

High School Computer Class: Online vs. Face-to-Face Learning

Christina L. Smith

University of South Florida

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Introduction

Distance learning is growing at a compound annual growth rate of 33 percent (Oblinger, Barone, Hawkins, 2001). The demand for virtual learning among our youth in public K-12 school is overwhelming. As we expand into the 21st century we rely on technology for day to day living and the skills required in the workplace. Virtual education provides additional courses that are not always readily available at their local school. This study will compare instructional design, academic achievement and perceptions of high schools students participating in a Career and Technical Education (CTE) high school computer course online vs. a traditional classroom educational setting. Although the main focus of this study is not centered on learner's outcome the results should parallel similar research which indicates no significance differences in the outcome for high school learners in a virtual course. However, research has found significant differences in the instructional design, methods, and perceptions of the students in delivery of curriculum virtually.

Purpose of Study

The innovation of technology has transformed how one learns. This study will look at secondary students who are adapting to the changes that technology brings in education. The research found is limited among adolescents in public education. The purpose of this study will provide the needed research in high school courses and provide a better understanding of how we can improve student's ability to learn in both educational environments. This study is unique in that there is limited research in comparing the same two CTE computer course at a high school level instructionally and academically. Quantitatively, the research will compare the results of the mid-term and final exam grades of students. Students will take the exams given in online class and the face-to-face class. Qualitatively, the research will compare the instructional design and students perceptions in both learning environments. Student's perceptions will include those students that are familiar with both learning environments.

Research Questions

1. To what extent does the instructional design of a high school computer class online differ from a face-to-face class?
2. What are the student's perceptions between both learning online and a traditional classroom?
3. How does the computer mid-term and end of course exam of student achievement differ in both learning environments?

Significance

The most recent trend in distance learning has been to provide courses to K-12 students. This research will contribute to the design of both learning environments to improve high school academic achievement. The school reform of school choice option came about due to the decline in student achievement, reading scores, math scores, science scores and ready to work skills. School reform requires improvement in education. Current research provides the theories that work to improve upon students staying in school and increasing student achievement by obtaining relevant real world skills. Distance education is designed for the desires of an individual to learn and want to be successful.

Literature Review

Background

The first accredited online university established was Jones International University in 1983 (USDLA, 2008). As of 2006-2007, 65% of 4200 institutions offered distance learning degrees (NCES, 2008). Education has come a long way since 1840 when the first method of distance learning was developed by Sir Issac Pitman as a correspondence shorthand course mailed through the postal system (Schlosser & Simonson, 2006). The most common delivery mode of distance learning in the 1800's was postal mail, print, guided readings, and tests. It provided a way for individuals that were not financial well off to attend college. As the economy expanded after World War II so did the increased need of

skilled workers and the need for more education. Correspondence courses grew into correspondence schools offering programs of studies that were included but not limited to liberal arts, mining, and Sunday school teachers (Schlosser & Simonson, 2006). The first distance correspondence course was offered at the University of Chicago in the early 1800's (McIsaac & Gunawardena, 2004).

The delivery method of distance education changed when sound waves hit the air with the invention of the radio. In 1906 the first official United States radio broadcast was presented by R.A. Fessenden (WCBN, 2005). This expansion of technology allowed for correspondence courses reach more opportunities. Individuals could receive instruction and guided practice at a much faster rate than receiving printed materials by the postal mail. It created almost an immediate demand for learning in real-time, expanding the definition to distance learning. The delivery method of distance learning continued to remain the same for almost 40 years until the television was invented in 1945. It again changed the way we could learn or you could say how we "looked" at education. Although, there was little research in the 1940's, today we know that it created a learning environment that included the instructional teaching strategies to include auditory and visual processes with the learning styles of each student to learn more effectively. Radio and television still continue to be an integral part of our educational system for the growing need to provide sound practices to the visually impaired. The American Federation of the Blind promotes distance education and offers many resources to help find those with disabilities online educational opportunities (AFB, 2009).

In 1980 the Internet changed our entire global world with technology enhanced education. It changed the way one could communicate almost immediately with anyone in the world in real-time. Although the Internet was slow in sending and receiving information, it was just as fast as picking up the telephone and saying, "Hi". The Internet allowed for the interchange of information faster than ever, considering the only way to deliver media such as print, cassettes or video tapes was only by postal mail before the Internet. The use of the Internet has truly redefined the definition of learning at a distance.

The Internet has provided the interactivity closest to the classroom setting. By 1989 virtually all states in American were involved with promoting distance education. There was so much interest in distance learning by profit and non-profit institutions the Higher Education Act was reauthorized creating the Bipartisan Web-based Education Commission in 1998 by Congress (Mclsaac & Gunawardena, 2004).

Distance education has become a way to fit many different lifestyles, as well as all types of learners. Distance learning is not just about “any time, any place, any path, and any pace” (FLVS, 2009), it also means distance education is for a person of any age, gender, race, learning difference, or the technologically savvy (Guide to Online Learning, 2000). Distance learning is a choice alternative to a classroom setting with four walls and chairs lined up in a row. The environment in distance learning is up to the learner. The convenience of distance learning can benefit a learner by providing them a safe, comfortable environment to help a students learn. In the article “Coming to Our Senses: Incorporating Brain Research findings into Classroom Instruction” by Wilmes, et.al. (2008) writes that the environment sets the stage for students to learn and that includes a safe, stress free environment. Distance learning offers that environment as students learn from the comfort of your own home.

Distance education has many types of delivery methods and some institutions still provide a combination of methods that were used in the 1840’s, as well as today. It continues to take form in print, postal mail, email, cassette to interactive webcasts and asynchronous to synchronous group discussions such as Eliminate. The Internet has brought the most common form of delivery in distance learning education. The method of distance learning a person chooses is dependent upon the institution, time, resources, and financial obligations. There are many steps one must take in choosing the right educational situation and setting. Depending on your life style, distance learning often is accessed when it is convenient for you, whereas classroom setting on campus meets at a central location at a specific time.

Career and technical programs promote specific career skill development and there have been innovative strides to provide the same opportunities at a distance. Learning at a distance for career and technical education has approached the constructivist theory, the theoretical framework of Bruner. It is the active learning process where the learner constructs past knowledge and creates new skills, new knowledge and new ideas. The constructivist theory is also based on the study of cognition. A learner should be able to take the conditions of learning and constructively apply them to similar situation in the constructivist theory.

Ertmer and Newby (1993) explained the most common theories the best. "Behaviorist strategies can be used to teach the facts (what); cognitivist strategies to teach the principles and processes (how); and constructivist strategies to teach the real-life and personal applications and contextual learning." There is a shift toward constructive learning, in which learners are given the opportunity to construct their own meaning from the information presented during the online sessions (Anderson & Elloumi, 2004).

No matter what form of education, distance or traditional method of education technology brings a learner a variety of learning mediums to fit their own learning style by preferences the mode to which they want to learn. The mediums include the variety of delivery methods of abstracts, text, visual, sound, and social. The mediums are more frequently found in distance learning where a learner has a computer in front of them, whereas a classroom setting financially cannot provide the technology for each student in each classroom. Therefore, distance learning mediums combine more of the visual, auditory and kinesthetic learning styles of each learner (Oblinger, Barone & Hawkins, 2001). Chute, Thompson and Hancock (1999) describes the future teacher similar to that of an orchestra conductor of multimedia. "The attention span of teens often is between 30 seconds and five minutes" (NCCTE, 2004) research focused on how teens learn. The web provides exploration, experience, engagement, ease of use, empowerment, and effectiveness. It provides a safe, environment that is conducive to learning.

Similar to the constructivist theory of what learning is all about, allowing learners to construct their own meaning from disseminating the information processed.

Distance education is learning at a distance through the use of a variety type of telecommunication delivery systems from an educational or training institution. Distance learning provides an alternative educational opportunity for people of all ages to learn at a distance. Where distance education is accessible to everyone through the convenience of method, time, and location. Distance learning can include, but is not limited to trainings, certificates and degrees that are desired in a particular field. The convenience of distance learning allows individuals a chance and an opportunity for a better way of life. Distance learning education has given a new meaning to the “American Dream” from what once was taught and learned in a little red one room school house to learning in your home. Much of our education has changed through the educational research theories: from teaching to facilitating; from mental discipline to motivation; from the 3 r’s of reading, writing, and arithmetic to today 3 r’s of rigor, relevance, and relationships; and from classroom learning to distance learning.

Although there are many definitions of distance education, none are perfect. Each institution creates a definition that is unique to their mission and vision statement. Florida Virtual School is a middle and high school distance educational public school self described as “any time, any place, any path, and any pace” (FLVS, 2009). Virtual public high schools were brought about by school reform as a K-12 school choice option for parents and students. The State of Florida was the first to establish distance learning through public education in 1997. (FLDOE, 2005) Within a postsecondary educational setting The Division of Continuing Education at Kansas State University established in 1974, listed the most delivery option choices than any other accredited colleges and universities. The types of delivery options included: postal mail, e-mail, e-mail lists, message boards, videotape, CD-ROM, audiocassette, guided study and videoconferencing. Although they are all still functional delivery methods, the most

common today is the Internet, established in the early 1980', and has become the most common method to distance learning.

There will be a need as distance education grows, for more online applications, campus based portals, online procurements, online course delivery, supplemental providers, content providers and online virtual libraries (Oblinger, Barone, Hawkins, 2001). Understanding that there are barriers to overcome such as not everyone has a computer let alone Internet, non-English learners, and international learners, disabilities, fair use, faculty issues, money, equipment, privacy and security, financial aid, accreditation, human resources, libraries, politics, processes, values, cultural, and teaching modalities. Barone (2001) found 12 essential characteristics in which higher education are choices, commitment, courage, communication, cooperation, community, curriculum, consistency, capacity, culture/context, complexity/confusions, and creativity. Educause ranked teaching and learning number 5 IT technology issue (Agee & Yang, 2009)

Method

Approach

A mixed method of research will be used in the study. The two research groups will consist of MyDistrict Virtual students and Chiefland High School students enrolled in the computer course. The participation will vary depending on the number of students enrolled. Students enrolled in MyDistrict Virtual School computer class is currently 9 students. Students enrolled in Chiefland High Schools face-to-face class is currently 99 students. Data will be collected this year and next year for validity purposes and because of the limited amount of current virtual students, however the amount of current traditional students is numerous. All students' that are enrolled in both computer classes will be asked to participate. Students will be chosen on a volunteer basis to participate in the testing of both the virtual and classroom mid-term and final exam. Parent consent will be obtained prior to testing.

Data needs

A course assessment questionnaire, developed by the University of Michigan with permission, will be used to assess both courses. Students who volunteer to participate will be given the course assessment questionnaire and exam twice during the year. The course assessment questionnaire, mid-term, and final exam will be administered over the Internet. Students will take the both the online and traditional classroom mid-term and final exam to see how the results differ based on the instructional design of the course.

Plan for interpreting results

The results of instructional design, academic achievement, and perceptions of high school student in each learning environment will be discussed qualitatively in the findings. Student academic achievement will be statistically analyzed based on both learning environments mid-term and final exam questions.

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