PREDICTORS OF SECONDARY STUDENTS' ACHIEVEMENT AND SATISFACTION IN ONLINE COURSES

A Dissertation Presented to

The Faculty of the School of Education

Liberty University

In Fulfillment

of the Requirements for the Degree

of Doctorate of Education

by

Kimberly Faith Metz

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ABSTRACT

Online learning has been prevalent at the post-secondary level and is increasingly being used at the secondary level. There are many advantages for students to learn online such as students being able to work at their own pace, work anytime and anywhere and take a course that would not otherwise be offered. Career and Technical Education (CTE) can use online learning for classroom instruction, and allow additional time for hands-on instruction or for other courses of study. This study investigated the extent that CTE students' online course grades can be predicted by the Distance Education Learning Environment Survey (DELES) (Insight System, n.d.) and by students' Grade Point Averages and the extent that six DELES psychosocial scales can predict student satisfaction.

Descriptors: Career and Technical Education, Online Learning, Secondary Education Online Achievement, DELES, GPA.

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List of Abbreviations

Career and Technical Education (CTE)

Distance Education Learning Environments Survey (DELES)

Grade Point Average (GPA)

Health Insurance Portability and Accountability Act (HIPAA)

Individual Educational Plan (IEP)

Statistical Package for the Social Sciences (SPSS)

Texas Center for Educational Technology (TCET)

United States Department of Education (USDOE)

Variance Inflation Factor (VIF)

CHAPTER ONE: INTRODUCTION

While the use of online learning is growing, there is limited amount of related research at the secondary level in determining the best predictors of student achievement and satisfaction. The future may gain momentum in using online learning as an alternative to the traditional face-to-face education, and therefore, there is a necessity to identify predictors for student achievement and satisfaction of the online learning environment. Identifying the best predictors will help educators, practitioners, administrators and course developers improve the development and implementation of online courses and evaluate the effectiveness to ensure that all students can achieve in online learning. This study was designed to investigate the extent that Career and Technical Education (CTE) students' online course grades can be predicted by the scales used in the Distance Education Learning Environment Survey (DELES) (Insight System, n.d.) and by Grade Point Averages (GPAs) and to the extent the DELES scales can predict student satisfaction. Students' achievement was based on final online course grades from those students that had taken their first online course that was completed beyond the school day and related to their CTE program. Satisfaction was based on eight statements related to student satisfaction with the online learning environment that were included in the DELES. This quantitative correlation study using a bivariate and multiple regression analysis was used to investigate each of these variables. The goal was to add to the limited body of knowledge of predicting online course achievement and satisfaction at the secondary level.

Background of the Problem

Technology is rapidly changing the way people worldwide function in their daily lives. The impact of technology on education is no exception. The integration of technology has been widespread in many schools and classrooms (GenevaLogic Active Teaching Systems, 2007). Technology through online learning has enabled students to take courses, to learn beyond the classroom walls, and to complete their entire education without ever being in the traditional classroom (Glader, 2009). They are able to share, to learn, and to partner with others in their home town, and throughout the world, even from remote areas. "Today's students are increasingly savvy about the role technology plays in modern life" (Harper & Martinez, 2008, p. 65). At the same time, as funding for school decreases, and a poor economy exists, districts are forced to seek new innovative ways to reduce the cost of education and expand their thoughts on ways to deliver education. Online learning at the secondary level may increasingly become prevalent in education in the future. According to the International Association for K-12 Online Learning, the number of secondary students taking online courses is expected to continue to grow 30% annually (Mellon, 2011). The report titled "The Rise of K-12 Blended Learning" revealed "that 50% of all high school courses will be delivered online by 2019" (Stansbury, 2011, p. 22).

Online learning has been implemented for several decades at the post-secondary level and since mid-1990 at the secondary level (Furger, 2005). While Watson, Gemin, Ryan, and Wicks (2009) have estimated that roughly 2% of the total K-12 U.S. population are taking online courses, the interest in and attention to online learning is growing quickly. In 2000, approximately 45,000 K-12 students were taking online courses (Stansbury, 2011). Since then, enrollment has grown greatly. According to a

Sloan Consortium survey taken in 2007-2008, the number of K-12 students taking online courses was about one million which was a 50% increase since 2005-06 (Miners, 2009). According to "The Rise of K-12 Blended Learning" report more than 3 million K-12 students took an online course (Stansbury, 2011).

Online learning will become increasingly common in K-12 education as budgets tighten, and where there are "technological opportunities that have the potential to transform education by altering where, when, and how learning takes place" (Bonk, 2010, p. 62). According to Collins and Halverson (2009) online education is rapidly spreading and will inevitably keep growing for years ahead. Reports from Project Tomorrow and Blackboard Incorporated stated the online courses that are available in K-12 schools have not kept up with the demand (eSchool News, 2009, July). Almost half of 6-12th graders have researched or are interested in taking an online class, and more than 40% believe that online classes should be part of an ideal school, yet only one in ten 6-12th grade students have taken an online class through their school (Project Tomorrow, 2009). Christensen, Horn and Johnson (2008) predicted that by 2014, online courses will have a 25% of the market share in high schools. Online learning has the potential to continue to grow as 90% of teenagers in America are Internet users and over 50% have Internet access (Valenza, 2006). According to Discovery Education (2009) teenagers author 50% of all blogs on the Internet, 96% are engaged in social networking, and 57% develop content online.

At the national level the U.S. Department of Education's National Education Technology Plan 2010 titled "Transforming American Education Learning Powered" by Technology (United States Department of Education [USDOE], 2010) focused on two

goals set under the President Obama administration. The goals are to raise the number of college graduates with a two or four-year degree by 2020 to at least 60%, and that all students graduate from high school ready for college and careers. The plan indicates that technology-based learning and providing students with 24/7 assess will be important to improve education and to reach these goals.

At the state level, in 2009 the New Jersey Department of Education, for example, noted that one of the essential elements for transforming New Jersey's secondary schools was integrating technology in all content areas, including virtual and face-to-face opportunities. Their proposal required every high school student to take at least one online course, despite the existence of some concerns and statements from critics regarding online courses. The idea of an online course requirement for high school graduation is not new. In 2006, Michigan passed legislation that requires every high school graduate to have an online learning experience, and Alabama did the same in 2008 (Virtual Learning Academy, 2009).

There are many advantages to online learning at the secondary level. Online learning allows students to work at one's own pace, and enroll in courses online that are not traditionally offered by their school. Students do not have to travel to school and are given the flexibility to learn at any time and any place. Online learning has been helpful for students that need to make up a course they failed or could not fit into their schedule. Online learning has been used as a dropout prevention strategy for at-risk students where they can select their own instructors and become more engaged in their own academic success (Umstead, 2010). The Digital Learning Council believes that online learning can help U.S. schools to overcome declining revenues, instructor shortages and the need for

an increasingly high demand of skilled workers (Zwang, 2011).

There are also challenges and concern with online learning. For example, there has been no consistent accountability among online courses regarding their quality, the expertise of the instructor, and the extent of learning that takes place. Critics are afraid that this will lead students to take online courses that are not of quality and have very little oversight (Kossan, 2009, p. 1). Another stated challenge is that online learning may not be for all students. Family dynamics and personality traits can also influence the success of online learning (Howland & Moore, 2002). For instructors, Ash (2010) states that teaching an online course is different, and that instructors need to be dedicated in learning new teaching strategies.

Despite the concerns cited, online learning could be beneficial to CTE students at the secondary level. According to DeWitt (2008) CTE motivates and engages students to stay in school, and provides career links to prepare students for the workforce. Collins and Halverson (2009) suspects that industry recognized certifications that CTE has to offer, will become more valuable than a high school diploma because the certifications are more specialized in what the student can do. CTE is a flexible education that addresses globalization and meets the needs of businesses and industries (DeWitt, 2008). Drage (2009) stated that CTE -students have better employment opportunities, are less likely to dropout of high school, have improved attendance and enhanced post-secondary outcomes. The Pathways to Prosperity Report (Harvard Graduate School of Education, 2011) released in February 2011, addressed the increasingly high college dropout rates (the highest in the industrialized world) and the need to meet two-thirds of the future jobs that will require at least one year of post-secondary education or training and lead to an

industry recognized credential. The report states that there is compelling evidence that integrating work and learning, a characteristics of CTE, is an excellent way to learn and that "today's best CTE program do a better job of preparing many students for college and career than traditional academics-only programs" (Harvard Graduate School of Education, 2011, p. 25). Continuing CTE in today's schools is important in meeting the demands for the new skilled workforce.

However, at the same time there are pressures for students to pass standardized academic tests for graduation and; therefore, the school's priority is academic, and decreasing the amount of time spent on other subject areas including CTE. Christensen et al. (2008) state, "schools are disinvesting in those "nice-to-have" courses that are less critical to the mandates of improving test scores and leaving no child left behind" (p. 103). Online learning could be an approach to extend the school day providing the student an opportunity to continue participating in the "nice-to-have" courses such as CTE. Unfortunately, there is a lack of research, particularly at the secondary level in CTE, to determine if all students can succeed with online learning. "There has been little research on the success of virtual schooling for K12 students" (Butler, 2010, p. 46) and according to Zehr (2010) there continues to be a lack of research at the secondary level despite the surge of interest in online education. The limited research that has been conducted has not determined the characteristics or scales that can best predict online course achievement at the secondary level. This study will begin to identify those predictors in order to effectively deliver related content online for students enrolled in CTE programs while students are meeting all of their standardized mandatory testing and graduation requirements.

Statement of the Problem

In 2009 a meta-analysis on online learning was conducted by the U.S. Department of Education. Of the 51 studies analyzed, 44 focused on post-secondary level students. The meta-analysis revealed "that students who took all or part of their class online performed better, on average, than those taking the same course through traditional face-to-face instruction" (U.S. DOE, 2009, p. xiv). If students at the post-secondary level are performing better at online learning than traditional instruction, can younger students also perform better in online learning? If this is the case, online learning would be beneficial for CTE students in preparing them to meet graduation requirements and online educational opportunities.

While CTE is viewed as an important aspect in workforce preparation and is known for hands-on training and applying knowledge to real world problems, it is slowly being eliminated in secondary education. The elimination of CTE is mainly due to recent reform efforts that focus on increased graduation requirements and standardized test mandates. The number of states doubled to 28 states since 2002 that now have requirements of exit tests, particularly end-of-course exams, in order to graduate (Gewertz, 2010). The increase in rigorous academic standardized tests has "led to the elimination of elective courses such as CTE in the secondary curriculum" (Drage, 2009, p. 32). According to Drage (2009) due to increased graduation requirements and standardized tests, the dropout rates are enormous throughout America. According to Gewertz (2010) the risk of increasing standardized tests, multiplies for disadvantage students when tests become a requirement for graduation.

CTE typically only meets a few of the high school elective or practical arts type graduation requirements, but CTE can be beneficial for all students. Gaunt and Palmer (2005) indicated that nearly 80% of the students surveyed thought that CTE programs were for all students and not just those that found school difficult. However, where CTE programs are not being totally eliminated, the increased graduation requirements are making the opportunity to enroll in a CTE course much more difficult, particularly for minority and special needs populations. As students face increased academic requirements and standardized test mandates, they have less opportunity to enroll in an elective course such as a CTE program. In addition, elective courses are considered as optional courses, and they are often the first to be dropped or limited when schools districts are faced with financial difficulty, time constraints, or facility issues. Many CTE programs focus on providing the opportunity for students to obtain an industry-recognized-credential. The credential requires a mastery of knowledge that requires a large amount of the student's instructional time. To increase the opportunity for a student to participate in a non-academic or elective program, the student's instructional time must be increased. An extended school day, in combination with online learning opportunities, could be the key to providing this instruction. The use of an online learning environment, learning 24/7, and anytime and anywhere, could lessen the amount of time that is physically needed in the classroom while still meeting the goals of the CTE program. The classroom could be used for the hands-on portion of the CTE program, and the theory and knowledge portion could be completed online outside the class period.

Although the focus of the 2009 meta-analysis was to research online learning at the K-12 level, "the report noted that only a few rigorous research studies have been

published on the effectiveness of online learning for K-12 students" (Stansbury, 2009, p. 1). The online learning environment is very different from the traditional face-to-face instruction and must be investigated and redefined in order it to be effective (Walker, 2004). The problem is a lack of research to determine the predictors of the achievement and satisfaction of online learning and if online learning is effective for all students. If students can successfully achieve some of their related CTE instruction online, it will require less time physically in the classroom; therefore ensuring enough time of the student's school day is left for preparing for required standardized test mandates and meeting all of their graduation requirements.

To determine if all CTE high school students can achieve online learning, it is important to investigate variables that may predict online learning achievement and satisfaction. This study investigates the extent that several variables can statistically predict students' online course grades and satisfaction. Identifying the best predictors will help evaluate the effectiveness of online courses and ensure that all students can achieve in online learning.

Purpose of the Study

The purpose of this quantitative study was to determine the extent to which variables can predict high school CTE students' online course grades and their satisfaction with the online learning environment. The variables that were investigated included seven scales in the DELES (Insight System, n.d.), students' GPA and online course grades. Specifically this study will investigate the extent that CTE students' online course grades can be predicted by the scales used in the DELES and by students' GPA and the extent that DELES scales can predict student satisfaction. Student

participants include 114 junior and senior high school students enrolled in one of seven CTE programs at a CTE school district in New Jersey taking a six-week online course from Ed2go related to their CTE program. The student's GPA was defined as the average of all the courses taken in high school to date based on a scale of zero to four. The DELES (Insight System, n.d.) consisted of 42 Likert-type statements of values from 1 to 5 and were divided among seven factor areas; instructional support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy and student satisfaction (Appendix D). The final online course grade was the final grade the student received after completing their related online course. The course grade was based on a scale of zero to 100.

There are a limited number of studies focused on the predictors of online learning at the secondary level and especially in CTE. This study is perhaps the only study at the secondary level that focuses on CTE related instruction and identifying predictors of student achievement. The existing studies at the secondary level are few and are only slightly related. For example, a study at the secondary level by Jackman and Swan (n.d.) compared students enrolled in traditional courses to those that were located in a remote site where the students were physically in the school, but the instructor provided instruction through an electronic format.

Studies at the post-secondary level include one related to CTE comparing student achievement between CTE online and traditional courses in three community colleges. The results of the study indicated that students did equally well, and that there was no statistically significant difference between student's achievement of online and on-campus courses. The study also revealed that students did better in their first attempt on

passing their national board exams. (Benson, Johnson, Taylor, Treat, Shinkareva & Duncan, 2004) and online CTE students were as motivated and pleased as on-campus CTE students.

Technical training will continue to be an important aspect in training and retraining the workforce as employers continue to require more specialized skills. According to the Futurist's Outlook 2009 list, college majors are becoming more specialized to prepare students for careers and they will have to continue their education to become retrained throughout their lives. (Reese, 2009). As CTE students become part of the workforce, they too will be faced with the need for on-going specialized education and retraining. Therefore online training may be a good option for CTE students not only while in high school but for further training upon graduation.

According to Sachs (Sarrio, 2009) a representative from the United States Department of Education (USDOE), the iGeneration, those students born in the 1990s, of students expect to be taught differently, to have more options and to have access to instruction anytime and anyplace. As stated by Sprenger (2009) "both the net generation and digital natives, our students have grown up using digital media" (p. 34). A recent study indicated that students spend an average six hours a day on some type of digital communication devise and often will be operating several simultaneously (Sprenger, 2009).

However, can all secondary students achieve online learning or is online learning only for students that have specific characteristics or skills? Several of the findings suggest that students must be extraordinarily committed, more mature, and motivated to succeed in online learning (Jackman & Swan, n.d.). Online students of high school age

are expected to learn on their own which requires self-discipline according to Butler (2010). Similarly, Howland and Moore (2002) found that self-management and motivation were essential for online learning. At the same time, there appears to be a large number of students interested in taking courses but have not been able to do so. According to a report on learning in the 21st century 40% of students in grades 6 to twelve had an interest in taking an online course but only 10% actually enrolled (eSchool News, 2009, July).

This quantitative study investigates several variables to predict online course grades and satisfaction. The variables of interest include the DELES and GPAs. The DELES was designed for researchers to use to measure the psychosocial online learning environment and student satisfaction at the post-secondary level (Walker & Fraser, 2005). There were 6 psychosocial DELES scales that consisted of: instructional support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy. The seventh DELES scale was student satisfaction was added to the survey to give researchers an opportunity to investigate the associations of the 6 psychosocial scales with student satisfaction (Walker, 2004). Although the DELES was designed for post secondary students, the online environment, according to Tucker (2007), is personalized to students at all levels and therefore is beneficial to different types of learning styles and needs. A study at the post secondary level performed by Aragon, Johnson and Shaik (2001) indicated that students could be as equally successful online as face-to-face learning environments regardless of their learning style. In investigating student satisfaction a study was conducted by Sahin (2007) where 917 post-secondary students used the DELES to predict student satisfaction. A linear regression

analysis was conducted for each of the DELES scales. The results indicated that four DELES scales; instructor support, personal relevance, authentic learning, and active learning were significantly related to the DELES satisfaction scale. The findings suggested that these four scales are important in order to support students' satisfaction and learning within the online learning environment.

Another predictor of interest was GPAs. A study by Jackman and Swan (n.d.) compared the GPAs of high school students enrolled in distance education courses with students enrolled in traditional face-to-face courses. Although the results indicated that there were no statistically significant differences in GPAs among the two groups, the results indicated that "student success, as measured by GPAs, was above average in distance education courses" (Jackman & Swan, n.d., p. 62). This study did not compare student GPAs of online and traditional face-to-face students, but rather determined the extent that GPAs can predict online course grades.

Significance of the Study

The significance of this study is to help determine the extent that predictor variables, online DELES scales and GPAs, can statistically predict high school CTE students' online courses grades and satisfaction. Identifying the best predictors will help improve online courses and evaluate the effectiveness to ensure that all students can achieve in online learning. The results of the study will add to the research that has been conducted on the effectiveness of online learning for students in secondary education. The study is important due to a lack of research on online learning at the secondary level. According to Zehr (2010), the research on online learning for students in secondary education is limited and without data it is hard to know the effectiveness of online

learning among high school students. In addition, investigating the extent that online scales and GPA can statistically predict online courses grades and satisfaction of the online learning environment could inspire additional research. This information will be vital, as online courses continue to grow and develop in meeting the needs of all students and determining the most effective and successful online learning environment. Online learning is different from traditional face-to-face instruction and therefore online learning needs to be researched. According to Lips (2010) policy-makers should reform educational policies and funding to support online learning activities. Policy-makers and parents want to know if online learning is as effective as traditional face-to-face instruction, and this can only be done through research. At the secondary level and in CTE, this study is important because if predictors for online achievement and satisfaction can be identified, focus can be made on those predictors that ensure that all students achieve online and ultimately can lend a solution towards the problem of increased academic graduation requirements and the limitations to CTE courses.

Research Statements

The following three research questions were investigated:

1. To what extent can a linear combination of DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy predict high school CTE students' online course grades?
2. To what extent can high school CTE students' GPA statistically predict online course grades?

3. To what extent can the six DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy statistically predict high school CTE students' satisfaction?

Null Hypotheses

The research analyses were guided by the following null hypotheses:

Null Hypothesis (H^O1): A linear combination of DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy cannot statistically predict high school CTE students' online course grades.

Null Hypothesis (H^O2): High school CTE students' GPA cannot statistically predict online course grades.

Null Hypothesis (H^O3): The six DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy cannot statistically predict high school CTE students' satisfaction.

Identification of Variables

This was a quantitative study using a bivariate and multiple regression analysis to determine the extent to which online scales from the DELES (Insight System, n.d.), survey and students' GPA can statistically predict high school CTE students' online course achievement and satisfaction of the online learning environment. For this study, the results of DELES, GPAs and final online course grades from their first online course related to their CTE program were collected.

The DELES was provided from the Texas Center for Educational Technology (TCET) (Insight System, n.d.). (Appendix D). The DELES consisted of 42 Likert statements focused on seven scales of online learning; instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and student satisfaction. The DELES was design as a questionnaire for distance education at the post-secondary level and to use for investigating relationships between the online learning environment and the students' satisfaction (Walker & Fraser, 2005). The goal of the survey was to develop and validate a testing instrument to help researchers and practitioners in measuring and investigating the psychosocial learning environment and to use the results as valid predictors of learning (Walker & Fraser, 2005). The DELES has proven validity and internal reliability (Walker & Fraser, 2005). According to Biggs, Simpson and Walker (2006), students' satisfaction needs to be studied in order to understand the barriers they may encounter and to produce effective online learning.

The student's GPA was defined as a calculation of the average of all of a student's grades for all semesters and courses completed up to a given academic term based on a scale from 1.0 to 4.0. Each course grade was converted to a number A = 4, B = 3, C = 2 and D = 1 and an average was taken for all the courses the student has completed to date. For this study, the students' GPAs were calculated based on all the courses the student completed at their high school to date. The GPAs were either acquired from the student and verified by their instructor or obtained from their school counselor. According to Wisegeek.com, although the performance in education has been evaluated using numbers for 200 years, GPAs may be calculated differently among

schools or countries. Although GPAs may be recorded differently they are used often for items such as class ranking and for college acceptance, a way to distinguish the students' success in education. They are also used to predict achievement. For example, a study conducted by Gerlich, Mills and Sollosy (2009) evaluated predictors of achievement on self-paced online course outcomes, one of the predictors being GPA. Another study by Bell (2007) examined predictors of college student achievement in web-based courses. The study revealed that GPA was one of 12 variables that were significant in the achievement of online courses.

CHAPTER TWO: REVIEW OF THE LITERATURE

Introduction to the Review of Literature of Online Learning

The following review of literature provides a theoretical framework and related research that analyzes the status of online learning in education. The review of related literature includes: a brief historical overview, types, advantages, challenges, future of online learning, and the variables of interest. The chapter concludes with a summary of research on online learning.

Theoretical Framework of Online Learning

This study is based on the Constructivist Learning Theory. Described as a learning theory for the digital age, Jonassen, Davidson, Collins, Campbell, and Haag (Lynch, 1997) applied technology principles to distance education.

> Using synchronous and asynchronous communication, hypertext based programs to promote debate, real life problems, and computer programs like data bases and artificial intelligence, distance education learners can work together to solve problems and provide the social interaction necessary to translate educational material into meaningful experiences. (Lynch, 1997, p. 1)

Constructivism focuses on how knowledge is constructed by connecting new information to old information and by interactions between one another. As explained by Crotty (1995), constructivism can be traced back to the works of Piaget and Vygotsky where the constructivist model focuses on individual construction of meaning and social interaction. Crotty (1995) stated that distance learning activities support autonomy, independence and cooperation, as well as self-regulated learning, and lends to make instruction more personally relevant. Constructivism provides a base for distance

learning environments. "Computer-mediated communication (especially computer conferencing), computer-supported intentional learning environments, and computer-supported collaborative work environments all support constructive learning" (Jonassen, Davidson, Collins, Campbell, & Haag, 1995, p. 20). Similarly Lynch (1997) stated the constructive learning applications include computer-supported collaborative work and computer-based cognitive tools and computer mediated communications.

The theoretical frame for the DELES was based on three psychosocial dimensions; relationship, personal development, and system maintenance and change (Sahin, 2007). The relation dimension recognizes the strength of personal relationships in the online learning environment while the personal development dimension measures the personal growth of students. The system and maintenance and change dimension reflects how orderly the environment is, clear the expectations are, and the control factor. The DELES was developed as a framework to assess online learning environments using this theoretical framework as the basis.

Review of the Literature of Online Learning

Historical Overview of Online Learning

There has been a growing development of online learning at the post-secondary level for hundreds of years. However, the presence of cable and satellite television in the early 1980s had transformed distance education to more like today's online learning environment (Nasseh, 1997). For secondary schools, online learning was introduced at a much slower pace. Although the origins of online learning at the secondary level can be traced to 1996, according to Wood (2010) the topic at that time was focused only on the use of technology in the classroom. Like many new changes to education, acceptance

was slow. While Kleinsmith (1997) declared that technology needed to be a requirement for all students to prepare them for the 21st century, he also questioned how educators would find the time, where the funding would come from, and how staff would keep up with technology changes. He questioned if the cost was justifiable, would the community support it, would it be a good investment or should the money be spent to do other things?

Similar statements and concerns were continuously being raised as online courses became more available and attractive. Russo (2001) questioned the cost, effectiveness and accountability of on-line courses in the K-12 system. He also questioned if online courses were appropriate for all students, whether online courses were worth the time and money, and if online courses were equitable among all students that had equal support and technology access. Russo (2001) stated that online courses were only second best to face-to-face and lacked human interaction, low completion rates, and a limited data on effectiveness. Despite Russo's (2001) concerns, he recommended that administrators proceed slowly, and consider the quality of the online course and develop sound district policies.

There remain a number of concerns and issues related to online learning. Unfortunately, only a small body of research addressed these concerns and issues of online learning for K-12 students. The limited research found that there was no significant difference in student achievement in online course versus traditional face-to-face learning (Tucker, 2007). In 2009 a Meta analysis conducted by the USDOE revealed that "students who took all or part of their class online performed better, on average, than those taking the same course through traditional face-to-face instruction"

(Stansbury, 2009, p. 1). However, since the study was conducted mostly with college-level courses, USDOE warned about applying the findings with K-12 students.

Despite the lack of research and concerns, by 2002 the National Education Association (NEA) recognized the potential of on-line learning and developed a policy in support for online learning but not without also expressing their concerns. The NEA expressed in their policy that online learning must also be equitable, and students must receive support that will allow them to operate effectively in this environment (Tucker, 2007). In 2008 some of the issues and concerns with online courses were also addressed by the USDOE. The USDOE developed the first guide to evaluate K-12 on-line learning programs and address the issues of evaluating on-line K-12 education programs (Trotter, 2008).

Despite the lack of research and concerns, online learning opportunities and enrollment continued to grow at the secondary and post-secondary levels. By 2007, 90% of U.S. post-secondary institutions offered online learning (Tucker, 2007) and by 2009, 22% of the post-secondary population was enrolled in an online course (Picciano & Seaman, 2009). At the K-12 grade level, of the 48 million K-12 grade students in the U.S., only 700,000 in 2005-06 enrolled in an online course (Tucker, 2007). By 2007-08 over one million students enrolled in online courses (Picciano & Seaman, 2009). This represents a small percent of the entire K-12 U.S. population but it is approximately a 45% increase since 2005-06.

Online learning has also increased the number of full-time virtual schools. As early as 1996, the USDOE funded a project to start a virtual high school (Berman & Pape, 2001). In 2010, there were 175,000 full-time online K-12 students (Butler, 2010).

The number of full-time virtual schools has been growing. According to Keeping Pace with K-12 Online Learning (Watson et al., 2009), 45 states and the District of Columbia offer full-time virtual schools and according to Kossan (2009) 48 states offer some type of online learning to K-12 students. Since 2009 virtual schools have experienced a spike in enrollment. According to eSchool News (2009, Nov) enrollment in virtual schools increased in six states by more than 50% and by 25 to 50% in another six states. Although the number of overall students that are taking online courses is only a small percentage of the entire population, eRepublic's Center for Digital Education predicts that online learning programs will continue to increase as more courses and grade levels are implemented (eSchool News, 2009, November).

Research has also shown online learning to be improving. A 2010 meta-analysis by the USDOE (2009) revealed that "Students who took all or part of their class on line performed better, on average, than those taking the same course through traditional face-to-face instruction" (p. xiv). Although the goal of the study was to acquire research-based guidance for K-12 online instruction, the USDOE cautioned on the interpretation and generalizing the study because the results were from studies in other settings such as medical training and higher education (USDOE, 2009).

However, a lack of research on online learning at the K-12 level continues to be in existence. While the USDOE (2009) conducted a meta-analysis of online learning, they acknowledged that there were a limited number of studies that were published comparing online and face-to-face instruction. The lack of research also exists on the quality and effectiveness on online learning. Zehr (2010) states that people question the effectiveness of online programs and without data, it is hard to know. According to

Glader (2009), most virtual schools are relatively young and that there have been few researches on the students' academic achievement and social adaptation. Butler (2010) also stated there has been a very limited amount of research on the success of K-12 virtual schools. Despite the lack of research, Butler (2010) noted five trends in online learning that are emerging, including: the use for student's Individualized Educational Plans (IEP); a home school alternative; credit recovery; innovative partnerships; and, students returning to school to obtain their GED.

Types of Online Learning

Online learning is also known as e-learning, cyber learning, virtual learning, e-education, and distance education (Russo, 2001). There are no clearly defined differences among these names, and new names continue to emerge reflecting different viewpoints. For example, Manheim High School in Pennsylvania began implementing 'virditional' courses which are courses that are delivered online but scheduled as a regular class during school time (Pape, 2006).

However there are some differences in the delivery of online courses. One delivery method is totally online. For courses delivered totally online, they are often viewed as courses for courses where instructors are difficult to obtain such as foreign languages (Clayton, 2010) and for home school students (Kossan, 2009) that do not spend any time in a traditional brick and mortar school. The online course can be taken at any time and any place that is convenient to the student. There is often little or no adult supervision unless the instructor is communicating with the student through the Internet. Courses are offered or developed in-house and either requires the student to meet the course requirements within a structured amount of time or at their own pace.

Another type of online learning is video conferencing. This type of online learning occurs synchronously when an instructor instructs students live in different locations at the same time (Henke-Greenwood, 2006). This type of learning is becoming less popular because students must be participating in the activity at the same time and requires an extensive video communications system. Once viewed as the state-of-the-art technology, it is apparently becoming less attractive because it was mentioned at a minimum in the review of literature.

The model that has received attention for the last several years is a hybrid or blended model that combines online learning with face-to-face instruction. The blended model is considered the most admired choice for the traditional school and is used as an instructional supplement (Tucker, 2007). According to Serim (2007), higher completion rates and better learning outcomes for blended or a hybrid online approach with small enrollments and clear linkages to approved curriculum seem to be better than online courses alone. Wood (2010) observed that the blended model is likely to become the norm as students take online courses to supplement their education. He acknowledged that the students prefer this model because they get the best of both worlds, face-to-face and online instruction. As indicated by Furger (2005), the in-class instructor acts as a coach by helping students stay on track and managing their time appropriately. For the blended model, the existence of personal interactions is important. As stated by Picciano and Seaman (2009) the continued growth of blended online learning will occur "where online instruction not only meets individual student needs but where there is also a 'flesh and bones' instructor available to assist and guide students in their studies" (p.26).

However, LaFee (2001) disagrees and suggested although online is a great alternative to education courses, face-to-face is ultimately the best.

Advantages of Online Learning

There are many advantages of online learning for the student, instructors and logistics. According to the literature, advantages of online learning for students includes, but not limited to, the opportunities for students to work at their own pace, to reduce dropouts, for extra help, as an alternative to traditional schooling**,** for global awareness, for positive brain effects and benefits to special education students. Having the opportunity to work at their own pace is an attractive feature for students. At the Virtual School Symposium (North American Council for Online Learning in October, 2008), virtual school students indicated that they like being able to work at their own pace. Cindy Loe, associate superintendent for Gwinnett County, Georgia stated that she would like the idea of online learning because it allows her students to work at their own pace (Russo, 2001). One study showed that 1 of the top 3 reasons why high school students took an online courses was to work at their own pace (Henke-Greenwood, 2006). At the post-secondary level, Wilson, Cordry and King (n.d.), also stated that online courses gives students the flexibility to work at their own pace and not having to work within an established time line.

Another example is to help reduce the high school dropout rate. Many schools throughout the country are experiencing high dropout rates. To lower the dropout rate, Michigan implemented a cyber school option for at-risk students and the dropout rate reduced by 1.7% even as enrollment climbed (Umpstead, 2010). Florida virtual schools emphasizes that online schools are especially helpful for students that are high risk and

dropouts (Tucker, 2007). Providing students with online learning options can better serve students of small or rural districts, provides students with other course options and increases engagement and personal selections therefore helping reduce dropouts (Patton, 2008).

Online learning can be used for students that need extra help in their classroom studies. The executive summary of "Learning in the 21st Century: A National Report of Online Learning", revealed that extra help was the main reason why parents would have their child take an online course (Henke-Greenwood, 2006). Older students may desire courses to earn college credits, while younger ones want it for extra help (eSchool News, 2009, July).

Online learning can also provide students with alternatives to the traditional school. Livingston (2008) stated that schools need to provide alternatives to the regular school, and give students opportunities to make personal choices. Sachs (Sarrio, 2009) said that students today expect more choices. According to Christensen et al. (2008), computer based learning can be customized to meet students' different types of intelligence and learning styles meeting their individual needs. In addition, Butler (2010) observed that online learning is beneficial for athletes that may need flexible hours or for those that do not feel safe in their school due to bullying or social differences.

Online learning provides opportunities for students to enhance their global awareness, and the opportunity to interact and network with others throughout the country and world (Berman, 1999). Pape (2006) suggested that by providing global activities within a blended approach, students "will have the opportunity to develop global citizenship skills, gaining an appreciation for cultural and geographic differences"

(p. 5). Patton (2008) also acknowledged that distance learning not only enhances foreign language knowledge and skills but allows students to learn about different cultures. According to Glader (2009) researchers are stating that students that take instruction online will be better prepared for the digital world.

The use of technology including online learning can also positively affect the brain and increase intelligence. When Sturgeon (2008, November/December) referred to the 21st century classroom, he stated "certain types of stimulation not only change the chemistry of the brain but also can actually increase brain cells and dramatically boost intelligence" (p. 39). The findings of the changes to the brain may continue to change as scientists study to see if the students' exposure to digital technologies on a daily basis can change how the brain works (Associated Press, 2008, p. 1).

Online learning can also be beneficial for special education students. According to Ash (2010) online learning allows special education students to work when they feel most productive, provides ongoing virtual communications and a stronger bond between the instructor and student, and helps relieve social and behavioral problems that are triggered in a traditional school. Similarly, online testing was found to be beneficial for English as a Second Language students and those with disabilities (Granger & McGarry, 2002). Online learning can provide an opportunity for instructors to be more approachable by students (Coleman, n.d.).

There are also online learning advantages for instructors including the opportunity for instructors to get to know the students better and to improve job satisfaction. Diane Lewis, a director that has helped develop two virtual schools stated that one of the biggest myths is that instructors will not get to know their students. On the contrary, she stated

that every one of her online instructors shared that they get to know their students better than their face-to-face students (Mellon, 20011). Sturgeon (2008, May/June) held that teaching technology, including online learning, improves the instructor's technology skills, instructional skills and connecting to others around the world.

Sturgeon (2008, November/December) believes that instructors may stay in education longer if different ways of teaching are provided. Implementing technology in the classroom can change instructor's perspectives on teaching, expands their world knowledge, and provides them opportunities to implement new ideas and activities. For instructors, there are a lot of benefits to using technology. Granger and McGarry (2002) found that the benefits for instructors was less time to record grades and student information, to save time by reusing test statements, to have reading materials more accessible, to increase instructional time and assessments and improved feedback from the students for statistical use.

Several of the advantages of online learning involve logistics. The logistics of online learning relate to travel, flexibility, parent involvement, course offerings and cost savings. Post-secondary level educators found that not having to spend time traveling to a school location was the most attractive feature to online learning (Flowers, 2001). The advantage of not having to spend time traveling also applies to secondary students that live in rural areas or that have to spend an enormous amount of time on a bus to get to school.

One of the most appealing advantages is having the flexibility to participate in online learning at any time. Students enrolled in full-time virtual schools and those enrolled in programs beyond their school day, can both take advantage of participating in

online learning at any time of the day, during the summers, weekends or after school. For example, Florida Virtual School utilizes their online learning often for after school learning (Tucker, 2007). Online learning reduces time in the classroom allowing more time for face-to-face instruction. At Brattleboro High School in Vermont, students partnered with a school in China to learn about each other's cultures. The students met twice weekly in face-to-face instruction and the remainder of the week online. "This allows not only an extension of the school day but also of the school year and enables more classroom-type activities to occur outside of the classroom walls" (Pape, 2006, p. 4). Hill (2011) described another example where high school students are taking college courses virtually from their high school, eliminating the drive to the college or the worry of having them on a college campus.

Online learning can get parents involved. They can be kept informed about their child. Through online learning at the secondary level, parents can monitor their child's learning. This gets parents involved in their child's learning (Pape, 2006). This includes those are being home schooled and that may be home bound due to illness (Livingston, 2008) and disasters such as Hurricane Katrina (Pape, 2006).

Another logistic advantage to online learning is that students having the ability to take a course that otherwise would not have been offered (Berman, 1999). The results of a study showed that the 1st out of 8 reasons why 9 to 12th grade students might take an online course was because the course was not offered at their school (Henke-Greenwood, 2006).

Especially comparing the cost of school construction and operation, the cost of online learning is an advantage. Virtual schools, upon enrollment provide students with a

computer, printer, and Internet access. Still with the costs of equipment, the overall the cost of online learning is affordable (Sturgeon, 2008, November/December). According to Moe and Chubb (2009) "budget constraints, limited capacity, and constituency demand will give public schools officials persuasive reasons (in some cases) to turn to virtual schools as new, less costly providers of a wider array of services" (p. 110).

Challenges and Concerns of Online Learning

Although online learning has advantages, there are also challenges and concerns, one being the student's and instructor's ability to work in an online environment. Changes in school funding, the limited amount of government regulations, and the resistance to change by public schools are also other concerns and challenges.

Students may find that the online learning environment is to challenging. Livingston (2008) stated that students that have only prior experience in a traditional classroom may or may not find it difficult with a new online format, and they may have to work at a different pace. The lack of socialization, particularly those students that enroll in full-time virtual education schools is another concern. A needs assessment survey that studied the perceived needs of potential students found one of the least attractive elements of online learning is human interaction (Flowers, 2001).

There are also challenges for the instructors. Teaching face-to-face students is much different than teaching online students and creates a different set of challenges (Brown & Corkill, 2004). They must be willing to master new teaching strategies. Ineffective instructors often include too much text, do not engage students enough and provide students with a feeling of isolation. Teaching online learning requires instructors to develop new instructional strategies, interaction with students, feed-back skills,

evaluation procedures and resources (Jackman & Swan, n.d.). The instructor needs to assess their ability to teach without personal communications, to ensure the instructions are clear, to determine when students are confused, to evaluate if students are learning and to engage students. To improve these abilities, Berman, Lowes and Scribner (2007) recommends implementing high order thinking skills, providing extremely clear directions, focusing on the essential learnings, developing meaningful assessments, demanding independent learning and engaging activities in weekly meaningful assignments (Berman et al., 2007). According to Richardson (Dembo, 2008) instructors must embrace the technology world and that school districts be forward thinkers, ensuring that their instructors become accustomed to virtual environments and ready for new technologies as they become available. He states that instructors that spend time in the virtual world are better prepared to implement them in the classroom and with students.

Although it is recommended that instructor improve their online learning teaching skills, there is limited amount of educational opportunities to learn these new skills. According to the president and chief executive officer of the International Association for K-12 Online Learning, Patrick stated that colleges must teach online instructional skills, and expressed how disgraceful it was that instructors are graduating from college today without these skills (Clayton, 2010, p. 21). Only 4% of the colleges' teacher-in-training students are taught specific instructional strategies for online learning (Clayton, 2010).

The expense of online learning is an advantage especially when compared to school construction and operations costs, however for some States, current regulations make it costly to the public districts that the student resides in. For example in the State

of Pennsylvania, as in many states, the funds follow the student, and therefore every student that chooses to attend a cyber or virtual school, the district looses thousands of dollars (Reeves, 2001). The funds lost by the public school can no longer help contribute to the operation of the district. Doluisio, (Reeves, 2001) a superintendent of a Pennsylvania school, is upset that he has to send funds to pay for virtual schools and argues that he is not made aware of the effectiveness and quality of the courses, the instructor's qualifications, the student's attendance, and even if the child actually lives in the district and where the school is 'located'. A problem is that the amount to educate a student in a virtual school is unknown (Reeves, 2001).

The local school districts are charged with educating students that reside within their district. Students that enroll in a cyber schools rather than their public school, makes it a challenge. Cyber schools have been blamed for consuming public funds but also for inappropriate activities such as using parents as instructors with little oversight (Henke-Greenwood, 2006). As stated by Smith (Reeves, 2001) that state policy-makers "are wrestling with laws so wide open or nonexistent, that they fear anyone could throw up a Web page, hire a couple of teacher aides and start recruiting home-schoolers" (p. 2). According to Quillen and Davis (2010), "Many states require a virtual instructor to be a state-certified teacher; but a majority of states have no endorsement to label an instructor competent in the skills necessary to work in a fully virtual environment" (p. S3). Unfortunately there continues to be a lack of government oversight and accountability. It is difficult to obtain the basic statistics on student performance and enrollments from virtual schools (Tucker, 2007). Education policy-makers are however, in the process of making recommendations that cyber schools ensure quality courses, invest in research

and development of new ways to assess and teach courses, obtain federal funds to investigate new technologies to improve courses, create models of success, use highly qualified instructors and partner with other reform efforts. The underlying issue is that "There are wide variances in the quality of K-12 virtual programs from very poorly developed with limited personal attention to those that are of quality therefore caution needs to take place in order to ensure the best quality program" (Tucker, 2007, p. 6).

An enormous challenge for online learning is the resistance for the traditional public schools to change barriers to online learning such as changing the requirements of seat time. As stated earlier, one of the advantages of online learning is that students can typically take courses at their own pace. The International Association for K-12 Online Learning argues that students performance should be based their competency of meeting course requirements and not based on seat time (Eisele-Dyrli, 2010). However, course credit has traditionally been based on seat time rather than proficiency based credits. Currently only 36% of schools in the United States allow proficiency based credits rather seat time credits (Zehr, 2010). Seat time is one of the barriers that has to be addressed by policy makers. Zwang (2011) believes that it is the policy makers that must remove the barriers to online learning by changing school funding and seat time requirements. Although the USDOE recommended in their report, Transforming American Education Learning Powered by Technology (2010) to eliminate seat time, the problem is perceived to be much bigger. According to Moe and Chubb (2009) authors of Liberating Learning, the U.S. educational system is controlled largely by a powerful political party supported by teacher unions that are resistant to change because they want to promote their own public school interest and membership. The authors state that teacher unions have been

very successful at using the political process to prevent reforms including the competition that online and virtual schools create.

At the post-secondary level similar challenges and concerns with online learning are found. Zirkle (2004) found the barriers perceived by students consisted of "cost and motivators, feedback and teacher contact, alienation and isolation, student support and services, and lack of experience/training" (p.3). Other concerns that post-secondary students had was not feeling as important to the instructor as if they were face-to-face with their instructor, believing that they would receive limited advising since they did not see advisors face to face and feeling isolated from their advisor and other students. (Zirkle, 2004). However, some of the issues are different between secondary and post-secondary students such as the responsibility of taking care of the family responsibilities and working a full-time job.

Future of Online Learning

The impact of online learning to secondary education is unclear. Scholars believe online learning and technology advances such as Web 2.0 and social networking will rapidly move the school system towards a total transformation. For example, LaFee (2001) envisions on-line learning transforming schools as places to learn social skills where teachers become facilitators of learning. He acknowledges that although online learning may not be used to its fullest potential at this time, technology and online learning has a great potential to change the educational system. Students have their own educational needs and learning styles according to Packard (2009), and believes that the individualized learning that online programs offers is one of the best contributions to education.

According to Lips (2010) online learning has a very good potential to reform education in America. Advancements in technology also have the potential to bring unimaginable transformations like Second Life where individuals log in to computers and create avatars, an image that represents them in another life (Linden Lab Research, Inc. 1999). Dembo (2008) described virtual worlds for educators where, for example, students can take a tour through Rome or go through parts of the body to learn the body systems. Secondary students can also enroll in virtual college classes. Five high school students enrolled in East Carolina University's Early College Second Life Program virtually taking a three credit college course (Hill, 2011). This not only saves on travel time, but the colleges do not have to worry about high school aged students on campus. These virtual worlds and other 3-D Internet sites have over one million users worldwide since 2003 will continue to enhance online learning strategies (Dembo, 2008). As stated by Dembo (2008), Second Life had been created by Linden Lab Research and has two versions, one for 18 years and older and the other is for 13 to 18 year old students. In order to use Second Life (SL), a person logs on and creates an avatar, an image that represents them. Large corporate companies are getting involved in creating this virtual world where people are being purchase land, conduct business and drive vehicles virtually at a computer screen. For example, Disney's Virtual Magic Kingdom™ has a virtual world that gives young students opportunities to play and learn with other children around the world. For educators, Dembo (2008) conveys that

> With a few clicks of the mouse, teachers and administrators can congregate at Discovery Education's amphitheater on Edu-Island II, a virtual property that Discovery Education is renting and where about 700 educators congregate to

receive alerts about upcoming events and professional learning opportunities. (p. 1)

Computer simulation may become popular for training students in CTE because of the expense of up-to-date equipment that CTE requires and the amount of physical space the equipment utilizes. Computerized training may not only lessen the cost and space associated with equipment but could provide students the opportunity to learn and practice within the online learning environment. For example, there are now computer training simulators to teach students how to operate printing presses to preparing students in becoming emergency medical dispatchers.

However, there is some work to be done. According to Richardson (Dembo, 2008) "Until we are able in some systemic way to re-envision, teaching and schooling to embrace the potentials of anytime, anywhere learning, we're going to have a very difficult time understanding how the leverage the possibilities" (p. 49). For CTE, there also has to be a transformation of a variety of equipment and training to the online learning environment.

There are visions of how instruction will be delivered differently in the future, as well as how schools will function. Authors Jukes, Kelly and McCain (2008) believe that digital technology has transformed students to learn, think, and act differently. This transformation has created five major shifts: a focus from content and knowledge skills to higher order thinking skills; an embracing of new digital reality; a change in students thinking patterns; broader ways to assess learning; and, an increase of connections from what schools are teaching them and how it applies to the world around them. The authors suggest different types of schools to offer more choices and to reflect the new digital

student that moves away from the industrial age one-size fits all students. Parents and students will expect customized and personalized education choices. For CTE, training will need to be focused on CTE skills that can be taught in the online learning environment.

Different teaching types of schools are provided by Jukes et al. (2008) such career theme academies that focus on careers and academic focused school that focus only on earning college credit and dual credit. The students enrolled in academic focused schools attended school 12 months, nine hours a day, had no extra-curricular activities and graduated at the completion of the eleventh grade. Other types of schools are those that are self-directed where a majority of the school work takes place at the home and the physical school is used only for small group discussions, research, and to meet with their advisor and mentor or a school with no courses requirements, but instead a list of competences that must be accomplished. There will be an entirely new way of communication between teacher and student. It will radically alter the way people relate, learn, obtain and use technology.

That new way of communication may now be more visible. Richardson (2008) proclaimed that it is the Collaboration Age where students work with others they do not know to share ideas and interests. Educators are challenged with allowing students to collaborate with other students virtually when they are given the primary responsibility of following a teacher-guided curriculum that is knowledge and content based and is becoming less relevant when students can get it whatever, whenever, and from whomever from the Internet. Some educators have begun to communicate with their students through blogs and wikis (Richardson, 2008). Richardson (2008) confirms that educators

must engage in these new technologies and understand their potential in the Collaboration Age.

Advancements in technology can provide online learning opportunities to a broader group of students that include special needs students, which often choose CTE as a program option while in secondary education. Schachter (2008) describes a school for the deaf and how technology has helped educate students to a level where they can be employed. Technology is able to convert text on a screen to Braille and optical scanners can recognize letters and read them out loud for the blind. Students with auditable disabilities can now listen to current events as well as entire books. Interactive whiteboards can convert material to visual information making it easier for students that have trouble reading text. In "Tech & Learning" (Wieser, 2008) a host of technology products for special needs students are advertised such as symbol-making tools, communication devises, alternative keyboards and text-to-speech speech recognition programs are advertised for special needs students. Products address aural problems, poor handwriting, physical or cognitive typing challenges, computer access for physically impaired students, reading and writing, autism, difficulty communicating, and homebound students. The assessments include ePortfolios, iTunes, RTI process and comprehensive courseware. Similarly special devices such as mp3 players and iPods as an instructional tool for oral communications are being investigated to determine if the tools will be more relevant to the new aged learner and if reading skills will decrease or improve (Dyck, 2007).

Variables of Interest in Online Learning

In reviewing the related literature, there were studies that addressed skills and characteristics that students had to have in order to be successful in online learning, and other studies that indicated the skills and characteristics that did not impact achievement in online learning. Some literature, for example, indicated that the students' learning style did not appear to make a difference in achievement, but others indicate that students must be self learners and self motivators. A study by Aragon et al. (2001) compared learning style preferences and found that graduate students can be just as successful in an online format as a face-to-face environment regardless of their learning style. Yet, another study by Howland and Moore (2002) surveyed 48 online college students enrolled in three online courses and found that "self-management, self-monitoring, and motivation appear to be even more essential for success in an online course than in the face-to-face classroom" (p. 188).

There were several studies that identified predictors of online achievement. One study by Burlison, Murphy and Dwyer, (2009) investigated motivational strategies to predict the academic performance of college students. A fifteen subscale questionnaire on motivated strategies was used and indicated that self-efficacy and time and study environment were the best predictors for online learning.

For this study, a number of predictor variables related to online learning will be investigated. The predictors will be seven variables or scales of the DELES and GPAs. Of the seven DELES scales, six scales are psychosocial scales and include instructional support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy. The seventh scale added to the DELES is student

satisfaction, is not a psychosocial scale but was developed for further study of student satisfaction (Insight System, n.d.).

The DELES instructor support variable focused on 8 survey statements of providing support to the students by giving feedback, answering statements promptly, encouraging students to participate and be easy to contact. As Stager (2005) explained that online instructors sometimes assume that students know how to manage their time, participate in student discussions and ask good statements but instead they should teach and model practices for students to be successful.

The 6 DELES student interaction and collaboration survey statements focused on students' opportunities to compare their work, information and ideas with their peers. For highly quality online courses, Stager (2005) stated that emphasis should be placed on inspiring students to participate in discussions more often that what is found in a traditional face-to-face instruction. Young and Bruce (2011) found online learning that provides student with a strong sense of classroom community and a sense of connectedness are better prepared to become engaged and successful.

The 7 DELES personal relevance statements focused on the opportunity for students to relate and connect their new learnings to their personal life and include topics that interest them. According to Lee (n.d.) research indicates that relating content and problems to personal interest is an effective strategy to encourage students to participate and to be engaged and necessary for learning to take place.

Five authentic learning DELES statements focused on providing students with real world problems. Providing students will the ability to resolve real world problems and issues are important. According to Curtis (2001), giving students the opportunity to

solve and apply issues to real world problems is a great motivator and makes the material more meaningful.

The 3 active learning DELES statements focused on opportunities for students to explore their own learning strategies, answers and problems. Tucker (2007) shares that personalized and individualized learning where students can explore their own learning is beneficial for all students from the gifted and talented to those that are at risk.

The 5 DELES survey statements that focused on autonomy referred to allowing students to have control of their own learning and at times that are convenient for them. Students that are responsible for their own learning are more engaged, take charge, develop high standards of achievement, know their strengths and weaknesses and can manage change. According to Jones, Valdez, Nowakowski, and Rasmussen (1994) successful, engaged students are responsible, self-regulated and self-evaluators and tend to increasingly want to solve problems and be in charge of their own learning.

The remaining DELES scale of student satisfaction, as mentioned, was also added to the survey. As stated by Walker and Fraser (2005) the additional scale of enjoyment, or referred to as student satisfaction, was developed to explore the associations between the six psychosocial scales and student affective characteristics. The 8 DELES student satisfaction statements referred to whether the students were satisfied with their online course and if they would take another course in the future. A study by Chang and Smith (2008) concluded that student satisfaction is a very important component for students to succeed in an online learning environment. Online instructors need to ensure that students are satisfied and that they don't have negative attitudes that will hinder their success.

In this study of online learning, GPAs were investigated to determine the extent that they can predict online course grades. Several studies at the post-secondary level indicated that GPA is a reliable measure for student achievement. One study by Peters (2000) performed an exploratory analysis of 28 predictor variables to predict the success or failure of a college course. The findings revealed that GPA was one of the best indicators in predicting student achievement. Another study, by Gerlich et al. (2009), on three predictors of achievement and three selected outcomes of self-paced online courses, found that GPA was the only significant predictor.

Summary of Research of Online Learning

In summary, based on a Constructivist learning theory, online learning has become of increased interest in secondary schools. There are many advantages to online learning, but there are also many concerns and challenges that still exists such as if online learning is for all students. Different types of delivery from full-time virtual schools to blended online courses are also of increased interest. The future of online learning is uncertain, but the use is likely to increase due to advancements in technology such as virtual worlds. There is literature related to post-secondary studies, but the research for secondary education is limited. Chapter three will provide details of this study of the prediction of achievement and satisfaction of online learning by CTE high school students.

CHAPTER THREE: METHODOLOGY

Chapter three explains the methodology that was used to carry out this study including an introduction of the study, description of the semester one and two participants and online courses, the setting, instrumentation, procedures, research design, and data analysis.

Introduction to the Study

This study consisted of CTE students enrolled in high school CTE programs along with an online course related to their CTE program. First and second semester studies were conducted. The studies focused on determining the extent that the scales from the DELES and GPAs can predict high school CTE students' online course grades and the extent that the DELES can predict student satisfaction with the online learning environment.

Participants of the Study

The first semester study consisted of 24 participants enrolled in a high school CTE Nursing program. This study was conducted first to determine any necessary changes or revisions to the design of the study. Following the first semester study, a second semester study of 90 participants was conducted. The study consisted of participants enrolled in six high school CTE program areas; Culinary Arts, Baking and Pastry, Health Science, Cooperative Education, Early Childhood Education and Pre-Veterinary Sciences. The targeted CTE participants were those that had never before taken an online course and for the first time were participating in an online course that was related to and as part of their CTE program during the 2010-11 school year.

Description of the First Semester CTE Student Participants

The participants of the first semester study were high school junior and senior students enrolled in a CTE Nursing program at a CTE school during the 2010-11 school year. Students traveled from several sending high school districts for 120 minutes of instruction per day for the entire 180 day school year for two years. The classroom instructor was a non-tenured instructor that had worked in the medical field for over 10 years and had been implementing technology in the classroom on a daily basis. The Nursing instructor also had personally taken and enjoyed online college courses in the past.

There were 18 participants enrolled in the first year of the Nursing program and six participants enrolled for the second year. All 24 participants participated in the program. Of the participants there were three male and 21 female students. Four of the participants were classified as special education. The remaining 20 participants were classified as regular education students. The majority, over 90%, were Caucasian.

Description of the First Semester Study Online Course

The Nursing participants enrolled in the online Health Insurance Portability and Accountability Act (HIPAA) course in January 2011 with Ed2go (Education to Go, 2010). The online course was taught by an online instructor. There were twelve lessons that were taken in a six-week period (Appendix C) with two additional weeks for students to complete all of the assignments. After a final exam, the student received a numeric final course grade and received a 'confirmation of completion' upon a passing score of 70 out of 100 possible points. The online course was $139 per student and was paid by grant funds received by the school district for new initiatives.

The HIPAA was enacted by the U.S. Congress in 1996 and protects health insurance coverage for workers that change or lose their employment. Knowing and understanding HIPAA was important for anyone entering the health field and has been part of the CTE district's Nursing program curriculum. The online course focused on the administrative simplification, transactions, code sets, identifiers, and the key elements of HIPAA.

The online instructor had worked in healthcare for more than 30 years, beginning as a Licensed Vocational Nurse, through a number of related professions and degrees and had planned on obtaining a Registered Health Information Administrator Certification. Specializing in medical billing and coding, health information management and HIPAA, the instructor had a master's degree and had taught a variety of health care information courses.

Description of the Second Semester CTE Student Participants

The second semester consisted of junior and senior high school students enrolled in the Culinary Arts, Baking and Pastry, Health Science, Cooperative Education, Early Childhood Education and Pre-Veterinary Sciences during the 2010-11 school-year at the same CTE school district as the Nursing students. Similar to the Nursing program, all of the CTE programs met for instruction an average of 120 minutes per day for the entire 180 day school year for one to two years depending on the program.

The Culinary Arts program instructor had tenured with over twenty-five years of work experience in the restaurant business and received the district's Teacher of the Year Award. The Baking and Pastry program instructor, completed a Master's degree online, a had been teaching the CTE program for the district for over ten years and also had

received the district's Teacher of the Year award. The Health Science instructor had been employed as an instructor for four years with ten years of work experience in the health fitness field. The instructor held a Masters degree in English and was working on a Math Education degree. Cooperative Education was a work-study program for students that are employed and was part of their high school graduation requirements. The instructor had been with the district for two years, held a Masters Degree in Counseling and worked in various CTE education positions previously. The Early Childhood Education program was taught by two CTE certified instructors. Both instructors had previous work experience and teaching experience in the field. One instructor also had participated in developing online courses for the child development field. The Pre-Veterinary Science program has been taught by a tenured certified animal science instructor and who had been actively involved in implementing new technology strategies into the classroom.

The six CTE program areas included 15 students in Culinary Arts, 16 in Baking and Pastry, 26 in Health Science, 7 in Cooperative Education, 11 in Early Childhood Education and 15 in Pre-Veterinary Sciences for a total of 90 student participants. There were 29 (32%) males and 61 (68%) females. In addition, of the 90 students enrolled in the second semester there were 26 (29%) participants classified as special education students and the remaining 64 (71%) were considered as regular education. The majority, over 90%, were Caucasian.

Description of the Second Semester Study Online Courses

The participants of the second semester study enrolled in a six-week online course that was selected by their CTE instructor and provided by Ed2go (Education to Go,

2010). Ed2go was a vendor that provided online learning courses through more than 1800 college and university partners. There were a variety of courses from accounting to webpage design. As with the HIPAA Ed2go online course, the online courses were taught by an online course instructor and consisted of 12 lessons in a six-week period with an additional two weeks to complete assignments. At the end of the online courses, a final exam was given and upon receiving a passing score a certificate of completion was provided. The cost per student was $139 and paid by grant funds received by the district for new initiatives.

The participants from Culinary Arts, Baking and Pastry and Cooperative Education CTE programs in a CTE school district enrolled in Ed2go's Resume Writing Workshop online course (Appendix C). The participants from the CTE Health Science I enrolled in the Beginning Writer's Workshop and Health Science II students enrolled in the Introduction to Natural Health and Healing (Appendix C) online course. The Early Childhood Education participants enrolled in Teaching Pre-School: A Year of Inspiring Lessons and Pre-Veterinary Science students in the Become a Veterinary Assistant online course by Ed2go (Appendix C).

The online Resume Writing Workshop teaches students to create effective resumes. The course consisted of a variety of resume formats, components of a resume, how to write an employment objective, and know what and what not to include in a resume. The online course also included information about using references and online resumes appropriately.

The online instructor for the Resume Writing Workshop course was a member of the National Resume Writer's Association, had been employed in management and

marketing and was a business owner and college director. The instructor has taught the course for over ten years and was involved in resume writing for twenty years.

The Beginning Writer's Workshop online course was a course to teach students about the life of a writer and how to improve their writing skills and create fiction and nonfiction pieces of work. The workshop provided a variety of strategies and techniques to build characters, interest, and add meaning. Participants participated in numerous exploratory writing exercises.

The online instructor for the Beginning Writer's Workshop was a continuing education instructor for thousands of learners in colleges, corporations, and non-profit organizations. The instructor had written novels, newsletters and poetry.

The Introduction to Natural Health and Healing online course teaches students about the stages of health and illness and the meaning of mind, body and spirit. Students had the opportunity to start a personal health journal. The topics of the course included naturopathy, hydrotherapy, diet, biorhythms, and fasting. Other course topics are aromatherapy, T'ai Chi, osteopathy, Feng Shui and chiropractic.

The online instructor for the Natural Health and Healing online course was a Natural Health Consultant and has been an educator for many years. The instructor held a BS in Education and a MS in Natural Health.

The Teaching Pre-School: A Year of Inspiring Lessons online course was a course that teaches students that are already teaching preschoolers or are planning on to pursue a career in the field, to create inspiring lesson plans. A lesson plan template was used to show how to develop lessons that are engaging and creative. Practical tips were

given on their implementation and that covered a variety of themes that can be customized to their individual needs.

The online instructor for the Teaching Pre-School: A Year of Inspiring Lessons had a Master's degree in education, experience in teaching special education students, and had developed over 100 lesson plans. The lesson plans incorporated a variety of themes and activities including games and songs. The instructor shared secrets on how the student can develop their own inspiring lessons.

The online instructor for the Become a Veterinary Assistant online course was a course that prepares students on how to work in veterinary facilities. A variety of information was taught to the student from vaccinations, flea control, nutrition and emergency care. Information included areas such as euthanasia, spaying, neutering, and preventive care. Soft skills such as customer service, pet loss, work ethics and confidentially were also discussed. Other information included the business operations of a veterinary office, marketing and communications.

The online instructor for the Become a Veterinary Assistant online course was a publisher and author of related articles, had been a small animal veterinarian for 25 years and developed courses for almost 20 years. The instructor specialized in high demand areas of first aid and alternative medical therapies and had been practicing at a veterinary hospital in Canada.

The setting of the study consisted of 24 participants in the first semester and an additional 90 participants in the second semester enrolled in seven CTE program areas. For secondary students enrolling in an online course, Jackson (Sturgeon, 2007) found that a key to student success was having a mentor as the first help line for a student if they

needed help. A "Los Angeles district, too, has had the most success with online classes when schools provide a facilitating teacher for students in real time as a support, even though the instructor is online" (Davis, 2010, p. S4). Since this course was the first online course for all of the student participants, the students' CTE instructor was made available to provide assistance. In addition, the CTE instructors were given administrative access to view the participants' progress throughout the course. They could view their students' completed 12 assignments and view when and how often the students went online.

Although participants were able to access their online course outside of the school day, there were times during their CTE program day that they were able to access the course. For example, some students arrive to class up to 20 minutes early providing the students with time to access the online class before the remaining students had arrived. To ensure that participants could access their online course outside the parameters of the school day, participants that did not have their personal computer were allowed to borrow a school laptop computer with Internet capability. This arrangement was made to in ensure that all participants had access to the online course at home and any other public place that had Internet connections.

Community

The site of this study was at a CTE school in New Jersey. This district was located between the metropolitan areas of New York City and Philadelphia. The county was a rural community, the third least dense county in the State. The county was considered a bedroom community, as more than 50% of the workers were employed outside of the county. The majority of residents were Caucasian. The county had been

ranked as one of the wealthiest in the country and had the lowest percent of families (1.6%) and individuals (2.6%) in the state living below the poverty rate. Similarly, the county had a low crime rate and educationally, the county had one of the highest graduation rates (95%) in the State, where 42% of the residents had attained at least a Bachelor degree.

School District

In 2010, the CTE school was recognized as a highly performing school by Technology Centers that Work (TCTW), a modified High School that Works (HSTW) model that addresses the needs of shared-time career centers. The HSTW design is the Southern Regional Education Board's largest national program for school improvement that focuses on college and career readiness. The district received one of five TCTW Gold Improvement Awards for improving academic scores in math, reading and science. The TCTW was an extension of the High Schools that Work model that assisted shared-time CTE schools. Each year the CTE school served approximately 450 high schools students from four sending high school districts in the county in over twenty CTE program areas and approximately 800 adults in a variety of adult education courses. At the secondary level, the school was a 'school of choice' where students chose to attend the CTE school and received practical arts credits toward their high school diploma. Several courses also met some of the students' academic credits. For example, the Nursing program met some of the student science credits for graduation. The district consisted of two campuses with different CTE programs, located within two miles of each other. All of the programs were shared-time programs, where the high school students were transported every day to one of the two campuses in the district for their

CTE program for half-day. The other half-day, the students completed their academics at their high school. The student's CTE credits were transferred to the students' sending district and the students graduated from their high school. There were twenty-one county vocational schools in the state. This county was one of two counties in New Jersey that only received students on a shared-time basis. The remaining 19 county CTE schools in the state operated on a full-time basis where the students attended and graduated from the full-time CTE school district.

In the 2010-11 school year, the student population of shared-time CTE students at the CTE school was 466. Forty-three percent were classified as students with special needs, as compared to an average of 13% at each sending district. An average from 60 to70% of the CTE students attended post-secondary education upon high school graduation. The average dropout rate for all four sending districts was less than 2%. In addition to serving high school students in CTE during the day, the facilities was also used to serve over 800 adults in the evening in a variety of CTE programs such as water and wastewater management, certified nursing aide, phlebotomy, and electrical and plumbing apprenticeship programs.

The CTE School was funded by three major sources and through grant funds. The three major sources included tuition from the sending districts for each student that attended the CTE district, New Jersey State Department of Education funds based on per student enrollment, and county taxes generated by residents of the county. The county funds were determined by a Board of School Estimate consisting of three County Freeholders elected by the public and two appointed Board of Education members appointed by the Board of Chosen Freeholders. The district's budget for the 2010-11

school year was $4,684,767 and the cost per shared-time CTE high school student was $8,835.

The school district's CTE programs focused on different career fields such as cosmetology, auto mechanics and law enforcement. However, they operate and were built upon the same standards. The CTE programs traditionally meet on the average of two hours and 30 minutes a day for the 180 days of the school year. The typical day consisted of about 30-40 minutes of theory in the classroom and the remaining time was spent on hands-on training in their shop area. There was a morning and afternoon program held in each classroom. Several programs were two years in length and others were one. There were from 10 to 30 students enrolled in each program depending on the available space. Some programs, such as the teaching academy program, required a minimum GPA to enroll because the program focused on acquiring college credits. All the CTE programs offered a work-based learning component such as job shadowing, internships, and implemented live projects such as building a shed for the local park, catering a luncheon for 150 guests, or holding a cosmetology clinic for the public. Each CTE program also had an advisory board made of representatives from their occupational area, and focused on completing industry recognized credentials such as a cosmetology state license or a dispatcher certification. All of the students participated in a CTE student organization such as SkillsUSA for state and national competitions and leadership learning opportunities. Students took their lunch and participated in sports and after school extra-curricular activities at their high school.

Instrumentation

Data for the study came from a variety of sources. This study investigated the extent of which high school CTE students' online course grade can be predicted by their GPA and the six scales of the DELES survey. In addition, the study determined the extent of which the six scales of DELES can predict the seventh DELES scale of student satisfaction of the online learning environment.

Student Demographics Data

Demographic information on each participant was collected. Instead of using the student participants' names, the instructor gave each student, at random, a code to use throughout the study. For example, Health Science participants were identified as HS100, HS102, etc. and Cooperative Education participants were indicated with CE700, CE701, etc. This code was used on a pre-survey where the participants' GPA was asked. The participants were told that if they did not know their GPA, they were to leave the GPA question blank. After the pre-survey, CTE instructors or guidance counselor were able to verify the data and provide any missing information to the researcher.

Course Grades

Participants' final online course grades were collected by their instructor and provided to the researcher according to the participants' personal code. The course grade was provided in numerical form at a range from 0 to 100. The score of 100 was considered to be a perfect score and a score of 60 and above as passing. Each student that completed the online course was provided with a numerical grade. Participants that did not complete their online course or dropped out were considered as an incomplete or failure.

DELES Survey

Approval to use DELES was received from the Texas Center for Educational Technology (TCET) (Insight System, n.d.). (Appendix D). The survey was designed to acquire information about post-secondary student's use and attitudes toward the distance education environment in six psychosocial scales and one scale on satisfaction. Although the survey was designed with the post-secondary online student in mind, representatives from TCET suggested the survey would be appropriate for high school students providing they have the reading skills to respond and if not, the statements could be revised slightly (Insight System, n.d.). The statements were revised slightly and used as the participants' post-survey, after they had taken the online course. Originally the pre-survey was designed to compare the participants' traditional face-to-face instruction with the online learning environment; however it was later determined inappropriate for the study. The pre-survey, did however, provide the students' GPA. The pre-survey was taken by the participants prior to taking the online courses.

The DELES survey consisted of a total of 42 Likert statements that focused on seven scales areas with a specific number of statements related to each scale. There were 8 statements related to instructor support, 6 for student interaction and collaboration, 7 for personal relevance, 5 for authentic learning, 3 for active learning, 5 for student autonomy, and 8 for student satisfaction. The responses were coded for analysis: '1=never', '2=seldom', '3=sometimes', '4=often' and '5=always'. For each of the 7 DELES scales the total value was calculated from each student and recorded.

The alpha reliability coefficient for each of the seven scales ranged from 0.75 to 0.95. The high alpha number indicates the group of statements that related to the same scale. The reliability and validity of the results were obtained. The validity of the

original instrument was field tested among 680 responses from 13 countries, primarily the United States. The original 56 tested items were reduced to 42 after factor analysis and internal consistency reliability analysis were conducted. Reliability was conducted using Cronbachs alpha coefficient and, the correlations ranged from *r* =.12 to .31 between the attitude scale and the other six psychosocial scales. In addition regression coefficients ranged from B = .00 to .23. Reliability of the instrument was consistent with 680 responses. Using a reliable and valid instrument was an important component of this study to help determine predictors of achievement and satisfaction.

With the approval, the DELES statements were slightly revised to make the statements more suitable for high school students and the language that they were more accustomed to. For example, instead of using 'distance education' in the survey statement, 'online learning' was used. Appendix D provides the list of original and slightly revised DELES statements.

There was no cost for the survey. Representatives from TCET administered and provided a website for both the pre and post-surveys for the participants to access. The participants' code was used for both surveys in obtain the data. Participants took the pre-survey prior to enrolling in the online course and the post-survey after completing the online course.

Procedures of the Study

Permission to perform this study was obtained from the Institutional Review Board of Liberty University (Appendix A) and from the CTE District's Board of Education. The online survey was revised under the direction of representatives from TCET and URL addresses were formulated (Appendix D). The instructors were given

the option of one of three dates offered by the online vendor, and chose the online course. Although the online courses were six weeks in length, the start dates varied for each CTE program. There was also a concern that there would not be enough laptop computers available at one time.

The researcher made a presentation about the study to each of the CTE programs approximately one week prior to their schedule online course start date. They were allowed to ask statements and clarify any issues. Since the participants were of high school age, the TCET and the Institutional Review Board required that the participants and their parents sign a letter of consent in order to complete the surveys and participate in the study. A consent form was explained and given to each student at that time and they were asked to return the form within a week, signed by them and their parents (Appendix B). Parents were provided with the opportunity to ask statements and receive answers within a reasonable amount of time. The parents and students were ensured that their identity would be kept confidential by replacing student names with a personal identification code. The signed form indicated that they gave permission to participate in the study. Forms were collected from all participants with the required signatures. Parents or students that chose not to participate were given alternative assignments by their instructor.

Once the signed consent forms were received, the technology assistant and adult education coordinator provided participants with a laptop computer called a netbook with Internet access to those that asked to borrow one. Participants that wanted to borrow a district laptop were asked to have them and their parent sign a written agreement (Appendix B). While in class, all of the participants were then showed how to officially

enroll in their online course by the technology assistant. The online course was set up internally by the adult education coordinator and with Ed2go (Education to Go, 2010). While still in class, participants were then asked to take the pre-survey. The web site address was provided to the participants. The researcher arranged the payment of the course tuition as CTE programs enrolled in their online course.

The semester one study was conducted first. There were 24 Nursing CTE student participants in the study. The semester one study was conducted first to help determine any problem areas or changes that would be needed for the remaining CTE programs. While in class during a designated scheduled time, each participant enrolled in the online course through the Internet and then took the revised pre-DELES. The pre-survey provided demographic information including GPAs. The CTE instructor encouraged the students' participation and shared positive experiences from their own online courses that they had taken. The students were informed that their performance would be monitored occasionally and if they needed assistance, to please ask. Participants then proceeded in taking their online course as instructed for the following six weeks.

In the mean time, the results of the pre-survey were collected from TCET by the researcher. The data was provided to the researcher electronically in Excel format at various times throughout the study. The survey indicated a problem area. The problem was that student's apparently were confused on what to use for their name in the pre-survey. The researcher told the instructors to replace each name with a number but it was forgotten. A majority of the participants either used their email address or school identification number. The problem was easily corrected by replacing the email addresses and identification numbers with the participants' personal identification code to

be used in the study. For the remaining online courses, the instructions were made clear to use the special code assigned by their instructor and an assistant that was familiar with the process was made available to eliminate any confusion. After the pre-survey results were received, the instructor was able to effectively confirm the demographics and identify any missing data. Information such as GPA was asked on the pre-survey. Any missing information, such as a few GPAs, or incorrect responses, was later collected by the instructor or district guidance counselor and provided to the researcher. The researcher inputted the information on the Excel document and updated it as the participants completed the process.

At the end of the course an additional two weeks were provided to the students to complete their assignments. With administrator access, the CTE instructor and adult education coordinator were able to obtain a final grade for each of the participants. Utilizing the students' personal code, the numerical grades were then given to the researcher to record into the Excel document. At an arranged time during class and just after the completion of the online course, all of the participants then completed the revised online DELES post-survey.

Upon the completion of the semester one study and after a few procedural changes were made, the main study participants from the Culinary Arts, Baking and Pastry, Health Science, Cooperative Education, Early Childhood Education and Pre-Veterinary Science participated in their online courses. Although the online course was at the discretion of the instructor, it was asked if they would consider an Ed2go class for consistency. Fortunately all of the participating instructors identified an online Ed2go course that was appropriate for their CTE program. The instructor also had the option to

select one of several start dates during the spring 2011 semester. After the instructors identified the course and the start date, a schedule was developed and shared with all the CTE participating instructors. The staff members that were involved included the researcher, CTE instructors and the coordinator for adult education. The adult education division offered Ed2go (Education to Go, 2010) online courses and therefore the adult education coordinator, had experience in setting up the online courses with the vendor. The coordinator assisted with setting up laptops with Internet capabilities for those participants that wanted to borrow one and attended the first orientation of every CTE program to ensure that all the CTE students were properly enrolled in their CTE online course.

Research Design

This quantitative study used a correlational design to investigate the extent of which the DELES and GPAs can predict high school CTE student's online course grades and satisfaction. Similar studies had similar approaches. A study conducted by Bell (2007) studied the relationship of twelve variables including GPA to predict the students' achievement in a variety of asynchronous web-based online courses. A correlation was conducted with each of the twelve variables and the students' final online course grade. The correlations *r*, were considered significant at a p value of .05. Since the all of the correlations were significant, a multiple regression was then conducted. In another study by Peters (2000), a multivariate prediction model and correlation coefficients were used to predict the best set of predictor variables among 28 variables to study their relationship with achievement in a college course.

Data Analysis

This study on CTE students enrolled in online courses used IBM SPSS software to conduct a bivariate correlation and standard multiple regression procedures to test the hypotheses. To determine the extent that the six DELES scales can predict online course grades for high school CTE students, descriptive statistic were first conducted to identify the means and standard deviations. Preliminary analyses were conducted to indicate if there were any violations of the assumptions of multicollinearity, normality and extreme outliers by conducting collinearity diagnostics, bivariate correlations, normal p-plots and scatter plots for each six predictor variables. A histogram was generated to determine normality for online course grades. A standard multiple regression analysis was then conducted to determine the extent of which the DELES can predict students' online course grades.

To determine the extent that GPA can predict high school CTE students' online course grades, a bivariate regression was conducted. Correlational research can determine if two variables are correlated and if they are, the results can use a variable to predict the other variable (Ary, Jacobs, Razavieh, & Sorensen, 2006). First descriptive statistics were conducted to identify the means and standard deviations. To check for assumption, a scatter plot was generated to determine the assumption of homoscedasticity and normality. To determine if online course grades could be determined by GPA, a bivariate regression was conducted. The determination will be used using a two-tailed significance based on a 95% confident level. The value ranging from +1 to -1, indicates the strength of the relationship with 0 indicating no relationship, .10 to .29 a small relationship, .30 to .49 a medium relationship and .50 to 1.0 a large relationship (Ary et al., 2006).

To determine the extent that the six DELES scales can predict high school CTE students' satisfaction based on the seventh DELES scale of student satisfaction, descriptive statistics was first conducted to obtain means and standard deviations. Preliminary analyses were conducted to indicate if there were any violations of the assumptions of multicollinearity, normality, tolerance and extreme outliers by conducting bivariate correlations. To indicate if multicollinearity was violated a collinearity diagnostic tests using SPSS will be used to determine the tolerance, Variance Inflation Factor (VIF) and condition indexes. The tolerance values should be less than .10, VIF values under 10 and condition indexes under 15 to determine that there were no violations of multicollinearity.

To test the assumption of normality, a Normal P-Plot of Regression Standardized Residuals were conducted for each of the seven DELES variables and to test the assumption that there were no extreme outliers, scatterplots were generated for each of the seven variables of the DELES. Upon determining if there were any violations of assumptions, a standard multiple regression analysis was conducted to determine the linear combination of the DELES equation. Coefficients were used to determine the significance of each predictor.

Restatement of Methodology

In summary, this quantitative study used a correlational research design using a bivariate and multiple regression analysis to determine the extent of which the DELES and GPAs can predict students' online achievement and the extent that the DELES can predict student satisfaction. Preliminary tests were conducted to ensure that there were no violations of the assumptions of multicollinearity, normality, and extreme outliers.

The data provided statistical information to determine the relationships and prediction of each variable of interest.

CHAPTER FOUR: RESULTS

Restatement of the Purpose

The purpose of this study was to determine the extent that GPAs and six scales in the DELES can predict high school CTE students' online course grades, and to determine the extent that the six DELES scales can predict student satisfaction, the seventh DELES scale. The DELES seven scales include; instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, student autonomy, and student satisfaction. Participants enrolled in one of six 6-week online courses that were selected by their instructor and provided by Ed2go (Education to Go, 2010). This study is necessary because there are very few research studies at the secondary level to help evaluate the effectiveness of online learning and to identify predictors of success. The results will provide additional information to educators, researchers, course developers and other stakeholders on the effectiveness of online learning.

The following three research statements were investigated:

1. To what extent can a linear combination of DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy can statistically predict high school CTE students' online course grades?
2. To what extent can high school CTE students' GPA statistically predict online course grades?
3. To what extent can the six DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning,

active learning, and student autonomy statistically predict high school CTE students' satisfaction?

The Null Hypothesis includes:

Null Hypothesis (H^O1): A linear combination of DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy cannot statistically predict high school CTE students' online course grades.

Null Hypothesis (H^O2): High school CTE students' GPA cannot statistically predict online course grades.

Null Hypothesis (H^O3): The six DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy cannot statistically predict high school CTE students' satisfaction.

The data was based on high school CTE online course grades, results from seven DELES scales and students' GPA. The results for each research question are described in this chapter. The study analysis was based on the combination of the first and second semester participants. There were a total of 114 participants. There were 32 males and 82 female participants. Of the 114 participants, 30 participants were classified as special education students. The remaining 84 participants were indicated as regular education students. Overall the results indicated that 91 (80%) of the participants passed their online course grade with a course grade of 60 or better and 23 (20%) of the participants failed.

Research Question One

The first research question for this study was to determine the extent that the linear combination of the six DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning and student autonomy could predict online course grades for high school CTE students. Table 1 provides the descriptive statistics for Online Course Grades and each of 6 DELES Scales for the 114 participants. The minimum and maximum values differ because of the number of statements related to each scale. For example the DELES survey consisted of 8 statements focused on instructional support. Each statement was valued '1 = never', '2 = seldom', '3 = sometimes', '4 = often' and '5 = always', therefore for the 8 statements for the instructor support scale there were a possible minimum score of 8 and a maximum score of 40.

Table 1

Descriptive Statistics of Grades and 6 DELES Scales (N=114)

Variable	Minimum	Maximum	Mean	Std. Dev.
Grades	22.00	100	75.09	18.36
Instructor Support	8.00	40.00	25.83	9.52
Student Interaction	6.00	30.00	15.02	6.95
Personal Relevance	7.00	35.00	21.57	7.81
Authentic Learning	5.00	25.00	16.79	5.62
Active Learning	3.00	15.00	10.24	3.42
Student Autonomy	5.00	25.00	17.45	5.40

Preliminary analyses were conducted to indicate if there were any violations of the assumptions of multicollinearity, normality, and extreme outliers. To indicate if multicollinearity was violated, the tolerance, VIF and condition indices were evaluated from a Collinearity Diagnostics table generated from SPSS. The tolerance values for each of the six DELES scales ranged from .24 to .70, which is not less than .20; thus, further verifying that the assumption is not violated. This was verified by the VIF values which ranged from 1.4 to 4.0 which are under 10 suggesting that the assumption of no multicollinearity is tenable (Tabachnick & Fidell, 2007). The condition indices indicated values ranging 6.7 to 18.3. Two of the six variables were over a value of 15 which indicates possible multicollinearity problems but none were over 30 which suggest serious multicollinearity problems. Based on the results of the tests, the assumption of no multicollinearity was tenable.

To test the assumption of normality, a Normal P-Plot of Regression Standardized Residuals was examined for each of the six variables indicated in the DELES and online course grades. For all Normal P-Plots, the points lied in reasonably straight lines,

therefore, the assumption of normality was found tenable. In addition, a histogram was generated for online course grades. The histogram did not indicate a strong symmetrical, bell-shaped curved and had a negative skew (Figure 1). To interpret the significance of the skewness, a standardized coefficient was calculated by the online course grades skewness of -.752 divide by the standard error of skewness .226 (Table 2). Since the value significance of the skewness was -3.32 and greater than positive or negative 2, the distribution was interpreted as severely skewed. The Kurtosis was described as Leptokurtic and had a value of -.47 which is within positive or negative 2 and considered normal.

In an attempt to obtain a normal distribution, Tabachnick and Fidell (2007) suggested for a negatively skewed distribution a Reflect and Logarithm Formula; new variable = LGIO (K-old variable) where K = largest possible value +1. Using SPSS's Transform command and the new transformed data, the results indicated a p = .000 for the Kolmogorov-Sminmov and Shapiro-Wilk tests. Since the value was not greater or equal to .05, the transformed data still did not have a normal distribution.

Although a normal distribution was not obtained, a study was conducted to determine the minimum sample size for multiple regression for grade predictors and found that a sample size of 50 was appropriate (Sawyer, 1984). Using a sample size calculator for multiple regression it was determined that at a alpha level of .05, with 6 predictors, a .15 medium effect size with a desired statistical power level of .8 that a minimum sample size of 97 was needed for this study. According to Tabachnick and Fidell (2007) normality is not always required for analysis and indicated that with large sample sizes, the skewness is not as important as the sample size and appearance of

distribution. Since this study exceeded the minimum sample size by 17 participants, the distribution was considerable tenable, but results were used with caution.

Figure 1. Histogram of Online Course Grades

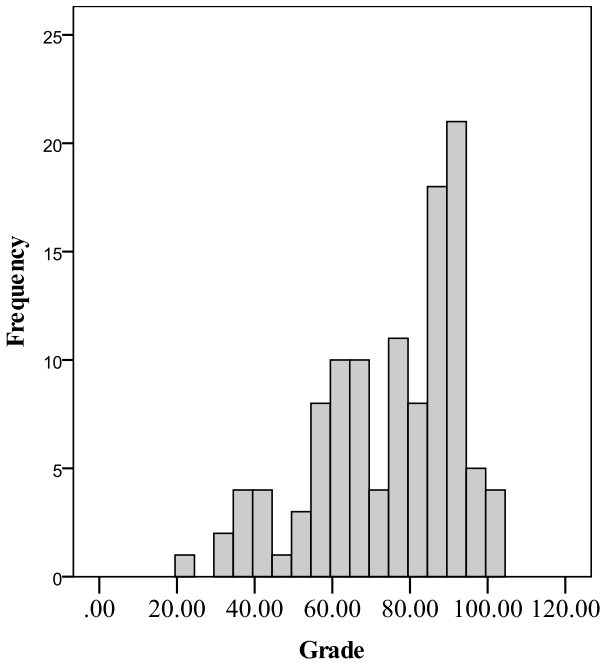

Table 2

Skewness & Kurtosis of Online Course Grades

	Statistics (Stat)					Skewness		Kurtosis	
	N	Min	Max	Mean	Std. Dev	Stat	Std. Error	Stat	Std. Error
Grade	114	22	100	75.09	18.36	-.752	.226	.214	.449

To test the assumption that there were no extreme outliers, scatterplots were generated for each of the six DELES scales. All of the scatter plots appeared to be contained and had no indication of extreme outliers, however a Mahalanobis Distances test was conducted and indicated with a df = 6 at p=.001, the critical value was 22.46. The results indicated that there were 2 outliers that were over the critical value; 24.2 and 26.2. However, the maximum value of Cook's distance was only .194, indicating that the outliers would not improperly influencing the model therefore the assumption of no extreme outliers was found tenable.

A standard multiple regression analysis was used to determine the extent of the six DELES scales to predict online course grades. Results indicated that the linear combination of the DELES scales did not significantly predicted grades, $R^2 = .08$, *adj* $R^2 = .04$, $F = (6,107) = 1.72$ $p = .12$. The multiple correlation coefficient is .29. This model explained approximately 8% of the variance in online course grades can be accounted for by the linear combination of the six DELES scales.

This research question was to determine the extent of which the six DELES scales can predict online course grades. After descriptive statistics, test for violations of assumptions and a standard multiple regression analysis was conducted, it was found that

the linear combination of the DELES scales did not predicted grades as a .05 level of significance and therefore, there was ample evidence that the researcher failed to reject the null hypothesis. The six DELES scales cannot statistically predict high school CTE students' online course grades.

Research Question Two

The second research question was to determine GPA can predict high school CTE students' online course grades. There were 114 CTE participants in this study overall; however, two students were homeschooled and did not have a GPA, and, therefore there were 112 participants for this research question as indicated in the summary statistics. Based on the descriptive statistics the online course grade (M=75.12, SD=18.44) had the highest grade at 100 and the lowest at 22. The GPA (M=2.75, SD=.51) had the highest GPA at 3.95 and lowest GPA at 1.5.

A scatter plot was generated to determine the assumption of homoscedasticity and linearity. The scatter plot indicated that the assumption of homoscedasticity and linearity were tenable. The assumption of normality for each variable was evaluated using the Shapiro-Wilk tests. The results of tests indicated that all of the significant values ranged from .06 to .878 which are greater than .05, and therefore the data was normal. In addition a histogram was generated to determine normality for online course grades. As indicated in question one, the results of the online course grades indicated a negative skewed distribution, however the sample size (N=112) appeared to be appropriate according to Sawyer's (1984) study on sample size for regression of predictor variables. By using a sample size calculator for regression it was determined that at an alpha level of .05, with 1 predictor, a .15 medium effect size with a desired statistical power level of

.8 that a minimum sample size of 105 was needed for this study. In addition, Tabachnick and Fidell (2007) indicated that the skewness wasn't as important as the sample size and appearance of distribution. Since this study exceeded the minimum sample size with 114 participants and the distribution looks somewhat normal, the normality for grades was consider to be tenable, however, any results were used with caution.

A bivariate regression analysis (Table 3) was conducted to provide a summary of the regression analysis for predicting online course grades *(N = 112).* The regression equation for predicting online course grades was, *Online Course Grade* = 61.06 + $5.11_{GradePointAverage}$. Accuracy in predicting online course grades is very low. The coefficient of determination is .02; therefore, only 2% of the variation in the online course grades is explained by GPA. The 95% confidence interval for the slope was -1.6 to 11.8.

Table 3

Summary of Regression Analysis for Online Course Grades (N = 112)

Model	B	SE B	β
1 (Constant)	61.06	9.49	
GPA	5.11	3.39	.142

Note. r = .14; r^2 = .02.

Pearson's correlation coefficient (r) = .14, p =.13 (Table 4) indicates a small relationship based on Cohen (1988) determination. Based on a .05 significance level, there was significant evidence to not to reject the null hypothesis and concluded that GPAs (M = 2.75, SD = .51) cannot statistically predict online course grades (M = 75.12, SD = 18.44) r = .14, F (1, 110) = 2.27, p <.05.

Table 4

Bivariate Regression Correlation Test of GPAs and Online Course Grades (N=112)

		GPA	Grade
GPA	Pearson Correlation	1	.142
	Sig. (2-tailed)		.135
Grade	Pearson Correlation	.142	
	Sig. (2-tailed)	.135	

This research question was to determine the extent of which GPAs can predict online course grades. After descriptive statistics was generated, tests for violations of assumptions and a bivariate regression were conducted, the results indicating that there was very little relationship. Based on these tests, there was significant evidence the researcher failed to reject the null hypothesis and conclude that that high school CTE students' GPA cannot statistically predict online course grades.

Research Question Three

The third analysis was conducted to determine the extent that the six DELES scales; instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy can predict high school CTE students' satisfaction. Table 1 (N=114) indicates the descriptive statistics for each 6 DELES scales; instructor support (M=25.83, SD=9.52), student interaction and collaboration (M=15.02, SD=6.95), personal relevance (M=21.57, SD=7.81), authentic learning (M=16.79, SD=5.62), active learning (M=10.24, SD=3.42), and student autonomy (M=17.45, SD=5.40). For the seventh DELES scale, student satisfaction

(*M*=18.92, *SD*=9.11), the descriptive statistics indicate a minimum score of 8 and a maximum score of 40 indicating that there were 8 DELES statements related to satisfaction.

Preliminary analyses were conducted to indicate if there were any violations of the assumptions of multicollinearity, normality, and extreme outliers. To indicate if multicollinearity was violated, the tolerance, VIF and condition indices were evaluated from a Collinearity Diagnostics table in SPSS. The tolerance values for each of the seven DELES scales ranged from .24 to .70, which are not less than .20; thus, further verifying that the assumption is not violated. This was verified by the VIF values which ranged from 1.4 to 4.0 which are under 10 suggesting that the assumption of no multicollinearity is tenable (Tabachnick & Fidell, 2007). The condition indices indicated values ranging from 6.7 to 18.3. Two of the six variables were over a value of 15 which indicates possible multicollinearity problems but none were over 30 which suggest serious multicollinearity problems. Based on the results of the tests, the assumption of no multicollinearity is tenable.

To test the assumption of normality, a Normal P-Plot of Regression Standardized Residuals was conducted for each of the seven DELES variables. For all seven, Normal P-Plots of Regression Standardized Residuals were examined. The points lied in reasonably straight lines, therefore, the assumption of normality was found tenable.

To test the assumption that there were no extreme outliers, scatterplots were generated for each of the seven variables of the DELES. All of the scatter plots appeared to be contained and had no indication of extreme outliers, however a Mahalanobis Distances test was conducted and indicated with a df=6 at p=.001, *N*=114, the critical

value was 22.46. The results indicated that there were only 2 outliers that were over the critical value; 24.2 and 26.2. One outlier was greater than +/- 3.3, however, the maximum value of Cook's distance was only .194, with a cut off of 1; this indicated that the outliers would not improperly influencing the model (Tabachnick & Fidell, 2007), therefore the assumption of outliers was found to be tenable.

A standard multiple regression analysis was conducted for all the variables to be entered simultaneously. Results of the regression analysis indicated that the linear combination of six DELES scales; student autonomy, student interaction, instructor support, active learning, authentic learning and relevance, significantly predicted satisfaction, R^2 = .39, *adj* R^2 =.35, F = (6, 107) = 11.38, p < .01. The multiple correlation coefficient was .62. This model explained that approximately 39% of the variance in satisfaction can be accounted for by the linear combination of the six DELES scales. At the .05 level of significance, the model was significant at p = .000 and therefore the null hypothesis that DELES scales cannot statistically predict satisfaction is rejected.

For this regression equation, the coefficients determined that instructor support (t (107) = 2.42, p = .01), authentic learning (t (107) = -1.98, p = .05) and student autonomy (t (107) = 3.63, p = .00) made significant contributions to the prediction of satisfaction. Table 5 shows the bivariate, partial, and beta correlations of the predictor variables with satisfaction. This indicates that there was a significant positive relationship between students' satisfaction and instructor support, authentic learning and student autonomy. These findings suggest that students with high perceptions of these 3 variables were more satisfied with their online experience. The results also indicated that the regression coefficients of the other variables were not significant. This suggests that

there was no positive or significant relationship between satisfaction and the remaining variables; personal relevance, student interaction and collaboration and active learning. For this model, the regression equation was *Satisfaction* = .617 + $.224_{InstructorSupport}$ - $.427_{authentic\ learning}$ + $.667_{student\ autonomy}$.

Table 5

Summary of Regression Analysis for Satisfaction (N = 114)

Variable	B	SE B	β
Constant (Satisfaction)	.617	.277	
Instructor Support	.224	.092	.234
Student Interaction	-.127	.118	-.097
Personal Relevance	.282	.177	.242
Authentic Learning	-.457	.230	-.282
Active Learning	.427	.352	.160
Student Autonomy	.667	.183	.395

To determine the extent that six DELES scales can predict student satisfaction, descriptive statistics, violations of assumptions, standard multiple regression analysis and t tests were conducted. The findings suggest that students with high perceptions of authentic learning, student autonomy and instructor support are more satisfied with their online experience. For this research question, the null hypothesis is rejected and therefore concluded that the six DELES scores can statistically predict high school CTE students' satisfaction.

Summary

A standard multiple regression analysis was conducted to determine if the six psychosocial DELES scales could predict satisfaction and online course grades and a bivariate regression analysis was used to determine if GPA could predict online course grades. The results concluded that the six DELES scales and GPA could not statistically

predict online course grades. In determining if the six DELES scales can predict student satisfaction, analysis revealed that instructor support, authentic learning and student autonomy had a significant relationship with satisfaction. The remaining three scales; student interaction and collaboration, personal relevance, and active learning had little or no relationship with satisfaction. Overall, for two of the three hypotheses, there was significant evidence that the researcher failed to reject the null hypotheses; high school CTE students' online course grades cannot be predicted by the DELES or by GPAs. However, the third hypothesis was rejected and therefore the DELES scales can predict student satisfaction. More detailed explanations and findings are described in the next chapter.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary of the Problem

Brief Introduction

Online learning has the potential to transform education by improving instruction and the quality of education for all students while lowering cost (Lips, 2010). There are many advantages to online learning such as working at one's own pace, however, there are also challenges and concerns such as the quality of online courses and meeting seat time requirements (Zwang, 2011). Despite challenges and concerns, online learning continues to experience significant growth at the secondary level, going from 45,000 students in 2000 to over one million in 2007 (Christensen et al., 2008). This growth is expected to continue as it has been predicted that "in less than 10 years, 50% of the nation's secondary courses will be taken over the Internet" (ACTE, 2010, p. 2).

Online learning appears to be making advancements into secondary education and could become an option to meet the challenges that many CTE students face. For many school districts, increasing academic requirements and standardized testing are necessary for graduation (Gewertz, 2010). Therefore, more of the students' time is spent on meeting these new requirements and less time is available for electives (Christensen et al. 2008). Very few elective credits are required for graduation, and courses such as CTE are often counted as elective credits. In addition, career type programs such as CTE, often take up a large portion of the students' school day. Unfortunately the time needed to ensure that students complete their required academic courses and standardized tests, lessens their ability to enroll in CTE while in high school. Assuming online learning is an effective delivery method of instruction, it is important that all students can achieve

and therefore educators need to be able to identify those variables that can predict success and satisfaction in online achievement since online education is much different from traditional face-to-face instruction (Lips, 2010).

Having the ability to predict online achievement is a necessity in order to provide students with the opportunity to take CTE programs at the secondary level. As the United States is experiencing high dropout rates at the secondary and post-secondary levels, President Obama has stated that we not only have to prepare students for college but also a career, stating that every student needs to graduate from high school and acquire a meaningful post-secondary credential (Harvard Graduate School of Education, 2011). One important component in preparing students for college and career is CTE. The Pathways to Prosperity report (Harvard Graduate School of Education, 2011) states that "today's best CTE programs do a better job of preparing students for college and career than traditional academic-only program" (p. 24) and there is "compelling evidence that vocational education that integrates work and learning is a superior way to learn" (p. 20).

Online learning is an option to extend the students day in order to meet high school graduation requirements and still have time available to enroll in CTE. Typically CTE can take up all most half of the student's instructional day. Through a blended approach of online and classroom instruction, a portion of the CTE curriculum could be taught online and taken beyond the school day, in essence extending the school day while allowing the time needed to meet graduation requirements. The problem is that there "are a limited number of studies of the effectiveness of K-12 online learning" (Bamford,

2011, p. 24) and therefore, limited information on whether online learning could effectively take the place of traditional face-to-face instruction.

Purpose

The purpose of this study was to identify variables that can predict online learning to add to the body of knowledge of online learning at the secondary level. Specifically, this study determined if six scales of the DELES and the students' GPA can predict students' online course grades and also determined if the DELES could predict student satisfaction. To determine predictors of online learning is important because online learning is different from traditional face-to-face instruction (Lips, 2010) and therefore research at the secondary level is a necessity in order to develop the most effective online learning environment.

Participants

For the purpose of this study, the participants consisted of 114 junior and senior high school participants enrolled in seven CTE programs at a CTE school district in a rural part of New Jersey during the spring of 2011. The seven CTE programs consisted of Nursing, Health Science, Pre-Veterinary Science, Culinary Arts, Baking and Pastry, Early Childhood Education and Cooperative Education. Students in each CTE program participated in an online course chosen by their CTE instructor and related to their CTE program. The average GPA was 2.75 with the lowest at 1.50 and highest at 3.95 on a 4.0 grading scale. There were 32 males and 82 female participants. Of the 114 participants, 30 participants were classified as special education students. The remaining 84 participants were indicated as regular education students.

The CTE participants enrolled in one of seven online courses by Ed2go (Education to Go, 2010) that was selected by their CTE instructor. There were 38 participants that enrolled in the Resume Writing Workshop, 24 participants in the HIPAA course, 17 participants in the Beginning Writer's Workshop, 9 participants in the Introduction to Natural Health and Healing course, 11 participants in the Teaching Pre-School course and 15 participants in the Become a Veterinary Assistant course. Each online course was six weeks in length consisting of 12 lessons and delivered by an online instructor. The district ensured that all the participants had or were able to borrow a laptop computer with Internet capabilities that they could access at home or at locations that had Internet access. It was required that the online course be taken beyond the school day or during down times at school. Instructors were given the ability to monitor the participants' progress through the Internet and to assist the students by acting as a mentor when they needed help.

Before enrolling in the online course, participants took a survey that focused on their face-to-face instruction based on the DELES statements but was later eliminated from the study. The survey, however, also consisted of several demographic statements such as GPA and if they have ever taken an online course. All the participants responded that they have never taken an online course. After the participants completed their online course, they took a post-original DELES survey of 42 Likert (Appendix D) statements that focused on the online learning environment experience.

Method Used

The researcher obtained the student's online course grade from Ed2go (Education to Go, 2010), the provider of the online courses. The participants' GPA was collected

from the DELES pre-survey statements. If participants did not know the answer, they were told to leave the response blank. The school guidance counselor or CTE instructor obtained GPAs for the participants that left a response blank.

The district's Board of Education and the Institutional Review Board approval was obtained prior to implementation. The instructors voluntarily had their CTE program students participate in the study. The instructors selected an Ed2go online course that they thought was appropriate for their CTE program. All the Ed2go online courses are at the seventh grade reading level and offered through post-secondary institutions.

One week prior to enrolling in the online course, the participants were given a brief introduction to the study and presented with a letter to be signed by their parent or guardian and themselves indicating that they would participate in the study. All but two of the participants were given approval to participate in the study. One parent asked that her child not participate in the study because of their child's previous experience with online learning, and another parent stated that their child did not want the extra work. Throughout the study several additional students dropped out because they had withdrawn from their CTE program for a lack of participation or personal issues that evolved.

The first semester study was conducted in January 2011 with 24 nursing participants in an online course. Upon the completion of the course in February 2011, 31 additional participants from Culinary Arts and Baking and Pastry enrolled in an online course. Their course ended in March 2011. The remaining 90 participants enrolled in an online course during the second semester in March and resumed in May.

Data was collected as students' completed the pre and post surveys and online course. The data were organized in the Microsoft Excel software program and later transported to IBM SPSS. The survey results were provided from the Texas Center for Educational Technology. The statistical tests that were conducted included descriptive statistics and standard multiple and bivariate regressions, t test and a number of assumption tests including scatter and Normal P-Plots.

Research Questions

The following three research statements were investigated:

1. To what extent can a linear combination of DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy can statistically predict high school CTE students' online course grades?
2. To what extent can high school CTE students' GPA statistically predict online course grades?
3. To what extent can the six DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy statistically predict high school CTE students' satisfaction?

Null Hypotheses

The research analyses were guided by the following null hypotheses:

Null Hypothesis (H^O1): A linear combination of DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning,

active learning, and student autonomy cannot statistically predict high school CTE students' online course grades.

Null Hypothesis (H^O2): High school CTE students' GPA cannot statistically predict online course grades.

Null Hypothesis (H^O3): The six DELES scales for instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning, and student autonomy cannot statistically predict high school CTE students' satisfaction?

Summary of Results

The results of this study provided information on predicting student achievement and satisfaction in online learning. The results indicated that GPAs and the six DELES scales; instructor support, student interaction and collaboration, personal relevance, authentic learning, active learning and student autonomy cannot statistically predict online course grades and therefore the researcher failed to reject the null. In determining if the DELES could predict satisfaction, there was enough evidence to reject the null and therefore the DELES scales can statistically predict student satisfaction.

The researcher suggests that further research be conducted to determine the predictors of online achievement and satisfaction. Current research is not able to determine if online learning is an effective strategy for learning for all students and if there are specific predictors of effective learning and satisfaction. There are many theories of the characteristics of students that best achieve in online learning, but more research needs to be conducted. The results of this study differ from other studies conducted at the secondary level because this study was among CTE students and all students were asked to voluntarily participate.

Limitations

There are limitations to this study of online learning. Limitations include but not limited to, the delivery and expectation of the online course, the quality, difficulty and availability of the online course, quality of the instructor, the level of instructor mentorship, the inability to compare online with face-to-face instruction and the student population. The implications of these limitations can help redefine future research and will be relevant to design considerations.

The delivery and expectation of the online course were limitations. Students were asked to voluntarily participate in the online course. They were expected to complete the course as extra work or in lieu of other time spent in their CTE program. Several of the teachers provided extra credit for taking the course while others did not. Participants express interest when they were first introduced to the study but later expressed that the experience only added to the heavy load of work that was already expected from them. The disadvantages cited of online learning has been that students need more self discipline (Picciano & Seaman, 2009) and parent support (Butler, 2010) in order to achieve in online learning. The participants that were concerned about extra work or did not have the self discipline may have impacted their satisfaction and achievement in their online course. In addition, some face-to-face instructors encouraged student participation more than other instructors, and therefore their level of support may have impacted the results. Students may need some specific skill training such as time management training in order to be successful.

The level of difficulty, availability and quality of the online course are limitations. It can be assumed that the Ed2go (Education to Go, 2010) online courses were developed

with the intention of adults would enroll in the courses. All of the online courses relied heavily on reading which is time consuming and can be unsatisfactory to CTE students who are often attracted to CTE because of the hands-on experiences. There was difficulty in finding technical type online courses related to the CTE programs, especially at the high school level. This vendor was chosen because all of their online courses were consistent in length, format and procedures and although limited, there were options that related to the participating CTE programs. Depending on the course content, the level of engagement varied and they seemed to deliver content by reading resources and websites, rather than video clips, classroom discussions and games for example. The quality of the online courses could greatly influence their efforts and therefore their grade and satisfaction with the online learning environment. The quality of online courses is being addressed by agencies such as the North American Council for Online Learning (NACOL) which provided a publication on national standards of quality online courses.

The quality of the instructor may also be a limitation. Although for each course a brief biography of the instructor was provided along with a picture, there was indication the instructor's ability to teach online. Teaching online students is different than traditional face-to-face instruction (Brown & Corkill, 2004). According to (Jackman & Swan, n.d.) ineffective instructors often include too much text and do not engage students enough. The qualifications to teach online courses vary (Davis, 2010) from none to the completion of a course to learn how to teach online. Unfortunately few colleges of education are offering these courses or teaching the skills to be an effective online instructor (Clayton, 2010). A study at the post-secondary level of college instructors and administrators indicated that pedagogical competency of online instructors will

significantly affect the success of online courses in the future and predicted that online instructors will require some type of training (Bonk & Kim, 2006). The effectiveness of the instructor may impact the students' satisfaction and achievement of online learning.

The level of mentorship by the participants' CTE instructor was another limitation. Several of the instructors were actively involved in keeping participants on task but several others were less engaging. In a blended type online learning environment, the instructor should act as a coach, keep students on track, and help teach students time management skills (Furger, 2005). The researcher observed that the instructors that were monitoring participants' activities online appeared to be more successful in keeping participants on task and assisting them. Other instructors that did not monitor their students' activities were not as successful in keeping students on task. These students were often several assignments behind. A few of the instructors reported that the students need to have time management skills in order to be successful and that many are lacking in these skills. The level of mentoring and assistance by the participants' instructor could also influence their success and satisfaction in online learning.

The ability to compare traditional face-to-face instruction and online learning is another limitation. Because of the students' schedule and the lack of topic areas, there was not an appropriate method in dividing the classes to compare the two groups. Students were expected to take the online course outside of the classroom and therefore would a void of instructional time for the online students while face-to-face student received the same instruction. The idea to have all students participate in the study was

the most appropriate and fair way to deliver the study. This also eliminated any errors in comparison groups.

The DELES may also be a limitation. The DELES was designed to determine post-secondary students' satisfaction with the online learning environment. The survey had 42 Likert statements that students responded as a value of 1 for 'never' to a maximum value of 5 as 'always' for each statement. Although representatives from TCET stated that the survey may be appropriate for high school students if they could handle a seventh grade reading level, there was no indication whether the statements were appropriate for high school students, if the number of statements were too many for high school students to answer, or if they valued the same scales. The desires of satisfaction at the post-secondary level may be different from students at the high school level. Students' prior experience in learning was all based on traditional face-to-face instruction whereas the survey does not indicate if the survey is to be used for first-timers or for students that have had past experiences in online learning.

The student population was also a limitation. This study focused on high school students enrolled in CTE in an affluent rural area of N.J. The students chose to enroll and had the ability to enroll in a CTE program based on their schedule and meeting their high school graduation requirements. In addition, the sample population was only 25% of the entire CTE school district and overall less than 10%, of all junior and senior high school students from the county that could have possibly enrolled in a CTE program or online course. Therefore the results are narrowly skewed to a specific population and cannot be generalized for the entire population.

Implications and Recommendations

This research study determined if the six psychosocial scales of the DELES and GPA could predict online course grades and if the DELES survey could determine satisfaction with the online learning environment. There are many factors that could impact the results of this study. The results concluded that the DELES scales or students GPAs could not predict high school CTE students' online course grades. However, the DELES could predict student satisfaction.

Students that had high GPAs or high DELES scores did equally as well and equally as poor of those with lower GPAs or low DELES scores. This implies that all students can do equally well with online learning and that a students' overall GPA or DELES score is not a good predictor for student achievement. However, these results are unlike the findings at the post-secondary level. GPAs have been found to be a very good predictor for online achievement at the post-secondary level. For example, Gerlich et al. (2009) found that GPAs were the only significant predictor for online courses among three predictors and Peters (2000) found that GPAs were one of the best indicators among 28 predictor variables. In light of related literature, GPAs should continue to be studied to determine why they may not have been a good predictor to determine student achievement at the secondary level but is a good predictor at the post-secondary level.

This study also determined that DELES scales could statistically predict student satisfaction. The 8 DELES satisfaction statements had a value range from 8 to 40. A mean score of 18.92 implies that the student satisfaction was a little beyond the response of '3 = sometimes' or that there were about equal amount of students that responded with '1 = never' and '2= seldom' as there were for '4 =often' and '5 =always'. The findings however, determined that there was a significant positive relationship between student

satisfaction with instructor support, authentic learning and autonomy. These findings suggest that students with high perceptions of instructor support, authentic learning and autonomy are more satisfied with their online experience. The satisfaction statements indicated that students thought the online learning was interesting, exciting, worthwhile and satisfying. The statements implied that students enjoyed the experience and look forward to other opportunities.

Of the most significant predictors to attribute to the regression equation of satisfaction was instructor support. The 8 DELES instructor support statements had a value range from 8 to 40. A mean score of 25.83 implies that the average responses was close to '4 =often' with a value of 28 which was more than '1=never', '2=seldom' or '3=sometimes' responses but not '5=always'. The DELES survey statements implied that students with high DELES scores had an instructor that asked statements, found time to answer their statements, was helpful, gave valuable feedback , was easy to contact and encouraged participation were more satisfied. Online learning experiences are better than traditional courses because students can receive feedback that is immediate and learning can be more engaging (Maki & Maki, 2003). A series of regression analysis was conducted by Hiltz (1993) to predict grades and satisfaction in online courses and found that students that were more satisfied had high ratings for having access to the instructor. A study by Adbous and Yen (2010) indicated student to instructor interactions was able to predict student satisfaction and final online course grades. Students' perception of their quality of instructor have been able to predict student satisfaction with the online learning environment according to Artino (2007).

Another predictor variable that made a significant contribution to the regression equation was authentic learning. The 5 DELES authentic learning statements had a value range from 5 to 25. The mean score of 16.79 implies that students average responses were '3=sometimes' with a value of 15 or there were equal amount of students that responded with '1=never' and '2=seldom' and with '4=often' and '5='always'. The DELES statements implied that students had the opportunity to study real situations and real world problems and issues. Solving and applying issues to real world problems is a great motivator and makes the material more meaningful (Curtis, 2001). For this study, students that had high DELES scores for satisfaction implied that they had high expectations of being able to solve real world problems and issues. The desire for authentic learning could be tied in with students that desire CTE which focus on real world hands-on problems and activities on a daily basis. According to Hyslop (2009), CTE's involvement in business and industry provides links between student learning and the needs of the workforce as well as providing engaging applied learning to real world problems and issues.

Student autonomy was also a significant contribution to the satisfaction regression equation. The 5 DELES student autonomy statements had a value range from 5 to 25. A mean score of 17.45 implies that students average responses were on the average between the '3=sometimes' with a value of 15 to '4=often' with a value of 20. The DELES statements addressed students' desire to make their own decisions about how and when they learned which has been considered as an attractive feature of online learning. The statements also implied that students liked to be in control of their own learning. One study by Maki and Maki (2003) investigated variables that affect learning and satisfaction

in online and traditional college courses and found that students that enjoyed working independently were more satisfied with online learning. In addition, a study by Hiltz (1993) found that students that had higher ratings for course convenience were more satisfied. A model was formed to examine the relationships of student autonomy, course structure, computer technology experience and satisfaction and found that student autonomy and satisfaction were related with student achievement (Calvin, 2005). Therefore students that have high expectations of autonomy were more satisfied with the online learning environment.

In addition to researching predictor variables for satisfaction and online course achievement at the secondary level, other considerations should also be investigated when developing a research design. Several considerations include comparison groups, comparing online and face-to-face instruction, qualitative and quantitative studies, unifying delivery strategies and comparing course quality. Different student populations should be considered in future research. This study consisted of about 25% of the students that had an IEP and considered as special education students. Future research should consider students' gender, age, and their disabilities to better understand the predictors of student achievement and effective online learning. In addition, to generalize results to a larger population of students, studies should be conducted with a broad spectrum of students including those that have not chosen to enroll in CTE.

Comparing online and face-to-face instruction will determine the differences and similarities of the specific predictors in both environments. In addition, since instructor support appears to be a significant contributor to student satisfaction, having the same instructor for online and face-to-face instruction in a blended approach would help focus

on predictor variables. If online learning is truly different, we must identify those predictors of success and satisfaction for student achievement.

Conducting qualitative and quantitative studies will help enhance research findings. Participants, both students and instructors, may be more honest and offer more information in a qualitative type research than a quantitative study such as a Likert survey. For this study, the researcher received important feedback from students and instructors on their online learning experiences that were qualitative in nature and were not recognized in this quantitative study but may have been of importance. Several instructors indicated that students needed to learn time management skills and students expressed that they needed more of an incentive to do well.

When working with large sample sizes with a number of instructors and disciplines, it may be important to unify the delivery of the online course as much as possible. The students are guided by their CTE instructor. CTE instructors that may be disinterested or were not actively engaged in the process may heavily impact the results of achievement. Instructors were given the opportunity to monitor the students' progress throughout the course through the Internet but very few did. In addition, incentives for the students such as extra credit or college credit should be offered and unified. Some instructors gave incentives and others did not which may have impacted the results.

The quality of the course is also of importance for future research. Comparing course quality and features may be helpful in determining student achievement and satisfaction. Features of online courses such as being addressed by the International Association for K-12 Online Learning should be considered as an important feature in a

research design. The impact of the quality of the course would be worthwhile for further research.

Although future research is essential to determine the effectiveness of online learning among high school students, this study adds to the existing body of knowledge and literature review on predictor variables of student achievement and satisfaction with the online learning. With the limited number of secondary studies, these results will provide educators, practitioners, course developers and other stakeholders with the additional information to identify predictors of online learning and provide considerations for research in order to ensure the most effective learning for all students.

Summary

The purpose of this study was to determine if the DELES and high school GPAs can statistically predict high school CTE students online course achievement and if the DELES can statistically predict student satisfaction. The participants included 114 high school juniors and seniors enrolled in seven CTE programs. They participated in one of six related Ed2go (Education to Go, 2010) six-week online courses taken beyond the school day. Several of the limitations included the delivery of the online course, the quality of the online course, and the level of instructor mentorship. For this study, it was determined that the seven scales of the DELES and GPAs cannot statistically predict online course grades, therefore the researcher failed to reject the null hypotheses. In determining if the DELES can predict student satisfaction, the results indicated that instructor support, authentic learning and student autonomy had a statistically significant relationship with student satisfaction. The remaining three scales; relevance, active learning, and student interaction, indicated that there was little or no relationship with

student satisfaction. Additional research is necessary in order to determine predictors of student achievement in online learning for students in secondary education.

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APPENDIX A

9/07 **RESEARCH EXEMPTION REQUEST** Ref. # _____

Liberty University: Committee on the Use of Human Research Subjects

1. Project Title: Predictor of Career and Technical Education high school student's achievement in related online courses.

2. Please list all sources of funding. If no outside funding is used, state "unfunded":
Unfunded for research study. Allocated grant funds from Carl D. Perkins grant are being used to provided laptop computer and online services.

3a. Principal Investigator(s) *[Must be a Liberty faculty member or investigator authorized by the Chair of the Institutional Review Board. If a student is the principal investigator, the student must have a faculty sponsor. Include contact information for both the student and the faculty sponsor as appropriate]*:

Kimberly Metz
Superintendent
Name and Title

Phone, E-mail, correspondence address

3b. Faculty Sponsor

Dr. Mark Alan Lamport, Assistant Professor
Name and Title

Phone Email: School of Education
Dept., Phone, E-mail address

Anticipated Duration of Study: Dec. 1, 2010 (From) May 30, 2011 (To)

4. Are you affiliated with Liberty University? YES X NO ☐

If so, in what capacity? Graduate Student

5. Do you intend to use LU students, staff or faculty as participants in your study? If you do not intend to use LU participants in your study, please check "no" and proceed directly to item 6.

YES ☐ NO X

If so, please list the department and/classes you hope to enlist and the number of participants you would like to enroll. _____

In order to process your request to use LU subjects, we must ensure that you have contacted the appropriate department and gained permission to collect data from them.

Signature of Department Chair:

Mark A. Lamport, Ph.D. 31 January 2011

_____ _____

Department Chair Signature(s) Date

6. Briefly describe the purpose of the study.
   The purpose of this study is to determine the correlation of four independent variables to predict the achievement of the students' online course grade. The students will be enrolled in a Career and Technical Education (CTE) program in an established public school approved by the New Jersey Department of Education. As part of the study, students will be asked to enroll in a related online course such as resume writing that has been established by an online provider. The student's classroom CTE instructor will act as a mentor to help guide the student through their first online course experience. The students' online course grade will be compared to four independent variables; their satisfaction with the online environment, grade point average, gender and educational classification as special or regular education student. Students will be asked to complete a pre and post Distance Education Learning Environment Survey by the Texas Center for Education Technology (TCET) to determine their online satisfaction with the online learning environment upon completing their first established online course (attachment C). The pre/post surveys asks students statements that compare their learning style preferences in a traditional setting and their perception of the learning environment to their experiences of the online learning environment upon completing the online course. The overall purpose is to determine if all students can achieve an online course and what are the likely variables that will determine the student's success in achieving a passing grade including their GPA, gender, educational classification and their satisfaction with the online learning environment.

7. Provide a lay language description of the procedures of the study. Address ethical issues involved in the study (See the Avoiding Pitfalls in section of the IRB website for helpful suggestions) and how you will handle them. For example, consider issues such as how subject consent will be obtained (or explain why the study meets waiver guidelines for informed consent), how the data will be acquired, and how the data will be stored confidentially once it is collected. Please attach pertinent supporting documents: all questionnaires, survey instruments, interview statements and/or data collection instruments, consent forms, and any research proposal submitted for funding.

Since the participants are junior and seniors in high school and are minors, their parent or guardian will be asked to complete a consent form (attachment A). The data will be collected by TCET (survey), the student and if needed, the district's counseling department if the student does not know their current GPA. The data will be stored confidentially on the researcher's computer. This is only accessible by the researcher using pass codes and kept in a locked office. A consent waiver from TCET will also be signed to ensure confidentiality (attached C). Once all the data is collected, names will be converted to substituting codes and the names will be destroyed. Federal regulations require research related data be stored for a minimum of 3 years after the study is completed.

The CTE instructors have approved an appropriate online course such as the Ed2go online resume workshop (attachment D). All the students in the identified programs will be asked to participate in the study. Participation in the online course will require the student to spend time beyond the school day and therefore, instructors will provide extra credit for those students that are willing to participate in the online course. The online course is not a requirement but encouraged. Their parents or guardian will be sent a consent form for their approval informing them of the study, providing them with an opportunity to ask statements or request that their child not participates in the study (attachment A). Students will also be required to sign the consent form in order to participate. Student participants will be provided with a laptop computer and Internet access. Permission will be received (attachment B). They will complete a pre-survey (attached C) that is conducted online by TCET prior to enrolling in the online course. Additional statements on their gender, grade point average and educational classification as regular or special education will be acquired through the survey or counseling office if needed. A post-survey will be given upon completion of the course (attachment C). Student's final grades will be recorded in the data with the other information already obtained with substituting identification code for each participant. The data will then be analyzed.

8. Will subject's data be gathered anonymously? YES ☐ NO X (only at beginning)
Upon gathering the data from each participant, all existing names will be substituted by their instructor with an individual identification number to ensure that information cannot be traced back to the student. The instructors have access to the data and can code it to ensure that data is correlated properly and is provided to the researcher anonymously. The number of participants in the study will be an adequate number to ensure that there are no singletons that can be traced back to the participant. This includes an equal representation of gender and students that are categorized as special or regular education. There are an expected total of ninety participants.

9. Please describe the subjects you intend to recruit. For example, minors under age 18, adults 18 and over, students, etc. Also, please describe your recruitment procedures. How will you find participants for your study? How will you contact them? Please be explicit.

Considered as minors, the subjects are junior and senior high students that are enrolled in high school CTE programs. All the students in the CTE programs will be asked to participate. Parents and guardians will be provided with a written document that explains that they have the opportunity to speak to the researcher by phone or by email for additional information or to request that their child not participate in the study. All students and their parents will be required to give written consent to participate in the study. (Attachment A). The District's Board of Education has been informed and has agreed upon the study at the October 2010 Board of Education meeting.

FOR ALL APPLICANTS:
I have read the Human Subjects *"Research Exemption Request Guidelines"*.

_____ _____

Principal Investigator Signature(s) Date

_____ _____

Faculty Sponsor (If applicable) Date

LIBERTY UNIVERSITY

SCHOOL OF EDUCATION

DOCTORATE OF EDUCATION

Research Consultant Form: Quantitative Research

When submitting your manuscript to a research consultant for review, please complete and submit the following form. This form should be no longer than 1-3 pages. Keep your descriptions brief.

Candidate's Name and e-mail: Kimberly F. Metz and kmetz@liberty.edu
Chair's Name and e-mail: Dr. Mark Alan Lamport, malamport@liberty.edu
Title: Assistant Professor of Education, Instructional Mentor, School of Education
Purpose/ Problem Statement: The purpose of this study is to investigate the achievement of related online CTE courses for high school CTE students enrolled in CTE programs. The objective is to compare four independent variables with the students' online course grade to determine the effectiveness of online learning for high school CTE students.

Research Question #1	Is there a statistically significant relationship between high school CTE students' Grade Point Averages and their online course grades?
Hypothesis (es) #1	Null Hypothesis (H^O1): There will be no statistically significant relationship between high school Grade Point Average and their online course grades.
Independent Variable and Measurement	The independent variable is the student's Grade Point Average.
Dependent Variable and Measurement	The participants online course grade. The measurement is a numeric or alphabetic grade.
Research Design	The multiple regression design will be used.
Analysis	The analysis will be inferential statistics.
Setting	A Career and Technical Education high school in New Jersey.
Participants	Ninety junior and senior high school students enrolled in Career and Technical Education and a related online course.

Brief Description of Procedures	Permission will be received from the IRB of Liberty University and the CTE District Board of Education. A signed consent form allowing student permission will be obtained from each participant's parent and the participating students in the identified career and technical education programs. Students will be provided laptop computers and Internet access through approval from their parents. Upon approvals, students will take a revised pre-DELES survey electronically and then enroll during a designated time in a related online course. As part of the survey, students will use their student identification which will be transformed into an unidentifiable code. Data will be collected on the student's course grade along with the grade point average, gender, and their educational status of special or regular education. Upon completion of the program a revised post-DELES survey will be taken by the participants. Statistics will then be used analyze the data.

Research Question #2	Is there a statistically significant difference between male and female high school CTE students and their online course grades?
Hypothesis (es) #2	Null Hypothesis (H^O2) There will be no statistically significant relationship between high school CTE students' gender and their online course grade.
Independent Variable and Measurement	Participant's gender is the control variable. The measurements are statistics using the student's gender as male or female.
Dependent Variable and Measurement	The participants online course grade. The measurement is a numeric or alphabetic grade.
Research Design	The multiple regression research design will be used.
Analysis	The analysis will be inferential statistics.
Setting	A secondary Career and Technical Education school in New Jersey.
Participants	Ninety junior and senior high school students enrolled in Career and Technical Education and a related online course.
Brief Description of Procedures	Same as stated in the first research question.

Research Question #3	Is there a statistically significant difference in online course grades between high school CTE students that are classified as regular and special education?
Hypothesis (es) #3	Null Hypothesis (H^O3): There will be no statistically significant difference between students that are classified as special or regular education and their online course grade.

Independent Variable and Measurement	The independent variable is the student's educational classification as special or regular education. The measurement is either special or regular education.
Dependent Variable and Measurement	The participants online course grade. The measurement is the numeric or alphabetic grade.
Research Design	The multiple regression research design will be used.
Analysis	The analysis will be inferential statistics.
Setting	A secondary Career and Technical Education school in New Jersey.
Participants	Ninety junior and senior high school students enrolled in Career and Technical Education and a related online course.
Brief Description of Procedures	Same as previously stated in other statements.

Research Question #4	Is there a statistically significant relationship between high school CTE students' satisfaction with the online learning environment and participants' online course grades?
Hypothesis (es) #4	Null Hypothesis ($^{HO}4$): There will be no statistically significant difference between the student's online course grade with their satisfaction of the online learning environment.
Independent Variable and Measurement	The independent variables are students' satisfaction using the results from a pre and post revised DELES survey.
Dependent Variable and Measurement	The dependent variable is the participant's online course grade. The measurement is the numeric or alphabetic grade.
Research Design	The multiple regression research design will be used.
Analysis	The analysis will be inferential statistics.
Setting	A secondary Career and Technical Education school in New Jersey.
Participants	Ninety junior and senior high school students enrolled in Career and Technical Education and a related online course.
Brief Description of Procedures	Same as previously stated in other statements.

APPENDIX B

PARENT/ STUDENT CONSENT LETTER/FORM

Dear Parent,

Recently the New Jersey High School Redesign Committee recommended that every child experience an online course before they graduate from high school. Over 90% of colleges in the country provide online courses for meeting course requirements. Online learning is becoming an increasingly popular way of acquiring a college degree. To help prepare your child for lifelong learning options, the CTE program in which your child is enrolled in the district has been selected to be part of a research study. The purpose of this study is to determine if today's technology literate students enjoy the experience of learning online and to give your child the experience of learning online while their CTE instructor is there to support them. Your child will be asked to enroll in a short six to eight week online course during the 2010-11 school year that has been selected by their CTE instructor and that relates to their CTE program. We ask that you read this document for further details and ask any statements you may have before allowing your child to be in the study. The study is being conducted by the Superintendent of the CTE district.

Their current CTE instructor will act as their mentor, addressing any problems and coaching them through the online course. Through grant funds, the district will provide students with a lap top computer, cover the cost of online tuition and if needed, provide access to the Internet at your home for the duration of the course. A school technician will be available to ensure that your child is connected to the Internet and the online course. It is expected that the student will complete their online course requirements outside normal school hours, giving them the true experience of any time and any where education.

In addition to participating in the online course, your child will be asked to complete the attached pre and post-survey to help determine their satisfaction with their online learning experience. Other student data will be collected, which will include the participant's gender, grade point average, online course grade, their computer use, and whether they have an Individualized Educational Plan (IEP) or taken an online course previously. This is the extent of the data that will be collected and analyzed.

To protect the privacy and confidentiality of your child's information, each student's identification will be substituted with a code. There are minimal risks in participating in the study. The likelihood that your child's information will be released is minimal since students will be given a substituting code that only pertains to the study's data and the data will be kept private and stored securely under lock and key at all times in the district office. Records of names will be destroyed once all

the data is collected and recorded. Any reports or findings that may be published will not include any information that will make it possible to identify a participant.

It is my hope to determine if high school students of today can be successful within the online learning environment. If so, this will give the school district an opportunity to provide more hands-on experiences for students as they will learn some of the theory portion of their CTE program online. Your child's participation will give them the opportunity to experience an online course while their CTE instructor is available to assist them.

Participation in this study is voluntary. You and your child's decision whether or not to participate will not affect their CTE program grade in any way. If your child decides not to participate at any time, they can request to withdraw without affecting their CTE grade. The online course will be provided by a reputable and secure vendor that will enhance the students' program and provide them with an industry recognized certificate. The course information for your child is enclosed.

If you have any statements, please do not hesitate to call. If you would like to talk to someone other than me, you are encouraged to contact the Institutional Review Board.

Statement of Consent:

I have read the above information and provide my consent to allow my child to participate in the study.

Signature of parent or guardian:_____ Date: _____

Student's name that will be participating in the study_____

Student's School Identification Number _____

I agree to participate in the study described above

Student Signature _____Date:_____

You will be given a copy of this information to keep for your records.

Thank you,

Kim Metz, Superintendent

Netbook (Laptop Computer) Acceptable Use Agreement – SCHOOL COPY

CTE School District

This Acceptable Use Agreement is in addition to the regular acceptable use policy signed by all students. Therefore, all students must abide by the rules of both policies.

The netbook

Students will be provided with a netbook for their school use. The netbook is an extremely useful tool that when properly used can enhance your learning in many ways. Though the netbook can be used for many purposes, you must remember that its main purpose is as a learning tool. In order to ensure that you get the most out of your computer, we ask you to read this document carefully and observe the guidelines and policies within.

General information about your computer

All netbooks look similar to each other, so we have labeled both the netbook and the power cord. Please do not remove these labels. Your computer is your responsibility and no-one else's; if something happens to it, you will be held accountable. You should not loan your computer to anyone or allow your friends to use it: you will be held responsible for how your netbook is used, no matter who is using it. The netbooks are the school district's property they belong to the school. The school therefore has the right to ask you for your computer back at any time or to search through your computer's files. You will need to return your netbook when your class is complete.

If damaged (not due to normal wear and tear), lost or stolen, the replacement cost of each netbooks is $415. The student and/or parents will be responsible for this cost.

The following guidelines are to ensure that your netbook stays in good working order.

Students should:

- Keep the computer in a safe and clean place.
- Agree to not attempt to change hardware settings or non-cosmetic system software settings.
- Provide the school district with a police report in the event of fire or theft.
- Keep the netbook in a padded backpack.

The following guidelines must be respected to ensure fair use for all community members.

File Storage

All of the files you will be working with will be stored in one of these places your computer's hard drive and the district's server. Many of our students use jump drives, as well.

The server functions like a virtual hard drive. You will be able to store all of your work on your file space on the server and retrieve the files from home or from school whenever you need to. You will be provided with a password and a username that you will use to gain access to the server. Please do not share your password or username with anyone else, and do not try to log in using anyone else's password and username.

By using the server, the safety of your files will be ensured, and if your computer crashes or breaks, you will still be able to get to your work using these drives. Keep in mind, the server space should be used for educational purposes only. Do not use the server to store personal files such as movies, games, non-school related images, etc. Personal files and applications may be stored on your computer's hard drive; the school district is, however, not responsible for the loss of any of these files if your computer

crashes or breaks. Please be sure to save a copy of any and all important school work to the file server.

Connecting to the Internet

The entire school is covered by a high-speed wireless Internet network. All students will be able to access the Internet from anywhere within the school at any time. With all this, however, comes a degree of risk and of danger: there are things to avoid and general rules to abide by while online. Below is a list of some of the opportunities and limitations presented to you on the school's network. Here are some basic do's and don'ts of Internet communication.

Do

- Use clear and precise language whenever possible.
- Treat others as you'd like to be treated.
- Be polite and courteous, whether you are writing to a friend or to an instructor.
- Keep your correspondence (email, IM, etc.) brief and to the point.
- Respond to emails promptly to assure that information gets to where it needs to go.

Don't

- Use swear words.
- Include any explicit sexual content in your writings.
- Be rude or aggressive towards others.
- Send others offensive files or messages.
- Use the of the district's email account for resolving a personal feud.

Remember that all email can be read by the district's technology team and administration. Don't write anything you'd be afraid to show your parents or instructors.

Research

You will be able to browse hundreds of thousands of websites, each containing information which can be used in your school projects and personal learning. *Remember* that the information you view online is someone else's work, and that it is essential that you respect copyright laws. All material that is copied from any site must be properly recognized with a citation. **Plagiarism** will not be tolerated from any student.

Publishing to the Web

You or your instructors may wish to publish your work on the Internet for others to see. This is a great opportunity for you as a student as well as for people not directly involved in the district: it provides you and other students with a chance to share your work with the world, and it gives outsiders a view of what is going on here at school. Here are some basic do's and don'ts of publishing to the web.

- Only use your first name, if at all; never use your last name.
- Never share any personal information such as your address.
- Never use any copyrighted materials without proper permission and/or citation.

Gaming and other entertainment media

We understand that computers are not only great tools for learning, but for entertainment as well. However, we feel that gaming while at school would be distracting both to the gamer and to other students. Because of this, no gaming will be allowed by students while at the CTE school, unless the games being played have been specially approved by your

instructors. For the same reasons, listening to music and watching videos on your computers is also off-limits while in classes, unless directly related to your CTE program. And of course, no pornography will be allowed on the district's netbooks. If any student is found to have pornography, disciplinary action including possible loss of computer privileges will occur.

Chatting @ School

While many members of the district including faculty and staff use chat programs such as Chat, Adium, Twitter and others, learning how to use these while remaining a productive member of the community is of the utmost importance. Students should be aware that chatting during class time is a distraction, and instructors have the expectation that students who are asked to get off of a chat program will do so immediately and not have to be told again.

File Sharing and Downloading

In recent times, the use of the computer to share music, videos, games and other software has become very popular. The district's network does not support file sharing for non-educational purposes; no personal file sharing is allowed while connected to the district's network. This includes using Peer-to-Peer programs like Napster, Limewire and Kazaa, using BitTorrent, or sharing files with other students using USB-Keys or the server.

Using netbooks in Class

While the netbooks will be used in class often every day, there will be times when the instructors will ask that the netbooks are closed. Students are expected to close and/or put away the netbooks when asked. Failure to do so will result in disciplinary action.

Internet Access from Home

You will be able to use your netbooks on your home network, whether it is wireless or not. You may need to change settings on the computer between school and home if you are not able to connect.

Tech Support

If your netbook is not functioning properly, please report this to your instructor. Your instructor will contact the Help Desk who will come out to fix it. They will come in a timely fashion, but may not be out the same day as it is reported.

Other Network Restrictions

Do not attempt to "hack" websites while on the district network.

Do not attempt to log in as another person or to access another person's work, server space, or district email account.

Do not use the district's network for personal profit (for example, for selling personal products on sites like eBay) or for buying personal objects.

Do not host Internet-based multiplayer gaming sessions.

Students who do not follow the policies in this document may be subject to disciplinary action including possible loss of computer privileges.

A Warning . . . Off-line, there are many people that you can make friends with and learn from, and yet there also some people who would do you harm. The same is true of the online world; while most people are quite like you, some individuals out there have bad intentions. The district has Internet filters and security to prevent harmful pages from getting through, but no filter is perfect. We trust that you will make the right choices in

who you interact with and where you go online and will avoid potentially dangerous situations. Making good decisions is key to keeping yourself safe.

I have read the above policy; I have a copy of it, and will follow it accordingly:

Student Name (print):_____

Student Name (sign): _____

CTE Program: _____

Home School Name:_____

Netbook #: _____

Parent Signature: _____

Contact Ph/email: _____

APPENDIX C

Six Online Course Descriptions

C1: First Semester Study Online Course: Health Insurance Portability and Accountability Act (HIPAA)

Course Details

Are you a health care professional or considering a career in the health care industry? Do you provide products or services to a health care organization? If the answer to either of these statements is yes, then it is mandatory that you understand the requirements of HIPAA, ARRA, and HITECH compliance. This groundbreaking legislation requires all health care professionals to take careful steps to protect private information. But what exactly does HIPAA, ARRA, and HITECH require? In this course, we will demystify the compliance process. We will focus specifically on the Administrative Simplification portion of HIPAA, ARRA, and HITECH, starting by defining the lingo of HIPAA, ARRA, and HITECH and identifying the important players. Then we'll cover transactions, code sets, and identifiers, which are all key elements in electronic health care transmissions. We'll use real-world examples to help explain the Privacy Rule, which governs patient rights, disclosure of protected health information (PHI), business associates, and many other relationships within the health care industry. Since computers are an integral part of health care these days, we'll see how they fit into the Security Rule. We'll also examine administrative safeguards, physical safeguards, technical safeguards, and policy and procedure creation—all of which

are crucial components of the Security Rule. By the time you finish this course, you'll be confident and capable of implementing HIPAA, ARRA, and HITECH's requirements in your own organization. If you're just starting your career in the health care field, you'll have a priceless addition to your resume.

Syllabus

A new section of each course starts monthly. If enrolling in a series of two or more courses, please be sure to space the start date for each course at least two months apart. All courses run for six weeks, with a two-week grace period at the end. Two lessons are released each week for the six-week duration of the course. You do not have to be present when lessons are released. You will have access to all lessons until the course ends. However, the interactive discussion area that accompanies each lesson will automatically close two weeks after the lesson is released. As such, we strongly recommend that you complete each lesson within two weeks of its release. The final exam will be released on the same day as the last lesson. Once the final exam has been released, you will have two weeks to complete all of your course work, including the final exam.

Wednesday – Lesson 01. In our first lesson, we'll lay out the foundation of HIPAA so you'll understand the motivation behind the law. We'll focus specifically on the Administrative Simplification portion of HIPAA and give you a good idea of its goals. As with any law, noncompliance comes at a price. So we'll also take a look at the penalties involved for anyone who ignores HIPAA's requirements.

Friday – Lesson 02. HIPAA has a language all its own. To truly grasp the scope of the law, it's important that you become familiar with HIPAA's lingo and also its players—the various organizations involved in setting HIPAA standards. And that's what we'll work on in this lesson. By the time you finish, you'll understand HIPAA's jargon and be able to untangle its acronyms.

Wednesday – Lesson 03. It is time to put your newfound lingo to work. The overriding goal of HIPAA is to protect personal health information. In this lesson, we'll identify the 12 types of electronic transactions that HIPAA covers. We'll also take a peek at the code sets and identifiers used in these transactions. Transactions, code sets, and identifiers are key to your understanding of HIPAA. This lesson will put those pieces of the puzzle together.

Friday – Lesson 04. The Privacy Rule is another key element of HIPAA, and it has some core requirements. When you finish this lesson, you'll have a good understanding of those requirements as well as an overview of the Privacy Rule's relationship to other privacy laws. Privacy breaches can have far-reaching consequences, so we'll take a look at some examples to help emphasize the value of the Privacy Rule.

Wednesday – Lesson 05. Now that you understand the Privacy Rule, we'll take the next step and delve into the requirements for using and disclosing protected health information (PHI). HIPAA has two types of disclosures: required and permitted. At the end of this lesson, you'll understand the difference between the two. Another concept that figures

heavily into the entire HIPAA picture is *minimum necessary*. You'll see how this concept fits neatly into the issue of PHI disclosures.

Friday – Lesson 06. Under HIPAA, patients have seven fundamental privacy rights. And those rights are what we'll be examining in this lesson. You'll learn that included in HIPAA are careful steps to make sure patients have access to their own medical information and control over how it's disclosed. You'll also see how state laws can expand on HIPAA's provisions.

Wednesday – Lesson 07. The health care industry doesn't operate in a vacuum. Health care entities provide services through a network of relationships with other entities. We'll focus on those relationships in this lesson. We'll examine business relationships and learn how to recognize their differences. We'll also take a closer look at the business associate relationship from the perspective of contracts and liability.

Friday – Lesson 08. The Security Rule is the companion to HIPAA's Privacy Rule. In this lesson, we'll turn our attention to the concept of information security. Security has its own key terms, and we'll spend some time defining them so you'll be familiar with their meaning. We'll also address the various threats that exist when we electronically handle and transmit protected health information.

Wednesday – Lesson 09. Continuing the journey into HIPAA's Security Rule, in this lesson, we'll explore the Security Rule's fundamental approach to addressing security.

We'll examine the philosophy and principles behind the Security Rule. Then we'll go over the standards for implementation, and you'll learn which ones are required and which are simply addressable. We'll also take a look at some real-life security breaches, which should emphasize the need for good security practices.

Friday – Lesson 10. The Security Rule covers three major areas: administrative safeguards, physical safeguards, and technical safeguards. In this lesson, we'll focus on administrative safeguards. By the end of the lesson, you'll understand that administrative safeguards are actions, policies, and procedures designed to manage your security.

Wednesday – Lesson 11. In this lesson, we'll look at the physical and technical safeguards component of the Security Rule. We'll dig into their various standards and implementation specifications so you can see how they apply to your own organization. We'll also talk a bit about how the Security Rule and the Privacy Rule overlap.

Friday – Lesson 12. When it's time to begin creating your own policies and procedures to implement HIPAA, it helps to have a framework to follow. And that's what this lesson will give you: a description of the most common frameworks available to best suit you. We'll also look at some health care trends so you'll have an idea of what the future holds for HIPAA.

LOCATION: http://www.ed2go.com/

C2: Second Semester Online Courses: Resume Writing Workshop

Course Details Create an effective resume or improve the one you already have. Transform your resume into a powerful tool that will get you interviews. This workshop will lead you through a self-assessment series so you will have extensive knowledge about the product you are marketing YOU! Learn different resume formats and the advantages and disadvantages of each. Write an employment objective that shows potential employers that you have direction. Make the most of your work experience. Know what to reveal in a resume, and what to keep to yourself. Learn to overcome gaps in work history and age discrimination. Discover how to use references to your advantage. This course includes the use of online resumes and Internet Resume Secrets. This course is invaluable for anyone who wants to create their own resume, or learn how to write resumes and cover letters for profit.

Syllabus A new section of each course starts monthly. If enrolling in a series of two or more courses, please be sure to space the start date for each course at least two months apart. All courses run for six weeks, with a two-week grace period at the end. Two lessons are released each week for the six-week duration of the course. You do not have to be present when lessons are released. You will have access to all lessons until the course ends. However, the interactive discussion area that accompanies each lesson will automatically close two weeks after the lesson is released. As such, we strongly recommend that you complete each lesson within two weeks of its release.

The final exam will be released on the same day as the last lesson. Once the final exam has been released, you will have two weeks to complete all of your course work, including the final exam.

Wednesday – Lesson 01. In our first lesson, we're going to discuss what a resume is and why you need one. Then we'll go over the six sections of a resume: Heading, objective, education, work experience, special skills, and references, and you'll learn how job seekers utilize each one to market themselves to prospective employers. We'll finish up the lesson by discussing some other resources on the Internet where you can look over sample resume headings and objectives.

Friday – Lesson 02. Today, we'll outline the skills that you've developed in five areas of your life—work, education, internships, volunteering, and extracurricular activities. Then we'll edit those skills down to the ones that are most relevant to employment, and choose an important skill for each area. Next, we'll come up with personality traits, and narrow those down to the ones that are useful in a business setting. I'm going to ask you to list the three accomplishments that you're most proud of, and the skills that you used to make these goals come to fruition.

Wednesday – Lesson 03. In this lesson, we're going to cover the rules of resumes. For instance, a resume should be only one page, and it should be laser-printed or typeset by a professional printer, and it should be printed on bond paper. You're also going to learn what not to include on your resume, and why it's perfectly acceptable to use the word "I" on your resume if you so desire. We'll conclude the lesson with a discussion about *Truth in Resume Writing*. Through example, I'm going to demonstrate how to portray job duties in the best possible light without getting yourself into trouble.

Friday – Lesson 04. In Lesson 4, you'll learn about the most popular style of resume—the chronological resume. In this type of resume, you'll list work experience in reverse chronological order. Your current or last position is listed first in the work experience section of your resume. We'll discuss the advantages and disadvantages of this type of resume. You'll also learn how to minimize a gap in work history. Although many people will have a few small gaps in work history, too many gaps, and gaps that are too large will put prospective employers on alert.

Wednesday – Lesson 05. In this lesson, we're going to go over the other two resume formats—the functional resume and the hybrid—the combined resume. Although not as popular as the chronological resume, these resume formats do fulfill a need for some job seekers. Employees who are following a new direction in their career, or who don't have much experience for a particular position, may choose a functional format. You'll learn the differences between functional resumes and chronological ones, and as part of the lesson, we'll look at four people's chronological resumes and practice converting them into functional and combined resumes.

Friday – Lesson 06. In this lesson, we're going to concentrate on your resume. We'll discuss how to set up the heading of your resume and the options you have available to you when you're doing so. Then we'll look at some sample resume headings. You'll learn how to write a persuasive objective for your personal resume, and then we'll discuss career profiles and summaries of qualifications. We'll also go over examples of

objectives, career profiles, and summaries. Finally, we'll look at the education section of your resume and discuss what's included in an honors section.

Wednesday – Lesson 07. In this lesson, we're going to discuss references. We'll begin by looking at examples of two reference letters written by two different individuals. Then, we'll discuss how to request a reference letter, and take a look at a sample dialogue of this. We'll discuss the different people you could request a letter from, and take a look at the difference between a regular reference and a sealed reference. Later, we'll look at a sample reference sheet that you can use as a model to construct your own. We'll finish up with some examples of how you can refer to your references on your resume.

Friday – Lesson 08. In today's lesson, you'll learn how to turn job descriptions into advertising copy. Your resume is an advertisement for a product, and you are the product, and your potential employer is the customer. You need to express the features (actual description of your product) and the benefits (how it will help or aid the customer) of the product. You must be as persuasive and specific as possible when describing your features and benefits. Finally, we'll discuss company job descriptions and why they're important to you.

Wednesday – Lesson 09 - In today's lesson, you'll learn all about technical resumes (resumes for engineering, data processing, and other technical and management careers). We're going to discuss how these resumes differ from traditional resumes. You'll learn about buzzwords, and find out how to use them effectively on a technical resume. Then

you'll learn some writing tips for technical resumes, and we'll go over a recommended technical resume format. We'll finish up the lesson by looking over some examples of technical resumes—one chronological and one functional.

Friday – Lesson 10. In this lesson, you'll learn the three methods that employers use to locate a job candidate on the Internet. We're going to discuss resume banks, search engines, and newsgroups. I'll explain what you need in order to get Internet access, and the three versions you'll need in order to post your resume on the Web. We'll go over keywords and other online resume tips, and I'll explain why you need to protect yourself on the Internet, as well as ways to accomplish this. We'll finish up with a discussion about how to post your resume

Wednesday – Lesson 11. In Lesson 11, you're going to learn how to write an effective cover letter. I'll explain what a cover letter is, and when you'll need one. Then we'll go over the different parts of a cover letter, and look at several examples of them. Finally, we'll discuss the follow-up sentence that you might include in the closing of your cover letter and why it's important in your job search.

Friday – Lesson 12. Our final lesson is all about the new resume that you've been working on throughout this course. We're going to take one final critical look at it: Is your name centered at the top of the page? Is it highlighted by a larger font, bolding, or underlining? Is your objective highlighted, along with your education, college, and work experience? Were you consistent with font sizes, capitalization, spacing, and

punctuation? Is everything lined up vertically? The left-hand side of your resume should be lined up vertically, but the right-hand side should be ragged. Is your resume perfect with no typos or spelling errors? By the time you finish today's lesson, your resume will be ready to present to prospective employers.

LOCATION: http://www.ed2go.com/

C3: Second Semester Online Course: Beginning Writer's Workshop

Course Detail If you've always wanted to write but have no idea where to start, this course will demystify the process for you. You'll get a taste of the writing life, improve your writing skills, and develop new ways to stretch your creative muscles. This exciting, hands-on course for the creative writing novice is filled with challenging exercises, expert advice, and plenty of direct support and encouragement. As you work your way through the lessons, you'll develop your own short, creative fiction or nonfiction piece. Our emphasis in this course is on developing your skills through practice, so you'll spend more time writing than reading. You'll master important concepts by completing enjoyable writing exercises and assignments, and you'll discover a variety of strategies and techniques the pros use to develop characters, create a compelling point of view, build interest through dialogue, and add meaning to your stories.

Syllabus. A new section of each course starts monthly. If enrolling in a series of two or more courses, please be sure to space the start date for each course at least two months apart. All courses run for six weeks, with a two-week grace period at the end. Two lessons are released each week for the six-week duration of the course. You do not have to be present when lessons are released. You will have access to all lessons until the course ends. However, the interactive discussion area that accompanies each lesson will automatically close two weeks after the lesson is released. As such, we strongly recommend that you complete each lesson within two weeks of its release. The final exam will be released on the same day as the last lesson. Once the final exam has been

released, you will have two weeks to complete all of your course work, including the final exam.

Wednesday – Lesson 01. You'll jump right in and start writing in this first lesson, but with the permission to write as poorly as you want. This isn't school as you knew it! Today, you'll find out how to enjoy yourself while you write—when you're having fun, that's when the learning starts. You'll learn how to listen to your mind work so you can practice turning your thoughts into words. You'll discover that you're quite a complicated person and why it's all right to think of yourself as a writer.

Friday – Lesson 02. In today's lesson, you'll write even more as you practice writing description and capturing detail. More than that, you'll complete writing experiments that will help you discover what ideas and symbols reside in the things you write about. And you'll practice using description to capture emotion. By the end of the lesson, you'll have enough material to decide what you want to write about. You'll start work on a short, creative piece that you'll finish by the end of the class.

Wednesday – Lesson 03. Today, you'll explore the different forms that fiction and creative nonfiction can take. Form is the container that holds your ideas. Creative nonfiction is a new genre that offers you many terrific ways to explore your love of writing. To stimulate your creative side, I've also included a list of some odd forms you might try. You'll find out that you have the option of ignoring the decision about form for now, letting it emerge from your content as you write. It takes courage, but you can do it.

Friday – Lesson 04. Memorizing the major points of view is boring! Instead, you'll spend this lesson writing from each of the points of view, then learning about them afterward. You'll have a lot more fun that way. I'll show you how distance works in creative writing, and why your verb tense can make a big difference. This practice will give you as taste of each point of view option, and help you decide which you want to use in your own creative piece.

Wednesday – Lesson 05. In this lesson, you'll get a chance to play by exploring the concept of creativity. You'll find your own creative center and use it to come up with ideas that are better than you expected. You'll try a technique called "galumphing" to create a mini-story. You'll learn to take the attitude of a bricoleur so that you can make something out of nothing. You'll gain the knowledge you need to continually nurture your creative ability.

Friday – Lesson 06. You'd think the topic of revision would be dull and dry. The exact opposite is true. Revision is one of the most amazing tools a writer can use. Beyond learning the nuts and bolts of revision, you'll learn how revision is a process of discovery. Your creativity will constantly contribute while you evaluate your words using all your abilities. Come along for a bit of revelation.

Wednesday – Lesson 07. Here's where you'll learn why it's so easy to write poorly, and you'll discover some good ways to catch yourself when you do. You'll find out why

nouns are more powerful than adjectives and why a strong verb outshines a descriptive adverb. Next, we'll examine each step of the communication process and practice making dull sentences interesting. You'll learn a great technique for eliminating clichés and use the depths of your creative ability to write a powerful, original description.

Friday – Lesson 08. Every creative writer can use some tips about the logistics of dialogue. It's not easy to write what characters are thinking, avoid hedging words, use conflict to create interest, describe emotions, and always get your facts right. These techniques aren't typically taught in school, so it's helpful to learn them here. You'll practice fixing choppy sentences, and you'll begin to think about your readers and what they have to do with what you want to write.

Wednesday – Lesson 09. It's time to examine how the act of writing teaches you about yourself. You'll take a good look at the voices of your inner critics to see what they're really telling you. You'll discover whose voices you're listening to and write them "Unsent Letters" to tell them what you think about their messages. You'll try a writing exercise called "The Story of My Life" that will help you examine where you've been and where you'd like to go from here. Then you'll practice the "Ultimate Motivation" exercise to figure out what it takes to make your dreams come true.

Friday – Lesson 10. Today, you'll delve into the inner workings of stories. We'll explore the three basic building blocks of a plot. You'll try out several ways to make up a plot and learn how to write endings. We'll discuss the option of writing a story before you know

how it ends. It takes courage, but the result can be worth the bumpy ride. You'll explore how to move through time using summaries, scenes, and flashbacks. This lesson will help you understand why even simple stories can intrigue and hold your reader.

Wednesday – Lesson 11. All people have a lot in common. We share the same basic story. We're born, we struggle, and in the end, we die. Your job as a writer is to create characters that your readers feel similarities with. In this lesson, you'll practice developing characters and using dialogue. You'll learn how to pay attention to people—what makes them different and what makes them the same. I'll pass on some tips on writing good dialogue, and then you'll conduct an in-depth interview—with yourself!

Friday – Lesson 12. In our last lesson, we'll talk about the ways you'll inevitably doubt yourself as you write. You'll try out two exploratory writing exercises that will help you develop the trust you need to keep on writing. I'll have you consider the point of view of an alien living five million light years away. Humans have an odd habit of writing down events that may or may not have happened. Why do they like to write? What good does it do? How can they tell good writing from what isn't so good? From this perspective, you'll discover why the pursuit of meaning comes naturally to human beings. You'll get some good advice about steps you can take to continue to improve your writing, as well as explore publishing. In your final assignment, you'll share your short creative piece with me and your fellow students.

C4: Second Semester Online Course: Introduction to Natural Health and Healing

Course Detail Would you like to learn more about natural health but don't know where to start? If so, then this is the course for you! We'll discuss the various stages of health and illness, and you'll discover that true health means wholeness of the mind, body, and spirit. You'll start a personal health journal to evaluate your current lifestyle and observe how your behaviors can affect your health. We'll also explore naturopathy, which seeks ways for the body to heal itself. You'll find out about proper breathing techniques that enhance health, and you'll learn the value of hydrotherapy, diet, biorhythms, and fasting. We'll also examine using the power of the mind for healing the body--discussing brain function tests, visualization, and relaxation therapies. You'll see the great power of belief. Then we'll delve into vitamins, minerals, antioxidants, free radicals, and the basic requirements that constitute a healthy diet. After our talk, you'll be able to develop menus that improve health. We'll also look at herbal healing, aromatherapy, body therapies, massage techniques, osteopathy, chiropractic, T'ai Chi, reflexology, yoga, Feng Shui, therapeutic touch, natural remedies for common emergencies, and much more. By the end of this course, you'll have begun taking charge of your own health and healing!

Syllabus A new section of each course starts monthly. If enrolling in a series of two or more courses, please be sure to space the start date for each course at least two months apart. All courses run for six weeks, with a two-week grace period at the end. Two lessons are released each week for the six-week duration of the course. You do not have to be present when lessons are released. You will have access to all lessons until the course ends. However, the interactive discussion area that accompanies each lesson will

automatically close two weeks after the lesson is released. As such, we strongly recommend that you complete each lesson within two weeks of its release. The final exam will be released on the same day as the last lesson. Once the final exam has been released, you will have two weeks to complete all of your course work, including the final exam.

Wednesday – Lesson 01. In our first lesson, I'll introduce you to the principles of natural healing and we'll discuss the various stages of health and illness. You'll begin to understand that true health means wholeness of the mind, body, and spirit. You'll put together a personal health journal that will help you self-evaluate your current lifestyle. Throughout the course, you'll be able to use this to observe how your behaviors can affect your health.

Friday – Lesson 02. Today you'll learn all about naturopathy and its basic philosophy—seeking ways to help your body to heal itself. Then I'll teach you a valuable breathing technique that can enhance your heath. Finally, you'll learn the value of hydrotherapy, diet, biorhythms, and fasting.

Wednesday – Lesson 03. We'll explore ways to use the power of the mind and the placebo effect in this lesson. You'll begin to understand the power that your mind can have in healing your body. We'll talk about brain function tests, visualization, and relaxation therapies. Then you'll discover the power of belief.

Friday – Lesson 04. This lesson will teach you to look at nutrition and its healing effects. We'll explore basic nutrients, vitamins, minerals, antioxidants, and free radicals. You'll learn what basic requirement you need to promote a healthy diet. Then you'll learn how to develop menus to improve your health.

Wednesday - Lesson 05. In this lesson, we'll briefly explore the history of herbal healing. You'll have the opportunity to identify the most popular herbs and learn ways to prepare herbal mixtures. Then we'll explore herbal charts to help you to understand some of the most beneficial herbal remedies.

Friday – Lesson 06. Today, we'll explore aromatherapy. You'll not only learn about its benefits, but also how to blend oils for medicinal uses. You'll discover how to make and use poultices, compresses, tinctures, and infusions. We'll also go over some essential oil charts to help you create wonderful blends.

Wednesday – Lesson 07. Today, you'll discover the wonders of body therapies as we explore many of the most popular therapies and their benefits. We'll discuss massage techniques, osteopathy, chiropractic, T'ai Chi, reflexology, and yoga. You'll discover why the main theme of body therapies is to regain and maintain balance and well-being.

Friday – Lesson 08. In this lesson, you'll learn all about natural energy fields. We'll discuss how energy can be manipulated using magnets, TENS, Feng Shui, and Therapeutic Touch. You'll learn how to center your consciousness, and you'll have the

opportunity to try energy modulation. You'll even find out how to feel your own energy between your hands!

Wednesday – Lesson 09. Today, we'll talk about how to identify pollutants in your environment. We'll discuss indoor pollutants and ways to clean indoor air. We'll talk about methods to purify your drinking water and allergy proof your indoor spaces. This lesson will help you gain an understanding of the relationship between your immune system and the health of your surroundings.

Friday – Lesson 10. In today's lesson, you'll discover how to use natural remedies for common emergencies, illnesses and injuries. Some of the topics we'll discuss include treatments for cuts, bruises, fractures, burns, breathing emergencies, fainting, and travel illnesses.

Wednesday – Lesson 11. In this lesson, you'll begin to understand the effect that light, color, and music can have on your mood and behavior. You'll learn how to heal and relax by using practical applications of these therapies. You'll be able to use energies that are inherent in light, color, and sound to improve your overall well-being. We'll also discuss using chakras and colored light in healing.

Friday – Lesson 12. In our final lesson, you'll continue to learn how physical, emotional, and spiritual factors make up your whole being. You'll begin to understand the impact that these three sectors of your life can have on your stress level and healing rate.

Once you make that connection, you'll begin to take charge of your own health and healing! We'll finish up with a discussion on what to expect when going to a natural heath therapist.

C5: Second Semester Online Course: Teaching Preschool: A Year of Inspiring Lessons

Course Detail If you've been teaching preschoolers or are in the process of becoming a preschool instructor, you know what short attention spans preschoolers have. You've probably wondered how to structure your days to make the most of the way they learn. Up to now, crafting original and inspiring lesson plans may have been a daunting task, but not for much longer! In this course, you'll get equipped with a solid lesson plan template and lots of interchangeable activities to choose from—plenty of inspiration to take you and your students from September to May. You'll learn over 100 circle-discussion, art, literacy, fine and large motor skill, science, and music activities that you can take into your classroom right away. Then you can adopt the ideas just as they are or tweak them slightly to fit a variety of themes. Either way, you'll have ample material for crafting memorable, balanced, and engaging lesson plans. Whether you're already teaching or you're just investigating a career as an early childhood educator, you're sure to find the right mix of inspiration, motivation, and practical tips in this six-week course.

Syllabus A new section of each course starts monthly. If enrolling in a series of two or more courses, please be sure to space the start date for each course at least two months apart. All courses run for six weeks, with a two-week grace period at the end. Two lessons are released each week for the six-week duration of the course. You do not have to be present when lessons are released. You will have access to all lessons until the course ends. However, the interactive discussion area that accompanies each lesson will automatically close two weeks after the lesson is released. As such, we strongly

recommend that you complete each lesson within two weeks of its release. The final exam will be released on the same day as the last lesson. Once the final exam has been released, you will have two weeks to complete all of your course work, including the final exam.

Wednesday – Lesson 01. Have you ever thought about teaching children aged 2 to 5? Or maybe you already are and just want some fun, creative ideas to help you reach these students on their level. Either way, you've come to the right place. We're going to discover what preschool teaching is all about, what the typical preschooler is like, and the skills we need to cultivate to be successful instructors. It's a privilege to educate children at this age because these are the formative years that set the stage for all the K-12 learning to follow.

Friday – Lesson 02. A lot of people mistakenly think that preschool teaching is all about art projects and snack time. Nothing could be further from the truth—the best preschool classrooms are structured around solid, balanced lesson plans that challenge and motivate students to learn something new every day. In this lesson, we'll use my trusty lesson plan template, and we'll discuss its first four components—themes, circle discussions, literacy activities, and songs and fingerplays.

Wednesday – Lesson 03. Now that you know the first four components of our lesson plan template, are you ready to meet the rest? A balanced lesson plan also includes art projects, number sense activities, large and fine motor skill activities, dramatic play, and

science and discovery time. I know that sounds like a lot of activities to do during the week, but we'll be mixing it up every day to provide a balance of activities that stretch students' minds. See how we do just that in this lesson.

Friday – Lesson 04. There's something about going back to school in September. For us, it's an exciting time of year because we get to meet our new students. But students often have a lot of anxiety about going back to school. So in today's lesson, we'll talk about smart strategies to make the classroom transition easy on them. We'll also discuss some of my favorite activities built around the All About Me and My Family theme. This theme will take us through the first week of school, and we'll use it as a springboard to design all the other activities to fill that week's lesson plan template.

Wednesday – Lesson 05. October is a month of spooks and scares, but that doesn't mean that our lesson plans need to be in horrifying shape. On the contrary, October lends itself to some fun lesson plans around the Halloween theme. That's just what we'll be discussing today—are you ready to craft a week's worth of lessons around this spooktacular holiday? We'll discuss everything from the books to the art projects and dramatic play that complement Halloween.

Friday – Lesson 06. November is the month when we take some time to consider all that we have and how grateful we are for the wonderful things in our life. And in today's lesson, we'll build a week's worth of lesson plans around the Thanksgiving theme. Complete with science activities, fine and large motor skill ideas, and number sense

activities, we'll fill in our Thanksgiving week with a balance of educational and fun projects.

Wednesday – Lesson 07. If November is a month for being thankful, December is a month for grand-scale celebration. In this lesson, we'll craft a week's worth of lesson plans around the theme of Celebrations Around the World. We'll discover wonderful books, circle discussions, dramatic play ideas, and art projects that help us celebrate diversity and cultural exploration.

Friday – Lesson 08. Whether you live in a snowy climate or sunny Florida, you can probably appreciate the joys of winter. And that's the theme we'll plan a week's worth of lessons around for January. You'll be able to build your own winter wonderland at school with lesson plan ideas that incorporate number sense, discovery, games, and art projects. No passport necessary!

Wednesday – Lesson 09. It's always great to get a Valentine, and Valentine's Day is a fantastic time to incorporate some heart into the preschool classroom. Today we'll create a week's worth of Valentine's themed lesson plans. Covering everything from heart-y recipes to exciting art, number, and letter projects, we'll create a balanced lesson plan that won't leave you seeing red.

Friday – Lesson 10. March is often when we notice the sunshine and puffy clouds in the sky. That makes March the perfect time to plan a weather-themed week. In today's

lesson, we'll do just that—craft literacy, number sense, science, and motor skill activities around the weather. As we build balanced lesson plans in our trusty template, we just might see the lightning bolt of inspiration strike!

Wednesday – Lesson 11. April showers do lead to May flowers, but one of my favorite themes in April is all about the farm. Since spring is a time that brings birth and renewal in the natural world, what better time to teach students about animals and outdoor life? In today's lesson, we'll craft a variety of farm and animal-themed lesson plans that include art projects, science and discovery time, number activities, and circle discussions.

Friday – Lesson 12. May is the perfect time to pay tribute to some of our favorite people: the moms who love us. In today's lesson, we'll develop a week's worth of lesson plans around Mother's Day crafts, activities, games, books, and art projects that help us appreciate Mom. As we walk through these ideas, I'm sure you'll remember all over again why moms are so integral to students' success.

C6: Second Semester Online Course: Become a Veterinary Assistant

Course Detail Do you love animals? Have you ever thought about a career as a veterinary assistant? This course, taught by a practicing veterinarian and college instructor, will give you the information you need to prepare for work in veterinary hospitals. What vaccinations do cats and dogs really need and how often should they be given? What is the best way to control fleas? What do you do if your dog has a cut? What is the best way to deal with an emergency situation involving a pet? This course will answer all these statements and more.You'll learn about pet nutrition and a variety of health and safety issues. You'll understand how to treat and prevent parasites, including roundworms and heartworms. You'll even learn the facts of life, as it pertains to dogs and cats. You'll explore current thoughts on spaying and neutering, and how to deal with the very emotional issues of euthanasia, pet loss, and how best to assist clients in a time of need. Special lessons will target specific aspects of veterinary assistant duties. Did you know that a veterinary assistant needs to dispense medications just like a pharmacist? You'll learn how to interpret medical prescriptions that look like Greek scribbles to the untrained eye. You'll also understand the hazards of working in a veterinary setting so that you can protect yourself from x-ray exposure, infections carried by animals, and potential damage from teeth and claws. Veterinary hospitals are small businesses, not just places of medicine, so you will also gain a complete understanding of their economics how income is generated and where it goes. You will also explore marketing and communication because they are essential factors in making a business successful. Even if you are already employed in a veterinary hospital, you will find this course invaluable in helping you understand the reasoning behind decisions and

recommendations made by veterinarians. And if you're a pet owner, this course will help you better assess the quality of veterinary care your pets receive.

Syllabus A new section of each course starts monthly. If enrolling in a series of two or more courses, please be sure to space the start date for each course at least two months apart. All courses run for six weeks, with a two-week grace period at the end. Two lessons are released each week for the six-week duration of the course. You do not have to be present when lessons are released. You will have access to all lessons until the course ends. However, the interactive discussion area that accompanies each lesson will automatically close two weeks after the lesson is released. As such, we strongly recommend that you complete each lesson within two weeks of its release. The final exam will be released on the same day as the last lesson. Once the final exam has been released, you will have two weeks to complete all of your course work, including the final exam.

Wednesday – Lesson 01. Our first lesson will start way back at the beginning—you'll learn how ancient veterinary medicine evolved into the modern-day practice that you're accustomed to. You'll also learn why a veterinary assistant is just as important to the success of the practice as the veterinarian. In the second component of this lesson, you'll learn all about dog and cat reproduction. You'll learn the normal hormonal cycles and breeding times, and then delve into the benefits of sterilization.

Friday – Lesson 02. In this lesson, you'll learn how vaccines protect against disease. And just as important, you'll learn why they sometimes fail. We'll take a close look at how often vaccines should be given, why they may be ill-advised, and why vaccinosis is so controversial.

Wednesday – Lesson 03. Today, we'll talk about the importance of parasites that can infest both pets and people. You'll see the worms that live in the intestines, and also get acquainted with heartworm, a nasty guy that lives in the arteries. We'll explore how parasites infect people, what they do, and how to prevent their invasion.

Friday – Lesson 04. Have you ever wondered how to pick the best food for your pet? This lesson will give you the tools to make the right decision, and how best to pass the information on to your clients. We'll also talk about the role of prescription diets in pet health.

Wednesday – Lesson 05. This will certainly be the most emotional lesson in the entire course. The topic is euthanasia, and we'll look at it from the perspectives of both the client and the hospital employee. We'll explore the stages of grief that everyone goes through after a loss. You'll also see what the procedure entails, how to help a grieving client, and tools for assisting children with pet loss.

Friday – Lesson 06. In this lesson, you'll learn why a veterinary hospital can be a dangerous place. You'll see how X-rays, anesthetics, and certain drugs can harm you.

You'll finish this lesson with Economics 101, a glimpse into the cash flow of a typical veterinary hospital.

Wednesday – Lesson 07. This lesson will help you in a crisis. Designed like a short course in human first aid, this lesson will help you cope with almost any emergency, and we'll discuss ways that some emergencies can be prevented. There's even a segment on cardiopulmonary resuscitation, dog and cat style!

Friday – Lesson 08. What is the most important parasite affecting our pets? If you answered the flea, you're right. In this lesson, you'll learn all about this parasite that lives on the skin. You'll also hear about other crawling parasites that live in the skin (mange) and how they can be managed.

Wednesday – Lesson 09. Did you know that as a hospital employee, any advice you give could end up in a lawsuit? You'll find out how to handle these situations and, related to this, how to maintain client confidentiality. You'll round off your study on client communications with an introduction to client education programs.

Friday – Lesson 10. As soon as you're hired as a veterinary assistant, you'll be helping to prepare prescriptions. In this lesson, you'll find out how to do this correctly. You'll also learn about your role in keeping accurate medical records. We'll end the lesson with a short course on marketing, taking a close look at some of the best tools you can use to keep old clients and attract new ones.

Wednesday – Lesson 11. This lesson is the most cutting edge: Here, you'll learn all about alternative therapies that some veterinarians are applying in their practices, including acupuncture, homeopathy, herbs, and chiropractic care. And when it comes to pet food, is commercial, home-cooked, or raw the best choice? We'll examine the plusses and minuses of each possible diet.

Friday – Lesson 12. In our last lesson, we'll take a close look at animal behavior. You'll delve into how best to train puppies and kittens, and more importantly, how to share the information with your clients. At the end of the course, you'll see how everything you've learned can be put together for a comprehensive health plan covering everything from behavior, vaccinations, and nutrition to castration, euthanasia, and alternative therapies.

Course is provided by Ed2go: http://www.ed2go.com/

APPENDIX D

Distance Education Learning Environment Survey (DELES)

This survey contains 34 statements about practices that take place in this class, followed by eight statements regarding your opinion about distance education. There are no 'right' or 'wrong' answers. Your opinion is what is wanted on each item. Please think about how well each statement describes what this class is like for you.

Revised DELES Form on original pre-survey included the following statements;

1. Student ID:
2. If you know your Grade Point Average please indicate, otherwise leave blank.
3. Are you: Male or Female
4. Do you have an IEP (Individualized Educational Plan)? Yes or No
5. Have you ever taken an online course in the past? Yes or No
6. How many hours do you spend on the computer on a daily basis?

None Less than 1 hr. Between 1 to 2 hrs Between 2-4 hrs. More than 4 hrs.

All the statements were set up electronically and appear as the example below.

1. If I have an inquiry, the instuctor finds time to respond.	Never	Seldom	Sometimes	Often	Always

Original DELES Survey Statements with revised survey statements;

DELES Teacher Support Items

1. If I have an inquiry, the instructor finds time to respond.

   If I had a question, my online teacher found time to respond.
2. The instructor helps me identify problem areas in my study.

My online teacher helped me identify problem areas in my school work.

3. The instructor responds promptly to my statements.

   My online teacher responded promptly to my statements.

4. The instructor gives me valuable feedback on my assignments.

   My online teacher gave me helpful feedback on my assignments.

5. The instructor adequately addresses my statements.

   My online teacher satisfactorily answered my statements.

6. The instructor encourages my participation.

   My online teacher encouraged me to participate.

7. It is easy to contact the instructor.

   My online teacher is easy to contact.

8. The instructor provides me positive and negative feedback on my work.

   My online teacher provided me positive and negative comments to my class work.

DELES Student Interaction and Collaboration Items

9. I work with others.

   I worked with other students in the online class.

10. I relate my work to other's work.

    I compared my work to other online student's work.

11. I share information with other students.

    I shared information with other online students.

12. I discuss my ideas with other students

    I discussed my ideas with other online students.

13. I collaborate with other students in the class.

I collaborated with other students in the online class.

14. Group work is part of my activities.

    Group work was part of my online class activity.

DELES Personal Relevance Items

15. I can relate what I learn to my life outside of university.

    I can relate what I learned online to my life outside of school.

16. I am able to pursue topics that interest me.

    I was able to pursue topics that interest me in my online class.

17. I can connect my studies to my activities outside of class.

    I could connect my online studies to my activities outside of the online class.

18. I apply my everyday experience in class.

    I could apply my everyday experience in the online class.

19. I link class work to my life outside the university.

    I linked online class work to my life outside of school.

20. I learn things about the world outside of the university.

    I learned things about the world outside of the school.

21. I apply my out-of-class experience.

    I was able to apply my out-of-class experiences to my online class.

DELES Authentic Learning Items

22. I study real cases related to the class.

    I was given the opportunity to study real situations in my online class.

23. I use real facts in class activities.

    I was able to use real facts in online class activities.

24. I work on assignments that deal with real-world information.

    I had assignments in my online class that dealt with real-world situations.

25. I work with real examples.

    My online class used examples that were real.

26. I enter the real world of the topic of study.

    My online class topics of study are part of the real world.

DELES Active Learning Items

27. I explore my own strategies for learning.

    I was able to use my own strategies for learning in my online class.

28. I seek my own answers.

    I was able to seek my own answers in my online class.

29. I solve my own problems.

    I was able to solve my own problems that related to the online course.

DELES Student Autonomy Items

30. I make decisions about my learning.

    I was able to make my own decisions about my online learning.

31. I work during times I find convenient.

    I did work for my online class during times that were convenient.

32. I am in control of my learning.

    I found that I was in control of my online learning.

33. I play an important role in my learning.

    I played an important role in my online learning.

34. I approach learning in my own way.

I have approached online learning in my own way.

DELES Student Satisfaction Items

35. Distance education is stimulating.

    Online learning is interesting.

36. I prefer distance education.

    I prefer online education.

37. Distance education is exciting.

    Online learning is exciting.

38. Distance education is worth my time.

    Online learning was worth my time.

39. I enjoy studying by distance.

    I enjoyed online learning.

40. I look forward to learning by distance.

    I look forward to other online experiences.

41. I would enjoy my education more if all my classes were by distance.

    I would enjoy my education if all my classes were online.

42. I am satisfied with this class.

    I was satisfied with this online class.

<u>About INSIGHT the provider of the DELES Survey</u>

INSIGHT, the South Central Instrument Library and Data Repository, is an evaluation resource that serves a broad range of educational constituents. It consists of two distinct but interrelated components:

INSIGHT Instrument Library

The INSIGHT Instrument Library provides a centralized library of Web-enabled educational evaluation surveys and instruments, available for program/project evaluators in K-16 education.

INSIGHT Data Repository

The INSIGHT Data Repository is a research tool containing the accumulated historical record of administrations of evaluation instruments housed in the Instrument Library. It serves two purposes:

- Support of post-secondary research in educational technology
- Comparison data for instrument evaluation/administration

Key Features

Data security

Security features are an integral part of the INSIGHT Data Repository. Any/all identifying information is automatically removed before data can be included in the Repository, and the results of this automatic "sanitizing" are double-checked by an INSIGHT administrator.

Data aggregation

Every time an instrument is administered through the INSIGHT system, results are added to the INSIGHT Data Repository, for subsequent analysis by interested educational researchers.

Content Accessibility

The INSIGHT Instrument Library has been designed to be compatible with the widest possible variety of Web clients. With rare exceptions, all instruments are accessible for populations with special needs and assistive technologies.

High-capacity servers

The INSIGHT system is capable of supporting literally thousands of users, in hundreds of remote locations, simultaneously.

Low cost/no cost

Operation of the INSIGHT system was originally supported by a federally-funded Department of Education grant. Every effort will be made to accommodate users at little or no cost.

Features for Evaluators

"Hassle-free" administration

Any instrument within the library can be administered to any group, of any size, anywhere, at any time. The INSIGHT technical staff handles all mechanical details of the administration, freeing the evaluator to focus on the results of the evaluation process.

Summary Reports and Analyses

At the end of an administration, evaluators are provided with complete electronic copies of all data collected, as well as a variety of summary reports and simple statistical analyses on selected datasets.

Features for Instrument Creators

World-wide exposure/distribution/dissemination

Including an instrument in the INSIGHT Instrument Library provides an instrument with regional, sometimes even national exposure. This exposure supports the collection of large amounts of data from geographically and demographically diverse respondents.

Protection of intellectual property

Protection of intellectual property rights is a paramount concern of the INSIGHT Instrument Library. Inclusion of a survey instrument in the Library has no impact on existing intellectual property rights. Instrument creators simply grant a nonexclusive, unrestricted, but revocable, right to administer the instrument upon request. Any applicable copyright notices remain part of the instrument.

Features for Researchers

Cross-platform compatibility

Data extracted from the INSIGHT Repository are made available as a comma-delimited file, compatible with the widest possible range of analytical and database software.

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Terms of Use - Administration of Instruments

Insight System

Texas Center for Education Technology

University of North Texas

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2. TCET shall provide descriptive statistics at no charge to Instrument Users or Researchers within the Texas Center for Educational Technology region as defined by the U.S. Department of Education.
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4. TCET will make every reasonable effort to hold individual responses to the Assessment Instrument in confidence; however, TCET disclaims and Instrument Users agree to hold TCET harmless for any and all liability for an unauthorized breach in the integrity of TCET's computer system by a third-party.
5. Access to the general public is limited to the descriptive statistics; unrestricted access to the aggregate data in the Data Repository is granted on an individual basis to

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6. Researchers agree that any and all information relating to and collected on the TCET INSIGHT system that TCET permits Researchers to review shall be held in confidence. Furthermore, Researchers represent and warrant that they shall not distribute or reveal any or all of the information relating to or collected on the TCET Online Library to any third party without first allowing TCET to review any such distribution or revelation and obtaining prior written approval from TCET to make any such distribution or revelation. RESEARCHERS AGREE TO INDEMNIFY AND HOLD TCET HARMLESS FOR ANY AND ALL THIRD PARTY ACTIONS OR PROCEEDINGS THAT MAY ARISE DUE TO ANY UNAPPROVED DISTRIBUTION OF ANY OR ALL OF THE AGGREGATE DATA BY RESEARCHER.
7. TCET reserves the right to modify these terms upon thirty days written notice. Notwithstanding anything to the contrary, TCET reserves the right to modify these terms immediately if circumstances arise that require prompt action. TCET also reserves the right to institute administrative procedures as necessary to enforce these terms.

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