>Often when completing the assignments, you used other resources than the ones provided in the course to learn more about the topic.</p> <p>Completing the online course was fun.</p> <p>Completing the online course improved my understanding of the subject.</p> <p>Completing this online course took more time and effort than it was worth.</p> <p>Online courses' assignments are more difficult than traditional face-to-face courses.</p>	<p>Strongly agree Moderately agree Slightly agree Don't know Slightly disagree Moderately disagree Strongly disagree</p>
<p>Rate the online course completed on each of the following dimensions:</p> <p>Ease of use</p> <p>Clarity of information</p> <p>Interesting</p> <p>Useful</p> <p>Degree of interaction with instructor</p> <p>Degree of interaction with classmates</p>	<p>Excellent Satisfactory Somewhat satisfactory Somewhat unsatisfactory Very unsatisfactory</p>
<p>How do you rate the overall quality of the most recent online course you completed?</p>	<p>It exceeded my expectations. It met my expectations. It did not meet my expectations.</p>
<p>Which of the following best describes your future intentions?</p>	<p>I am definitely interested in taking another online course. I will consider taking another online course. I am definitely not interested in taking another online course.</p>

## CHAPTER IV

### DATA ANALYSIS AND RESULTS

The purpose of this chapter is to provide a detailed analysis of the data collected from distance learning students throughout this study. This study investigated the impact of online (distance education) instruction on academic achievement and the variables that might impact achievement, thus providing additional data related to this important educational instructional mode.

This chapter addresses the four research questions the researcher sought to answer.

1. The following research questions were developed to guide this study:
2. When students are grouped based on demographic differences, is there a significant difference in achievement (grade in the class) in their online class?
3. Is there a relationship between specific online course features (availability of chat, videos, discussion boards, and video conferences) and student achievement in online courses as measured by students' course grade?
4. Is there a relationship between student behaviors (where students accessed the course and content, how much of the course they completed, how often they logged into the course, when they began working on assignments, interaction with professor, classmates, and interaction with content) and student achievement as measured by students' course grade?

5. Is there a relationship between students' perception of the online course and student achievement as measured by students' course grade?

### **Characteristics of Population**

Out of the 38 participants' surveys used for this study, 76.3 % were female and 23.7% were male. The majority of the participants, 65.8%, were Caucasian, and 31.6% were African American. Most participants were seniors and graduate students. Professor F had the most participants in this study, 26.3%; Professor D, 18.4%, Professor E, 18.4%. Two participants did not report a professor. Additionally, most participants in this study took Course A (28%). Course A was divided into three sections due to three professors teaching that course. Two participants did not report which class they were taking. One participant failed to report his or her professor, and two participants failed to report the course in which they were enrolled. The description of the participants for this study is notated in Table 6.

Table 6

*Description of Participants (N=38)*

Characteristics	<u>N</u>	%
Gender		
Female	29	76.3
Male	9	23.7
Race		
Caucasian	25	65.8
African American	12	31.6
Hispanic	1	2.6
Classification		
Freshman	1	2.6
Sophomore	2	5.3
Junior	7	18.4
Senior	13	34.2
Grad Student	15	39.5
Professor		
Professor A	6	15.8
Professor B	1	2.6
Professor C	1	2.6
Professor D	7	18.4
Professor E	7	18.4
Professor F	10	26.3
Professor G	5	13.2
Course		
Course A 1	6	15.8
Course A 2	1	2.6
Course A 3	3	7.9
Course B	4	18.4
Course C	4	13.2
Course D	3	7.9
Course E	4	5.3
Course F	5	13.2
Course G	6	10.5

## Research Question One

Research question one was: When students are grouped based on demographic differences, is there a significant difference in achievement (grade in the class) in their online class? Students were asked on the survey to identify their current grade in their respective online courses as A, B, C, D, or F. A letter grade of D or higher is considered successful completion. All students successfully completed their online course with a grade of C or higher.

A Kruskal-Wallis analysis was conducted to analyze differences within and between groups. The assumptions for a Kruskal-Wallis analysis were met because the dependent variable, letter grade, is ordinal data. The independent variables, gender; race; classification; course taken; and professor, are categorical data. Independence of observation was met because data were collected individually from students. An alpha level of  $\leq .05$  was set a priori.

After analyzing the data, non-significant results were found on all variables: gender,  $p=.556$ ; race,  $p=.271$ ; students' classification,  $p=.760$ ; course taken,  $p=.343$ ; and professor of the course,  $p=.319$ . These results can be found in Table 7.

Table 7

### *Results of Significant Differences in Class Grade by Demographics*

Test Statistics <sup>a,b</sup>					
	Gender	Race	Classification	Course	Professor
Chi-Square	1.125	.614	7.217	8.916	5.449
Df	1	2	4	8	6
Asymp. Sig.	.289	.736	.125	.349	.488

a. Kruskal Wallis Test

b. Grouping Variables: Gender, Race, Classification, Course, and Professor

As notated in Table 8, the median grade for each group was either an A (4) or B (3). Because non-significant results were found, no post hoc tests were needed.

Table 8

*Median Grade by Groups*

Group	N	Median
Gender		
Female	29	4.00
Male	9	4.00
Total	38	
Race		
Caucasian	25	4.00
African American	12	4.00
Hispanic	1	4.00
Total	38	
Classification		
Freshman	1	4.00
Sophomore	2	4.00
Junior	7	4.00
Senior	13	3.00
Grade Student	15	4.00
Total	38	
Course		
Course A1	6	4.00
Course A2	1	3.00
Course A3	3	4.00
Course B	4	4.00
Course C	4	4.00
Course D	3	3.00
Course E	4	4.00
Course F	5	4.00
Course G	6	4.00
Total	36	
Professor		
Professor A	6	4.00
Professor B	1	3.00
Professor C	1	3.00
Professor D	7	4.00
Professor E	7	3.00
Professor F	10	4.00
Professor G	5	4.00
Total	37	



## Research Question Two

Research question two was: Is there a relationship between specific online course features (availability of chat, videos, discussion boards, and video conferences) and student achievement in online courses as measured by students' course grade?

Participants responded yes or no to the availability of each feature in his or her online course. The availability of a chat feature in the online course existed in 51% of the students' courses. Thirty percent of students used chat when completing assignments while three percent used chat for socialization purposes. Students in courses that offered these features (chat, video conference, content videos, and student lounge) received similar grades to students in courses that did not offer these features. The availability of video conferencing existed in 35% of students' courses, and 8% of students used video conferencing when completing assignments. Moreover, five percent of students used video conferencing to socialize with fellow classmates. In regards to content related videos, 71% of students reported having access to content related videos that helped them gain a better understanding of course content. Table 9 shows participant responses for questions relating to course features.

Table 9

### *Participants' Responses on Availability of Course Features*

Course Features	Response	
Was instant chat available in your online course?	<b>No</b> 49 %	<b>Yes</b> 51 %
Were content related videos available in your online course?	<b>No</b> 29 %	<b>Yes</b> 71 %
Was a student lounge available in your online course?	<b>No</b> 49 %	<b>Yes</b> 51 %
Was any form of video conferencing available in your online course?	<b>No</b> 66 %	<b>Yes</b> 34 %
Did you use instant chat to assist in completing assignments?	<b>No</b> 70 %	<b>Yes</b> 30 %
Did you use instant chat for socialization?	<b>No</b> 97 %	<b>Yes</b> 3 %
Did you use video conferencing for completing assignments?	<b>No</b> 92 %	<b>Yes</b> 8 %
Did you use video conferencing for socialization?	<b>No</b> 95 %	<b>Yes</b> 5 %

The researcher analyzed if there was a significant correlation between specific online course features as identified above and student achievement in online courses as measured by students' course grade. A Spearman's Rho Correlation was used to identify any statistically significant relationships among course features and student achievement. The correlations were interpreted based on the scale shown in Table 10. A correlation of  $r_s = .40$  or greater is considered to be a moderate association or better.

Table 10

*Interpretation of Correlations*

Correlation	Interpretation
+ or - 0-.19	Very low association
+ or - .2-.39	Low association
+ or - .4-.59	Moderate association
+ or - .6-.79	Strong association
+ or - .8-1	Very strong Association

Data analysis revealed that there were no significant, meaningful correlations between specific online course features: availability of chat and students' grade, availability of video conferencing and students' grade, availability of content related videos and students' grade, availability of a student lounge and students' grade, use of chat for assignments and students' grade, use of chat to socialize and students' grade, use of video conferencing to complete assignments and students' grade, and use of video conferencing to socialize and students' grade. There was a moderate association between the availability of video conferencing and students' use of video conferencing in completing assignments,  $r_s = .40$ ,  $p = .01$ . When video conference was available, students were more likely to use it when completing assignments. Table 11 provides the

correlations used to determine if specific online course features had an impact on student achievement in online courses.

Table 11

*Correlations of Online Course Features and Grades*

			Connection	Chat Available	Video Conference Available	Content Videos Available	Student Lounge	Chat to Complete Assignments	Chat to Socialize	Video Conference to Complete Assignment	Video Conference to Socialize	Grade
Spearman's rho	Connection	Correlation Coefficient	1.000	-.115	-.341*	-.004	-.302	-.312	-.080	-.138	-.115	-.197
		Sig. (2-tailed)	.	.498	.036	.981	.066	.060	.638	.407	.499	.236
		N	38	37	38	38	38	37	37	38	37	38
	Chat Available	Correlation Coefficient	-.115	1.000	.212	-.160	.396*	.338*	.169	.091	-.006	.094
		Sig. (2-tailed)	.498	.	.207	.345	.015	.044	.324	.592	.970	.579
		N	37	37	37	37	37	36	36	37	37	37
	Video Conference Available	Correlation Coefficient	-.341*	.212	1.000	.216	.274	.055	-.115	.406*	.090	-.009
		Sig. (2-tailed)	.036	.207	.	.193	.097	.748	.496	.011	.597	.957
		N	38	37	38	38	38	37	37	38	37	38
	Content Videos Available	Correlation Coefficient	-.004	-.160	.216	1.000	-.104	.035	.101	-.028	-.106	.025
		Sig. (2-tailed)	.981	.345	.193	.	.533	.837	.550	.866	.532	.881
		N	38	37	38	38	38	37	37	38	37	38
Student Lounge Available	Correlation Coefficient	-.302	.396*	.274	-.104	1.000	.353*	-.101	.243	.106	.019	
	Sig. (2-tailed)	.066	.015	.097	.533	.	.032	.550	.141	.532	.911	
	N	38	37	38	38	38	37	37	38	37	38	
Chat to Complete Assignments	Correlation Coefficient	-.312	.338*	.055	.035	.353*	1.000	.255	.368*	.120	.150	
	Sig. (2-tailed)	.060	.044	.748	.837	.032	.	.134	.025	.485	.374	
	N	37	36	37	37	37	37	36	37	36	37	
Chat to Socialize	Correlation Coefficient	-.080	.169	-.115	.101	-.101	.255	1.000	-.050	-.041	.122	
	Sig. (2-tailed)	.638	.324	.496	.550	.550	.134	.	.771	.812	.473	
	N	37	36	37	37	37	36	37	37	36	37	
Video Conference to Complete Assignments	Correlation Coefficient	-.138	.091	.406*	-.028	.243	.368*	-.050	1.000	.367*	.222	
	Sig. (2-tailed)	.407	.592	.011	.866	.141	.025	.771	.	.026	.180	
	N	38	37	38	38	38	37	37	38	37	38	
Video Conference to Socialize	Correlation Coefficient	-.115	-.006	.090	-.106	.106	.120	-.041	.367*	1.000	-.155	
	Sig. (2-tailed)	.499	.970	.597	.532	.532	.485	.812	.026	.	.361	
	N	37	37	37	37	37	36	36	37	37	37	
Grade	Correlation Coefficient	-.197	.094	-.009	.025	.019	.150	.122	.222	-.155	1.000	
	Sig. (2-tailed)	.236	.579	.957	.881	.911	.374	.473	.180	.361	.	
	N	38	37	38	38	38	37	37	38	37	38	

\*. Correlation is significant at the 0.05 level (2-tailed).

### Research Question Three

Research question three was: Is there a relationship between student behaviors (where students accessed the course and content, how much of the course they completed, how often they logged into the course, when they began working on assignments, interaction with professor and classmates, and interaction with content) and student achievement as measured by students' course grade?

Participants answered questions on a Likert type scale relating to where they accessed the Internet to complete assignments, when they logged into the course to start completing assignments, how often they logged into the course, how much of the course work they completed, and when they began completing course assignments. A Spearman's Rho Correlation was used to identify any statistically significant relationships among course features and education achievement. A correlation of  $r_s = .40$  or greater is considered to be a moderate association or better.

When analyzing the data, it appeared that most students, 82%, accessed their online courses from home, and 68% of students logged into their course four or more times a week to complete assignments. Forty-four percent (44%) of students began completing their assignments four or more days prior to the due date, while 32% started three days prior to the due date. Most assignments, 77%, took more than an hour to complete. Table 12 shows participants' responses to behavior characteristics when completing course assignments.

Table 12

*Participants' Response Regarding Behavior*

Student Behavior	Percentage of Responses
Where students connected to Internet for course? Home On Campus Restaurant Other	82% 10% 3% 5%
How many times did students log into the course? <i>Per week</i> None Twice Three times Four or more times	3% 16% 13% 68%
When did students begin working on assignments? On due date One day prior to due date Two days prior to due date Three days prior to due date Four or more days prior to due date	3% 5% 16% 32% 44%
How long did it take students to complete assignments? <i>Per Week</i> Less than 30 minutes 30 mins – 1 hour 1.1 hrs – 1.5 hours More than 1.5 hours	5% 18% 37% 40%
How much of the course assignments did students complete? None of it Less than half of it More than half of it All of it	0% 0% 5% 95%

No significant relationship existed among student behaviors when completing assignments and student achievement. There also were no other strong associations among any other variables. Table 13 provides the correlations used to determine if specific logging in and access behaviors had an impact on student achievement in online courses.

Table 13

*Correlations of Students' Access to the Course and Grades*

			Connection Location	Amount of Work Completion	When Logged Into Course	When Began Work	Length of Work Completion	Grade
Spearman's rho	Connection Location	Correlation Coefficient	1.000	.111	-.188	-.068	.086	-.197
		Sig. (2-tailed)	.	.506	.258	.685	.609	.236
		N	38	38	38	38	38	38
	Amount of Work Completion	Correlation Coefficient	.111	1.000	-.157	-.241	.360*	.057
		Sig. (2-tailed)	.506	.	.346	.145	.026	.732
		N	38	38	38	38	38	38
	When Logged Into Course	Correlation Coefficient	-.188	-.157	1.000	.332*	.059	.092
		Sig. (2-tailed)	.258	.346	.	.042	.723	.583
		N	38	38	38	38	38	38
	When Began Work	Correlation Coefficient	-.068	-.241	.332*	1.000	.065	.108
		Sig. (2-tailed)	.685	.145	.042	.	.697	.520
		N	38	38	38	38	38	38
	Length of Work Completion	Correlation Coefficient	.086	.360*	.059	.065	1.000	-.191
		Sig. (2-tailed)	.609	.026	.723	.697	.	.250
		N	38	38	38	38	38	38
	Grade	Correlation Coefficient	-.197	.057	.092	.108	-.191	1.000
		Sig. (2-tailed)	.236	.732	.583	.520	.250	.
		N	38	38	38	38	38	38

\*. Correlation is significant at the 0.05 level (2-tailed).

Participants also answered questions on a Likert type scale relating to their interactions within their online courses. Regarding students' interaction with others in their online course, most students did not contact their instructors nor fellow classmates for content related questions. No significant relationship existed between students' interaction with instructors and other students and student achievement. When asked how often students contacted their instructors, 57% reported that they did not contact their instructors for content related questions, while 35% contacted the instructor once a week.

Additionally, 92% of participants reported that they did not contact their instructors for non-content related questions, while 8% contacted their instructor once a week about non-content related questions. Twenty-six percent (26%) of students felt that when they communicated with the instructor using a different form of medium than discussion boards, they better understood course content. Thirty-four (34%) percent of the students were unsure if using a different form of communication than discussion boards when interacting with the instructor fostered better understanding of course material.

When asked questions about students' interaction with other students, 73% reported that they did not contact their fellow classmates for content related questions, while 21% contacted fellow classmates once a week. Ninety-four percent (94%) of participants reported that they did not contact their fellow classmates for non-content related questions, while 3% contacted their fellow classmates once a week about non-content related questions. Table 14 shows the percentage of participants' responses about their interactions in their online courses.



Table 14

*Percentage of Participants Responses about Course Interactions*

Interaction	Participants' Responses
Contacted instructor for content related questions (per week) None Once per week Twice per week Three times per week Four or more times per week	57% 35% 8% 0% 0%
Contacted classmates for content related questions (per week) None Once per week Twice per week Three times per week Four or more times per week	73% 21% 3% 3% 0%
Contacted instructor for non-content related questions (per week) None Once per week Twice per week Three times per week Four or more times per week	92% 8% 0% 0% 0%
Contacted classmates for non-content related questions (per week) None Once per week Twice per week Three times per week Four or more times per week	97% 3% 0% 0% 0%
Posted to the discussion board for content related reasons None Once per week Twice per week Three times per week Four or more times per week	25% 50% 19% 3% 3%
Posted to the discussion board for non-content related reasons None Once per week Twice per week Three times per week Four or more times per week	97% 3% 0% 0% 0%

Table 14 (continued)

Communicated with instructor for content related reasons	
None	54%
Once per week	38%
Twice per week	8%
Three times per week	0%
Four or more times per week	0%
Communicated with instructor for non-content related reasons	
None	92%
Once per week	8%
Twice per week	0%
Three times per week	0%
Four or more times per week	0%
Communicated with classmates for content related reasons	
None	81%
Once per week	19%
Twice per week	0%
Three times per week	0%
Four or more times per week	0%
Communicated with classmates for non-content related reasons	
None	97%
Once per week	3%
Twice per week	0%
Three times per week	0%
Four or more times per week	0%

Analysis of the data revealed that there were no significant relationships between students' interaction with their instructor, students' interaction with their classmates, nor students' interaction with discussion boards and student achievement. There were strong associations identified between contacting teachers for content related questions and communicating with the instructor using a different form of communication other than discussion boards for content related questions,  $r_s = .61, p = .00$ . There was also a strong association between contacting the instructor for non-content related issues and contacting the instructor using a different form of communication other than discussion boards for non-content related issues,  $r_s = .64, p = .00$ . When communicating with the instructor for content or non-content related issues, students appear to more likely use a

different form of communication than discussion boards. As shown in Table 14, at least 46% of students contacted the instructor for content related issues at least once per week; and 8% of students contacted the instructor for non-content related issues at least once per week. Table 15 provides the correlations used to determine if students interacting with their professor and other students had an impact on student achievement in online courses. There were no other significant relationships found.

Table 15

*Correlations of Students' Interactions and Grades*

			Contact Instructor for Content	Contact Students for Content	Contact Instructor for Non-Content	Contact Classmates for Non-Content	Discussion Post for Content	Discussions Post for Non-Content	Communicate with Instructor for Content in Other Medium	Communicate with Instructor for Non-Content in other medium	Communicate with Students for Content in Other Medium	Communicate with Students for Non-Content in Other Medium	Grade
Spearman's rho	Contact Instructor for Content	Correlation Coefficient	1.000	.078	-.074	.160	.167	-.142	.606**	-.066	.088	-.140	-.018
		Sig. (2-tailed)	.	.647	.664	.345	.331	.402	.000	.700	.604	.417	.915
		N	37	37	37	37	36	37	37	36	37	36	37
	Contact Students for Content	Correlation Coefficient	.078	1.000	-.179	.252	.223	-.101	.253	.025	.483**	.364*	-.141
		Sig. (2-tailed)	.647	.	.288	.133	.190	.553	.131	.886	.002	.029	.397
		N	37	38	37	37	36	37	37	36	37	36	38
	Contact Instructor for Non-Content	Correlation Coefficient	-.074	-.179	1.000	-.050	.435**	-.050	-.089	.636**	.109	-.051	-.184
		Sig. (2-tailed)	.664	.288	.	.771	.008	.771	.601	.000	.520	.768	.276
		N	37	37	37	37	36	37	37	36	37	36	37
	Contact Classmates for Non-Content	Correlation Coefficient	.160	.252	-.050	1.000	.308	-.028	.149	-.051	.345*	-.029	.122
		Sig. (2-tailed)	.345	.133	.771	.	.067	.870	.377	.768	.036	.869	.473
		N	37	37	37	37	36	37	37	36	37	36	37
	Discussion Post for Content	Correlation Coefficient	.167	.223	.435**	.308	1.000	.000	.216	.261	.212	.220	-.049
Sig. (2-tailed)		.331	.190	.008	.067	.	1.000	.205	.129	.214	.205	.775	
N		36	36	36	36	36	36	36	35	36	35	36	
Discussion Post for Non-Content	Correlation Coefficient	-.142	-.101	-.050	-.028	.000	1.000	.149	-.051	-.081	-.029	.122	
	Sig. (2-tailed)	.402	.553	.771	.870	1.000	.	.377	.768	.636	.869	.473	
	N	37	37	37	37	36	37	37	36	37	36	37	
Communicate with Instructor for Content in Other Medium	Correlation Coefficient	.606**	.253	-.089	.149	.216	.149	1.000	.081	.186	-.155	-.179	
	Sig. (2-tailed)	.000	.131	.601	.377	.205	.377	.	.637	.271	.366	.290	
	N	37	37	37	37	36	37	37	36	37	36	37	
Communicate with Instructor for Non-Content in Other Medium	Correlation Coefficient	-.066	.025	.636**	-.051	.261	-.051	.081	1.000	.360*	-.051	.023	
	Sig. (2-tailed)	.700	.886	.000	.768	.129	.768	.637	.	.031	.768	.894	
	N	36	36	36	36	35	36	36	36	36	36	36	
Communicate with Students for Content in Other Medium	Correlation Coefficient	.088	.483**	.109	.345*	.212	-.081	.186	.360*	1.000	.344*	.074	
	Sig. (2-tailed)	.604	.002	.520	.036	.214	.636	.271	.031	.	.040	.665	
	N	37	37	37	37	36	37	37	36	37	36	37	
Communicate with Students for Non-Content in Other Medium	Correlation Coefficient	-.140	.364*	-.051	-.029	.220	-.029	-.155	-.051	.344*	1.000	.126	
	Sig. (2-tailed)	.417	.029	.768	.869	.205	.869	.366	.768	.040	.	.463	
	N	36	36	36	36	35	36	36	36	36	36	36	
Grade	Correlation Coefficient	-.018	-.141	-.184	.122	-.049	.122	-.179	.023	.074	.126	1.000	
	Sig. (2-tailed)	.915	.397	.276	.473	.775	.473	.290	.894	.665	.463	.	
	N	37	38	37	37	36	37	37	36	37	36	38	

\*\*. Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

### Research Question Four

Research question four was: Is there a relationship between students' perception of the online course and student achievement as measured by students' course grade?

Participants answered questions on a Likert type scale assessing their perception of their online course. The types of questions included about perception detailed their understanding of content, effectiveness of the course, feelings of belonging and isolation while completing the course, difficulty of assignments, and future intentions for taking other online courses. A Spearman's Rho Correlation was used to identify any statistically significant relationships among course features and education achievement. A correlation of  $r_s = .40$  or greater is considered to be a moderate association or better.

Concerning students feeling like they were a part of a community, 32% of students strongly agreed that communicating with the instructor regarding content related questions fostered a sense of community and belonging in their online course. Twenty-two percent moderately agreed, and 14% slightly agreed. Alternatively, 11% of participants felt that communicating with their instructor did not foster a sense of community and belonging. When assessing the same feeling of community and belonging between student-to-student interactions, 23% of participants strongly agreed that communicating with fellow classmates fostered a sense of community and belonging, 23% moderately agreed, and 34% responded "Don't Know". "Don't Know" responses were analyzed independent of the other answer choices for their perceptions because students' perceptions could possibly be a result of a combination of situations in the course. When communicating with instructors and fellow students for non-content related questions, 13% strongly and moderately agreed that they felt a greater sense of

community and belonging when communicating with the instructor while 7.9% strongly agreed and 15.8% moderately agreed that communicating with fellow students about non-content related questions fostered a greater sense of community and belonging.

Additionally, participants were questioned on the level of their sense of isolation within the online course. Forty percent (40%) of the participants strongly disagreed that they felt a sense of isolation when communicating with their instructor regarding content related questions while 26% moderately disagreed that they felt a sense of isolation. Likewise, 34% of participants strongly disagreed that they felt a sense of isolation when communicating with their fellow classmates regarding content related questions. Table 16 shows participants' responses to questions about having a sense of belonging or experiencing isolation.

Table 16

*Students' Perception of Belonging*

Perception	Participants' Responses
Communicating with the instructor about content related issues fostered a sense of community.	
Strongly Disagree	3%
Moderately Disagree	0%
Slightly Disagree	11%
Don't Know	19%
Slightly Agree	14%
Moderately Agree	22%
Strongly Agree	32%
Communicating with the instructor about non-content related issues fostered a sense of community.	
Strongly Disagree	5%
Moderately Disagree	0%
Slightly Disagree	3%
Don't Know	57%
Slightly Agree	8%
Moderately Agree	14%
Strongly Agree	14%

Table 16 (continued)

Communicating with classmates about content related issues fostered a sense of community. Strongly Disagree Moderately Disagree Slightly Disagree Don't Know Slightly Agree Moderately Agree Strongly Agree	6% 3% 6% 34% 6% 23% 23%
Communicating with classmates about non-content related issues fostered a sense of community. Strongly Disagree Moderately Disagree Slightly Disagree Don't Know Slightly Agree Moderately Agree Strongly Agree	8% 3% 3% 53% 8% 17% 8%
Communicating with the instructor about content fostered a sense of isolation. Strongly Disagree Moderately Disagree Slightly Disagree Don't Know Slightly Agree Moderately Agree Strongly Agree	41% 27% 8% 8% 3% 5% 8%
Communicating with classmates about content fostered a sense of isolation. Strongly Disagree Moderately Disagree Slightly Disagree Don't Know Slightly Agree Moderately Agree Strongly Agree	35% 22% 3% 27% 3% 5% 5%

After analyzing the data, the researcher found that there was no significant relationship between students' sense of community or isolation and their grades. There were, however, several other significant relationships found after analysis of the data. The researcher found that there was a strong association between students feeling a sense of community when contacting the instructor for content related questions and students feeling a sense of community when contacting the instructor for non-content related

questions,  $r_s=.68$ ,  $p=.00$ . Students who felt a sense of community when communicating with their instructor about content were also more likely to feel a sense of community when contacting their instructor about non-content related issues.

There was also a strong association between students who felt a sense of community when contacting fellow classmates for content related questions and students feeling a sense of community when contacting the instructor for non-content related questions  $r_s=.68$ ,  $p=.00$ . Students were more likely to report that they also felt a sense of community when contacting fellow classmates for content related questions while also contacting their instructor for non-content related questions.

A very strong association was found between students feeling a sense of community when contacting the instructor for non-content related questions and students feeling a sense of community when contacting fellow classmates for non-content related questions  $r_s=.95$ ,  $p=.00$ . Students who communicated with their instructor for non-content related issues were more likely to feel a sense of community when also communicating with their fellow classmates about non-content related issues.

Additionally, there was a significant relationship between feeling a sense of isolation when contacting the instructor for content related questions and students feeling a sense of isolation when contacting fellow classmates for content related questions  $r_s=.61$ ,  $p=.00$ . Students who contacted their instructor for content related questions were less likely to feel a sense of isolation when also contacting their fellow classmates for content related questions. Table 17 provides the correlations used to determine if students feeling a sense of community had an impact on student achievement in online courses.



Table 17

*Correlations of Students' Feeling a Sense of Community and Grades*

			Communicating w/Instructor about content fostered sense of community	Communicating w/classmates about content fostered a sense of community	Communicating w/Instructor about non-content fostered sense of community	Communicating w/classmates about non-content fostered sense of community	Communicating w/Instructor about content fostered less sense of isolation	Communicating w/classmates about content fostered less sense of isolation	Grade
Spearman's rho	Communicating w/Instructor about content fostered sense of community	Correlation Coefficient	1.000	.532**	.385*	.351*	.029	.132	-.163
		Sig. (2-tailed)	.	.001	.019	.036	.865	.437	.334
		N	37	35	37	36	37	37	37
	Communicating w/classmates about content fostered a sense of community	Correlation Coefficient	.532**	1.000	.677**	.675**	.129	-.014	-.135
		Sig. (2-tailed)	.001	.	.000	.000	.458	.935	.439
		N	35	35	35	35	35	35	35
	Communicating w/Instructor about non- content fostered sense of community	Correlation Coefficient	.385*	.677**	1.000	.949**	.164	.195	.030
		Sig. (2-tailed)	.019	.000	.	.000	.333	.247	.861
		N	37	35	37	36	37	37	37
	Communicating w/classmates about non- content fostered sense of community	Correlation Coefficient	.351*	.675**	.949**	1.000	.129	.130	.098
		Sig. (2-tailed)	.036	.000	.000	.	.452	.448	.568
		N	36	35	36	36	36	36	36
	Communicating w/Instructor about content fostered less sense of isolation	Correlation Coefficient	.029	.129	.164	.129	1.000	.613**	.124
		Sig. (2-tailed)	.865	.458	.333	.452	.	.000	.466
		N	37	35	37	36	37	37	37
	Communicating w/classmates about content fostered less sense of isolation	Correlation Coefficient	.132	-.014	.195	.130	.613**	1.000	-.040
		Sig. (2-tailed)	.437	.935	.247	.448	.000	.	.813
		N	37	35	37	36	37	37	37
	Grade	Correlation Coefficient	-.163	-.135	.030	.098	.124	-.040	1.000
		Sig. (2-tailed)	.334	.439	.861	.568	.466	.813	.
	N	37	35	37	36	37	37	38	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

To further analyze how participants perceived their online course, the researcher asked students to answer questions on a Likert scale relating to their understanding of course content, the effectiveness of the course and learning online, the enjoyment of taking an online course, and the difficulty of the online course. When analyzing how

students perceived their online course, 55% of participants strongly agreed, 21% moderately agreed, 11% slightly agreed, and 11% disagreed that learning online about their course content was an effective way to learn the content. Twenty-seven percent (27%) of students strongly agreed that communicating with their instructor helped them to better understand course content, while 16% moderately agreed and 35% did not know if the communication with instructors led to better understanding course content. Fourteen percent (14%) of students strongly agreed that communicating with fellow students helped them to better understand course content, while 22% moderately agreed and 43% did not know if the communication with fellow classmates led to better understanding course content. Eighty-seven percent (87%) disagreed that the assignments were too difficult to complete online. Eighty-two percent (82%) of students reported that completing the online course was fun while 11% disagreed that completing the online course was fun. Eighty-seven percent (87%) of participants agreed that they received a better understanding of the content while taking the course online while 6% disagreed. Table 18 provides participants' responses to their perception of the quality of the online course.

Table 18

*Participants' Perception of the Quality of the Online Course*

Perception	Student Response
Discussion board offered a better understanding of course content.	
Strongly Disagree	3%
Moderately Disagree	0%
Slightly Disagree	5%
Don't Know	21%
Slightly Agree	11%
Moderately Agree	29%
Strongly Agree	31%

Table 18 (continued)

Communicating with the instructor offered better understanding of course content.	
Strongly Disagree	3%
Moderately Disagree	0%
Slightly Disagree	3%
Don't Know	35%
Slightly Agree	16%
Moderately Agree	16%
Strongly Agree	27%
Communicating with classmates offered better understanding of course content.	
Strongly Disagree	3%
Moderately Disagree	5%
Slightly Disagree	0%
Don't Know	43%
Slightly Agree	14%
Moderately Agree	22%
Strongly Agree	14%
Taking the course online was an effective way to learn.	
Strongly Disagree	3%
Moderately Disagree	3%
Slightly Disagree	5%
Don't Know	3%
Slightly Agree	11%
Moderately Agree	21%
Strongly Agree	55%
Assignments were too difficult	
Strongly Disagree	37%
Moderately Disagree	24%
Slightly Disagree	26%
Don't Know	8%
Slightly Agree	5%
Moderately Agree	0%
Strongly Agree	0%
Used other resources to complete assignments.	
Strongly Disagree	18%
Moderately Disagree	11%
Slightly Disagree	8%
Don't Know	10%
Slightly Agree	16%
Moderately Agree	16%
Strongly Agree	21%
Completing the course online was fun.	
Strongly Disagree	3%
Moderately Disagree	5%
Slightly Disagree	3%
Don't Know	8%
Slightly Agree	29%
Moderately Agree	29%
Strongly Agree	24%

Table 18 (continued)

Completing the course online improved understanding of content.	
Strongly Disagree	0%
Moderately Disagree	3%
Slightly Disagree	3%
Don't Know	3%
Slightly Agree	6%
Moderately Agree	25%
Strongly Agree	61%
Completing the course online took more time and effort than what it was worth.	
Strongly Disagree	34%
Moderately Disagree	24%
Slightly Disagree	13%
Don't Know	11%
Slightly Agree	5%
Moderately Agree	5%
Strongly Agree	7%
Online course was more difficult than traditional face-to-face course	
Strongly Disagree	26%
Moderately Disagree	18%
Slightly Disagree	13%
Don't Know	11%
Slightly Agree	16%
Moderately Agree	3%
Strongly Agree	13%

The researcher analyzed if that there was significant relationship between students' perception about the quality of the course and students' grades. After analyzing the data, the researcher found that there was no significant relationship between students' perception about the quality of the course and their grades. There were no other significant relationships found. Table 19 provides the correlations used to determine if students' perception of the course had an impact on student achievement in online courses.

Table 19

*Correlations of Students' Perception and Grades*

			Discussion Board Offered Better Understanding of Content	Communicating w/Instructor Offered Better Understanding of Content	Communicating w/Classmates Offered Better Understanding of Content	Online Course was Effective Way to Learn	Completing Assignments Online Were Difficult	Used Other Resources When Completing Assignments	Completing the Course Online was Fun	Completing the Course Online Improved Understanding of Content	Completing the Course Online Took More Time and Effort Than What It Was Worth	Online Course Was More Difficult Than Traditional Course	Grade
Spearman's rho	Discussion Board Offered Better Understanding of Content	Correlation Coefficient	1.000	.458**	.287	.234	-.252	.182	.446**	.309	.031	-.217	-.169
		Sig. (2-tailed)	.	.004	.085	.157	.127	.274	.005	.067	.854	.191	.311
		N	38	37	37	38	38	38	38	36	38	38	38
	Communicating w/Instructor Offered Better Understanding of Content	Correlation Coefficient	.458**	1.000	.374*	.353*	-.080	.430**	.243	.151	-.050	.139	-.140
		Sig. (2-tailed)	.004	.	.025	.032	.639	.008	.148	.386	.767	.411	.409
		N	37	37	36	37	37	37	37	35	37	37	37
	Communicating w/Classmates Offered Better Understanding of Content	Correlation Coefficient	.287	.374*	1.000	.282	-.260	.459**	.244	.219	-.003	.237	-.098
		Sig. (2-tailed)	.085	.025	.	.091	.120	.004	.146	.206	.986	.157	.562
		N	37	36	37	37	37	37	37	35	37	37	37
	Online Course was Effective Way to Learn	Correlation Coefficient	.234	.353*	.282	1.000	-.337*	.000	.288	.539**	-.350*	-.246	.068
		Sig. (2-tailed)	.157	.032	.091	.	.039	1.000	.080	.001	.031	.136	.686
		N	38	37	37	38	38	38	38	36	38	38	38
	Completing Assignments Online Were Difficult	Correlation Coefficient	-.252	-.080	-.260	.337*	1.000	.034	-.446**	-.110	.353*	.382*	-.354*
		Sig. (2-tailed)	.127	.639	.120	.039	.	.837	.005	.523	.030	.018	.029
	N	38	37	37	38	38	38	38	36	38	38	38	
Used Other Resources When Completing Assignments	Correlation Coefficient	.182	.430**	.459**	.000	.034	1.000	.056	.087	.047	.212	-.116	
	Sig. (2-tailed)	.274	.008	.004	1.000	.837	.	.736	.615	.780	.201	.490	
	N	38	37	37	38	38	38	38	36	38	38	38	
Completing the Course Online was Fun	Correlation Coefficient	.446**	.243	.244	.288	-.446**	.056	1.000	.354*	-.295	.324*	.099	
	Sig. (2-tailed)	.005	.148	.146	.080	.005	.736	.	.034	.073	.047	.553	
	N	38	37	37	38	38	38	38	36	38	38	38	
Completing the Course Online Improved Understanding of Content	Correlation Coefficient	.309	.151	.219	.539**	-.110	.087	.354*	1.000	-.283	-.219	.064	
	Sig. (2-tailed)	.067	.386	.206	.001	.523	.615	.034	.	.094	.199	.710	
	N	36	35	35	36	36	36	36	36	36	36	36	
Completing the Course Online Took More Time and Effort Than What It Was Worth	Correlation Coefficient	.031	-.050	-.003	.350*	.353*	.047	-.295	-.283	1.000	.175	-.113	
	Sig. (2-tailed)	.854	.767	.986	.031	.030	.780	.073	.094	.	.293	.500	
	N	38	37	37	38	38	38	38	36	38	38	38	
Online Course Was More Difficult Than Traditional Course	Correlation Coefficient	-.217	.139	.237	-.246	.382*	.212	-.324*	-.219	.175	1.000	-.264	
	Sig. (2-tailed)	.191	.411	.157	.136	.018	.201	.047	.199	.293	.	.110	
	N	38	37	37	38	38	38	38	36	38	38	38	
Grade	Correlation Coefficient	-.169	-.140	-.098	.068	-.354*	-.116	.099	.064	-.113	-.264	1.000	
	Sig. (2-tailed)	.311	.409	.562	.686	.029	.490	.553	.710	.500	.110	.	
	N	38	37	37	38	38	38	38	36	38	38	38	

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The researcher finally looked at the satisfaction of students' overall online learning experience in their online courses. Students answered questions on a Likert scale about their overall experience in their online courses. Sixty-six percent (66%) of students reported that the ease of use for the online course was excellent and 32% reported they were satisfied with the clarity, and 3% were not satisfied with the ease of use regarding their respective course. In regards to clarity of information and instructions, 55% felt it was excellent, 45% satisfactory. Ninety-seven percent (97%) of students felt that the information in the course was interesting. Seventy-six percent (76%) of participants were satisfied with the degree of interaction with their classmates and 92% of participants were satisfied with the degree of interaction with their instructors. Fifty-five percent (55%) of participants felt that their online course exceeded their expectations, 42% believed it met their expectations, and 3% believed it did not meet their expectations. Finally, when asked if participants would take another online course, 95% of participants stated they would and 5% stated they would consider taking another online course. Table 20 displays students' responses when questioned about their overall experience taking their course online.

Table 20

*Participants' Responses about Online Learning Experience*

Experience	Student Response
Online course's ease of use	
Very Unsatisfactory	0%
Somewhat Unsatisfactory	3%
Somewhat Satisfactory	3%
Satisfactory	29%
Excellent	66%
Course content and instructions were clear (Clarity)	
Very Unsatisfactory	0%
Somewhat Unsatisfactory	0%
Somewhat Satisfactory	16%
Satisfactory	29%
Excellent	55%
Course information was interesting	
Very Unsatisfactory	0%
Somewhat Unsatisfactory	3%
Somewhat Satisfactory	5%
Satisfactory	37%
Excellent	55%
Course information was useful	
Very Unsatisfactory	3%
Somewhat Unsatisfactory	0%
Somewhat Satisfactory	3%
Satisfactory	39%
Excellent	56%
Degree of Interaction with Classmates	
Very Unsatisfactory	11%
Somewhat Unsatisfactory	13%
Somewhat Satisfactory	29%
Satisfactory	34%
Excellent	13%
Degree of Interaction with Instructor	
Very Unsatisfactory	3%
Somewhat Unsatisfactory	3%
Somewhat Satisfactory	16%
Satisfactory	38%
Excellent	41%
Overall Rating of Course	
Did not meet expectations	3%
Met expectations	39%
Exceeded expectations	58%
Future Intentions for taking another online course	
Definitely not interested	0%
Will consider it	5%
Definitely interested	95%

After analyzing the data, the researcher found that there was no significant relationship between students' perception about the quality of the course and their grades. There were other significant relationships found. There was a strong association between ease of use and clarity,  $r_s=.62$ . Students who agreed with the ease of use for their online course were more likely to also agree with the clarity of information in their online course. There was also a strong association between the clarity of information and students who reported that the information was useful,  $r_s=.67$ . Students who agreed with the clarity of the information also reported the information in the course was useful. Finally, there was a strong association between students who agreed with the amount of interaction with their instructor and students who found the information interesting,  $r_s=.71$ . When reporting that participants were satisfied with the amount of interaction with their instructors, students were also more likely to report that the course information was interesting. Table 21 shows the correlations between students' overall experiences and students' grades.



Table 21

*Correlations of Students' Overall Experiences and Students' Grades*

			Online course ease of use	Clarity of information	Course information was interesting	Information was useful	Degree of interaction with classmates	Degree of interaction with instructor	Overall rating of online course	Future intentions for taking another online course	Grade
Spearman's rho	Online course ease of use	Correlation Coefficient	1.000	.617**	.534**	.188	.523**	.516**	.283	.375*	.223
		Sig. (2-tailed)	.	.000	.001	.271	.001	.001	.085	.020	.179
		N	38	38	38	36	38	37	38	38	38
	Clarity of information	Correlation Coefficient	.617**	1.000	.667**	.209	.451**	.475**	.245	.180	.299
		Sig. (2-tailed)	.000	.	.000	.221	.004	.003	.138	.280	.068
		N	38	38	38	36	38	37	38	38	38
	Course information was interesting	Correlation Coefficient	.534**	.667**	1.000	.460**	.342*	.705**	.424**	.219	.097
		Sig. (2-tailed)	.001	.000	.	.005	.035	.000	.008	.187	.563
		N	38	38	38	36	38	37	38	38	38
	Information was useful	Correlation Coefficient	.188	.209	.460**	1.000	.278	.399*	.236	.239	.023
		Sig. (2-tailed)	.271	.221	.005	.	.101	.016	.165	.160	.895
		N	36	36	36	36	36	36	36	36	36
Degree of interaction with classmates	Correlation Coefficient	.523**	.451**	.342*	.278	1.000	.355*	.184	.106	.043	
	Sig. (2-tailed)	.001	.004	.035	.101	.	.031	.270	.527	.796	
	N	38	38	38	36	38	37	38	38	38	
Degree of interaction with instructor	Correlation Coefficient	.516**	.475**	.705**	.399*	.355*	1.000	.532**	.084	-.096	
	Sig. (2-tailed)	.001	.003	.000	.016	.031	.	.001	.622	.573	
	N	37	37	37	36	37	37	37	37	37	
Overall rating of online course	Correlation Coefficient	.283	.245	.424**	.236	.184	.532**	1.000	.031	.287	
	Sig. (2-tailed)	.085	.138	.008	.165	.270	.001	.	.853	.081	
	N	38	38	38	36	38	37	38	38	38	
Future intentions for taking another online course	Correlation Coefficient	.375*	.180	.219	.239	.106	.084	.031	1.000	.294	
	Sig. (2-tailed)	.020	.280	.187	.160	.527	.622	.853	.	.074	
	N	38	38	38	36	38	37	38	38	38	
Grade	Correlation Coefficient	.223	.299	.097	.023	.043	-.096	.287	.294	1.000	
	Sig. (2-tailed)	.179	.068	.563	.895	.796	.573	.081	.074	.	
	N	38	38	38	36	38	37	38	38	38	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## Summary

Chapter IV provided the results of the study, and data analysis indicated that there were no statistically significant differences in the achievement of students who took online courses based on their educational demographics. All students successfully completed their online course. There was no statistically significant relationship between specific online course features and student achievement, student behaviors and student achievement, nor students' perception of online courses and student achievement.

However, the researcher did find some other significant relationships among other variables in the study. In regards to student behavior, there were strong associations identified between contacting instructors for content related questions and communicating with the instructor using a different form of communication other than discussion boards for content related questions. There was a strong association between contacting the instructor for non-content related issues and contacting the instructor using a different form of communication than discussion boards for non-content related issues.

When looking at students' perceptions, the researcher found a strong association between students feeling a sense of community when contacting the instructor for content related questions and students feeling a sense of community when contacting the instructor for non-content related questions. A very strong association was found between students feeling a sense of community when contacting the instructor for non-content related questions and students feeling a sense of community when contacting fellow classmates for non-content related questions. There was a significant relationship between less likely to feel a sense of isolation when contacting the instructor for content

related questions and students less likely to feel a sense of isolation when contacting fellow classmates for content related questions.

When analyzing participants' overall experience, the researcher found a strong association between ease of use and clarity. There was also a strong association between the clarity of information and students who reported that the information was useful. Finally, there was a strong association between students who were satisfied with the degree of interaction with their instructor and students who found the information interesting.

## CHAPTER V

### DISCUSSION

#### **Summary**

The purpose of this study was to determine if there was a significant differences in students based of education demographics and what factors contributed to the successful completion of online courses for postsecondary education students. The results of this study are specific to postsecondary education students who took online courses at a public university in the south eastern region of the United States. Therefore, the researcher can only draw conclusions based on the group of students who participated in the study. The results of this study do not apply to any other geographic areas or groups other than the group described in this study. The results of this study cannot be generalized to any other groups other than the population described in this study.

Participants in this study consisted of 38 distance education students of which 76.3% were female and 23.7% were male. Roughly 65.8% were Caucasian and 31.6% African American. Most participants were seniors (34.2%) and graduate students (39.5%). Professors F, D, and E had the most participants in this study. Additionally, most participants in this study took Course A and Course G. The results in this study were affected by the small number of participants and the limited range in students' grades. Because of the small number of participants, there was a small number of participants in some groups when grouping based on demographics.

## **Conclusion**

### **Research Question One**

Research question one examined whether or not there were significant differences in students' grades when grouped by demographics in the online class. Students received letter grades of A, B, C, D, or F. After conducting a Kruskal-Wallis, the researcher found that the academic grades of students were not significantly different based on the grouping of any variables in the study: gender, ethnicity, classification, course, and professor. The results in this study does not support the claims of Webb (2002); Yang et al. (2010); and Encoh and Soker (2006) who asserted that cultural differences were important in understanding student interactions in online learning as well as which students have access to technology. There were no differences among the students in this study when grouped based on ethnicity. Most students were satisfied with the degree of interaction with their fellow classmates as well as their instructions. The interactions between their instructors and classmates gave them a sense of belonging while taking online courses. Additionally, most students in this study either accessed their courses from home or on the university's campus indicating that this group of students had the access to technology needed to complete their coursework. These findings support the findings of Aragon and Johnson (2008) that there were no significant differences among ethnic groups in this study.

Additionally, this study does not support the findings of Chyung (2007), Gunn et al. (2003), Price (2006), Rovai and Baker (2005), Sullivan (2001), and Taplin and Jegede (2001) who claimed that male and female students differed in their online participation

and contribution in different ways. There were no differences found between male and female students. These students performed equally in their online courses.

The study revealed that student demographics do not have an impact on student achievement. One possible reason for these results is the self-reported grade distribution among students was limited. Most students in these online courses received a letter grade of A or B. Also, the population of students in this study was limited. Once grouped by demographic variables, groups were not equal based on specific characteristics of race, gender, classification, course, or professor. The unequal proportion of participants in each group and most students receiving similar grades contributed to the non-significant results for the Kruskal-Wallis analysis.

### **Research Question Two**

Research question two examined if there was a significant relationship between specific online course features (chat, videos, discussion boards, and video conferencing) and students' grades. After conducting a Spearman's Rho Correlation on each of these variables in relation to students' grades, the researcher found no significant relationship. The use of chat in online courses had no significant impact on student achievement as found in this study. Beldarrain (2006) indicates that students need social interaction to help in understanding course content. In this study, the researcher found that students did use chat when completing assignments and students also reported that they had a better understanding of course content when not communicating through discussion boards. Maushak and Ou (2007) indicated that chat allowed students to receive immediate feedback from others within the course or their instructors. Even though students used the chat feature, it did not have a significant impact on their grades.

This study also showed that when chat was available, students not only used it when completing assignments but also for non-content related issues. Contreras-Castillo et al. (2006) report that courses that included some form of instant messaging, fostered an environment where students were less likely to report a dissatisfaction with their courses. This is similar to the results of using instant messaging in the current study where students were satisfied overall with their online course experience.

The use of videos in online courses in this study supported Hughes (2009) who reported that the use of videos helped to engage students more in learning online. The use of videos has been shown to help motivate students to participate and engage more in the course (Choi & Johnson, 2005). Similarly in this study, when videos were available, students reported using them when completing course assignments. However, the use of videos did not have a significant impact on student achievement.

Non-significant results were reported when analyzing the relationship between online course features and student achievement. The non-significant relationship between specific online course features and student achievement could be attributed the fact that most students in the online courses did not utilize the video and chat features, while most did use the discussion boards for completing assignments. Typically, posting to discussion boards are required in an online learning environment. Additionally, the non-significant results can also be attributed to limited grade distribution among students in this study as well as the fact that the use of technology in today's society among today's college students is not as challenging as it was in prior years.

### **Research Question Three**

Research question three examined if there was a significant relationship between certain student behaviors and students' overall grades. After conducting a Spearman's Rho Correlation on each of the variables in relation to students' grades, the researcher found no significant relationship showing that students' behavior had no significant impact on their overall grade. There was no difference between students' grades in relation to specific student behaviors.

Interacting with the instructor, other students, and content is a very important factor in online courses. Even though there was no significant relationship between interaction and students' grades, there was a significant relationship between communicating with the instructor about content and non-content related issues causing students to have a sense of community as well as classmates interacting with other classmates fostering a sense of community. Di Petro et al. (2008) report that instructors who interact with their students see more success in their online courses. In this study, the researcher found that most students did report interacting with their instructors for both content and non-content related issues, and all students were successful in completing their online course. Additionally, Di Petro et al. (2008) report that students sought different opportunities to interact with their course content. This study revealed that students also used chat, videos, and discussion boards when completing course assignments. This provided students with different opportunities to interact with content, thereby keeping them engaged in the course. As Ward et al. (2010) assert, this type of interaction between instructors, students, and the content foster an effective online learning environment.



Student interaction and student achievement yielded non-significant results that could be contributed to the low number of participants in the study and the limited grade distribution. Many students reported that they felt a sense of belonging when communicating with the instructor and classmates. Additionally, most students reported only contacting their instructor for content related issues. There was not much variation in students' responses about their interactions within their online course which contributed to the non-significant results.

#### **Research Question Four**

Research question four examined if there was a significant relationship between certain student perceptions and students' overall grades. After conducting a Spearman's Rho Correlation on each of the variables in relation to students' grades, the researcher found no significant relationship. Students' perception had no significant impact on students' overall grade. There was no difference between students' grades in relation to students' perception of the online course.

Barbour (2008) indicates that it is important for instructors to know how students' view their online courses because instructors can use that information to determine how to best deliver instruction in the online learning environment. Similar to the results found in Wyatt's (2005) study, as cited in Dobbs et al. (2009), students in this study were generally satisfied with their experience in the online learning environment. Students tended to have fun when completing assignments and thought the most effective way to learn about the information was in the online course they were taking. Due to their experiences, students reported that they had a better understanding of the information due to taking the course online. Additionally, Lofstrom and Nevig (2006) report that students

who felt a sense of isolation in their class often reported they were dissatisfied with their online learning experience. This study supports Lofstrom and Nevig's claim because students in this study reported overall that they did not feel a sense of isolation and that they were satisfied with their online learning experience.

The non-significant relationship between of students' perception of their online course and student achievement is partially due to the lack of variance in students' final grade of the course and the limited population. Overall, students had a good perception of their course and reported that they would take another online course in the future. There was little variance in students' responses about questions related to the perception of their online course contributing to the non-significant results.

### **Recommendations**

This research focused on the factors that contributed to the successful completion of online courses at a university in the south eastern region of the United States. The participants in this study were limited to one department and the population was small which did not allow for many participants in each group after grouping based on education demographics. After reviewing and analyzing the data related to the population surveyed, the researcher makes the following recommendations for further research.

1. Repeat the study with a larger population to ensure enough participants in each group based on demographics identified so that a significant difference may be identified.
2. This study should be repeated using students actual GPA instead of students self-reporting their grade.

3. A similar study should be conducted that includes the questions to determine how often students used online course features such as chat, video conferencing, and content related videos.
4. Future studies should be conducted consisting of students in various departments to determine if the results will be consistent across different departments and courses.
5. Future studies should be conducted consisting of students in various colleges, universities, community colleges, and technical schools to determine if the results will be consistent across different universities in the same state and region.
6. A similar study should be conducted in colleges, universities, community colleges, and technical schools that include students who dropped out of online courses as well to analyze their reasoning for dropping out of the online course.

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APPENDIX A  
SURVEY INSTRUMENT

## FACTORS THAT IMPACT SUCCESSFUL STUDENT ACHIEVEMENT IN POST-SECONDARY ONLINE COURSES

We want to obtain your honest feedback about your experience taking online classes. Your participation in this survey is completely voluntarily. Please do NOT put your name on this survey. What you report in this survey has no effect on your grade in this course. Thank you for your help!

### Student Demographics

1. What is your gender?  
 Male  
 Female
  
2. What is your race?  
 African American  
 Asian  
 Caucasian  
 Hispanic  
 Native American  
 Other
  
3. What is your current student classification?  
 Freshmen  
 Sophomore  
 Junior  
 Senior  
 Grad Student
  
4. What course are you currently taking? \_\_\_\_\_
  
5. Who is your current professor? \_\_\_\_\_
  
6. What grade do you have in online courses you are currently taking?  
 A  
 B  
 C  
 D  
 F

### Course Features and Student Behavior in Online Course

7. Was instant chat available in your online course?  
 Yes  
 No
  
8. Was any form of video conferencing available in your online course?  
 Yes  
 No
  
9. Were content related videos available in your online course?  
 Yes  
 No
  
10. Was there a student lounge where you could discuss non-school related topics in your online course?  
 Yes  
 No

11. Did you use instant chat during your online course for completing assignments?  
 Yes  No
12. Did you use instant chat during your online course for socialization purposes?  
 Yes  No
13. Did you use any form of video conferencing during your online course for completing assignments?  
 Yes  No
14. Did you use any form of video conferencing during your online course for socialization purposes?  
 Yes  No
15. Did you use any course related videos to help you gain a better understanding of course content?  
 Yes  No
16. What method did you use to mostly connect to the online course?  
 on-campus direct Internet connections  
 off-campus direct Internet connections  
*(Select one)*  
 Home  
 Public Library  
 Restaurant  
 Other (Specify)\_\_\_\_\_
17. How much of the assigned online course did you complete?  
 None  Most of it  
 Less than half of it  All of it
18. How often did you log in to complete course requirements?  
 None  Three times a week  
 Once a week  Four or more times a week  
 Twice a week
19. When do/did you typically begin working on assignments?  
 On due date  3 days before due date  
 1 day before due date  4 or more days before due date  
 2 days before due date  date
20. In total, about how long does/did it take you to complete one assignment assigned in the online course?  
 less than 30 minutes  more than 1.5 hours  
 30 minutes - 1 hour  
 1.1 – 1.5 hours

21. How often do/did you contact the instructor for content related questions?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |
22. How often do/did you contact fellow classmates for content related questions?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |
23. How often do/did you contact the instructor for non-content related questions?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |
24. How often do/did you contact the fellow classmates for non-content related questions?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |
25. How often do/did you post a discussion board for content related purposes?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |
26. How often do/did you post to a discussion board for non-content related purposes?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |
27. How often do/did you communicate with your instructor using a different mode of communication other than the discussion board for content related purposes?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |
28. How often do/did you communicate with your instructor using a different mode of communication other than the discussion board for non-content related purposes?
- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> None         | <input type="checkbox"/> Three times a week        |
| <input type="checkbox"/> Once a week  | <input type="checkbox"/> Four or more times a week |
| <input type="checkbox"/> Twice a week |  |

29. How often do/did you communicate with your classmates using a different mode of communication other than the discussion board for content related purposes?
- None
  - Once a week
  - Twice a week
  - Three times a week
  - Four or more times a week
30. How often do/did you communicate with your classmates using a different mode of communication other than the discussion board for non-content related purposes?
- None
  - Once a week
  - Twice a week
  - Three times a week
  - Four or more times a week

### Student Perception

Answer the questions to explain your perception and satisfaction of taking an online course.

31. When posting to the discussion board, the information provided gave a better understanding of the content being discussed.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

32. When communicating with your instructor using a different mode of communication other than the discussion board, the information provided gave a better understanding of the content being discussed.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

33. When communicating with your classmates using a different mode of communication other than the discussion board, the information provided gave a better understanding of the content being discussed.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

34. When communicating with your instructor for content related topics, you felt a greater sense of community and belonging.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

35. When communicating with your classmates for content related topics, you felt a greater sense of community and belonging.



strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

36. When communicating with your instructor for non-content related topics, you felt a greater sense of community and belonging.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

37. When communicating with your classmates for non-content related topics, you felt a greater sense of community and belonging.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

38. When communicating with your instructor for content related topics, you felt a sense of isolation.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

39. When communicating with your classmates for content related topics, you felt a greater sense of isolation.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

40. When communicating with your instructor for non-content related topics, you felt a sense of isolation.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

41. When communicating with your classmates for non-content related topics, you felt a greater sense of isolation.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

42. Completing this online course was an effective way to learn about the assigned course.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

43. The assignments in the assigned online course were too difficult.

strongly agree	moderately agree	slightly agree	don't know/ no opinion	slightly disagree	moderately disagree	strongly disagree
-------------------	---------------------	-------------------	---------------------------	----------------------	------------------------	----------------------

44. Often when completing the assignments, you used other resources than the ones provided in the course to learn more about the topic.

strongly  
agree
moderately  
agree
slightly  
agree
don't know/  
no opinion
slightly  
disagree
moderately  
disagree
strongly  
disagree

45. Completing the online course was fun.

strongly  
agree
moderately  
agree
slightly  
agree
don't know/  
no opinion
slightly  
disagree
moderately  
disagree
strongly  
disagree

46. Completing the online course improved my understanding of the subject.

strongly  
agree
moderately  
agree
slightly  
agree
don't know/  
no opinion
slightly  
disagree
moderately  
disagree
strongly  
disagree

47. Completing this online course took more time and effort than it was worth.

strongly  
agree
moderately  
agree
slightly  
agree
don't know/  
no opinion
slightly  
disagree
moderately  
disagree
strongly  
disagree

48. Online courses' assignments are more difficult than traditional face-to-face courses.

strongly  
agree
moderately  
agree
slightly  
agree
don't know/  
no opinion
slightly  
disagree
moderately  
disagree
strongly  
disagree

49. Please rate the online course completed on each of the following dimensions.

	Very Unsatisfactory	Somewhat Unsatisfactory	Somewhat Satisfactory	Satisfactory	Excellent
Ease of use	_____	_____	_____	_____	_____
Clarity	_____	_____	_____	_____	_____
Interesting information	_____	_____	_____	_____	_____
Usefulness	_____	_____	_____	_____	_____
Degree of interaction with classmates	_____	_____	_____	_____	_____

50. How do you rate the overall quality of the online course you completed?

- It exceeded my expectations
- It met my expectations
- It did not meet my expectations

51. Which of the following best describes your future intentions?

- I am definitely interested in taking another online course
- I will consider taking another online course
- I am definitely not interested in taking another online course

APPENDIX B  
INFORMED CONSENT

Dear Participant,

**Purpose of the Study:**

This is a study being conducted by Meranda Esters, a graduate student in the department of Instructional Systems and Workforce Development at Mississippi State University. The purpose of this study is to examine what factors lead to successful completion of online courses.

**What will be done?**

If you decide to participate, you will be asked complete a survey, which will take approximately 30 minutes to complete. The survey includes questions about how you interact in the online course in which you are enrolled. Some questions will also address your perceptions of the current course you are taking. I will ask you some demographic information (gender, race, classification, course, and professor) so that I can accurately describe the general traits of the group of individuals who participate in the study.

**Incentives for this Study:**

You will be contributing to the knowledge of what influences success in online classes. Additionally, you will be entered into a drawing for one of four \$20 Amazon.com gift certificates. After I have finished data collection, I will conduct the drawing. Winners will receive their gift certificates by e-mail.

**Benefits of this study:**

After I have finished collecting and analyzing the data, you will be provided with further information regarding the purpose of this study and the research findings. These findings will be useful in helping students be successful in the online learning format.

**Risks or discomforts:**

No risks or discomforts are anticipated from taking part in this study. If you feel uncomfortable with a question, you can skip that question or withdraw from the study altogether. If you decide to quit at any time before you have finished the questionnaire, your answers will NOT be recorded.

**Confidentiality:**

Your responses will be kept completely confidential. I will NOT know your IP address when you respond to the Internet survey. Your email address will be collected for the sole purpose of drawing for the Amazon gift certificates. Your email address will not be stored with any data from your survey. Instead, you will be assigned a participant number, and only the participant number will appear with your survey responses. Only the researcher will see your individual survey responses. The list of email addresses will be stored electronically in a password protected document, and a hard copy will be stored in a locked file cabinet. After I have finished data collection and requirements for completing this study, I will destroy the list of participants' email addresses.

#### Decision to quit at any time:

Your participation is voluntary; you are free to withdraw your participation from this study at any time. If you do not want to continue, you can simply leave the website. If you do not click on the "submit" button on the survey, your answers and participation will not be recorded. You also may choose to skip any questions that you do not wish to answer. If you click on the "submit" button at the end of the survey, you will be entered in the drawing.

#### How the findings will be used?

The results of this study will be used for educational purposes only. The results from the study will be presented in an educational setting and published as a requirement for a doctoral degree.

#### Consent

By beginning the survey, you acknowledge that you have read this information and agree to participate in this research with the knowledge that you are free to withdraw your participation at any time without penalty.

#### Contact Information:

If you have any questions or concerns, please contact Meranda Esters at [mle3@msstate.edu](mailto:mle3@msstate.edu).

APPENDIX C  
HUMAN SUBJECTS APPROVAL LETTERS

April 20, 2012

Meranda Esters  
2829 N Lucien Rd NE  
Brookhaven, MS 39601

RE: IRB Study #12-116: What Impact Influence Successful Student Achievement in High School Online Courses?

Dear Ms. Esters:

This email serves as official documentation that the above referenced project was reviewed and approved via administrative review on 4/20/2012 in accordance with 45 CFR 46.101(b)(1). However, this approval is contingent on the submission of written permission from each external site listed in your IRB application. Once you have received written permission, please forward a copy to the Office of Regulators Compliance. Continuing review is not necessary for this project. However, any modification to the project must be reviewed and approved by the IRB prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB's policies and procedures in the coming months. These changes will be posted online at <http://www.orc.msstate.edu/human/aahrpp.php>. The first of these changes is the implementation of an approval stamp for consent forms. The approval stamp will assist in ensuring the IRB approved version of the consent form is used in the actual conduct of research. Your stamped consent form will be attached in a separate email. You must use copies of the stamped consent form for obtaining consent from participants.

Please refer to your IRB number (#12-116) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research! project. If you have questions or concerns, please contact me at [nmorse@research.msstate.edu](mailto:nmorse@research.msstate.edu) or call 662-325-3994. In addition, we would greatly appreciate your feedback on the IRB approval process. Please take a few minutes to complete our survey at <http://www.surveymonkey.com/s/YZC7QQD>.

Sincerely,

Nicole Morse  
Assistant Compliance Administrator

cc: Anthony Olinzock

February 26, 2014

Meranda Esters  
2829 N Lucien Rd NE  
Brookhaven, MS 39601

RE: HRPP Study #12-116: Factors that Impact Successful Student Achievement in Post  
Secondary Online Courses

Dear Ms. Esters:

Your procedural modification request submitted on 1/21/14 has been approved. You are approved to proceed with your research as modified. A stamped copy will be sent to you in a separate email. Please use this letter and the stamped copy as verification of the approval.

If you have questions or concerns, please contact Nicole Morse at [irb@research.msstate.edu](mailto:irb@research.msstate.edu).

Sincerely,

Nicole Morse, CIP  
IRB Compliance Administrator

cc: Anthony Olinzock