1-1-2011

How Interactive Video (ITV) Web-Enhanced Format Affects Instructional Strategy and Instructor Satisfaction

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2013

Abstract

How Interactive Video (ITV) Web-Enhanced Format

Affects Instructional Strategy and Instructor Satisfaction

by

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Doctoral Study Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Doctor of Education

Teacher Leadership

Walden Unversity

January 2013

UMI Number: 3552381

UMI®
Dissertation Publishing

UMI 3552381

ProQuest®

Abstract

This qualitative study explored the quality of technology associated with interactive video (ITV) classes in distance education programs and the resulting satisfaction of the instructors teaching this format. The participants were full time instructors of a rural community college that used the ITV format. Community college ITV instructors are knowledgeable about the ITV technology and are in need of research that explores the satisfaction of that technology. Distance education theory, social constructivism, individual and collaborative learning, and technology formed the foundation for the research. Grounded theory was used to generate a theory about the perceptions of the instructors. Data collected included surveys, interviews, and observations of the interviews. Data were analyzed using theoretical sampling, constant comparison, open coding, axial coding, and selective coding. Analysis indicated that instructors' perceived greater satisfaction teaching in an ITV environment when the structure of the class was optimum for the course, the audio/visual technology worked effectively, the Web-enhanced component of the course ran smoothly, IT was available, quality training was offered, and transactional distance was perceived as minimal. This grounded theory provides positive social change for other educators and administrators who teach ITV by guiding their efforts to use ITV course delivery systems in ways that ensure the fulfillment of needs for both instructors and their students.

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Acknowledgments

I would like to thank my husband, Jack, for his unending support of my pursuit of this milestone. Without his fantastic sense of humor and his willingness to help me with the more mundane tasks, I could not have dreamed of completing this goal. I would also like to thank my family for their support and unwavering belief that I was intelligent enough to be the first one in the family to do this.

In addition, thank you to my committee members, Dr. Jamie Jones, Dr. Ieda Santos, and Dr. Jeanne Iorio. They made navigating a rather complex process much more simple.

Section 1: Introduction to the Study

Introduction

The term "distance education" is a multifaceted term that has encompassed various ways of educating students (Anderson p.111). Anderson (2009) stated that "distance education has always been to a great degree determined by the technologies of the day" and "technology was necessitated given the basic requirement of distance education to be mediated—using some type of technology to span the distance between students, teachers, and institutions" (p. 111). In today's world, there has been a huge demand for education that is accessible to students when they can work it into their schedules. Thus, distance education, whether online or through interactive media, has become the primary educational trend.

Traditional, nontraditional, and dual-enrollment students have used this form of education in many states. Traditional students are those students that go to college directly after high school. Nontraditional students are those students that go back to school after taking time off from school. Dual-enrollment students are typically 16–18 year olds who choose to take college course while still in high school. Questions have arisen about whether high school students are prepared academically for college work and whether they are mature enough to handle the pressures of a college campus or a college environment whether on campus or online. On the other hand, studies have found that dual-enrollment reduced the dropout rate in high schools for at-risk students and allowed rural areas to have access to college courses (Andrews & Davis, 2003; Bowler, 2005; Johnson & Brophy, 2006).

Distance education has become more and more popular. Some school districts let students take courses online while other school districts maintain a modicum of control by allowing only interactive video classes with online components that are monitored by a certified teacher. These courses can be taught strictly as a two-way interaction between one or several sites simultaneously, or they can be taught with a face-to-face class and a two-way interaction with rural sites where students witness the class discussion. In either scenario, an instructor is responsible for imparting content-specific knowledge to students through the ITV course-delivery system (two-way transmission of televised images via satellite or cable). Technology often had a direct bearing on the success or failure of ITV courses.

Studies abounded in regard to students' satisfaction taking traditional face-to-face courses as opposed to those taking distance education courses yet regarding instructor's perceptions, specifically those teaching ITV courses, there was a lack of information regarding how ITV course delivery systems affected the instructional strategies in this particular type of distance education course (Woszcynski & Geist, 2006; Royal & Bradley, 2005; Henry, 2008; Melton, Graf, & Chopak-Foss, 2009). Further studies may be needed to address how ITV course-delivery systems affect instructional strategies.

Distance education classes could be an inherent part of the future. Determining how to maintain instructor's satisfaction with the technology associated with distance education courses, specifically ITV course-delivery systems, could determine whether instructors will not only continue to teach distance education courses but also whether they get as much satisfaction out of them as face-to-face courses. If instructors saw

advantages to using an ITV course-delivery system, then instructors would share their experiences and encourage other instructors to teach ITV courses; if instructors did not see advantages but only disadvantages, then instructors may decide not to teach in the ITV course delivery format, and as a result, the courses could be eliminated.

Problem Statement

The low quality of technology associated with ITV classes in a community college—for example, connectivity issues, equipment failures, and software glitches—has diminished ITV instructors' satisfaction with this mode of distance education at Twilight College. Technology issues represented a significant amount of lost time in the educational process for both instructors and students.

In a forum on issues related to the future of distance education at Twilight College, professors with at least 1-10 years experience teaching the ITV format concurred that, if this problem persists, community colleges run the risk of losing (a) the pool of instructors willing to teach ITV courses as well as (b) current and potential populations of dual-enrollment students (D. Davis & C.Philpott, 2010). This problem is significant because (a) instructors could refuse to teach ITV courses preferring online, hybrid, or face-to-face courses; and (b) rural, high school students could take undergraduate classes by online, face-to-face, at night, on weekends, or during the summer, and (c) they could be from rival institutions. The problems of connectivity issues, equipment failure, and software glitches for instructors and students alike include the following: (a) sites being dropped from the server over which instructors and students had virtually no control; (b) equipment failures during class—particularly DVD or VCR

players—the document camera, or the laptop Internet connections, when some or all sites did not get the audio or visual feed, and (c) inability to submit an assignment or test through Blackboard Academic Suite, an online software program. Other institutions and instructors have experienced similar problems.

Blackstock and Exton (2005) reported that instructors and students were dissatisfied with certain aspects of ITV technology such as the lack of audible communication, the 3-second-long microphone delay, and material missed due to circumstances beyond the instructor's or the students' control (p. 380). In addition to Blackstock and Exton, Rodrigues (2005) perceives that "interactive video can be more productive" because some students "thrive on face-to-face interaction, and interactive video provides a semblance of physical togetherness" (p. 2). ITV mimics key parts of the classroom, specifically the interaction with the instructor and other students that are lacking in an online environment. Rodrigues also pointed out that there was a trend shifting the focus away from two-way compressed video to asynchronous web-based courses, but many public schools have gone to the expense of setting up interactive video and audio classrooms, so community colleges need to continue developing or continuing good relationships with these public schools as a sensible idea for retention and enrollment. Educators are continually looking for new and innovative ways to retain students, and have started exploring facets of new technology. According to Evans (2010) in a recent interview, students were interested in replacing their traditional textbooks with a truly interactive learning experience, but "not an eReader device, like the Kindle—but an online environment that included educational games and simulations, as well as links

to outside experts and web sites and the ability to download this online environment to their smart phone" (p. 2). Technology is a part of education's future, but that technology must work effectively and capture the student's imagination if community colleges intend to retain the maximum number of students.

Research Questions

The following research questions guided this study:

1. How does the ITV course-delivery format affect the overall instructional strategy such as lectures, videos, powerpoint presentations?

2. How does the ITV course delivery format affect the ITV instructors' satisfaction with the overall instructional strategy?

Purpose

The primary purpose of this study was to present a grounded theory examining how ITV course-delivery systems affected instructional strategies at a local community college. Grounded theory was defined as theory generated from data systematically obtained and analyzed through the constant comparative method. The constant comparative method is the process of taking information from data collection and comparing it to emerging categories.

Ten instructors from Twilight College took part in the study. They taught courses through an ITV Web-enhanced program that uses various forms of technology to simulate a face-to-face format. In order to determine the instructor's level of satisfaction with ITV and the overall effectiveness of the ITV format, constant comparison was used to generate information from the data gathered. Current trends in local community

colleges suggested that students want to take distance education classes, college administrators want to make college available to all students, and instructors want to teach in a format that closely replicates the face-to-face environment for dual-enrollment students (Moker & McLendon, 2009; Phillips, 2008; Smith, 2007; Zeek, 2007). The constant comparison method enlightened the researcher in regards to whether ITV was successful.

Conceptual Framework

A review of the literature indicated that dual-enrollment classes serve a much needed option for traditional, nontraditional, and dual-enrollment students (Andrews & Davis, 2003; Deneker, 2007; Golann & Hughes, 2007). Alternatives were discussed for high school students who felt like they were wasting their time by taking watered down courses. The idea was that a beautiful marriage between the high school and college could exist, so that students could receive credit for both campuses by taking one course. Proponents of dual credit courses felt that society would see much more of these types of alternatives to traditional classes and felt a need existed to take a look at the state of distance education and what works (Andrews & Davis, 2003; Deneker, 2007; Golann & Hughes, 2007; Hebert, 2001; Karp, Calcagno, Hughes, Jeong, & Baily, 2007; Kim, 2006; Schworm, 2008). In addition to dual-enrollment students, traditional students also wanted a face-to-face option to education, especially for those that must commute long distances or be forced to take online classes.

Moore (1991) was concerned about the confusion of terminology in distance education. It was important to have a common vocabulary when discussing distance

education theory. Transactional distance was caused in part by the geographic distance, but it was also a distance of understandings and perceptions. What determines the extent of transactional distance was dialogue and structure. Dialogue consisted of the interaction between the teacher and the learner when one gave instruction and the other responded. Structure was inherent in the course design or how the course was structured. What determined the success of a distance education course was the extent to which the institution and the instructor were able to provide the appropriate opportunity for, and quality of, dialogue between the teacher and the learner (Moore, 1991). This should also be extended to include how the instructors incorporated technology through specific ITV course delivery systems.

Social constructivist theory is an inherent part of distance education theory. Social constructivists view learning as a continuous process that exists each time people willfully interact with each other in the world around them (Bronack, Riedl, & Tashner, 2006). Distance education environments that support deep learning and high levels of engagement do so by fostering interaction among people who used them. Distance education courses that are designed based on principles derived from social constructivist theories of learning usually incorporated teaching strategies that required learners to collaborate, communicate, explore, and reflect where learning was viewed as an active, constructive process. The understanding of a knowledge-based society pointed to individual expertise that is developed by individuals that created knowledge in a truly interactive environment. Constructivism differs from traditional instructional models in that learners must be active and construct knowledge themselves. In a knowledge society,

the student becomes the part of a global knowledge that generates community, tries to solve cases, and learns with others. Learning was constructing knowledge with others (Bronack, Riedl, & Tashner, 2006; Palloff & Pratt, 2003; Toprak, 2006; Zhang & Kenny, 2010). Dual enrollment students were immersed in a learning society due to the nature of the interactive video classroom. Although each student prepared for class individually, they formed a cohesive, dynamic group when combined for discussions both among themselves and in conjunction with other sites.

The collaborative learning approach was one of the concepts that was addressed in the study. Cooperative learning, the precursor to collaborative learning, involves putting students in small groups and having them work together to help each other grasp concepts better. According to Johnson and Johnson (1998), "In a cooperative learning situation, interaction is characterized by positive goal interdependence with individual accountability" (p. 34). A substantial body of research indicated that, in general, students learned more in cooperative groupings than with individual or competitive structures (Fraser & Henry, 2006; Lin, Swan, & Kratcoski, 2005; Slavin, 1980; Watson, 2010). Collaboration provides students with ways of interacting together so they learn to listen to what others have to say and how they say it; they challenge their own perspectives, and they develop new or alternative arguments that are logical and that are accepted as valid (Gillies, 2007, pp. 7-8). Collaboration typically occurs through either the classroom discussion or in online discussion in the interactive web-enhanced video (ITV) classes. To lessen the sense of isolation, quality collaboration is considered an essential requirement of ITV web-enhanced classes.

The individual learning approach was the other learning style that was addressed in this study. Individualistic learning occurred when the student learns without benefit of group interaction, which increased the transactional distance that was normally associated with distance education classes. However, Maeroff (2004) noted that "a classroom of one requires that a student gain comfort and facility with technology" and that students today "attend virtual college fairs" then "arrive on campuses across the country with their own computers, toting other accouterments of the cyber age – cell phones, graphing calculators, DVD players, MP3 files, etc." (pp. 75-76). Since 74% of the adult population and 90% of the young adult population, age 18-29, has access to the Internet and the country has more than 202 million cell phones, online learning is the next logical step (Raine, 2010). Online learning has the potential for individualizing instruction, and instructors can use streaming audio, streaming video, graphics, animation, volume, voice recognition, and text size to satisfy individual learning styles not to mention aiding students with disabilities. Since students entered college courses with varying degrees of expertise in a particular content area, textbooks and other electronic sources needed to be designed for individual needs (Maeroff, 2004; Mostyn, 2009). Since not all students work well in a collaborative environment and it is difficult to target every students' learning individual style, it is important to include individual components to target these additional learning styles.

Distance education classes included instructors who physically went to a distant location from their college or university to teach a class, classes that were taught via the World Wide Web (online learning), classes that were taught via satellite to remote

locations also termed as interactive video classes, and any combination of these classes. Interactive video classes also took on various different forms. Blackstock and Exton (2005) identified several varieties of this technology:

> The competing technology can be divided according to reciprocity: two-way audio and video versus two-way audio with one way video (students can see the instructor but the instructor cannot see the students) – or according to transmission technology: broadcast versus Internet. (p. 380)

Therefore, specific technology was required to target the learning styles of students. The interactive video site seemed similar to the classroom at first, but after working in this environment, most instructors realized that it came with its own technology nightmares. Many interactive video classes were being supplemented by the use discussion board systems, the World Wide Web or Virtual Reality programs. Many colleges and universities instructors wanted to control where discussions lead, so they were using discussion board systems like the one in Blackboard (Martyn, 2005). The use of these systems allowed both collaborative and individual learning styles to be addressed.

Operational Definitions

The following terms were defined in accordance with their use in the study.

Distance education: Education that was a formal learning activity, which occurred when an instructor was in a location remote from that of the student (Discenza, 2001, p. 57; Appanna, 2008, p. 5).

Online learning: This was any learning experience or environment that relied on the Internet/World Wide Web (WWW or web) as the primary delivery mode of communication and presentation (Appanna, 2008, p. 5).

Face to face (f2f) classes: Classes that occurred in a traditional setting where direct human contact occurs (Bates, 1995, p. 31).

Interactive video classes: These were distance education classes where two-way transmission of televised images via satellite or cable occurred. This was also termed Interactive Television or Video-conferencing (Moore & Kearsley, 2005, p. 84).

Web-enhanced classes: Students interacted with the instructor and other students via a network. This typically supplemented ITV systems (Moore & Kearsley, 2005, p. 86).

Dual-enrollment students: Dual enrollment programs offered high school students opportunities to take college-level courses on a high school or college campus. These programs offered challenging curriculum, exposure to college environments and an opportunity to earn college credits while still in high school (Golann & Hughes, 2007, p.1).

Instructional strategies: This was the process or manner by which an instruction module, instruction phase, or an entire course is delivered, and which may include a conference, demonstration, discussion, lecture, etc. (Clark, 2011).

Instructor Satisfaction: For the purposes of this study, the satisfaction of the instructors was determined directly by the failure or success of the technology involved with teaching ITV courses.

Assumptions

The satisfaction with technology in ITV web-enhanced courses will be affected by the instructor's perceptions of whether instructional strategies are being met effectively. Teaching and learning should improve when the instructor perceives that the technology of the ITV course delivery system is functioning at an optimal level.

Scope and Delimitations

The scope of this study was limited to instructors that taught ITV courses during the regular calendar year at Twilight College. These courses were offered to students from both urban and rural areas attending Twilight College. The courses were taught at least once, sometimes twice, a week, and Blackboard courseware was used for a web-enhanced format to supplement the learning environment. This study includes only ITV classes offered at community colleges.

Limitations

This study suffers from five limitations. First, the interview data from the sources in Twilight College may not be an accurate reflection of other higher education institutions across the state or outside the state. Since this community college was in an isolated area and the college taught students who lived hundreds of miles away, other community colleges that have closer populations or teach local high schools may not be able to make use of all of the data. However, some parts of the data should be useful to all community colleges.

Second, there were multiple instructors teaching the ITV courses with different levels of expertise in technology and years of teaching experience in ITV classes. Even

though there was a gap in technology and teaching experience, Twilight College implemented training to make sure that every instructor knew how to use the equipment. Other colleges that use the same basic technology and equipment should be able to use much of the data from this study.

Third, the study was limited in the number of times the researcher was allowed to conduct interviews. The IRB committee at Walden University only allowed the researcher to send out one survey and to conduct one interview per participant. Only conducting one interview could have limited the study in terms of whether saturation was reached. Readers should interpret the data carefully with this fact in mind.

The researcher was not one of the instructors of this community college. Therefore, the researcher could not limit the study through teaching ITV courses on this campus. However, the researcher does teach ITV courses at a different community college.

Fourth, the researcher was a participant observer and thus could have unduly influenced the climate of the classroom. However, the researcher remained off camera and out of sight of the instructors so that they did not feel watched. However, the instructors were made aware that a participant observer would be present. The participants were seasoned instructors who were used to being evaluated and wanted to participate to yield the most accurate data.

Fifth, the small sample size may not accurately reflect the situation. However, a larger group of participants from this district would not necessarily have changed the data

because the same technology issues and limited instructional strategies in ITV classrooms would have prevailed.

Significance

This study contributes to the knowledge of whether ITV web-enhanced classes are successful from an instructor's point of view and leads to changes in the structure of the classes if it was found that they were not meeting the needs of the students. Staff development opportunities could be devised to instruct ITV instructors in teaching strategies that were more effective for this teaching format. Technicians were aware that quality technology was inherently important to the success of ITV classes. Administrators were aware that instructor and inadvertently student satisfaction could impact the college positively, increasing enrollment and generating more revenue. Instructors and administrators across the state could be able to utilize this type of information to make their classes a quality learning experience.

This study contributed to the body of knowledge that existed for distance education. Since the ITV component of distant education classes lacked a substantial literature review about the ITV aspect of distance education courses, then this study contributed to that information. Instructors' feelings of satisfaction led to feelings of a successful learning environment; therefore, examining how ITV course delivery systems affected instructional strategy led to a deeper understanding of how technology led to course satisfaction.

Summary

Chapter 1 explored the quality of technology associated with ITV classes in distance education programs and addressed a problem that impacts instructors from community colleges that use an ITV format. The purpose of this study was to present a grounded theory approach examining how ITV course-delivery systems affected instructional strategies. A conceptual frame work was established through a review of the literature on distance education theory, constructivist theory, individual and collaborative learning approaches and technology. The research questions were designed to assess how ITV course-delivery formats affect the overall instructional strategy and the ITV instructors' satisfaction with the overall instructional strategy. Parameters were discussed for the scope and size of the study, delimitations and limitations were established.

The next chapter, Chapter 2, contains a review of the literature. Chapter 3 will address the methodologies used in this study. Chapter 4 contains the qualitative results of the study, and Chapter 5 discusses the findings and recommendations.

Section 2: Literature Review

Introduction

The purpose of this study was to evaluate how ITV course-delivery systems affected instructional strategies and instructors' perceptions of satisfaction with technology related to ITV Web-enhanced courses over the course of the one semester. The purpose of this chapter will be to cover the literature that has a bearing on this study. Distance education theory, constructivism, collaborative and individual learning approaches, as well as technology related to distance education will be reviewed

Relevant literature was located using the following databases: ERIC. The following keywords were used: *distance education, face-to-face, interactive video, web-enhanced, transactional distance, asynchronous, synchronous, Blackboard, Tegrity, and WebCT.*

Distance Education Theory

Definition

The U.S. Department of Education (1999) has defined Distance Education (DE) as "an educational process that is characterized by the separation, in time or place, between instructor and student" (Sec. 602.3). Distance education (DE) is a form of education where students at institutes of higher learning do not attend regular classes or lectures but instead study lecture material that has been organized by instructors in distant, usually rural locations. Students and instructors interact indirectly by means of media. The term "distance" does not refer to just the geographical distance of the learner, because some regular students take DE classes on campus. DE means, first, that it is not

face-to-face and that students are not tied down to fixed times, places, and persons but were free to decide when and where to study. Second, there is indirect interaction between the student and the instructor. A misconception exists that little, if any, interaction took place in a DE course. Distance education is growing with such speed that the instructors that were responsible for course delivery were often overwhelmed. This was especially true of the distance educators in higher education (Peters, 1994; Brady, 2006). The distance education environment was different from the traditional classroom and required different strategies to enhance effective teaching.

History of Distance Education

The last 100 years of DE have been characterized by doubt and criticism (Keegan, 2000). Then the development of open universities occurred and brought rapid improvements in the quality, the quantity, and the status of providing a quality education (Keegan, 2000). According to Keegan (1994), distance education resulted from the industrialization of education, and it could best be categorized as a more industrialized form of teaching and learning and "anyone professionally involved in education is obliged to assume the existence of two forms of instruction: traditional face-to-face teaching based on interpersonal communication, and industrialized teaching which is based on an objectified, rationalized, technology produced interaction" (pp. 243-244). Keegan (2000) wrote that DE became possible for the first time during the Industrial Revolution of the late eighteenth and early nineteenth centuries. Keegan also wrote "group-based distance systems," where teaching face-to-face at a distance became possible, "were born of the Electronics Revolution of the 1980s" (Keegan, 2000, p. 245).

Then "at the turn of the millennium, the wireless revolution started with air interfaces, replacing wired ones and mobile phones and computers were gaining ground over cabled and wired installations" (Keegan, 2000, p 245).

Mail. Distance education has evolved through a series of delivery methods. The earliest course delivery system was correspondence courses delivered by mail through the post office. According to Moore and Kearsley (2005) and Casey (2008), in 1852, the first course was the Pitman Shorthand program, allowing secretaries to further their education. Women were among the first to participate in correspondence courses, and they evolved in the business community initially. Anne Ticknor established the Society to Encourage Studies at Home in 1873, which offered educational opportunities for women across class boundaries (Casey, 2008). In 1878, Bishop John H. Vincent created the Chautauqua Literary and Scientific Circle, offering a 4-year correspondence course to supplement the summer schools held at Lake Chautauqua (Moore & Kearsley, 2005). In the early 1880s, people could study from home or work to obtain instruction from a distance instructor (Baggaley, 2008). By 1892, the University of Chicago had created the first college-level distance learning program (Moore & Kearsley, 2008). Cheap and reliable postal service and the spread of the railway networks were responsible for the increase in distance learning (McKee, 2010). The principle motive for the early correspondence was the vision to use technology to reach those who were otherwise not reachable.

Radio. Radio technology was greeted with enthusiasm and optimism initially. Radio shows reduced the instructional time and proved increased classroom immediacy, so that instructors did not have to depend solely on mail delivery to get instructions to

students (Moore & Kearsley, 2005; Casey, 2008). The first educational radio license was issued by the federal government to University of Salt Lake City in 1921, and between 1918 and 1946, the Federal Communications Commission (FCC) would grant licenses to over 200 colleges (Moore & Kearsley, 2005; Casey, 2008).. Radio as a delivery technology did not meet expectations. Instructors did not receive the technology with as much enthusiasm as commercial advertisers who wanted it for a broadcast medium (Moore & Kearsley, 2005; Casey, 2008).

Television. As early as 1934, educational television was in development as an instructional medium (Casey, 2005). According to Moore & Kearsley (2005) and Casey (2008), contributions by the Ford Foundation insured that educational television fared better than radio because of the hundreds of millions of dollars awarded in grants for educational broadcasting. In 1963, in an effort to further expand distance learning opportunities, the FCC created the Instructional Television Fixed Service (ITFS), a band of 20 television channels available to educational institutions to provide a low-cost, fixed-range, subscriber-based system capable of being utilized for the distribution of broadcast courses (Casey, 2008). Casey (2008) also made it known that in 1965, the Carnegie Commission on Educational Television issued a report that led Congress to pass the Public Broadcasting Act of 1967, setting up the Corporation for Public Broadcasting (CPB). CPB's primary purposes were to develop high quality programs, establish a system of national interconnection to distribute the programs, and strengthen and support local public TV and radio stations (Casey, 2008). In 1969, CPB negotiated with AT&T to interconnect 140 stations, creating the first true national public television system. The

result was the Public Broadcasting Service (Casey, 2008). By the mid- 1980s, there were approximately 200 college level telecourses (Moore & Kearsley, 2005; Casey, 2008). More than 1,000 institutions of postsecondary education signed up each year for courses distributed by the Adult Learning Service of the CPB, enrolling more than 600,000 adult students (Moore & Kearsley, 2005; Casey, 2008). Although television offered many new educational opportunities, the uneven communication flow meant that teacher-student interactions were awkward and cumbersome.

Computer. According to Casey (2008), the creation of the microprocessor in 1971 changed the face of education. The first e-mail was sent to those on Intel inter-office, and in 1978, the first Bulletin Board System (BBS) was established (Casey, 2008). The computer was the missing component of the educational puzzle that would pave the way for smoother communication between the instructor and the learner and add the personal connection that was previously lacking (Casey, 2008).

Satellite communication. Moore and Kearsley (2005), Casey (2008), and Suson (2008) found that satellite communication began on April 6, 1965 with the launch of the Early Bird satellite. It delivered 240 telephone circuits or 1 channel of television over the North Atlantic and was considered a technological miracle (Moore & Kearsley, 2005). By 1967, four International Telecommunications Satellite Organization (INTELSAT) were in orbit (Moore & Kearsley, 2005). The University of Alaska was one of the early experimenters with satellite transmissions for educational purposes (Casey, 2008). These early satellite services operated at low power and were expensive. The satellite television systems that were created in the 1960s finally became cost effective in the 1980s (Casey,

2008). Satellite communication led to a worldwide explosion of interest, especially in America (Suson, 2008). Whether the interest was in broadcasting educational television or for interactive teleconferencing, a consortium was formed, a voluntary association of independent institutions that shared the cost, the work, and the results of designing, delivering, and teaching educational courses; by 1982, the National University Teleconferencing Network (NUTN) used satellites to transmit programs to its 40 institutional members (Moore & Kearsley, 2005). Over the next 10 years, the network grew to more than 250 organizations (Moore & Kearsley, 2005).

Business TV and interactive programs at the K-12 level offered one-way video/two-way audio communications in the 1980s through the 1990s where participants at all sites could see and hear the presenters from the originating site, but could not see other participants, only hear them (Moore & Kearsley, 2005). In later 1990s, two-way conferencing became more widely used; the more expensive and older version provided signals from one studio to another using technology that transmitted data at "T1," or 1.5 megabits per second (Moore & Kearsley, 2005). The video signals were compressed by a device called a codec; the earliest codecs were as large as a refrigerator, but by the mid-1990s, they could fit inside a personal computer so that video-conferencing became possible (Moore & Kearsley, 2005; Casey, 2008). Two-way or multi-point video-conferencing became easier and less costly with the development of fiber optic telephone lines (Moore & Kearsley, 2005; Casey, 2008; Suson et al., 2008).

Web. Tim Berners-Lee developed the World Wide Web, which provided a potential linkage for all computers in the world, and in 1991, the information

superhighway was born (Casey, 2008). Through the World Wide Web, a document can

accessed by different computers separated by any distance, running different software,

operational systems, and different screen resolutions. Mosaic, the first Web browser,

appeared in 1993, giving educators increased opportunities for learning experiences.

Several universities started running web based programs at this time (Moore & Kearsley,

2005). Once high-speed broadband transmission was introduced, distance learning over

the Internet became the prime instructional model (Casey, 2008). The creation of

interactive, virtual classrooms was limited only by the vision of the instructor and the

budget of the institute (Casey, 2008). The spread of Internet technology like the software

programs Blackboard and WebCT stimulated thinking about how to organize distance

education classes (Casey, 2005). In 2005, Blackboard and WebCT merged under the

Blackboard label to become the leading provider of software applications in the education

industry (Blackboard Inc., 2006). With all of the technological advances on the WWW,

academic institutes are able to meet the needs of their students in a more productive

manner (Casey, 2008). Blending the online courses with face-to-face or interactive TV

creates an atmosphere that is conducive to student success.

Five Generations of Distance Education

Taylor's (2001) five evolutionary stages (generations) of distance education

consisted of (a) correspondence, (b) multimedia, (c) telelearning, (d) flexible learning,

and (e) intelligent flexible learning as shown in Table 1.

Table 1
Models of Distance Education

Models of DE & Technologies	Characteristics of Delivery Delivery Technologies			
	Flexibility Time	Place	Pace	Advanced Interactive Delivery
First Generation – The Correspondence Model				
Print	Yes	Yes	Yes	No
Second Generation – The Multi-media Model				
Print	Yes	Yes	Yes	No
Audiotape	Yes	Yes	Yes	No
Videotape	Yes	Yes	Yes	No
Computer-based learning	Yes	Yes	Yes	Yes
Interactive video (disk and tape)	Yes	Yes	Yes	Yes
Third Generation – The Telelearning Model				
Audioteleconferencing	No	No	No	Yes
Videoconferencing	No	No	No	Yes
Audiographic communication	No	No	No	Yes
Broadcast TV/radio and audioteleconferencing	No	No	No	Yes
Fourth Generation – The Flexible Learning Model				
Interactive multimedia	Yes	Yes	Yes	Yes
Internet-based access to WWW resources	Yes	Yes	Yes	Yes
Computer mediated communication	Yes	Yes	Yes	Yes
Fifth Generation – The Intelligent Flexible Learning Model				
Interactive multimedia	Yes	Yes	Yes	Yes
Internet access to WWW resources	Yes	Yes	Yes	Yes
Computer-mediated communication, using automated response systems	Yes	Yes	Yes	Yes

Note, From "Fifth Generation Distance Education," by J. Taylor, 2001, *E-Journal of Instructional Science & Technology*, 4, p. 3. Copyright 1991 by the American Psychological Association. Adapted with permission of the author.

First generation: Correspondence education. McKee (2010) saw the advantage of correspondence or the first generation as the permanence and easy to use print materials, the cheaper learning packages, the limited technology required for interaction between the material and the student, and the ability to match the student's schedule and place of study. The most effective design formats adhered to design formats that are intuitive, sequential, complete, and organized. On the other hand, the disadvantages of print are a lack of interaction with the instructor and the other students, static material that lacked the ability to extend thoughts or discussions presented, and could contain misunderstanding of key concepts without interaction between student/instructor or student/student.

Second generation: Mixed-media delivery. The second generation consisted of a mixture of print, audiotape, videotape, computer-based learning, and interactive video (disk and tape). The quality of the audio/video lectures, the organization of the printed materials, and the structure of class discussions reflected whether the course material was successful or not. Motivation for this type of course was determined by amount of transactional distance (McKee, 2010).

Third generation: Telelearning. Telelearning included audio-teleconferencing, video-teleconferencing, audiographic communication, and broadcast TV/radio and audio-teleconferencing. This generation allowed students and instructors to interact synchronously that had previously only been available in a face-to-face environment.

Fourth generation: Flexible learning. Flexible learning incorporated interactive multimedia online, internet access to WWW resources, and computer-mediated communication. At this level, current distant education was experiencing growing pains at the most basic level and was prompting reflection because these technologies were creating opportunities for students and educators to view educational processes, goals, definitions, and environments in both face-to-face and distance education in exciting new ways. No longer was distance education a one-size-fits-all education. Customization occurred in content, learning styles, methodology, and practice. Discussion with peers suddenly was possible in an easily, accessible format for students as well as instructors.

Fifth generation: Intelligent flexible learning. Interactive multimedia online, internet-based access to WWW resources, computer mediated communication using automated response systems, and campus portal access to institutional processes and resources fell into the fifth generation. The fifth generation Intelligent Flexible Learning Model of distance education, incorporated the use of automated response systems and intelligent object databases in the context of Internet-based delivery, had the potential to provide students with a valuable, personalized pedagogical experience at much lower cost than traditional approaches to distance education. The intelligent flexible learning model seamlessly integrated all aspects of the educational system, including administration, enrollment, commerce, publishing, and distribution (Taylor, 2010; McKee, 2010).

The Need for Distance Education Theory

Based on Moore's (1991) editorial, theoretical ideas on distance education theory were developed with the help of colleagues from around the world over the course of 20

years. First, Moore (1991, 2005) indicated a need for a theory. Terminology got muddled and confusing because there had been a lack of consistency. According to Moore (1991, 2005), the term distance learning was an inaccurate representation of what occurred because it implied that "the actions of one person, i.e., the learner, are independent of the actions of the teacher" (p. 2), yet, a distance learning program was a "teaching program as well as a learning program, and should be called distance education" (p. 2). Theory was the summary and synthesis of what is known about a field; it was the reduction of our knowledge to the basic ideas, presented in a way that shows their underlying patterns and relationships (Moore, 2005). Understanding theory made it possible for us to speak with a common vocabulary. Understanding it should have the effect of helping practitioners see where their piece of action fit and interfaced with others and thus should lead to better ways of working with others (Moore, 2005). The best way to resolve many understandings surrounding communication would have been to have a standardization of terminology.

The Theory of Transactional Distance

The theory of transactional distance referred to a distance that is more than just geographical separation of the students and instructors (Moore, 1991, 2005). Dewey and Bentley (1949) presented education as transactional, or as situational relationships between learners, their environments, and learner behaviors. Moore (1991, 2007) continued the definition by saying that the transaction that we call distance education occurred between individuals who are teachers and learners, in an environment with the special characteristic of separation of one from another, and a consequent set of special

teaching and learning behaviors. It was the "physical separation that leads to a psychological and communications gap, a space of potential misunderstanding between the inputs of instructor and those of the learner, and this is the transactional distance" (Moore, 2007, p. 91). Even though some transactional distance occurred in a face-to-face class as well, in online or ITV programs where the separation of teacher and learner was so significant, it affected their behavior in major ways and required the use of special techniques. If this is true, then special organizations and teaching procedures were essential.

Dialogue, Structure, and Autonomy

Special teaching procedures for distance education classes included dialogue and structure. Dialogue covered the interaction between the teacher and learner when one gave instruction and the other responded (Moore, 2007). Much of this was determined by the teacher's personality, course environmental factors, and programs utilized, but most important was communication. Since distance education courses could be self-paced via the U.S. postal service or e-mail, web courses, interactive video courses, or a combination of these with each one having various options for presentation, then the ability to communicate would also be vastly different. In ITV and online environments, learners could easily interact with one another as well as the instructor. This expanded the construct of dialogue in this environment to include interactions between and among learners and instructors (Stein, Wanstreet, Calvin, Overtoom, & Wheaton, 2005).

Structure refers to the course design. The structure expresses the rigidness or the flexibility of the program's educational objectives, teaching strategies, and evaluation

methods. It described the extent to which an educational program could accommodate or be responsive to each learner's individual needs. A recorded television program was highly structured and every minute was predetermined by the instructor. On the other hand, teleconference or interactive video courses permitted alternate options, including answers to written and verbal questions. Moore (1991, 2007) advised that the success of distance education was determined by the "extent to which the institution and the individual instructor are able to provide the appropriate opportunity for, and quality of, dialogue between teacher and learner, as well as appropriately structured learning materials," thus measures must be taken to reduce transactional distance. This could be done through teleconferencing or ITV by developing well structured printed material (p. 4). Moore (1991, 2007) advocated that much time and effort had to be devoted to understanding the needs of the learner and individual learners in order to analyze what was to be taught, to determine learning objectives, to structure learner exercises, activities, and evaluations, and the relationship of the learner and instructor. In other words, much care should be given to determine the structure of the program and the nature of the dialogue that was appropriate for each set of particular learners. Further research across time confirmed Moore's original concept of transactional distance. This research was extended to include audio-conferencing, videoconferencing, interactive television, and the computer network. Their research extended the original concept to include structure, dialogue and autonomy and to take into consideration the specific characteristics of teaching and learning environments, including the technology employed in those environments (Saba & Shearer, 1994; Chen & Willits, 1999). Learner autonomy

had been added as a key constituent and was the extent to which learners made "decisions regarding their own learning and construct their own knowledge based on their own experiences" (Moore & Kearsley, 1996, pp. 204-205). Stein, Wanstreet, Calvin, Overtoom, and Wheaton (2005) acknowledged that some support existed for the premise that instructors could lessen transactional distance through the development of dialogue and structure that match learner's needs and abilities to be autonomous, but that technical expertise and course format on learner satisfaction seemed to be in question. Literature supported the concept of transactional distance, yet how they work in conjunction with one another was indecisive.

Types of Learner Interaction

Interaction was an important key term that carried so many meanings as to be almost useless unless specific sub-meanings could be defined. Moore (2005), the seminal source on transactional distance, felt that distance educators needed to agree "on the distinctions between 3 types of interaction," which were labeled "learner-content interaction, learner-instructor interaction, and learner-learner interaction" (p. 2). These 3 types of learners shaped the way educators view learners in the future.

The learner-content interaction was the interaction between the content or subject matter and the learner. Holmberg (1986), a key contributor to distance education, termed this concept the "internal didactic conversation" that occurred when "learners talk to themselves" about information they found in their textbooks, on the internet, in educational videos, from lecture or guest speakers, and various other places. Learners may interact through teleconferencing, interactive video, or electronic recordings

delivered through various mediums. Many programs were solely content-interactive; therefore, they were one-way communications with a subject expert, and learning was largely self-directed (Moore, 1989, 2005).

Many educators regarded the component learner-instructor interaction as essential. This interaction was between the learner and the expert or instructor who prepared the subject material. Instructors endeavored to stimulate or maintain the student's interest in the material to be taught, to motivate the student, to maintain the learner's interest in regards to self-motivation and to provide encouragement to each student (Moore, 1989, 2007). As distance education and online learning continued to grow significantly, it was important to understand how student and faculty interaction affected student learning and student success (Sadera, Robertson, Song, & Midon, 2009). Conrad (2005) conducted a two year longitudinal study that indicated that learner-instructor interaction helped to create community in distance education courses. Lee, Cater-Wells, Glaeser, Ivers, and Street (2006) conducted a 3-year longitudinal study that indicated that positive interactions among all community members helped develop the distance education community and the sense of community related positively to student success. Guri-Rosenblit (2009) acknowledged that the physical separation between the learner and the instructor could affect the learning process, but that new technologies used in distance education could be used "most efficiently to support and enrich lectures" (p. 107). Communication between the instructor and the learner was by definition two-way in nature, rather than one-way because it could be an exchange via mail, e-mail, phone, voicemail, or participation in audio graphic sessions, videoconferences, or even

real-time virtual realities activities (Tuovinen, 2000; Guri-Rosenbilt, 2009). Vesely,

Bloom, and Sherlock (2007) suggested that instructors played a key role in motivating

students to engage in distance education classes. Instructor presence was most impacted

by 3 factors: (a) teaching presence, (b) instructor immediacy, and (c) social presence. The

teaching presence involved frequent and effective interaction with the course instructor.

Instructor immediacy was the behavior that enhanced nonverbal interactions. Social

presence referred to the salience of the interpersonal interaction (Mandemach, Gonzales,

& Garrett, 2006). Even though time delays could add a complicating dimension and add

to transactional distance, the better the instructor learner interaction, and the more

successful the student.

According to Moore (1989), the learner-learner was the "inter-learner interaction,

between one learner and other learners, alone or in group settings, with or without the

real-time presence of an instructor" (p. 3). The "learner-learner interaction among

members of a class or other groups was sometimes an extremely valuable resource for

learning and was sometimes even essential" (p. 3). Several definitions arose in regards to

the term community in distance education courses. Community could mean a group of

participants in a distance-based environment with a shared purpose, including their sense

of belonging, trust, and interaction or a community may include familiarity, rapport, trust,

and openness. Community has been defined as student interaction and social activity for

collaborative learning with a shared purpose, interaction, boundaries, behavior, and trust

and respect (Chapman, Radmondt, & Smiley, 2005; DiRamio & Wolveron, 2006; Vesely,

Bloom, & Sherlock, 2007; Sadera, Robertson, Song, & Midon, 2009). Rovai (2002)

found that when he taught Blackboard courses, the feelings of classroom community were moderately related to interactivity, emphasizing the importance of dialogue over structure. Garrison and Anderson (2000) determined that a worthwhile educational experience was embedded within a community of inquiry that was composed of teachers and students, who were the key participants in the educational process. Phillips, Santro, and Kuehn (1988) taught the principle and trained students in effective group functioning, and found that as instructors they could not effectively facilitate interaction among members of a large undergraduate class in face-to-face classrooms, so they turned to distance education techniques such as using recorded video and computer interaction to achieve higher performance. Thus, these educators gave the students the advantage of individual interaction with the instructor delivered electronically and the benefits of peer group interaction through asynchronous chat rooms. Chen (2001) used Moore's types of learners to examine the importance of instructor-learner and learner-learner interaction to determine satisfaction with instruction and learning. The results showed that the extent of instructor-learner and learner-learner interaction that occurred online and learner's skill levels with the internet had a significantly negative effect on transactional distance. The greater the reported skill level or the frequency of online discussions, the less the perceived transactional distance. In conclusion, distance teaching has the potential to "rescue the scattered students from their loneliness by providing interaction with other peer students" (Guri-Rosenblit, 2009, p. 3).

Soo and Bank (1998) added the concept of learner-self interaction. This interaction covered the learner's reflections on the content in distance learning. Moore, however, included this idea in the learner-content interaction.

According to Gorsky and Caspi (2005), despite the considerable time span over which the theory has been evolving, to date, very few researchers have carried out empirical studies to test the validity of its key constructs, and especially, the relationships among them. The main idea for Gorsky and Caspi (2005) was that the key is not distance, but rather, as the amount of dialogue increased, transactional distance decreased.

Social Constructivist Theory

Social constructivist theory was an inherent part of distance education theory. Vygotsky (1978) made the assertion that "learning occurs first on the social level and next on the individual level" (p. 53). Bronack, Riedl, and Tashner (2006) made the observation that "social constructivists view learning as neither solely intrinsic nor purely extrinsic, but, rather, as a continuous process that exists each time people willfully interact with each other in the world around them," and also said that "effective learning environments of all kinds must support participants as each becomes part of a community of practice through communication and co-construction" (p. 221). In line with the social constructivist viewpoint, "distance education environments that support deep learning and high levels of engagement do so by fostering interaction among people who use them" (Palloff & Pratt, 1999, p. 43). Further, constructivism has also been dubbed interactive constructivism because interactions challenge instructors to always take into account the social background whenever instructors teach or learn. Learning should be

aimed at growth; therefore, instructors should have to support all learners, especially

those suffering from social disadvantages, increasing the student's chances of learning

(Reich, 2007). Constructivist concepts were an inherent part of ITV systems that use

technology effectively to foster quality teaching/learning environments.

<div align="center">**Learning Approaches**</div>

Collaborative

The collaborative learning approach was one of the learning styles that were

addressed in the study. Cooperative learning, the precursor to collaborative learning,

involved putting students in small groups and having them work together to help each

other grasp concepts better. A substantial body of research has indicated that, in general,

students learn more in cooperative groupings than with individualistic or competitive

structures (Bossert, 1998-1999). Johnson and Johnson (1998) differentiated between

having student work in a group and structuring students to work cooperatively.

Collaboration was "the constructions of shared meaning for conversation, concepts, and

experiences" (Webb & Palincsar, 1996, p. 848). Collaboration "included but extended

cooperation, particularly with respect to how knowledge was addressed" (Patrick,

Bangel, Jeon, & Townsend, 2005, p. 99). Collaboration could have occurred through

either the classroom discussion or in online discussion in the interactive Web-enhanced

video (ITV) classes. To lessen the sense of isolation, quality collaboration was considered

an essential requirement of ITV Web-enhanced classes as well as targeting a crucial

learning style.

Individual

The individual learning approach is the other learning style that is addressed in this study. Individualistic learning occurred when the student learned without benefit of group interaction, which increased the transactional distance that was normally associated with distance education classes (Maeroff, 2004). However, Maeroff (2004) noted that a classroom with only one student required that a student gain comfort and experience with technology, and that students today attended virtual college fairs then as a result arrived on campuses carrying computers and toting other types of the cyber age items like cell phones, graphing calculators, DVD players, and MP3 files. Four out of 5 teens (17 million) carried a wireless device (a 40% increase since 2004); 57% of teens viewed their cell phone as key to their social life, second only to clothing, indicating their social status or popularity; 52% agreed that the cell phone has become a new form of entertainment; 66% wanted opportunities to be educated anywhere in the world through the use of their cell phones (Cell Phones, 2008, pp. 2-4). Online learning has the potential for "individualizing instruction" (Maeroff, 2004, p. 76), and "instructors can use streaming audio, streaming video, graphics, animation, volume, voice recognition, and text size to satisfy individual learning styles" not to mention aiding students with disabilities (Maeroff, 2004, p. 85). In North America, out of an estimated population of 340,831,831, 76.2% or 259, 561,000 of the population had access to the Internet (Cell Phones, 2008, p. 2). In a recent survey from Experience, Inc. (June, 2006), 43% of students surveyed spend 10 hours or more a week on the Internet. 24% of those participated in online discussion boards, groups, or chats in their college classes. College students spend the

majority of their time on the Internet as opposed to other mediums and their usage behaviors have evolved (Floren, 2006). The use of chat rooms, groups, and discussion boards required student to work collaboratively, yet they work at their own individual pace. Since not all students worked well in a collaborative environment and it can be difficult to address every student's individual learning style, it was important to include individual components to target these additional learning styles.

<div align="center">**Technology**</div>

Distance education classes included instructors who physically went to a distant location from their college or university to teach a course, courses that were taught via the World Wide Web (online learning), courses that were taught via satellite to remote locations also termed as interactive video courses, and any combination of these courses.

ITV Definition

Chorianopoulos and Lekakos (2007) defined interactive TV as at least one user and one or more audiovisual and networked devices. Previous definitions of ITV focused on the technological aspects and ignored the fact that even traditional TV was potentially interactive. ITV instruction also referred to synchronous (real time) two-way instructional delivery (McKenzie, Witte, Guarino, & Witte, 2002). Interactive TV actually had multiple definitions, but for the purposes of this study, the following definition will be utilized. ITV was a technology that allowed students at remote teaching sites to join a class broadcast from the main campus. The student could see, hear, and interact in real time with the instructor through a TV screen. Through ITV technology, teaching materials could be displayed on the TV and students could ask questions about the

material in real time. It was similar to a face-to-face classroom because it was live and interactive. However, unlike a face-to-face classroom, the ITV classroom included students from one or more remote sites. Learning through ITV was often called t-learning (Chao, 2010).

ITV Courses

ITV or interactive videoconferencing (IV) was an effective tool that may be used in distance education setting. This system could be integrated into the distance education program with minimal adaptation to the curriculum or course and was designed to support two-way video and audio communication between multiple locations. Some advantages to ITV include:

1. Allowed real time visual contact between student and instructor or among students at different sites.

2. Supported the use of diverse media (Touchstone & Anderson, 1995). Blackboards, handwritten documents or diagrams, and videos may be incorporated into all sites.

3. Enabled connection with experts in other geographical locations (Touchstone & Anderson, 1995).

4. Provided access to at-risk or special needs students (Touchstone & Anderson, 1996).

5. Provided additional access to students at remote sites.

Interactive video classes could also take on various different forms. Blackstock and Exton (2005) identified several varieties of this technology:

The competing technology can be divided according to reciprocity: two-way

audio and video versus two-way audio with one way video (students can see

the instructor but the instructor cannot see the students) – or according to

transmission technology: broadcast versus Internet. (p. 380)

In addition to video and audio transmission, different sites would have different

types of camera installations. At one site, there was a camera that has the capability of

zooming in on the student that asked a question in order to see facial expressions and

determine if they understood the instructor. In another site, there was a fixed student

camera that could be manipulated from the instructor's site, if the instructor needed to

zoom in on someone without their knowledge. In most cases, the camera was controlled

by the remote site, which could be challenging when a student decided to turn it off or

have it face a blank wall.

Specific technology was required to target the learning styles of students. The

interactive video site seemed similar to the classroom at first, but after working in this

environment, most instructors realized that it comes with its own technology nightmares.

Some limitations of interactive video include:

1. The initial cost of the equipment and leasing the lines to transmit conferences

    may be prohibitive.

2. Companies which produce codecs, a device or computer program capable of

    encoding and/or decoding a digital data stream or signal, have each developed

    unique methods of compression which were incompatible, although protocols

    have been established to allow communication among brand names. However,

this universal standard compromised resolution and quality to a certain

degree.

3. Unless a strong effort was made by the instructor, students not located with the

instructor could remain uninvolved in the course.

4. If visuals, like handwritten or copied materials, were not properly prepared,

students may have a difficult time reading them.

5. If the pipe that carried the transmission among sites was not large enough, the

students may have experienced ghost images when rapid movement occurred

in real time.

6. If the system was not properly configured, class members may have observed

an audio echo effect. The result was audio interference that detracted from the

learning environment (Touchstone & Anderson, 1995).

Other types of equipment, such as television monitors, were needed to make ITV

successful. Various forms of instructional technology could be incorporated into ITV,

including CD players, DVD/VHS players, microphones, cameras, and computers.

Pros of ITV. Even though ITV was considered obsolete to many instructors,

heavy utilization still occurred in secondary education in rural parts of the country for

delivering course content to learners at a distance. The synchronous, interactive television

(ITV) sessions for teaching, learning, and training was still used widely (Simonson,

Smaldino, Albright, & Zvacek, 2006; Olmstead, 2007). ITV created positive results for

instructors. Buck (2009) noticed that implementing ITV led to a shift in

professors/instructors workloads, teaching loads were lessened and became comparable

to other faculty loads. In many cases class sizes were reduced to accommodate

student/teacher ratios for more effective teaching. Another positive outcome of using ITV

was that using TV as a learning medium was its pervasiveness, as television was a

familiar and reliable consumer device with more than 90% penetration in developed

countries (Chorianopoulos & Lekakos, 2007). Since television was a visual medium,

which reduced the nature of face-to-face interaction, it also had the capabilities of

showing, demonstrating, and emotionally engaging students. It forced the researcher to

collaborate with others and involved significant planning to make it work, but the efforts

enhanced the teaching experience (Sebastian, Egan, & Mayhew, 2009).

Cons of ITV. Several negative factors also occurred when using an ITV system.

The cost of operating, maintaining, and upgrading the ITV equipment could prove to be

much more expensive than anticipated. The personnel required to operate and maintain

the system are costly and often not adequately trained. Technical issues could exist such

as the sound quality could be poor with echoes, supplemental lighting may be required,

the lighting may have elevated the temperature to intolerable levels, time delays between

the live sessions remote viewing may have occurred, and the presence of cameras in the

classroom may have caused distractions for the students. Instructors often expressed

frustration at having to change planned activities at the last moment due to ITV

malfunctions. Many instructors felt that ITV was a failure and viewed future

technological developments with skepticism. Synchronous audio/video methods have

been criticized for imposing pressures to conform to fixed schedules (Donorfio, 2008;

Buck, 2009). At the instructors' level during the broadcasts, instructors often failed to

look directly at the camera, did not repeat information, moved around too much on camera, did not appear to be comfortable or did not have much personality, did not make eye contact, talked too rapidly or too slowly, interrupted the students or overrode them. Instructor presence and availability were crucial or the students did not feel successful. This included getting to know students both before the course started and during the course (Donorfio, 2008; Sebastian, Egan, & Mayhew, 2009).

Web-Enhanced Portion of the ITV Course

Many interactive video classes are now being supplemented by the use of discussion board systems, the World Wide Web or virtual reality programs. Many colleges and universities, where instructors still want to control where discussions lead, were using discussion board systems such as DISCUS, WebBoard, or facilities in Blackboard, or WebCT (Discenza, 2001). Often, an interactive video site had up to 5 or 6 separate sites trying to discuss a topic and riding over each others' microphone. Options were made available, like discussion forums and small group learning, in programs like Blackboard, where students could go and make comments, and read and respond to others comments in an environment where they would not be interrupted. Other options were chat features where students could go at designated times to discuss homework or projects in real time, not the delayed timing of discussion forums or small groups. E-mail, instant messaging, and audio/video conferencing were also available for those students who needed one-on-one interaction. Whiteboards could be an invaluable tool when an instructor needed to diagram a sentence or work a math problem. It was often easier to see the document on a Whiteboard screen than from a laptop or document camera in the

ITV room. Many students liked the idea of using blogs (Dawley, 2007). It gave them a chance to put up photos or videos so that everyone had a visual to go with a name. ITV did not always capture the most flattering image of the student or instructor. The use of these systems and related technology allowed both collaborative and individual learning styles to be addressed.

Alternatives to ITV in Distance Education

Technology changed almost daily. Since ITV was envisioned as a wave of the future, newer, more popular avenues of educating students at a distance were being explored. Currently, not only were ITV, online, and a few hybrid classes a popular choice for students, but also new offerings were being made that could be accessed through the iPhone or the iPad.

Online distance education. The biggest development in the past decade was the emergence of the Internet and the World Wide Web. In today's educational world, almost all distant education courses now have an online presence. In many colleges and universities, the Internet has replaced telecourses and interactive video courses. Some universities had been created to offer only online courses and were usually called virtual universities. Jones International University (JIU) was the first virtual college to go totally online in 1995. Colleges like Capella University, Phoenix University, and Walden University were a few examples of other universities that were created to offer students the option of getting a degree entirely online from the comfort of their home. Barnes and Noble University offered free courses to the public taught by authors and experts as a way to increase book sales.

Online distance education courses were offered typically through the use of software like Blackboard or WebCT Vista. Many of the textbook companies were piloting their own versions of programs like Blackboard that already had the text and ancillary material loaded into them. Some of these types of courses offered unique grading options with audio feedback that did not come with Blackboard or WebCT Vista. The advantages to either of these software programs were that they could be taken online, and the student could access the course from work or home and do the required work when it was convenient. Discussion boards, power points, e-mail, chat rooms, group discussions, virtual lectures like Tegrity, grades, assignments, syllabus, and calendars were made available so students had immediate access. With today's technological advances, the students felt like they were sitting in a face-to-face classroom, especially with the integration of programs like Centra, HorizonLive, Elluminate Live!, or Interwise, which possessed interactive characteristics that allowed the instructor and the student to communicate orally, exchanged messages through typing, uploaded power points, transmitted video, surfed websites together and more (Moore & Kearsley, 2005; Barbour, 2007; McBrien, Jones, & Cheng, 2009).

Hybrid courses. Other colleges and universities offered both online or hybrid course. A hybrid course combined a traditional classroom with an online (Web-based) component, reducing the amount of time actually spent in a classroom. Hybrid courses met 50% of the class time in a traditional face-to-face classroom and 50% of the class time online. Hybrids could use Blackboard, WebCT, textbook software, or any other software available for the online portion of the course.

Hybrids offered the convenience and flexibility of online courses combined with the ability to work directly with your instructor and other students in the classroom and online. In return for the flexibility and convenience, students took responsibility for their learning by using time management skills, and staying current with readings and assignments. Logging onto the course on a regular basis allowed access to important class information and communication with fellow students and the instructor.

If the student was familiar with how the internet works, was able to e-mail and e-mail attachments, had regular access to a reliable Internet service, then the student possessed the basic skills needed to succeed in a hybrid course (Taylor & Perkins, 2011).

Mobile devices. As technologies advanced**,** so too did the delivery methods. The emergence of mobile technologies over the last few years has sparked much interest among researchers. Combined with wireless networks, mobile devices had the potential to bring powerful applications to the palm of the students' hand. A variety of services were already available for mobile devices, including mobile tourist guides and navigation systems, YouTube, games, and more. Web pages were also being designed specifically for these mobile devices so it was easy to access online banking and online retail. Researchers were also interested in these devices as a learning tool. Mobile device technology was being referred to as m-learning (Monahan, McArdle, & Bertolotto, 2006). iPhones and iPads could also be utilized for taking online courses. Apps could be downloaded that allowed students to use Blackboard and other compatible software. Many community colleges were recently piloting courses using a Blackboard app for the iPhone.

Virtual reality and 3-dimensional virtual reality courses. Online courses often were not as stimulating to students as a traditional face-to-face course. Through the use of virtual reality (VR) and instant communication, students could be made more visually aware of other students in their classes and could converse in real time with them. The students could have received immediate feedback from their tutors and gotten a sense of being in the same place as their peers despite being in a remote location. The shared virtual environments facilitated simultaneous viewing of learning materials and allowed the students to actively participate in the class discussions. 3D graphics have been explored and developed to enhance the VR program. 3D graphic could aid in simulations and visualizations of complex data. VR highlighted a shift from the conventional text-based online learning environment to a more immersive and intuitive platform for learning (Mohahan, McArdle, & Bertolotto, 2006).

AET Zone was a 3-dimensional virtual world designed for distance education students, faculty, and support staff. AET Zone offered users a perception of space, movement, and the presence of others. Text and audio conversational tools, interactive elements, and metaphors were included that were not found in traditional web courses. The students (citizens) selected an avatar to represent themselves. Students must have downloaded a 3Mb browser (Windows only) that allowed them to connect directly to the server. The browser included four areas: (a) a first or third person 3-dimensional view of the world, (b) a text-based chat for "whispering" or chatting to all who are online, (c) a browser that linked user interactions with objects in the world to web-based content, and (d) a utilities tab for accessing support, notes from other users, teleports (bookmarks), and

contacts. Broadband was useful for use with this 3-dimensional world but not necessary. When a student was logged in, other students' avatars could be seen and interacted with online (Bronack, Riedl, & Tashner, 2006).

Each technology added to a course or program was likely to increase the development time and its cost as well as the cost of administration. Thus, some type of parsimony must be practiced in selecting the number and type of technologies to be used (Moore & Kearsley, 2005).

Theoretical Framework

Moore's transactional distance theory was an important concept for any distance educator to understand and compensate for in order for students to get the maximum benefit from an interactive video course. Teachers also experienced frustration as well as joy from teaching at a distance and the better they compensated for transactional distance the better they will felt about meeting the educational needs of students. Constructivist theory included the element of interaction as a key component to the success of students in any learning environment and it was especially needed to overcome transactional distance for both the learner and the instructor. Collaborative and individual learning approaches were inherent components of interactive video courses. Interactive video tried to emulate a face-to-face environment by including both theories to meet the diverse needs of students. The effectiveness of the technology used in interactive video classes determined whether the teaching strategies employed by the instructor were successful or not. Each theory worked with the other theories in interactive video for the satisfaction of the instructor in reaching the full potential of the learner.

Summary

Chapter 2 provided a review of the literature relevant to the present study. Distance education literature provided a framework for the concept of transactional distance experienced by instructors and how it can be overcome for both instructor and student satisfaction. Technology changes daily and much of that educational technology centered on finding ways to help instructors teach students successfully in ITV courses. Interactive video courses as well as web-enhanced components made the job of the instructor both easier, and at times, more difficult, because of the problems associated with technology. Collaborative learning and individual learning approaches were discussed as an inherent part of the ITV web-enhanced learning format. Constructivist theory was the preferred theory for this study, allowing instructors and students to interact and take ownership of their education and the course.

The next chapter, Chapter 3, addresses the methodology for the study.

Section 3: Methodology

Introduction

The purpose of this study was to evaluate how ITV course-delivery systems affected instructional strategies. The purpose of Chapter 3 is to explain the study's methodology. It covers the following topics:

1. The nature of qualitative research

2. The nature of grounded theory

3. Justification for using grounded theory

4. Research questions

5. Context of the study

6. Gaining access to participants

7. Ensuring the ethical protection of the participants

8. Role of the researcher

9. Participant selection, sample size and their justification

10. Data collection procedures, including (a) how and when the data were collected, (b) analysis, and (c) methods used to address validity and trustworthiness of the collected data

Research Design

Qualitative Methods

In this subsection, the researcher will discuss the nature of qualitative research, starting with definitions. Denzin and Lincoln (2005) defined qualitative research as a situated activity that located the observer in the world. It consisted of a set of interpretive,

material practices that made the world visible. These practices turned the world into a

series of representations, including field notes, interviews, conversations, photographs,

recordings, and memos to the self. At this level, qualitative research involves an

interpretive, naturalistic approach to the world. This means that qualitative researchers

study things in their natural settings, attempting to make sense of, or interpret,

phenomena in terms of the meanings people bring to them (p. 3).

Corbin and Strauss (2008) posed the question: Why do qualitative research? (p.

12). The answer most often given was that the research questions should dictate the

methodological approach that was used to conduct research (Corbin & Strauss, 2008, p.

12). Productive qualitative research has a tendency to include the following

characteristics: (a) a humanistic bent, (b) curiosity, (c) creativity and imagination,(d) a

sense of logic, (e) the ability to recognize diversity as well as regularity, (f) a willingness

to take risks, (g) the ability to live with ambiguity, (h) the ability to work through

problems in the field, (i) an acceptance of the self as a research instrument, and (j) trust in

the self and the ability to see value in the work that was produced (Corbin & Straus,

2008, p. 13).

Qualitative researchers tend to enjoy working with data, drew on their own

experiences when analyzing materials and viewed their work as modifiable. Qualitative

researchers avoided quick closure and understood that research is tempered with the

realization that phenomena were complex and their meanings were not easily fathomed

(Corbin & Strauss, 2008). Many procedures such as making comparisons, asking

generative questions and theoretical sampling, could be used when the research aim was

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theory building or rich, thick description (Glazer & Strauss, 1967). Qualitative

researchers also needed a qualitative approach to inquiry, the data collected in a natural

setting, inductive data analysis that established patterns or themes, a final written product

that included the participants' voices, the acknowledgement of biases, values, and

interests of the researcher, and a complex reasoning that was multifaceted and extended

the literature or signaled a call for action (Creswell, 2003; Creswell, 2007; Hatch, 2002).

Merriam (2002) broke down qualitative research into three separate areas: (a)

interpretative qualitative approach, (b) critical qualitative approach, and (c) postmodern

or post-structural approach. The interpretive qualitative approach, which consisted of

learning how individuals experience and interact with their social world and the meaning

it had for them, was the best approach for this study. The interpretive qualitative

approach contained four key characteristics. First, researchers strived to understand how

people make sense of their experience. Second, the researcher was the primary instrument

for data collection and data analysis. Third, the research process was inductive where the

researcher gathered data to build concepts, hypotheses, or theories. Finally, the product

was richly descriptive, using words and pictures rather than just numbers.

Grounded Theory

ITV with dual-enrollment students was a unique teaching format that had not been

explored in terms of the instructors' perceptions, especially regarding how ITV course

delivery systems affected the instructional strategies or the instructors' satisfaction with

the instructional strategy in this particular type of distance education course.

Within the qualitative paradigm, the researcher could have approached the investigation using narrative research, which centers on the stories told from an individual and was arranged in chronological order, or ethnography, which focuses on setting the individuals within the context of their culture. Case study research involves "the study of an issue explored through one or more cases within a bounded system" (Creswell, 2007, p. 73). Phenomenology is a description of the essence of the experience concerning a phenomenon, as described by participants in the study. Extensive interviews are not as easy to perform as written open-ended instruments would be through e-mail, then the follow up with one or more interviews of a smaller population.

For this study, a grounded theory approach was adopted. The grounded theory approach was the best fit for this study for several reasons. Glaser (1978) asserted that grounded theory must fit the data, work in terms of useful explanation, be relevant to actual problems, and be capable of modification by future researchers. This study explored an aspect of distance education that had not been explored previously, where the participants all have experience in this area, and the basic analytical procedure, constant comparison, was utilized. Merriam (2002) stated that the goal of grounded theory was to "derive inductively from data a theory that is 'grounded' in the" (p. 7). Through the process of constantly comparing incident with incident, comparing incidents with emerging conceptual categories, and reducing similar categories into a smaller number of highly conceptual categories, an overall framework of substantive theory emerged. Vital to these procedures was the notion of constant comparison, through which researchers engaged in detailed analytical processes that required repeated confirmations of potential

explanatory patterns discovered in the data (Merriam, 2002; Strauss and Glaser, 1967; and Hatch 2002. In addition, the grounded theory approach was the best fit for this study because of the following characteristics of grounded theory laid out by Corbin and Strauss (1998):

1. The ability to step back and critically analyze situations

2. The ability to recognize the tendency toward bias

3. The ability to think abstractly

4. The ability to be flexible and open to helpful criticism

5. Sensitivity to the words and actions of respondents

6. A sense of absorption and devotion to the work process

Strauss and Glaser (1967), Hatch (2002), and Merriam (2002) all cautioned researchers that grounded theory consists of categories, properties, and hypotheses that state relationships among categories and properties. These would need to be tentative, suggestive, and make sure that they actually developed a theory rather than just derive conceptual elements of the theory.

Systematic Procedures of Strauss and Corbin

Strauss and Corbin (1998) developed a systematic approach to grounded theory. Within this systematic approach, the researcher sought to systematically develop a theory that explains process, action, or interaction on a topic. A typical study included 20 to 30 individual interviews based on several visits to the field, collecting interview data to saturate the categories. Saturation occurred when the researcher could no longer find information that added to the category. A category represented a unit of information

comprised of events, happenings, and instances. Creswell (2007) referred to the process as a "zigzag" process where the researcher goes out to the field to gather information, into the office to analyze the data, back to the field to gather more information, then back to the office and so forth until the researcher felt that the process was complete.

  Theoretical sampling. Data collection was guided by theoretical sampling because the researcher must collect, code, and analyze the data then decide the data that needed to be collected next and where to find that data. This was completed in order to develop a theory from the data as it emerged. Initially, a survey was chosen for its logical relevance to the research problem. Gaps or even problems with the theory would likely occur as the data collection and analysis continue. At this juncture, the researcher went go back to the field and collected delimited data to fill those gaps through the interviews and probes that occurred and were addressed during the interview, and this process was referred to as theoretical sampling. The sampling procedure collected data from individuals that were quite diverse. Comparing these diverse groups quickly revealed both the similarities and the differences that arose to theoretical categories, indicating or testing the strength of the emerging categories. Sampling individuals contributed to forming the open and axial coding of the theory. The researcher began with a homogeneous sample, then, after initially developing the theory, selected and studied a heterogeneous sample in order to confirm or disconfirm (Glaser & Strauss, 1967; Charmaz, 2000; Merriam, 2002; Creswell, 2007).

  Constant comparison. The constant comparative method of data analysis was the process of taking information from data collection and comparing it to emerging

categories. Unit of data determined to be meaningful by the researcher were compared with each other in order to generate tentative categories and properties. Using the constant comparative approach, the researcher attempted to saturate the categories in order to look for instances that represented the category and to continue looking and interviewing until any new information obtained does not provide additional understanding of the category. These categories are comprised of subcategories that are labeled properties, which represent multiple perspectives about the categories. Properties were viewed as dimensions and were presented on a continuum (Strauss & Glaser, 1967; Merriam, 2002, Creswell, 2007).

Coding. In the grounded theory approach to coding, the researcher examined the interviews and the literature to determine which themes or concepts to start the coding process, developed new concepts if appropriate, and decided on definitions before starting the physical coding. Grounded theorists coded each passage of every interview as they went along, rather than develop a separate list of concepts and themes, that were then applied to interviews (Rubin & Rubin, 2005).

Open coding. The naming and categorizing of phenomena through a close examination of the data was referred to as open coding. The researcher begins with open coding or coding the data for its major categories of information. Open coding can result in rich, fresh results. A downside to using open coding is it requires large amounts of coding that the researcher may never use. If the researcher used an open coding process where interviews were read and marked off and coded for each passage as it occurred, the meaning may not be consistent and the meaning of the codes may change over time.

Recoding may need to occur in this instance. This could be tedious and time consuming, so the researcher utilized this approach for shorter projects or ones that the researcher was very familiar with the concepts involved (Merriam, 2002; Rubin & Rubin, 2005; Creswell, 2007).

     Axial coding. Axial coding emerged from open coding. Whereas open coding fractured the data, axial coding put the data back together in new ways by making connections between a category and its subcategories to create several main categories. In axial coding the researcher identified one open-coding category to focus on called the core phenomenon. Then the researcher went back to the data and created categories from this core phenomenon. Using NVivo, a software program designed to analyze interview data, the researcher determined the types of categories surrounding the core phenomenon which consisted of (a) causal conditions or what factors caused the core phenomenon, (b) strategies or actions taken in response to the core phenomenon, (c) contextual and intervening conditions, the broad and specific situational factors that influenced the strategies, (d) consequences or the outcomes from using the strategies. These were referred to as the axial paradigm. Information from the coding phase was organized into a figure or a coding diagram that presented a theoretical model of the process being studied. At this point from the theory generated, the researcher formed propositions, hypotheses, or statements that interrelated the categories in the coding model (Strauss & Corbin, 1998; Merriam, 2002; Creswell, 2007).

     Selective coding. The selective coding process integrated the categories to develop a substantive theory. This theory depicted an interrelated set of categories that

emerged from the data through the constant comparative coding and analysis procedure. The identification of a core category was key for the development of the theory. Once the core category was identified, the remaining categories could then be related to the core category as the conditions that led to the occurrence of the phenomenon (Merriam, 2002; Creswell, 2007).

Research Questions

The research questions guiding this study were:

1. How does the ITV course delivery format affect the overall instructional strategy such as lectures, videos, powerpoint presentations?

2. How does the ITV course delivery format affect the ITV instructors' satisfaction with the overall instructional strategy?

Ethical Protection

This study was approved by the Walden University Institutional Review Board (IRB). Walden University's approval number is 05-02-12-0071656. Consent forms were obtained from each participant (see Appendix A). Participation was voluntarily and participants had the right to withdraw at any time. A letter of cooperation was obtained from Twilight Community College (see Appendix B). Data confidentiality was addressed through anonymity as well as confidentiality. All e-mailed surveys were deleted from the researcher's inbox as soon as they had been copied and coded to maintain anonymity. Tape-recorded material will be deleted or destroyed after the required 7-year period. All records submitted in a written format, such as surveys and interviews, will be destroyed at the completion of this study. All surveys and interviews were coded so participants'

names do not appear on any documents in this study. Surveys were downloaded from e-mail and copied without the names and e-mail addresses; they were then coded to eliminate any identifying information. Interviews were conducted in person, so all information was coded initially to eliminate names. The names of all ITV instructors were supplied by the Director of Institutional Effectiveness and Planning; then, on a voluntary basis, participants submitted surveys and agreed to conduct an interviews.

The results of the study will be made available to the institution at the completion of the study. The information should help the gatekeeper assess the effectiveness of ITV courses from the instructors' point of view.

Role of the Researcher

Twilight Community College was chosen because of its close proximity to the researcher. Obtaining access to qualified participants was convenient and easy (convenience sampling); however, even though this might be considered "backyard" research because it involved interviewing a nearby community college, the researcher took measures to alleviate biased data by employing multiple strategies of validity such as a convenience sampling, peer debriefing, member checking and triangulation to create confidence in the accuracy of the findings (Glesne & Peshkin, 1992, p. 21).

The "gatekeeper" was the Director of Institutional Effectiveness and Planning of Twilight Community. Written permission, delivered electronically from the director, was obtained.

The researcher started by conducting a field test with a second community college that was not the community college where the primary data was gathered, then after

determining that the questions were valid, an open-ended survey was delivered via e-mail

to approximately 35 faculty members of Twilight Community College who taught ITV

classes during summer semesters, constituting theoretical sampling. The survey allowed

the researcher to initially gather information about the study and the interview allowed

the researcher to follow up on key comments made in the surveys. After the open-ended

surveys were returned and data analyzed, then follow up interviews with a smaller

number of participants (10) was arranged. The interview process took place after work

hours on the campus to alleviate any disruption of the workday or site. The survey,

observational protocol and interviews satisfied saturation. No new data was gathered after

both the survey and the interview were completed. This study was designed to not be

intrusive or disruptive to the normal activities of the campus.

Participants

The purposefully selected site for this study was Twilight Community College.

This site was selected due to its use of ITV for remote, rural students. Twilight

Community College offered students the opportunity to take their basics via the ITV

system. This includes the various different courses offered by the community college.

Select instructors from those fields teach ITV as well as online and face-to-face courses.

In a grounded theory study, the researcher chose individuals who had "commonly

experienced the action or process" (Creswell, 2007, p. 125). Since the individuals may

not be located at a single site, the dispersed population provided "important contextual

information useful in developing categories in the axial coding phase of the research"

(Creswell, 2007, p. 122). Initially, individuals from another second community college

were sent a field test for the actual survey questions to be used at Twilight Community College. These individuals from the second community college did not participate in the actual study. In this study, the individuals came from Twilight Community College faculty in different departments rather than different sites, but the desired result were still obtained. Approximately 35 instructors who taught ITV classes across multiple disciplines for Twilight Community College were surveyed. Of these 35 instructors, 10 faculty members were asked to volunteer to complete an interview.

The participants were profiled based on the following criteria: (a) had taught at least one ITV course, (b) number of years of experience with ITV, (c) the age of participants, (d) the subject matter taught, and (e) the type of ITV format.

Data Collection Procedures

The study used the following data gathering: surveys and interviews.

Field Test

The field test was sent to the second area community college, where ITV faculty tested the survey and interview questions, but these individuals did not participate in the actual study (see Appendix C). The southern rural community college faculty chosen for the study did not participate in the field test.

Survey

After the field test was complete, the survey was sent to approximately 35 ITV faculty at a southern rural community college. An unstructured survey that contained open-ended questions was utilized for this study (see Appendix D). The survey contained only open-ended questions, meaning that the instructors responded to the survey in their

own words. Using open-ended questions can offer insight into why people believe the

way they do, even though interpreting can be a challenge, thus analysis and interpretation

played a key role in the process. Usually open-ended questions were used to determine

satisfaction with a product, service, or program, so concentrating on what they liked best

and what they least will be a critical component of the open-ended questions. Instructors

were sent an open-ended survey online through e-mail (see Appendix D). The use of an

online survey was preferable because the participants/instructors worked in an

environment that was conducive to the online e-mail format over paper and pencil

formats. The availability of a reliable internet was an integral component of the work

environment and the browser and system had twenty-four hour technical support, which

eliminated some of the drawbacks to using an online format for surveys. Confidentiality

was insured by using Twilight Community College's secure server. One supreme benefit

to this format was that data was automatically entered and could be transferred to the

program, NVivo, to be automatically analyzed. These electronic surveys were considered

documents and were preferable because it saved the researcher the time and expense of

transcribing.

Interviews

Once the survey was completed and analyzed, the interview process began.

Participants were selected from the Twilight Community College's ITV population. Ten

ITV instructors were asked to voluntarily participate. Then, the interview process began.

Interviews were conducted on the participant's campus to ensure easy access of an

interview site for the participants who were already on campus. This alleviated the need

to travel to another location and risk losing potential participants. A set of initial

questions (see Appendix D) were used for the initial interview. All interviews were tape

recorded by two different devices in case of a faulty tape recorder. The open-ended

interview questions, which were taken by 10 participants, were expanded as necessary to

answer any new categories or themes that emerged. Formal interviews, also known as

structured or in-depth interviews, were used in order for the researcher to be in more

control of the interview process. The beauty of formal interviews lies in the fact that

certain topics were introduced but could be open to digression. All 10 of the interviewees

got the same initial questions but progressed in the direction the interviewee naturally

progresses. The formal interview consisted of both structured and flexible questions and

responses. The researcher created probes for follow up questions based on the responses

received in the initial interviews. The probes were written in the observation protocol

during the interview as the interview progressed. The probes to the initial questions were

addressed during the same, initial interview. The probes were addressed at the end of the

initial interview not at a separate time. A few of the probes that arose were generated

during the interview and addressed and answered during the course of the interview not at

the end of the interview. All 10 interviews had probes for further information either at the

end of the interview or during the interview. Using a formal interview process allowed

for greater amounts of information to be generated surrounding the topic under study.

Since interviews were the primary source of information, it was important to obtain as

much quality information as possible to insure that the research question was answered

thoroughly. All interviews were recorded and transcribed by the researcher, using the

software, NVivo. This software program was utilized to assist in analyzing the data and to ensure that saturation was achieved. An observational protocol was used (see Appendix F). The observational protocol used resembled a journal, outlining any notation about the interview such as devising appropriate probes for the next interview, documenting discrepancies, or clarifying information.

Data Analysis

Data analysis "is the process of moving from raw interviews to evidence-based interpretations that were the foundations for published reports" and analysis entails "classifying, comparing, weighing, and combining material from the interviews to extract the meaning and implications, to reveal patterns, or to stitch together descriptions of events into a coherent narrative" (Rubin & Rubin, 2005, p. 201). Data analysis should be generated through the use of a field test, a survey, and interviews to obtain the raw data.

Field Test

Upon collection of the field tests sent out to the second community college, they were analyzed for validity prior to administering as a survey to the faculty of Twilight Community College.

Survey

Once the validity of the field test questions was established, the survey could be administered to approximately 35 Twilight Community College faculty. After obtaining the survey from the faculty and reviewing all of the survey responses, categories of information was generated from the responses, looking for properties or subcategories that could be generated. After categories had been determined, then the data was coded.

The researcher checked coding for reliability, assessing if the codes were clear. Once the surveys had been coded thoroughly and potential categories assessed, then the researcher interpreted the results. Once the survey questions were assessed and analyzed, then select instructors from Twilight Community College were interviewed face-to-face in order to generate additional data for this study (Fink, 2006).

Interviews

Once the interview with the 10 Twilight Community College ITV instructors had been completed, the researcher used the following steps in the analysis process, coding both by hand and using the NVivo software. Initially, the interviews were transcribed. Once the interviews were transcribed, the researcher read and reread all of the data to obtain a general sense of the information, looking for the overall tone, general ideas, or usefulness of the material. The researcher made notations in the margins about key ideas, themes, or patterns then organized them into coherent categories. After looking for indicators of categories in events and behaviors, the researcher started developing a coding system and coded the categories. Then the researcher began detailed analysis using the coding process. Opening coding or coding as the researcher went along through each interview provided a systematic approach that resulted in fresh and rich results. Then the researcher compared codes to find similarities and differences; consistencies between codes revealed categories, thus, categorizing each specific event. The researcher also used the software program NVivo to analyze categories. The researcher made memos on comparisons and emerging categories. Eventually, after coding for days, the researcher found the axial category that became the central focus. The researcher

assumed saturation when no new codes emerge. In the final step, the researcher took the information and developed propositions or selective coding.

To decide on the central category of this study, the researcher identified a category that would synthesize the other categories together to form an explanatory whole. After repeatedly reviewing the list resulting from axial coding and the original data, the researcher identified the central category, "instructor perception of the effectiveness of ITV courses," as the most dominant theme and most situated in the center of the relationships among the factors related to participants' satisfaction with the technology in and the teaching of ITV courses. Once the central category was ascertained, other categories, especially the major categories, were organized around the central category, creating the sub-categories.

The detailed descriptions of the major category and its subcategories are provided in Section 5. Once the theoretical scheme was determined, the researcher refined the theory by filling in poorly developed categories and combining several that were related then validated the theory by comparing it to the raw data.

Methods of Ensuring Validity

Due to the potential bias inherent in a convenience sampling and the researcher's own subjective interpretation, multiple strategies were used to insure validity. Prolonged time was spent in the field to develop an in-depth understanding of the phenomenon under study and conveyed detail about the site and the people that lent credibility to the narrative account. In the selective coding section where the researcher created a story from the interconnection of the categories, rich, thick description was used to convey the

findings, creating an element of shared experiences. The findings were sent back to the participants to verify the accuracy of their statements. A peer debriefer was also used to verify the accuracy of the data. As a final step, the researcher made suggestions for reform of the ITV process to generate greater satisfaction for the instructors teaching the courses. In addition, member checking was utilized to determine the accuracy of the qualitative findings through taking the final report or specific themes back to the participants and determining whether these participants felt that they were accurate. The participants also viewed the interpretations of the data. Peer debriefing was also used to enhance the accuracy of the account. A peer debriefer was located who reviewed and asked questions about the qualitative study, so the account resonated with people (Creswell, 2003, p. 196). The peer debriefer had 7 years of distance education experience with 6 of those years being in an ITV format. The peer debriefer looked over the study and made sure that the evaluation and analysis was thoroughly composed. The peer debriefer was in approximately the same stage of research in the same program as the researcher; therefore, the peer debriefer was familiar with the expectations of Walden University and research publications; the same research collection and analysis methods were employed by the peer debriefer, indicating that the peer debriefer was qualified to recognize opportunities for improvement. Triangulation also occurred through the use of a field test, a survey, and the interviews. Collecting information in many different ways added strength to the study.

Summary

This chapter described the qualitative method used for this study and the research design, grounded theory, using specifically the systematic procedures of Straus and Corbin (Strauss & Corbin, 1998). Ethical protection, the role of the researcher, and participants are addressed in detail. Both data collections and data analysis contains specific information on surveys used as field tests and interviews. The methods of validity included prolonged time in the field, member checking, peer debriefing, triangulation, and rich, thick description.

Section 4 presents the field test, survey, and interview results.

Section 4: Summary of Findings

Introduction

The purpose of this study was to evaluate how ITV course-delivery systems affected instructional strategies. The intention for doing this study was to formulate theoretical propositions that may support more efficient and effective ways of teaching ITV courses through the use of appropriate technology. The instructional strategy is the process or manner by which an instruction module, instruction phase, or an entire course is delivered, and which may include a conference, demonstration, discussion, lecture, etc. (Clark, 2011). According to the majority of the participants, the satisfaction of the instructors was determined directly by the failure or success of the technology involved with teaching ITV courses. Section 4 covers the following topics: data collection processes, data analysis, results, and evidence of quality.

Data Collection

Overview

This study was conducted in a rural community college. All procedures for selecting participants and the facilitation of the study were completed under the guidelines of the Walden University Institutional Review Board. The research questions that guided this study were as follows:

1. How does the ITV course delivery format affect the overall instructional strategy such as lectures, videos, powerpoint presentations?

2. How does the ITV course delivery format affect the ITV instructors' satisfaction with the overall instructional strategy?

The liasion with the community college, the Director, Institution Planning and Effectiveness, provided written permission for this study until the end of the semester (see Appendix B); then the liasion extended the permission date for 1 year (see Appendix C).

Data collection was guided by theoretical sampling because the researcher had to collect, code, and analyze the data prior to going to the next participant.

The field test was conducted in a southern rural community college. The field test, which consisted of both survey questions, interview questions, and an Informed Consent Form was hand delivered to four individuals. These four, who had several years of ITV experience, were asked to participate in the field test (see Appendix G) to ensure that the questions were worded succinctly and accurately. All four of the individuals returned an assessment of the quality and validity of the field test questions and the Informed Consent form. No changes were deemed necessary to the survey or interview questions.

Once the questions were deemed appropriate to the study, the researcher sent out the survey questions (see Appendix D) and an Informed Consent Form that contained a statement of invitation (see Appendix G), the first phase, to 35 individuals at a rural community college through a secure email server and a computer that was password protected. The information in the consent form stated that participation in the study, at any level, was strictly voluntary, and would be kept confidential. The instructors then had a choice of (a) not returning the survey or the signed consent form, (b) returning only the survey and the signed consent form, (c) not setting up and conducting an interview, the second phase, and returning a signed consent form, (d) only agreeing to conduct an

interview and returning a signed consent form, or (e) returning the survey, the signed

consent form, and agreeing to an interview. The last choice signified that the participant

agreed to do both the first phase, the survey, and the second phase, the interview.

Field Test

The field test (see Appendix G) was sent to a second community college that was

not where the study actually took place. ITV faculty at this community college assessed

both the survey questions and the interview questions for validy, reliability, and accuracy

but did not participate in the study.

Survey

In the first phase of the study, participants responded to a written survey (see

Appendix D). The process of delivering the survey took place via email through a secure

server since the participants were located at a distance. The researcher sent the survey to

35 participants. Fifteen of the 35 (42%) ITV instructors volunteered to complete the first

phase of the study, the survey. The total time to send and then receive the surveys back

was 1 month. The survey participants were represented by three males and 12 females

with a wide range of disciplines being represented, including English, nursing, business,

economics, history, and math. Participants were not asked to divluge an age in the survey.

The survey consisted of six open-ended unstructured questions (see Appendix D).

The first question established the number of years of experience of the participants. The

other five questions asked for information about their experiences with ITV. A total of 10

out of 15 (66%) of the survey participants also agreed to an interview.

Interviews

Of the 15 survey participants completing the first phase of the study, the survey, 10 agreed to be interviewed, one male and nine females. A wide range of disciplines were represented: English, nursing, business, economics, history, and math. Participants' ages varied.

The face-to-face interviews began 2 weeks after the initial surveys were sent out and began to be returned. The interviews were conducted over a period of 4 weeks, from May 2012 to June 2012. Each person responded via e-mail with a confirmation of an interview, which was then followed by an arrangement of a date and time for the interview via email. The participant was granted the opportunity to select the day and time that was convenient for the interview. The interviews were conducted either in the morning or the afternoon. Many of the participants were teaching summer school classes, so the location on the participants' campus was also determined by the participants. All participants were interviewed on their campus in a secure, private location. Two of the participants were interviewed in a secure private location at the college's annex in another rural town.

Each interview began with a review of the consent form, an explanation that the participant could drop out of the study at any time, that the results of the interview would be anonymous and confidential, and a reminder that the interview would be digitally recorded and transcribed. The researcher emphasized that no outside sources would be transcribing the interview; only the researcher would perform transcriptions. Each participant was informed that any identifying information would be removed from the

interview. Each participant expressed trust and satisfaction about the level of

confidentiality. Each interview took between 20 and 60 minutes. To maintain consistency

and ensure that each topic was addressed, an observational protocol (see Appendix F)

was formulated and used to record probes that needed to be addressed during or right

after the interview to add additional data. All 10 participants answered additional probes

either during the interview process or at the end of the interview. The IRB gave the

researcher permission to conduct only one set of interviews. The probes were used in an

attempt to reach saturation of the data.

Observational Protocol

The observational protocol contains the questions asked of the participants as well

as a memo section to record any other data that might add other dimensions to the

interview. The observational protocol was used during the interview to document body

language, facial expressions, and hand gestures that might add subtle nuances of meaning

to the interview. The observational protocol was also utilized to document memos and

make notations after each interview had concluded. Writing memos and making these

notations according to Janesick (2004) can provide an opportunity to reflect, clarify

thinking, triangulate the data, or delve deeper into the initial interpretation of the data.

This informal process encouraged creative thinking and added richer description to the

research.

Recording the Data

The researcher downloaded and saved the surveys that were returned via email as

attachments. Two participants typed their surveys in the dialog box, so the researcher cut

and pasted them into a Microsoft Word document that was consistent with the attached surveys. One survey was hand delivered to the researcher, and it was typed into the same Microsoft Word document format as the other surveys. All surveys were in the exact same format in separate Microsoft Word documents, so that they could be loaded into NVivo9 in the autocoding format. This format allows for faster, easier coding of similar data questions.

All interviews were transcribed verbatim. The researcher transcribed the interviews by using the voice recorder, an earbud, and Dragon Naturally Speaking 11.5 Premium (Nuance, 2011). The researcher listened to each interview through the earbud, then repeated the information verbatim into the microphone where the software typed or transcribed each interview into a transcript. After the initial interview was transcribed, then the researcher listened to the recorded interview a second time, verifying that the information had been transcribed accurately. Any errors were corrected by the researcher. Each interview was transcribed within 24 to 48 hours of the interview. Upon completion, the participant was contacted via e-mail, sent the transcribed interview, and asked to verify the accuracy of the interview. Participants were advised that they could make additions, deletions, or corrections as needed to make sure the information reflected the participants' views. Each participant chose to review the transcript, but only one participant made two minor changes to reflect (a) the correct term or concept used or (b) to fix a typo.

All files, Microsoft Word documents, including the surveys and transcripts, each recorded interview, and all data from NVivo9 were stored on an external hard drive and put in a safety deposit box for security and confidentiality.

Emerging Understandings

Survey Data

The researcher conducted an open-ended survey prior to interviewing the participants as a way to gather and analyze initial information about the effectiveness of the ITV format in a rural community college setting and assessed people's knowledge and attitudes about the ITV format. The survey (see Appendix D) was generated by the researcher and was not taken from any other source; therefore, permission to use the instrument was not necessary. The written results for the six questions generated for the survey were coded using the autocoding feature in NVivo9. The researcher used the autocoding feature to determine data content, produce nodes, then emerging themes by questions. NVivo9 was used to sort, filter, and count responses to question. The data were examined for relevance, redundancies eliminated, and additional codes were subdivided into clear, more concise codes. Several of the initial themes were revised into more coherent themes and combined or reorganized to make the themes more precise. Table 2 illustrates the initial themes generated.

Table 2

Results for Initial Coded Responses – Survey

Questions	Themes	Coded responses
Question 1	Years of experience	Over 5 years = 9 Under 5 years = 6
Question 2	Describe your experience	Positive = 2 Negative = 6 Both pos.& neg. = 5 No answer = 2
Questions 3	Give one positive experience	Advanced technology = 4 Teaching to remote locations = 3 Rich discussion/multiple sites = 5 Proctors/IT personnel = 2 Dedicated concurrent classes = 1
Question 4	One Negative Experience	Connectivity issues, equipment Failure, outages = 8 Unqualified IT personnel = 3 Noise interference,audio/visual Delays, pixilation = 3
Question 5	Advantages	Interaction between different Demographic areas = 3 Close proximity of Equipment/accessibilbity = 2 Advanced technology = 4 Reaching a larger area & students/remote areas = 9 Dual enrollment service = 6 Reduced transactional distance = 1
Question 6	Disadvantages	Students not perceiving as a college course = 8 Inadequate proctors = 1 Technical issues/system outages, weather related outages, Blackboard down/in class issues/no audio or visual, screens rolling, freeze frames, etc. = 10

Discussion of Findings

Survey Question 1 identified the number of years teaching experience each participant had in an ITV format. Of the 15 surveys that were returned, three participants had only 1 year of experience, two participants had 2 years of experience, one participant had 4 years of experience, two participants had 5 years of experience, one participant had 6 years of experience, two participants had 7 years of experience, three participants had 8 to 8.5 years of experience, and one participant had 10 years of experience. The majority of the participants surveyed exceeded 5 years of experience teaching ITV and all had additional teaching experience outside the ITV format.

Survey Question 2 asked the participant to "Describe your experience(s) with technology in ITV web-enhanced classes." Survey Question 2 provided initial insight into the instructor's perceptions about technology associated with an ITV classroom. The results were divided by positive and negative experiences. Six of the 15 participants classified experiences with technology as positive; two participants classified experiences with technology as negative, and five participants classified the experience with technology as both positive and negative. Two participants did not answer the question on the survey.

Survey Question 3 asked the participant to "Give one positive experience." One participant cited voice activated equipment as a positive feature of ITV. One participant cited having multiple family members from remote locations as a positive experience. One participant felt that getting ITV experience was a positive experience. Three participants cited teaching students in remote locations as a positive experience.

Experiencing or training on different types of classroom technology, such as Elmo, a document camera, remote audio/visual controls was a positive for three participants. Having students from different remote locations be able to interact productively was a positive experience for five participants. One participant enjoyed having a quality proctor on the participant's end. One participant felt that a positive was having dedicated concurrent classes. One participant enjoyed having well-trained technical support on site.

Survey Question 4 asked the participants to "Give one negative experience." Eight of the 15 participants cited connectivity problems, equipment failure, the infrastructure, or outages as a negative aspect of teaching an ITV class. Three participants cited a lack of qualified technical staff or facilitators as a drawback to ITV. One instructor felt that the lack of a personal connection or transactional distance was a negative. Noise interference, audio delay, freeze frames, and pixilations were found by three participants to negatively affect ITV classes. Training for the participants as instructors and for technicians and facilitators was also perceived as a negative by two participants. One participant found juggling public school holidays and activities that differed from the college schedule to be a negative.

Survey Question 5 asked "What are the advantages of using ITV web-enhanced courses?" Students from different demographic areas being able to interact with each productively was viewed as an advantage by three participants. The compactness, close proximity, and accessibility of the equipment/technology in both the instructor and the students' classroom saved instructors and students valuable time and was found to be an advantage by two participants. One participant felt that the exposure for the college due

to dual credit enrollment in remote locations was an advantage. Advanced technology

was viewed as an advantage by four participants. Nine participants felt that reaching a

larger group of students, especially in rural areas, was an advantage. Dual enrollment

students earning college credit while still in high school from a remote location was

viewed as an advantage by six participants. One participant felt that the ITV format

reduces the transactional distance better than the online format.

Survey Question 6 asked the participants, What are some of the disadvantages of

using ITV web-enhanced courses? Eight participants felt a disadvantage was that

students do not percieve ITV as a real course but more as a recorded lecture, a real

college course, and a transactional distance issue due to a lack of personal one on one or

face to face contact with an instructor. One participant felt that inadequate proctors was a

disadvantage. All facets of technical issues from system outages, weather related outages,

Blackboard going down, to classroom issues such as viewing remote sites, seeing an

entire class on screen, screens scrolling around or locking on one site, inadequate video

feed of freeze frames and pixilation were viewed as a disadvantage by 10 participants.

The survey questions were assessed then used by the researcher to gage the

effectiveness of the interview questions. Many of the initial survey questions were in line

with the results of the interview questions, helping to determine saturation after the

interview questions were coded and analyzed.

Interview Data

Within approximately 24 to 48 hours of conducting the interviews, the researcher

transcribed each interview using an audio recorder, an earbud, a microphone, and Dragon

Naturally Speaking 11.5 Premium (Nuance, 2011). Since the researcher was transcribing

each interview personally, the researcher was able to pay attention to what each

interviewee said, and it also helped the researcher to prepare for the next interview

(Creswell, 2003; Mills, 2003; Rubin, 2005). Hatch (2002) believed that getting the

interviews transcribed quickly leads to early stage analysis and gives the researcher a

sense of confidence in the data collection process. Within just a couple of days after each

interview, the transcribed interviews was open coded manually. Then the transcribed

interviews were transferred to NVivo where additonal open coding was performed and

put into nodes. NVivo lends itself to longer text for codes so elaborate coding symbols or

shorthand was not necessary.

Initial Themes

The researcher coded across all interviews. After applying the open coding to the

10 interviews, several initial themes emerged: (a) IT issues, (b) course appropriateness,

(c) visual issues, (d) audio issues (e) training, (f) class structure, (g) transactional

distance, (h) technology, (i) backup systems, (j) web-enhanced component, and (k) cost.

These main themes were evaluted and divided into other categories that were later refined

and focused.

The data were examined for relevance, redundancies eliminated, and additional

codes were subdivided into clear, more concise codes. NVivo9 was used to sort, filter,

and count responses to each theme or node. Several of the initial themes were revised into

more coherent themes and combined or reorganized to make the themes more precise.

For example, the audio and visual themes and class structure were combined to create

technology in the classroom. Backup systems was incorporated into technology outside the classroom. Course appropriateness was omitted because it lacked relevance or fit. Table 3 illustrates the final themes after refinement.

Table 3

Results for Initial Coded Responses - Interviews

Themes	Coded responses
IT issues	22
Technology issues – in the classroom	58
Technology issues – outside the classroom	5
New technology	31
Training	10
Transactional Distance	9
Web-enhanced component	13
Cost	24

Axial Coding

After open coding the data, axial coding took place because whereas open coding fractured the data, axial coding put the data back together in new ways by making connections between a category and its subcategories (Creswell, 2007; Rubin & Rubin, 2005; Strauss & Corbin, 1998). During the axial coding, a connection was made between categories and subcategories to create new main categories. Using the node function in NVivo9, the researcher was able to easily manipulate the data through a color coding process, making it easy to see connections. Smaller categories were either combined with

larger related categories or eliminated, which refined and focused the data. The

researcher continued this process until the data and relationships both within and between

the categories were clearly established.

Selective Coding

In selective coding, the storyline connected the categories, creating a substantive

theory (Creswell, 2007; Straus & Corbin, 1998). This theory emerged from the data

through the constant comparison coding and analysis procedures. All coded responses

were colored coded and stored in NVivo9 for easy access in generating empirical

generalizations. From the main category, "instructor perception of the effectiveness of

ITV courses," six theoretical categories emerged that informed the 2 research questions

about ITV formats: (a) class structure, (b) quality audio/visual technology related to the

classroom, (c) the web-enhanced component, (d) IT and personnel issues related to

technology both onsite and offsite, (e) training for instructors and IT personnel, and (f)

personal connection or transactional distance.

Discussion of Findings

The intent of this study was to assess how ITV course delivery systems affect

instructional strategy. Instructor's satisfaction with the overall instructional strategy in an

ITV course-delivery system was also evaluated. Grounded theory attempts to build theory

solely from the data at hand, and in doing so, emphasizes theory building rather than

theory testing (Charmaz 2000, 2001; Strauss & Corbin, 1998). The collected data, along

with quotes and comments from the collected data, are presented and organized first by

research question then by the theoretical category. Any discrepant cases are included at the end of the section.

Research Question 1

Research Question 1: How does the ITV course delivery format affect the overall instructional strategy such as lectures, videos, powerpoint presentation, document camera visibility, and computers? The first category is class structure. Out of the 10 participants interviewed, each participant felt that class structure impacted the overall instructional strategy.

Class structure. Ten of 10 interview participants felt that class structure significantly impacted the instructional strategy. Classroom structure included how classes were designed. This included whether the classroom was a dedicated remote broadcast or contained a class taught simultaneously along with a remote broadcast. The definition also included the number of remote sites taught at one time; it could be one remote site or multiple remote sites. Class structure also referred to the mixture of traditional students and dual enrollment students, only traditional students, or dedicated dual enrollment students. The type of broadcast via the television was also classified as class structure; some sites viewed only one remote site at a time; some sites viewed all remote sites at one time; and some sites had a rolling screen where they viewed each site at random intervals or when they keyed a remote to speak. One participant also had to make remote visits to the home campus. Class structure also referred to the ability to see all students in a class at the remote site. In several instances, only part of a class could be viewed. The time frame of the class was also considered part of the class structure.

P1 stated that teaching ITV is not just the content of the classroom, but the positioning of the students where you can see them. P5 acknowledged that they were often "microscopic … or you could have half of the students not even on the screen at the same time." P6 related that I couldn't see the students at all where they sat because of the number of students in the classroom; there was just no way, and also the construction of the classroom at the distance site was set up, so you could not see all of the students. P9 stated that the camera would pan from class to class from whoever was speaking, and it would zoom in on the speaker. P7 and P10 both had an actual physical classroom at the same time as teaching a remote site. P3 suggested that the time designated for dual enrollment students could affect class structure as well. Dual enrollment students at remote high school campuses did not always have the same time schedules as a college campus; therefore, it affected attendance as well. P6 was the only one that had to go to remote sites during the semester as part of the class structure.

Quality audio/visual technology related to the classroom. The second category that answered the research Question 1 was that the ITV course delivery format affects the overall instructional strategy if it does or does not have quality audio/visual technology related to the classroom. Quality technology was defined as any audio/visual component in the broadcast room or the remote classroom that affects the quality of the ITV broadcast. Ten out of 10 participants had either a positive or a negative experience with the audio/visual components of the ITV format. Four of the participants cited lag time or audio delays as a negative aspect of an ITV classroom. One participant was concerned that when the visual component went out that the audio component was not sufficient to

teach a class due to the course content. One participant experienced volume issues between their broadcast room and the remote location, making teaching difficult. The other participants did not cite audio as a concern. All 10 participants cited either pixilation, freeze frames, lag time, the size of content material or the student on the monitor, projection screen, or TV as a negative aspect of the ITV format. Six participants felt that the zoom feature for the remote site was a positive aspect of the ITV format.

Results from the survey also indicated that at least three of the participants found the audio visual component a negative factor of ITV when it did not work properly and all 10 of the participants found poorly working audio visual malfunctions were a disadvantage of ITV. Both the survey and the interviews support the idea that if the audio visual equipment are not in proper working order then the instructor experiences dissatisfaction with ITV.

In the interview, P7 indicated that delayed time or audio delay was a detriment to the ITV format. P9 said that it was a little slow … like time delays from the time I would say something to the time they would ask a question. P8 asked, Why can't we use Skype because there are no time delays. P7 noted that the speakers in my class are too loud for the other class over there, and then they have to turn it down, then they are too low for me to hear them over here.

P6 commented that the TVs were small, about 27 inches, and the students' faces were about the size of a fingernail … so I could not tell if they were focused, paying attention, or daydreaming. P9 related that in a face to face class, you can see their expressions, if they are picking up on something, or if they are completely clueless, but in

an ITV class, I could not read their expressions. P7 had issues with delays, especially if the systems were not exactly the same. P8 noticed that delays ruin the momentum, especially when trying to play interactive games as learning tools. P4 commented that in the middle of a hand gesture, I just stop, and Iam sure that I look pretty funny. P1 indicated that freeze frames and pixilation can be frustrating because I keep talking, but I have stopped on their end two or three sentences ago. P4 said that the delay that you have to deal with as far as buffering or pixilation when you do not come across crystal clear is probably just the internet speed, but it affects the quality of the ITV format.

P2 enjoyed the pads on the floor where you could step and the camera would move to where you were instead of you having to manually operate the controls. P3 felt that the zoom feature of ITV was a positive component because you could see who was asking questions and if they understood. P9 indicated that the zoom feature helped to keep students honest, knowing that you could see if they cheated.

The web-enhanced component. The third category that answered research Question 1 was that the ITV course delivery format affects the overall instructional strategy when a web-enhanced component is added. The web-enhanced component was used either as a backup system, Blackboard, or as a supplement to the course, including the following features: (a) a discussion board, (b) a chat room, (c) lecture notes, (d) an assignment folder, (e) announcements, and (f) a test forum. Nine out of the 10 participants used at least part of the web-enhanced component to supplement the ITV course delivery format. Not all 10 participants were required by the community college or department to use Blackboard for all courses taught, but for the ITV courses nine used

this system. Nine participants used the web-enhanced component as a backup system during outages due to weather or system issues such as lines being cut through or glitches in the system. If the students could not be accessed through the ITV delivery system, then nine participants used Blackboard to impart assignments, lectures, video capture, etc. Six of the nine participants used Blackboard as a supplement to the course for lecture notes, discussion boards, assignments, tests, and announcements. Two of the nine participants used Blackboard for all of the above except lecture notes. One participant used Blackboard for everything but avoided using the discussion board feature. Only two participants commented on the chat feature and both declined to use it due to issues with getting the class together at a time that would work for everyone outside the normal ITV setting. Two of the 10 participants had issues with the gradebook feature after a new upgrade to Blackboard. One participant did not have a comment on a backup system or Blackboard because the researcher did not discuss this aspect with the participant during the course of the interview; it would have forced the interview to proceed in a direction that was unnatural.

In the survey, all 10 participants felt that Blackboard was a disadvantage when internet connectivity issues occurred, but five commented that when the ITV connectivity, either visually or auditorially or both, occurred then Blackboard was a lifesaver as the only means of communication for these remote sites. Overall, Blackboard had it usefulness as a back-up system but not as the primary form of interaction.

In the interview, P1 stated that we lose the momemtum of the course when the system goes down; sometimes it would be a week or even two weeks later before I saw

my students, and then I have to send them the information through a system such as Blackboard. P4 said that there has to be another way to get students that information. P6 indicated that we did use Blackboard to communicate and to turn in papers. P8 concurred that we communicated off-line in Blackboard and posted grades that way. If there was a change in schedule on the calendar or say we could not make connections that day, then I communicated with Blackboard. P4 avoids dicussion boards because class interaction is so much better because it is on the spot, and people do not have time to think about it. P4 also felt that chat rooms are not successful because of excuses like "Hey, I could not get signed on," or "the time for everyone to be on at the same time did not work." P3 also stated that you have to take into consideration what students are going to be willing to do because a lot of them are not going to be able to sit there and have a meeting at 12 noon or 4 o'clock in the afternoon. P8 noticed that the old Blackboard I never had a problem with it, then they got the upgraded model, and I did have some issues; they know this is my grade but it is not weighted properly, or it is not weighted at all; it is just averaged, and this upsets them.

Research Question 2

Research Question 2: How does the ITV course delivery system affect the ITV instructors' satisfaction with the overall instructional strategies? Three theoretical categories emerged; the first category is IT and personel issues related to technology both inside and outside of the classroom.

IT and personnel issues related to technology both onsite and offsite. All 10 participants interviewed commented that the quality of IT personnel, facilitators, or the

middleman (administrators, student workers, or outside service workers) contributed to

the instructor's satisfaction with the overall instructional strategies. Six of the 10

participants acknowledged that IT was important to the instructors' satisfaction. Four of

the six participants had negative experience. Two of these felt that no one was available

to troubleshoot during classes offered at odd hours and two felt that finding IT personnel

that were qualified to do the job was an issue. Two of the participants thought IT

personnel was quick to fix problems and improvements in service had been made with

recent personnel changes. Facilitators (also refered to as proctors) were another issue

with instructor satisfaction. Seven of the 10 participants cited issues with facilitators as a

negative issue in regards to instructor satisfaction. Five of the 10 participants noted that

facilitator in the remote site did not assist the instructor with the students effectively. One

participant did not have a facilitator at the remote site, and one participant had a

facilitator in the broadcast site but not at the remote site. Two of the participants dealt

with a middleman either as an administrator or as a separate contracted entity to service

both the college and the remote site. The participant with the administrative backup found

this setup to be successful. The participant with the middleman found this setup to be

frustrating and unsuccessful.

The survey results also indicate that IT personnel and training are issues for

concern for ITV instructors. Two of the 10 paticipants were satisfied with IT personnel or

proctors at the participants' site, but four other participants felt that IT personnel were

unqualified or lacked adequate training and that protors were inadequate. The

participants' perceptions of qualified IT personnel and proctors affected the satisfaction

these instructors felt teaching ITV. Several participants did not have access to IT

personnel or proctors during the time they taught or were just not used for the

participant's subject.

In the interview, P1 said, Often, there is a lost connection and the people onsite do

not know how to bring it up, and the technology is so specialized that it is hard to find

someone who knows how to work it, especially in smaller towns. P10 stated that we have

to call if something goes down and hope they [IT] are available. P4 informed that I teach

a lot of night classes, so if there is a technological problem, there is nobody there to help

the situation; there is not an IT person to be found. On the other side of the issue, P6

acknowledged that if something went down, they were quick to fix it. P10 stated that we

have had some issues where the system goes down and the other people [facilitators] that

are watching on the TV do not pay quite close enough attention. P7 noted that they had a

proctor on this side because I have the budget, but they do not have a proctor that sits in

the room over there. P9 stated that the person they had facilitating on the high school

campus was not very helpful or cooperative. P1 said that there would be a middle man

that was taking care of business, and we would have to try and find the person that both

parties report to rather than having someone at the site who would be responsible for

finding or making sure that there are batteries, etc.

Training for instructors and IT personnel. The second category that answered

research Question 2 was that training of instructors and IT personnel would enhance

instructors' satisfaction with the overall instructional strategies. Seven of the 10

participants, and all of these participants had at least 5 years of teaching experience, felt

that training for instructors or IT personnel was essential to the instructors' satisfaction with an ITVformat. Three of the participants felt that training on how to run the ITV equipment such as the document camera, computer, video equipment, white boards, or adjusting the angle of cameras or connecting to the remote sites was necessary. Three of the participants felt that training on the web-enhanced component, Blackboard, was essential. Four of the participants found that continued training for IT personnel would be beneficial in order to keep up with the latest technology.

P2 acknowledged that I want to know how it works. P6 said that they thought that I should just be able to jump right into teaching a Blackboard course since I had taken one in college. P9 stated that I think just a lack of knowing how to manipulate everything was not helpful to the class. P1 also stated that maybe I just need more training. P2 felt that IT personel exhibited a lack of knowledge, and they needed a specific training program. P1 noted that you do not always have someone that is trained in the latest technology.

Personal communication or transactional distance. The third category that answered research Question 2 was that decreasing transactional distance by increasing personal communication would enhance instructors' satisfaction with the overall instructional strategies. Six of the 10 participants felt that increasing personal communication would enhance the instructors' satisfaction through quality interaction with students. Two felt that additional video options would, in the web-enhanced part of the class, decrease transactional distance between the instructor and student, creating a richer learning environment. Two participants felt that even though ITV was a poor

second to a face-to-face environment, it was better than an online format for reducing transactional distance. Four participants felt that the ITV environment reduced transactional distance and allowed students a means of at least seeing an instructor and other students, encouraging greater personal communication. Four participants felt that the web-enhanced portion of the course also added an element of personal communication as a follow up to the classroom discussions.

Information obtained from the surveys indicated that five participants were pleased with the class participation that occurred in an ITV format, allowing perspectives from multiple sites or demographic areas. At least 1 participant reflected that reduced transactional distance occurred.

In the interview, P2 stated that you have to have that connection that they are not just a number, but you have to have some components within the course so that they feel they have individualized instructions. They need to know that if they need help they can get it. P1 added that there are different things like discussion boards and group involvement that is a follow to class discussion that makes them feel as if they are part of a larger learning community. P6 opposes this viewpoint and feels that when I started teaching these video classes, I lost the one-on-one interaction across time and space. I can't see facial expressions, body language, or tell if they are paying attention. P5 noticed that you must have that personal connection … so that they know it is a live instructor, not a bobble head figure, and that they care.

After examining the category and subcategories in both the survey and the interview, the researcher ascertained that saturation was complete due to the fact that no

more new data arose. The same or similar data was generated through both research strategies. Theoretical sampling was satisfied through a homogeneous sampling of all ITV instructors from a rural southern community college through the use of a survey, then heterogeneous sampling from a specific number of ITV instructors through the interview process.

Evidence of Quality

Validity is seen as a strength of qualitative research; it is used to suggest determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account (Creswell, 2007). It is the researchers' ultimate responsibility to make sure that the study meets the appropriate standards for acceptability and evidence of quality (Charmaz, 2006). To ensure the accuracy of the data, several procedures were followed.

The first procedure, prolonged time spent in the field, was utilized through an initial field test to verify the accuracy of the research question. An open-ended unstructured survey was sent to 35 instructors to begin the process of collecting information over the two research questions. From those survey questions, additional research questions for the interviews were generated, thus making the process a prolonged time spent on formulating questions to acheive an in-depth understanding of the phenomenon under study.

The second procedure was using rich, thick description of the context and the participants. Rich thick description lent credibility to the site, the participants, and the narrative account. The richness was achieved through the development of many different

themes, including ones that were not anticipated. Probes into the themes encouraged detailed accounts, which added to the level of description.

The third procedure was sending the transcripts back to the participants for verification of the accuracy of their statements. Each participant verified the accuracy of their transcribed interview. One participant clarifed a specific statement to alleviate a typo. All other participants returned written letters verifying the accuracy of the transcribed interviews.

Triangulation, which strengthens the results of the study by using multiple sources of information, was done through a field test, a survey, and the interviews. After approximately 10 hours of interviews and 40 hours of sifting through survey and interview data, observational protocols, and hand coding as well as coding through NVivo9, triangulation occurred. The triangulation to this extent helped to reduce bias.

The final verification procedure was peer debriefing. Peer debriefing was used to enhance the accuracy of the account. A peer debriefer—a colleague and fellow doctoral student, who was also working on completing her doctoral study for an Ed.D—assisted with this part of the study process. A peer debriefer was utilized to review and ask questions about the qualitative study, so the account will resonate with people (Creswell, 2003, p. 196). The peer debriefer had 7 years of distance education experience with 6 of those years being in an ITV format. The peer debriefer looked over the study to make sure that the evaluation and analysis was thoroughly composed. The peer debriefer is in approximately the same stage of research in the same program as the researcher; therefore, the peer debriefer is familiar with the expectations of Walden University and

research publications; the same research collection and analysis methods have been employed by the peer debriefer, indicating that the peer debriefer is qualified to recognize opportunities for improvement.

Summary

This section provided a detailed explanation of the data collection process, a description of the data analysis process, and summarized the results from the study how interactive video web-enhanced format affects instructional strategy and instructor satisfaction. The data collection and analysis began with a field test to determine the validity of the research questions then continued with a survey and finally interview questions, which were transcribed and coded. A line by line hand coding was used to break down the interviews, and then they were transferred to NVivo9 for additional coding. Several initial themes emerged during open coding, but after axial coding, they were examined, reworked, and refined into several theoretical categories. Finally, evidence of quality for this study was offered.

Section 5 presents the interpretation of the findings and analysis discussed in Section 4. The proposed grounded theory will enlighten ITV instructors about satisfaction with instructional strategies. This section will also include comments about positive social change, reflections, and recommendations for future research.

Section 5: Summary, Recommendations, and Conclusions

Introduction

Distance education covered multiple formats over history from the early correspondence courses, radio as a delivery technology, ITV, and online courses. Various different ways of structuring each of these formats existed as well. Anderson (2009) stated that "distance education has always been to a great degree determined by the technologies of the day" and distance education was "necessitated given the basic requirement of distance education to be mediated-using some type of technology to span the distance between students, teachers, and institutions" (p. 111). The U.S. Department of Education (1999) has defined DE as "an educational process that is characterized by the separation, in time or place, between instructor and student" (Sec. 602.3).

The purpose of this study was to evaluate how ITV course-delivery systems affected instructional strategies and to formulate theoretical propositions that would support more efficient and effective ways of teaching ITV courses through the use of appropriate technology.

Distance education, which the U.S. Department of Education (1999) "characterized by the separation, in time or place, between instructor and student" (Sec. 602.3), has been offered in many formats over time—correspondence, radio, ITV, and online—based on "the technologies of the day" that were needed "to span the distance between students, teachers, and institutions" (Anderson, 2009, p. 111). Each format has been structured in different ways as well. ITV formats retain contact with the instructor

through the use of video equipment while online course typically rely on the WEB or software programs like Blackboard to communicate with students.

The researcher has 23 years of teaching experience, with 16 of those years at the post-secondary level, either as an adjunct or as a full-time professor. Seven of those years involved teaching ITV courses and piloting three new courses for the community college. As a result of these years of experience and involvement in ITV, the researcher was curious about not the student's input on ITV courses, but how the instructors' viewed the success or failure of technology in the ITV setting and the overall satisfaction teaching in this format.

This grounded theory study responded to a gap in the literature regarding instructors' opinions on the technology associated with learning strategies and the instructors' level of satisfaction teaching an ITV course. Although there is a body of literature on students' needs and perceptions about numerous aspects of ITV courses, instructors' perceptions were hardly documented. This study was an attempt to evaluate the opinions of the instructors and to educate other interested parties in the ITV field of education, providing insight into whether quality of technology makes successful ITV courses.

Overview

Participants for this study were selected based on the following criteria: (a) had taught at least one ITV course, (b) had at least one year or more of ITV experience, (c) the age of participants, (d) the subject matter taught, (e) the type of ITV format. All

participants answered either the survey or were interviewed. Interviewees volunteered from the survey pool.

The field test was conducted at a rural community college. The field test, which consisted of both survey questions and interview, was hand-delivered to four participants. All had several years of ITV experience and were asked to participate in the field test to ensure that the questions were worded succinctly and accurately. All four returned an assessment of the quality and validity of the field test questions. No changes were deemed necessary to the survey or interview questions.

Once the questions were approved, the researcher sent out the survey questions (see Appendix D), the interview questions (see Appendix E), and an Informed Consent Form that contained a statement of invitation to 35 participants at Twilight Community College via a secure e-mail server and a computer that was password-protected. The instructors then had a choice of (a) not returning the field test or the signed consent form, (b) not returning the survey and the signed consent form, (c) only returning the survey and the signed consent form, (d) not setting up and conducting an interview and returning a signed consent form, (e) only conducting an interview and returning a signed consent form, or (f) returning the survey, the signed consent form, and agreeing to an interview. The last choice signified that the participant agreed to do both the first phase, the survey, and the second phase, the interview.

Observational protocols were also an integral part of this study, allowing the researcher the ability to record nonverbal material that enhanced the inteview process. Probes were constructed as the interviews progressed and the researcher used these

probes to delve deeper into the original interview questions and uncovered new questions, thus attempting to reach saturation. The observational protocol was also utilized to document memos and make notations after each interview had concluded. Writing memos and making these notations according to Janesick (2004) provided an opportunity for reflection, clarified thinking, triangulated the data, or delved deeper into the initial interpretation of the data. This informal process encouraged creative thinking and added richer description to the research.

Five strategies ensured the validity and relevance of this qualitative grounded theory study. First, prolonged time in the field was utilized through a field test, survey, observational protocol, and an interview. Second, rich, thick description lent credibility to the site, the participants, and the narrative account. Third, member checking was used by sending the transcribed interviews back to the participants to insure accuracy of the recorded data. Fourth, triangulation occurred through the use of a field test, survey, and interview. Last, peer debriefing was employed to enhance the accuracy of the account. The peer debriefer was a colleague with 6 years of ITV experience as well as a fellow doctoral student with Walden University, making the peer debriefer qualified to recognize opportunities for improvement.

The research questions that guided this study were as follows:

1. How does the ITV course delivery format affect the overall instructional strategy such as lectures, videos, powerpoint presentations?

2. How does the ITV course delivery format affect the ITV instructors' satisfaction with the overall instructional strategy?

Results from the survey, observational protocols, and indepth interviews analysis indicated the key factor of the study was the "instructor perception of the effectiveness of ITV courses" and it determined whether instructors were satisfied with the ITV format and the quality of instruction that students received. From this key factor, emerged six theoretical themes that explain how ITV course delivery affects the overall instructional strategy and instructor's satisfaction with the overall instructional strategy. The 6 theoretical themes that emerged were (a) class structure, (b) quality audio/video technology related to the classroom, (c) the web-enhanced component, (d) It and personnel issues related to technology both onsite and offsite, (e) training for instructors and IT personnel, and (f) personal communication or transactional distance.

Interpretation of Findings

Two core questions framed this study. This section includes references to participants' responses and reflects the outcomes found in Section 4. The findings are also related to the literature review in Section 2 and the conceptual framework in Section 1.

Research Question 1

How does ITV course delivery format affect the overall instructional strategy such as lectures, videos, powerpoint presentations, document camera visibility, and computers?

There was a general consensus that items like class structure, the quality of audio and visual technology in the classroom and the web-enhanced component of the course all affected the key factor in the study, which was instructor perception of the

effectiveness of ITV courses. These findings from both the survey and the interviews

suggested that the better the quality of the class structure, audio and visual equipment,

and the web-enhanced component, the better the students performed and the easier it was

to teach effectively. Communication between instructor and student was either enhanced

by or detracted from the course by these issues.

Findings, interpretations, and references to the literature. According to Moore

(1991, 2005), the term distance learning was an inaccurate representation of what

occurred because it implied that "the actions of one person, i.e., the learner, are

independent of the actions of the teacher" (p. 2). In reality, quality communication

between the instructor and the student are important to student success; thus, class

structure is also important to the success of the learning environment. The class structure

of each participant's site affected how instructors viewed the effectiveness of

instructional strategies that engaged the student learner.

Most of the participants viewed the class structure as satisfactory, especially when

they only had remote sites as compared to when they had an onsite plus a remote site

combination, making it hard to focus on the remote site because of the immediacy of the

onsite class. Other aspects of class structure like whether it was a non-traditional,

dedicated concurrent class, or a mix of the two determined whether how the instructional

strategy worked. Most agreed that the non-traditional and the mixed environment were

more successful than the dedicated concurrent class due to maturity and proper

supervision. All 10 participants felt that the type of viewing scenario presented in the ITV

classroom was the greatest factor in hitting the instructional strategies. If the students

were too small to see, if they could only see one site at a time out of multiple sites, or they were continually scrolling through sites, the instructional strategies suffered from the lack of a clear, coherent format.

The quality of the audio/visual technology in the class interfered with a positive learning environment as well. All 10 participants cited issues with either audio lag time, no audio, high/low volume issues, echoes, or visual issues like pixilation, freeze frames, video lag time, and size of visuals presented from tiny to supersized. P5 commented that "my biggest problem was noise interference … I could hear myself half the time talking back to myself … or a kid crunching on a potato chip would just annoy the entire class." Most of the issues related to quality audio/visual were negative but a little over half of the participants did like the ability to zoom in to see students when a mike was keyed or by remote access. This they felt helped to reduce the transactional distance making it seem more like a normal class. P2 stated that "being able to zoom in and see the expressions on their face helped me to see if they were comprehending the material." The exceptions to this were the sites that did not have a zoom feature. The web-enhanced component was deemed a positive factor by all of the instructors, especially as a source of backup for times of outages, holidays or absences.

The Web-enhanced component seemed to help bridge the gap between the learner and the instructor reducing the transactional distance and increasing the quality of the instructional strategies. These findings align with the concept of Moore's transactional distance theory where Moore (1991, 2007) continues the definition by saying that the transaction that we call distance education occurs between individuals who are teachers

and learners, in an environment that has the special characteristic of separation of one from another, and a consequent set of special teaching and learning behaviors. It is the "physical separation that leads to a psychological and communications gap, a space of potential misunderstanding between the inputs of instructor and those of the learner, and this is the transactional distance" (Moore, 2007, p. 91). The evidence tends to support the idea of potential misunderstanding between the instructors and the students in this study, especially in relation to class structure and quality audio and visual technology, but not as much in relation to the web-enhanced part of the course. The instructors found that this was a place to extend the classroom discussions, add lecture notes and place assignments, extending the instructional strategies.

Research Question 2

How does the ITV course delivery system affect the ITV instructors' satisfaction with the overall instructional strategies?

The instructors' perception of the effectiveness of ITV courses and resulting satisfaction and dissatisfaction was impacted by (a) IT and personnel issues related to technology, both onsite and offsite, (b) training for instructors and IT personnel, and (c) personal communication or transactional distance. There was a general agreement that instructors felt IT and personnel issues had the potential to negatively impact the ITV instructional strategies. Although training for instructors was viewed as an optimum event, the instructors felt they survived and were able to self-teach themselves in a pinch. However, they felt that the lack of training or continued training for IT personnel created a disconnect for the success of instructional strategies. Personal communication between

the instructor and the student was primarily viewed as a negative aspect by several

instructors.

Findings, interpretations, and reference to the literature. Bronack, Riedl, and

Tashner (2006) made the observation that "social constructivists view learning as neither

solely intrinsic nor purely extrinsic, but, rather, as a continuous process that exists each

time people willfully interact with each other in the world around them" (p. 221). Based

on findings in both the survey and the interview process, the key factor, instructors'

perception of the effectiveness of ITV courses, was answered in this study. This study

finds that a breakdown in communication occurred between instructors and IT or other

personnel for the majority of the participants. All 10 participants had issues with either IT

being available or trained properly to fix equipment issues or system outages or

facilitators that functioned in the appropriate manner. When this occurred, the quality of

the instructors' satisfaction with ITV plunged dramatically. The problem appeared to be

both onsite and offsite at the remote location where IT issues were concerned.

Training not just for instructors but also for IT personnel was deemed extremely

important to the success of ITV courses. About half of the instructors were thrown into

the ITV environment without adequate training. P5 stated that they need to let the

instructor know what they are teaching over ITV classes and that they will be teaching an

entirely different way. P9 stated that she was not trained at all, and I think just a lack of

knowing how to manipulate everything is not helpful to the class. The other concern was

for qualified technicians or IT personnel. Seven of the participants felt that the IT

department was lacking in current training. By IT department, they referred both the

onsite and offsite technicians that run everything from the main server to the guy who replaces the batteries. Most felt that training was crucial for the success of the ITV program and the satisfaction of the instructors. P1 noted that you do not always have someone who is trained in the latest technology. Technology is so specialized that it is hard to find someone who knows how to work it. The last theme was decreasing transactional distance by increasing personal communication would enhance instructors' satisfaction with the overall instructional strategies. Six of the 10 participants felt that increasing personal communication would enhance the instructors' satisfaction through quality interaction with students.

For instructors, just as with students, collaboration is a key concept; collaboration is "the constructions of shared meaning for conversation, concepts, and experiences" (Webb & Palincsar, 1996, p. 848). However, inherent in an ITV course is the concept of isolation for both the instructor and the student, which increases the transactional distance. Maeroff (2004) noted that a classroom with only one student requires that a student gain comfort and experience with technology. Juggling the concept of transactional distance to create an environment rich in personal communication was a goal of at least six of the 10 participants. Two of the participants felt that the ITV format was a viable option for rural students and reduced the transactional distance as compared to strictly online classes. Two felt that new advances in lecture capture technology allowed for advances in the Web-enhanced component where you could capture the ITV lecture and students could watch it repeatedly. Four felt that even though it was not the same as a face-to-face class, it was still a better way to alleviate transactional distance

through instructor and student interaction. This left the researcher to speculate that even though transactional distance does exist in an ITV class, it is still a viable option and preferable for a particular part of a population, especially a rural population with fewer options available to them than urban students. A combination of cooperative learning and individual learning approaches coexist within an ITV class, and instructors wisely draw on both of them to create satisfaction with the instructional strategies.

Practical Applications of the Findings

Based on the findings of this study, an informed perspective about what community college instructors in a southern rural community college thought about the effectiveness of instructional strategies and instructors' satisfaction in an ITV course delivery format emerged. Practical applications of the study may support more effective and efficient use of technology and training in ITV classes. Instructors perceived that faulty or inadequate technology in the delivery system lead to instructor's dissatisfaction with the ITV instructional strategies. The instructors also concluded that training could enhance the ITV courses on multiple levels. The personnel required to operate and maintain the system are costly and often not adequately trained (Donorfio, 2008; Buck, 2009). Planning regular training for instructors and other involved personnel could alleviate some of the existing problems and strengthen moral among the instructors. Making sure that instructors, technicians and facilitators have effective ways to communicate with each other and train together could solve some of the issues that occur from a fractured community, especially those off campus.

Instructors' concerns over class structure may not be as easy to solve for instructors as the technology or training due to the fact that the set up of some of the ITV sites cannot be manipulated or changed without great cost to the institution, but a careful assessment between the IT personnel and the instructors may find some minor solutions or options to the class structure that could create a better teaching or learning environment.

The web-enhanced component was a positive part of the course. Some issues occurred after a new upgrade in one component of the web-enhanced part of the course, but overall, its use as a supplemental feature to the ITV course was a positive experience for the majority of the participants.

Transactional distance was not the tremendous issue that the researcher assumed it would be at the outset of this study. Personal communication was cited as a concern, but not to the extent that most of the literature led the researcher to believe. Most of the instructors felt that the ITV format at least offered students a live person and a specific time of day to interact; this was lacking in online classes. The technology was criticized more than the lack of an instructors' presence.

Implications for Social Change

The Greek philosopher, Heraclitus, used the metaphor of a river to speak of change: "the very river in which you bathe a second time is no longer the same one which you entered before" (Heraclitus, 500 B.C./1955). While there were some studies conducted about the ITV delivery format, they tend to center on the students' needs and

perceptions. This study concentrated on the instructors' perceptions of the ITV format. Several opportunities for social change came from this study.

The first opportunity for social change centers in the classroom structure. Findings from Section 4 indicate that all 10 instructors had issues with one or more aspects of the class structure. Revamping the structure of the classroom so that all students can be seen at one time, would make the learning environment better for the instructors because they could then see all of the students and determine if they were on task and understanding the material. The structure also referred to how the classes were setup, and whether the classroom was solely a remote broadcast or a combination of a classroom and a remote broadcast. Several of the participants expressed the view that having the sites broadcast remotely without the classroom component was more desirable because the remote sites had a tendency to not participate as much. The purpose of having a remote broadcast needs to be to service the remote students and have them interact effectively. Fewer problems were seen having multiple remote sites in one broadcast, especially when the sites were small because it created a larger pool of students to interact with each other more effectively. Time issues were also considered a class structure issue and due to different schedules between the high school and the community college, it was recommended that 8:00 classes not be given for ITV courses. Overall, if class structure issues are addressed, then the level of satisfaction of instructors would increase.

The second issue for social change arose in Section 4 and involved providing training or staff development for instructors, facilitators, technicians, and IT personnel.

This would alleviate some of the issues that instructors had with technicians, IT personnel, and facilitators not knowing how to run the equipment, not knowing what the facilitators responsibilities are in the classroom, and not keeping IT up on the latest technological advances. Instructors would also benefit from being trained on the ITV equipment initially when asked to teach in that format and then continue to receive training as new equipment or software is introduced to the course. This applies to the web-enhanced portion of the course for systems like Blackboard. Instructors need to be trained in that medium as well rather than try to learn as they are prepping for the course throughout the semester. Training ahead of time and letting instructors know well in advance of the expected date to teach the course would increase instructor satisfaction with teaching in the ITV environment rather that the frustration that arises when an instructor feels ill prepared to teach in a new area fraught with learning multiple forms of technology.

The final issue for social change is making sure that technicians, IT personnel, or administrators are aware that quality technology is an inherently important component of the ITV course delivery format. If the technology, which includes both the equipment in the classroom and the equipment outside the classroom required to run the course, is not adequate, then students will not learn the desired material no matter how dedicated, creative, or intelligent the instructor is teaching in this format. Audio and visual components of the course must work with a minimum of distraction on both ends of the feed, and if not, a technician needs to be available when classes are being taught to troubleshoot the problem. When the course has a web-enhanced component to

supplement the ITV format, then that component needs to work seamlessly with the ITV classroom and remote sites need to be compatible with the community college's technology as well before attempting to integrate the two school systems through the ITV course delivery system.

Recommendations for Action

The results of this study shed light on instructors' attitudes and perceptions about how the ITV delivery system affected instructional strategy and the instructors' satisfaction with the instructional strategies. The analysis of a written survey, interviews, and an interview protocol in Section 4, the interpretation of findings in Section 5, and the scholarly literature review brought about several recommendations for action.

Based on the findings and inferences of this study, the first recommendation for action would be for administrators, instructors, and IT personnel to assess the different classroom formats for teaching across campus and determine if those class structures were actually working to the full benefit of the students and the instructors. If instructors were inherently unsatisfied with the class structure then the quality of education imparted to students was jeopardized. Assessing the class structure and making modifications could result in a happier environment for the instructor and a quality education for the student.

The second recommendation for action in this study would be for administrators to work collaboratively with instructors, technicians, facilitators, and IT personnel to determine the type of training that would benefit each individual group, and then what would benefit all of them as a whole. Working collaboratively with each other could also

resolve any communication issues that were being attributed to a lack of training in technology.

The final recommendation for action would be for administration, technicians, and IT personnel to look at the current technology and see what needs to be replaced or what can be updated to ensure that the ITV course delivery system runs smoothly with as few technological glitches as possible, making the quality of education better

The results of the study was disseminated to Walden University through the dissertation process and the southern rural community college where the study took place through a condensed written report stating the findings of the study. The written report was hand delivered to the liaison, the Director of Institutional Effectiveness and Planning of the southern rural community college.

Recommendations for Further Study

One topic that came up several times during the course of the interviews was whether ITV has a future in education or not. ITV has been consistently used in education to address the needs of rural students. Further study into ITV versus online formats is an intriguing idea. With the introduction of various different forms of video technology that can be implemented into online courses, will it make ITV obsolete in the near future, or will the cost of this technology be too great for community colleges in the current economic downturn to handle?

Another area for further study might be investigating alternate forms of communication through technology. Exploring the latest technology through iPhones, iPads, or other androids might make an interesting study. Using the various apps or

features like FaceTime would allow individual video conferencing at a time that works for individuals instead of set classroom times might be more appealing to a larger audience. As long as you have a quality service provider, then the connections are usually clearly and do not have the same issues as ITV audio/video.

As fast as technology is developing, it is difficult for the educational systems to keep up with the cost of implementing each new fad that arises, but if the students take on some of the responsibility for the equipment and technology, then great strides could be made in the remote learning process.

Personal Reflection

As an educator of 23 years and having taught over the years as a high school instructor teaching dual-enrollment students, as an adjunct at the community college teaching both traditional and non-traditional students, and finally as a fulltime professor at the community college teaching every possible combination of students, the role of education has been a fascinating experience. After having taught 15 years in public schools, moving to the community college full time and being immersed in ITV was at times a frustrating but mostly a rewarding experience. These experiences fueled the desire to research the topic of ITV. After spending the last few years researching ITV and the related theory, most of the preconceived ideas were banished before ever reaching the interview stage.

Conclusion

Instructors have been immersed in the act of teaching distance education for several decades; ITV, as a form of distance education, was introduced as a service for

students that could not easily come to a campus to get a college education. These students could come from rural areas, could be handicapped, could be in the military, or could be dual-enrollment students, just to name a few types of students that have been served through ITV courses. This study was conducted to determine the success of ITV courses from the instructors' viewpoint, especially how technology affected the instructional strategy.

The researcher found that interviewing participants from a different college allowed for more objectivity than doing backyard research on the same campus where the researcher taught. As a result of this study, many experiences of the researcher were identical to those of the participants, yet many more were a new and enlightening perspective on ITV that shed light onto the study in new and unique ways. ITV courses, when the technology runs properly or help is readily available, appeared to be a viable option for teaching a specific segment of the college population; some instructors felt that there is a segment of the population that would not go to college if a face-to-face alternative were not offered. Moore's (2007) theory of transactional distance still seems to apply to a relatively large percentage of the population; therefore, ITV courses, even with some of the technological issues, still seem to be a preferred mode of education for most of the instructors in order to actually see the students and obtain that personal interaction. Working on some of the current technology issues to enhance the teaching experience of the instructors and learning experience of the students is imperative and should be a primary concern of administrators to keep this important form of educating students a quality learning forum.

References

Anderson, T. (2009). A rose by any other name: Still distance education – a response to D.R. Garrison: Implications of online and blended learning for the conceptual development and practice of distance education. *The Journal of Distance Education, 23*(3), 111-116.

Andrews, H. A. & Davis, J. (2003). Curriculum: An academic marriage between college and high school can be the answer to "senioritis" when family is not enough. *American School Board Journal*, 8-39.

Appana, S. (2008). A review of benefits and limitations of online learning in the context of the student, the instructor, and the tenured faculty. *International Journal of E-Learning 7*(1), 5-22.

Baggaley, J. (2008, May). Where did distance education go wrong? *Distance Education, 29*(1), 39-51. doi: 10.1080/01587910802004837

Barbour, M.K. (2007, February). Portrait of rural virtual schooling. *Canadian Journal of Educational Administration and Policy, 59*, 2-21.

Bates, A.W. (1995). *Technology, open learning, and distance education.* London, England: Routledge.

Blackstock, A. & Exton, V. N. (2005, May). "Drive-by English": Teaching college English to high school students via the interactive video. *Teaching English in the Two Year College,* 32(4), 379-390.

Bossert, S.T. (1998-1999). Review of research in education. *American Educational Research Association, 15,* 225-250.

Bowler, M. (2005, April). *High school students using dual enrollment programs to earn college credits, new reports say: President Bush's budget proposes increasing access to "dual enrollment" programs for at risk students*. U.S. Department of Education.

Brady, M.J. (2006, February). Strategies for effective teaching: Using interactive video in the distance education classroom. *Designing for Learning.* Retrieved from http://www.designingforlearning.info

Bronack, S., Riedl, R., & Tashner, J. (2006, December). Learning in the zone: A social constructivist framework for distance education in a 3-dimensional world. *Interactive Learning Environments, 14*(3), 219-232.

Buck, G.H. (2009). Far seeing and far reaching: How the promise of a distance technology transformed a faculty of education. *Journal of Distance Education, 23*(3), 117-132.

Casey, D.M. (2008, March/April). A journey of legitimacy: The historical development of distance education through technology. *Tech Trends, 52*(2), 45-51).

Cell phones key to teens' social lives, 47% can text with eyes closed. (2008). *Marketing Charts: Charts Quarterly.* Retrieved from http://www.marketingcharts.com

Chao, L. (2010, Summer). Teaching lab intensive computer technology courses in an interactive TV classroom. *Journal of Technology Integration in the Classroom, 2*(2), 29-44.

Chapman, C., Radmondt, L., & Smiley, G. (2005). Strong community, deep learning: Exploring the link. *Innovations in Education and Teaching International, 42*(3), 217-230.

Chen, Y.-J. & Willits, F. (1999). Dimensions of educational transactions in a videoconferencing learning environment. *American Journal of Distance Education 13* (1), 45-59.

Chen, Y-J. (2001). Transactional distance in world wide web learning environments. *Innovations in Education and Teaching International 38* (4), 327-338.

Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. *Handbook of Qualitative Research.* Thousand Oaks, CA: Sage.

Charmaz, K. (2001). Grounded theory. *Contemporary Field Research: Perspectives and Formulations.* Prospect Heights, IL: Waveland.

Charmaz, K. (2006). *Constructing grounded theory.* London, England: Sage.

Chorianopoulos, K. & Lekakos, G. (2007). Learn and play with interactive TV. *ACM Computers in Entertainment, 5*(2), 1-9.

Conrad, D. (2005). Building and maintaining community in cohort-based online learning. *Journal of Distance Education, 20*(1), 1-20.

Corbin, J. & Strauss, A.L. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Los Angeles, CA: Sage Publications.

Creswell, J.W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.

Creswell, J.W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Davis, D & C. Philpott. (personal communication, October 2010).

Dawley, L. (2007). *The tools for successful online teaching.* Hershey, PA: Information Science Publishing.

Denecker, C. (2007, December). *Toward the seamless transition: dual enrollment and the composition classroom*. (Doctoral dissertation). Retrieved from www.ohiolink.edu/etd/send-pdf.cgi/Denecker%20Christine%20M.pdf?... Bowling Green State University.

Denzin, N.K. & Lincoln, Y.S. (2005). *The sage handbook of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage Publishers.

Dewey,J. & Bentley, A.F. (1949). *Knowing and the unknown.* Boston, MA: Beacon Press.

DiRamio, D. & Wolverton, M. (2006). Integrating learning communities and distance education: Possibility or pipedream? *Innovative Higher Education, 31*(2), 99-113.

Discenza, R., Howard, C., & Schenk, K. (2001). The future of distance learning in the traditional university. *The Design and management of effective distance learning programs*. Hershey, PA: Idea Group Publishing.

Donorfio, L.K.M. (2008). Teaching an interactive television course on adulthood and aging: Making it happen. *Educational Gerontology, 34*, 531-549. doi:10.1080/03601270802000535

Evans, J. (2010, April). Ed-tech leaders reveal keen insight. *eSchool News: Technology News for Today's K-20 Educator.* [add URL or page range]

Fink, A. (2006). *How to conduct surveys: A step-by-step guide.* Thousand Oaks, CA: Sage Publications.

Fraser, P. & Henry, R. (2006, July). *The future: Young scholars' inquiry an engaging community of inquiry*. John Hopkins University School of Learning: New Horizons for Learning. Retrieved from www.newhorizons.org

Garrison, R.D, Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2-3), 87-105.

Gilles, R.M. (2007). *Cooperative learning: Integrating theory and practice*. Thousand Oaks, CA: Sage Publications.

Glaser, B.G. & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Thousand Oaks, CA: Sage Publications.

Glesne, C. & Peshkin, A. (1992). *Becoming qualitative researchers: An introduction*. White Plains, NY: Longman.

Golann, J.W. & Hughes, K.L. (2008, August). Dual enrollment policies and procedures: College credit in California high schools. *National Research Center for Career and Technical Education*. Retrieved from www.ccrc.tc.columbia.edu/…/sendfiletoPublic.asp?ft…

Gorsky, P. & Caspi, A. (2005). A critical analysis of transactional distance theory. *The Quarterly Review of Distance Education, 6*(1), 1-11.

Guri-Rosenblit, S. (2009). Distance education in the digital age: Common

misconceptions and challenging tasks. *The Journal of Distance Education, 23*(1),

105-122.

Hatch, J.A. (2002). *Doing qualitative research in education settings*. New York, NY:

State University of New York Press.

Hebert, L. (2001, Winter). A comparison of learning outcomes for dual-enrollment

mathematics students taught by high school teachers versus college faculty.

Community College Review, 29(2), 22-38.

Henry, P.D. (2008). Learning style and learner satisfaction in a course delivery system.

World Academy of Science, Engineering, and Technology, 38.

Holmberg, B. (1986). *Growth and structure of distance education.* London, England:

CroomHelm.

Instructional strategy. (2010). *Business Dictionary*. Retrieved from

http://www.businessdictionary.com/definition/instructional-strategy.html

Instructional strategy. (2011). Retrieved from

http://dictionary.babylon.com/instructional_strategy

 Internet usage statistics for the Americas. (2009, December). *Internet World Stats:*

Usage and Population Statistics. Retrieved from

http://www.internetworldstats.com/ststs2.htm

Janesick, V.J. (2004). *"Stretching" exercises for qualitative researchers*. Thousand Oaks,

CA: Sage Publications.

Johnson, R.T. & Johnson, D.W. (1998, Winter). Cooperative learning: Two heads learn better than one. *Transforming Education.*

Johnson, T. & Brophy, M. (2006, Fall). Dual enrollment: Measuring factors for rural high school student participation. *The Rural Educator.*

Karp, M. M., Calcagno, J. C., Hughes, K. L., Jeong, D. W., & Bailey, T. R. (2007). *The postsecondary achievement of participants in dual enrollment: An analysis of student outcomes in two states.* St. Paul, MN: National Research Center for Career and Technical Education.

Keegan, D. (2000). *Distance training: Taking stock at a time of change*. New York, NY: Routledge.

Kim, E. (2006, June). Academic pathways that promote student access and success. *In Brief: Office of Community College Research and Leadership,* 1-4.

Lee, J., Carter-Wells, J., Glaeser, B., Ivers, K., & Street, C. (2006). Facilitating the development of an online learning community in an online graduate program. *Quarterly Review of Distance Education, 8*(1), 13-31.

Lin, Y., Swan, K. & Kratcoski, A. (2005). Situated collaborative learning in ubiquitous computing environments: A case study. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2005* (pp. 1474-1479) Chesapeake, VA: AACE.

Lowe, V. (2006, July). Study: College students' internet use. *iMedia Connection: Connecting the Marketing Community*. Retrieved from http://www.imediaconnection.com

Maeroff, G.I. (2004). *Classroom of one: How online learning is changing our schools and colleges.* Gordonsville, VA: Palgrave Macmillian.

Mandermach, B.J., Gonzales, R.M., & Garrett, A.L. (2006). An examination of online instructor presence via threaded discussion participation. *Journal of Online Learning and Teaching, 2*(4), 248-260.

Martyn, M.A. (2005). Using interaction in online discussion boards: Successfully fostering interaction in online courses requires incorporating both instructional and social types of interaction in discussion boards. *Education Quartley 4.*

McBrien, J.L., Jones, P, & Cheng, R. (2009, June). Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning. *International Review of Research in Open and Distance Learning, 10*(3), 1-10.

McKee, T. (2010, May). Thirty years of distance education: Personal reflections. *International Review of Research in Open and Distance Learning, 11*(2).

McKenzie, B.K., Witte, J.E., Guarino, A.J., & Witte, M.M. (2002, Fall). Interactive television (ITV) instructor behaviors: Implications of frequency and importance. *Innovative Higher Education, 27*(1), 65-73.

Melton, B., Graf, H., & Chopak-Foss, J. (2009, January). Achievement and satisfaction in blended learning versus traditional general health course designs. *International Journal for the Scholarship of Teaching and Learning, 3*(1).

Merriam, S.B. (2002). *Qualitative research in practice: Examples for discussion and analysis.* San Francisco, CA: Jossey-Bass.

Mills, G.E. (2003). *Action research: A guide for the teacher researcher*. Upper Saddle River, NJ: Merrill Prentice Hall.

Mokher, C. & McLendon, M.K. (2009, February). Uniting secondary and postsecondary education: An event history analysis of state adoption of dual-enrollment policies. *American Journal of Education, 115*(2), 249-277.

Monahan, T, McArdle, G, & Bertolotto, M. (2006, December). Virtual reality for collaborative e-learning. *Computers and Education, 5,* 1339-1353.

Moore, M.G. (1989). Three types of interaction. [Editorial]. *The American Journal of Distance Education 3* (2), 2-6.

Moore, M.G. (1991). Distance education theory. [Editorial]. *The American Journal of Distance Education,* 5(3*).add page range*

Moore, M.G. (2007). *The handbook of distance education.* (2nd ed). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Moore, M.G. & Kearsley, G. (2005). *Distance education: A systems view*. New York: Thomson Wordsworth.

Mostyn, G. (2009, December). An application of contemporary learning theory to online course textbook selection. *Journal of Online Learning and Teaching,* 5(4).

Olmsted, J. (2007). Quantitative analysis of performance for a distance education program. Presented at the 23rd Annual Conference on Distance Teaching & Learning.

Palloff, R.M. & Pratt, K. (1999). *Building learning communities in cyberspace: Effectiveness strategies for the online classroom.* San Francisco, CA: Jossey-Boss.

Patrick, H., Bangel, N.J., Jeon, K-N., & Townsend, M. (2005). Reconsidering the issue of cooperative learning with gifted students. *Journal for the Education of the Gifted, 29*(1), 90-108.

Peters, O. (1994). *Otto Peters in distance education: The industrialization of teaching and learning*. New York, NY: Routledge.

Phillips, C. (2008, Fall). Are we holding back our students that possess the potential to excel? *Education, 129*(1), 50-55.

Phillips, G.M., Santoro, G.M., & Kuehn, S.S. (1988). The use of computer-mediated communications in training students in group problem-solving and decision-making techniques. *The American Journal of Distance Education 2*(1), 38-51.

Raine, L. (2010, January). Internet, broadband, and cell phone stats. *Pew Internet*. Retrieved from http://www.pewinternetstats

Reich, K. (2007). Interactive constructivism in education. *Education and Culture 23*(1), 7-26.

Rodrigues, D. (2005). *Models of distance education for composition: The role of interactive video.* Paper presented at the 1998 Computers and Writers Conference in Gainesville, Florida.

Royal, K.D & Bradley, K.D. (2005, Winter). Interactive television (ITV) courses and students' satisfaction. *Online Journal of Distance Learning Administration, 8(4).*

Rovai, A.P. (2002, April). Building sense of community at a distance. *The International Review of Research in Open and Distance Learning, 3(1).*

Rubin, J.R. & Rubin, S.R. (2005). *Qualitative interviewing: The art of interviewing*. Thousand Oaks, CA: Sage Publications.

Saba, F. & Shearer, R. (1994). Verifying key theoretical concepts in a dynamic model of distance education. *American Journal of Distance Education 9* (3), 36-59.

Saldera, W.A., Robertson, J., Song, L., & Midon, M.N. (2009). The role of community in online learning success. *Journal of Online Learning and Teaching, 5*(2), 1-9.

Schworm, P. (2008, October). Getting a head start on college: Dual-enrollment program gives high schoolers a jump. *Boston Globe*. Retrieved from www.connectionsproject.ilstu.edu/headstart.pdf

Sebastian, J.P., Egan, W.M., & Mayhew, J.C. (2009). From two-way television to the internet: The evolution of a rural distance education program. *Rural Special Education Quarterly, 23*(3), 5-8.

Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2006). *Teaching and learning at a distance: Foundations of distance education.* Columbus, OH: Pearson Prentice Hall.

Slavin, R.E. (1980). Cooperative learning. *Review of Educational Research, 50*, 315-342.

Smith, S. (2007, May). Why expand dual-credit programs? *Community College Journal of Research and Practice 31*(5), 371-387.

Soo, K.S. & Bonk, C.J. (1998). Interaction: What does it mean in online distance education? Paper presented at the EDMEDIA and ED-TELECOM 98, Frieburg, Germany.

Stein, S.S., Wanstreet, C.E., Calvin, J., Overtoom, C., & Wheaton, J.E. (2005). Bridging the transactional distance gap in online learning environments. *The American Journal of Distance Education 19*(2), 105-118.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Suson, D.J., Cox, P.H., Hewett, L.D., Leckenby, H.J., Espinosa, J., Fisher, P., … Willson, V.L. (2008). Distributed departments: A new approach to protecting the vitality of small programs. *Journal of Science Education & Technology, 17,* 595-609. doi: 10.1007/s10956-008-9128-0

Taylor, J. (2001). Fifth generation distance education. *E-Journal of Instructional Science & Technology, 4*(1), 1-14.

Taylor, J. (2010). *Sustainable higher education learning futures.* Keynote address, AACE conference: Global Learn Asia Pacific, Penang.

Taylor, M. & Perkins, J. (2011). *Distance learning*. Retrieved from http://www.macc.edu/index.php/locations/distance-learning

Toprak, E. (2006). Social constructivism and international cooperation in distance education. *Turkish Online Journal of Distance Education, 3(14).*

Touchstone, A.J.L. & Anderson, E.T. (1995, October). Interactive videoconferencing in

distance education. *Distance at a Glance.* Retrieved from

http://www.uiweb.uidaho.edu/eo/guide10.pdf

Tuovinen, J.E. (2000). *Multimedia distance education interactions.* Education Media

International. Churchill, Victoria, Australia. International Council for Education

Media.

U.S. Department of Education. (1999, October 20). *The secretary's recognition of

accrediting agencies: Final rule*. Federal Register, 64(202), Sec. 602.3.

Vesely, P., Bloom, L., & Sherlock, J. (2007). Key elements of building online

community: Comparing faculty and student perceptions. *Journal of Online

Learning and Teaching, 3*(3), 1-12.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological

processes.* Cambridge, MA: Harvard University Press.

Watson, S. (2010). Increasing online interaction in a distance education MBA: Exploring

students' attitudes towards change. *Australasian Journal of Educational

Technology 26*(1), 63-84.

Webb, N.M. & Palinscar, A.S. (1996). Group processes in the classroom. In D.C.

Berlinger & R.C. Calfee (Eds.), *Handbook of Education* (pp. 841-873). New

York, NY: Simon & Schuster.

Woszcynski, A.B. & Geist, D.B. (2006). *A comparison of college and high school

students in an online IT foundations course.* Southern Association for Information

Systems Conference.

Zhang, F.K. & Kenny, R.F. (2010, March). Learning in an online distance education course: Experiences of three international students. *The International Review of Research in Open and Distance Learning, 11*(1).

Zeek, S. (2007, Spring)*.* Senior humanities seminar: Dual-enrollment through a different lens. *Inquiry, 12*(1), 38-46.

Appendix A

CONFIDENTIALITY AGREEMENT

Name of Signer:

During the course of my activity in collecting data for this research: "_____" will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: **Date:**

Appendix B & C

Letter of Cooperation (due date extension)

January 19, 2012

Catrina V. Moody
1501 Cimarron
Odessa, Texas 79761

Dear Ms. Moody,

Title of Proposal: **How Interactive Video Web-Enhanced Dual-Enrollment Format Affects Instructional Strategy and Instructor Satisfaction**

This letter is to officially notify you of the approval of your project by the Institutional Review Board Committee. It is the opinion of the committee that you are providing adequate safeguards for the rights and welfare of the participants in the study. Your proposal appears to be in compliance with regulations for the Protection of Human Subjects (45CFR46).

You are authorized to implement this study as of: **January 15, 2012.** This approval is valid until **January 14, 2013**.

You should report any unanticipated problems involving risks to the participants or others to this college's IRB committee. Should your project continue beyond the end date, the IRB committee will request a continuing review and update on your research project. Please advise this committee when this study is finished or discontinued.

If you have any questions please contact me at ▬▬▬▬▬▬.

Sincerely,

▬▬▬▬▬▬▬▬▬▬
Director, Institutional Effectiveness and Planning

Appendix D

Survey Questions

1. How many years experience do you have teaching ITV web-enhanced classes?

2. Describe your experience(s) with technology in ITV web-enhanced classes.

3. Give one positive experience.

4. Give one negative experience.

5. What are some of the advantages of using ITV web-enhanced courses?

6. What are some of the disadvantages of using ITV web-enhanced courses?

Appendix E

Interview Questions

1. What can be done to improve the learning environment in an ITV web-enhanced class?

2. Would you be willing to try new types of technology to enhance the teaching/learning experience in ITV web-enhanced courses? Why?

3. Could you recommend a new type of technology that might be effective in creating greater satisfaction for the instructor?

4. Would the cost of the new technology be a factor in getting it implemented into the ITV program? How?

5. Does your institution encourage instructor involvement or input in purchasing new technology?

Appendix F

Observational Protocol

Memos

Time of the interview:

Date:

Place:

Interviewer:

Interviewee:

Position of Interviewee:

Years of ITV experience:

Questions:

1.   What can be done to improve the learning environment in an ITV web-enhanced class?

2.   Would you be willing to try new types of technology to enhance the teaching/learning experience in ITV web-enhanced courses?

3.   Could you recommend a new type of technology that might be effective in creating greater satisfaction for the instructor?

4.   Would the cost of the new technology be a factor in getting it implemented into the ITV program?

5.   Does your institution encourage instructor involvement or input in purchasing new technology?

Appendix G

Field Test Questions

Survey Questions

1. How many years experience do you have teaching ITV web-enhanced classes?

2. Describe your experience(s) with technology in ITV web-enhanced classes.

3. Give one positive experience.

4. Give one negative experience.

5. What are some of the advantages of using ITV web-enhanced courses?

6. What are some of the disadvantages of using ITV web-enhanced courses?

Interview Questions

1. What can be done to improve the learning environment in an ITV web-enhanced class?

2. Would you be willing to try new types of technology to enhance the teaching/learning experience in ITV web-enhanced courses? Why?

3. Could you recommend a new type of technology that might be effective in creating greater satisfaction for the instructor?

4. Would the cost of the new technology be a factor in getting it implemented into the ITV program? How?

5. Does your institution encourage instructor involvement or input in purchasing new technology?

Appendix H
Sample Interview

Participant #4 Interview
Interviewer:
Catrina V. Moody
Doctoral Study:
How Interactive Video Web-Enhanced Dual-Enrollment Format Affects Instructional Strategy and Instructor Satisfaction
Date: May 23, 2012
Time: 9:00 AM

Interviewer:

This is Catrina Moody, and this is my interview number four. It is Wednesday, May 23, 2012. It is approximately 9 o'clock. Good morning. We have already discussed the fact that this is a voluntary interview, and if any time you decide you want to opt out, just let me now, and I'll be happy to destroy your data. Hopefully, that doesn't happen, but if you do decide to just let me know. I have a few questions to ask you about the ITV classes that you have taught. We can just get started now.

Question #1:

The very first thing is what can be done to improve the learning environment in an ITV web-enhanced class?

Interviewee:

Um… I think probably the biggest thing is expectations …umm..the different expectations that maybe the students have, that maybe the instructors have… um… it is funny my biggest frustration has probably been …um… you know like…I teach a lot of classes at night so if there's a technological problem there is nobody there to help the situation, there is not an IT person to be found. I mean like I feel like I am like half instructor and half IT person, so it is frustrating. It is not only frustrating for me, it is also frustrating for the student, because I am taking up time. A lot of these people work during the day, and they are tired when they are coming to/doing classes, so this is like this stuff is supposed to work and it doesn't. Or another thing could be just the internet speed … the delay that you have to deal with as far as the buffering or you know I am talking , but it doesn't come across crystal-clear, I am kind of like pixilated I guess when I come across. So it is like it is there and almost like you are on the brink of it being really good, but you are just one day away from it all crashing down on you, I guess you know I don't know how they could make it to where … because it is kind of like uh … this is going to sound funny, but it is almost like taking your car to the mechanic and you have this sound on your car, and you cannot figure it out so you take it to the mechanic and you cannot get the sound to happen, so I have had it to where like nothing works and the IT person shows up the next day and everything is fine, and you have no way to prove like that actually happened, and you are the crazy person. So there has to be if that happens, there has to be another way to be able to get the students that information. Because if you are teaching professionals and you are only teaching once or twice a week and or maybe once every other week and doing half of this and half on line, man it sets you back pretty good. So how do you catch everybody back up if you had this delay? That is kind of my two cents on that I guess on making that where it is actually worthy, I guess.

Interviewer:

Did you ever have comments on lag time?

Interviewee:

Yes that is what I meant by buffering where it cannot get it there fast enough.

Interviewer:

And did they ever have comments about freeze frames when they were looking at you? Did you freeze, and they couldn't see you?

Interviewee:

Right , in the middle of a hand gesture, I just stop, and I am sure I look pretty funny.

Interviewer:

And that can be distracting.

Interviewee:

Yeah, it can be distracting, and it is frustrating because I keep talking, but I have stopped on their end two or three sentences ago, and I don't know where to go back and pick up from. It just becomes a nuisance almost.

Interviewer:

I do understand!

Question #2

Interviewer:

Would you be willing to try new types of technology within the ITV format to enhance that teaching/learning , and if so, can you think of any that might work?

Interviewee:

Always! Always willing to try new stuff, and the reason is because everyone learns differently.

So I love to try different forms of learning, so I am always willing to try new technology. I almost think that until some of this technology becomes … I almost thought it would be better to record my lectures and send them to whoever and let them to watch on TV or on the computer or record the lectures and put them on Blackboard. They can download them and watch them at their own convenience. Now the problem with doing that is that they cannot stop you and ask questions As a professor, I like to make sure that people are engaged and ask a lot of question and base my lectures mainly on feedback I am getting or areas that they want me to talk about. But I am just trying to think of other areas where at least you have the content, because sometimes with these when you talk about the buffering or the lag time, you don't even get the content. Or your microphone, I had that happen one time where and they can see me; everything is fine, and no volume, which is almost worse. Always willing to look at new … there are good things … universities and students think that we are so much more advanced than we actually are. The expectation because of iPads and iPhones and everything is that we never have to show up; we can get all of this done – part of that you are never going to be able to fully have technology do all of that for you.

Questions #3:

Interviewer:

Speaking of iPads and iPhones and that type of technology which is so immediate for students, can you think of any type of technology that might be used in the ITV format or any other type of technology that you could implement that in there?

Interviewee:

Yeah, I definitely think that like being able to watch lectures and things like that over an iPad or something like that. I do a lot of that myself. The problem is there is so many things like lag time or things like band width and signal, when you talk about streaming something on their iPad or iPhone, you are limited by the quality of the signal that student is getting, which is out of everybody's control besides AT&T & Verizon; it is out of any college's control. I don't know.

Interviewer:

Then you have the whole dial-up issues and remote locations.

Interviewee:

Yeah, like remote … there are some people whose internets are done via DISH or something. If it is cloudy, they are done. That is why I keep going back to recording my lectures and at least having those, so they can download or pull them off Blackboard. And I use that because when I was undergrad I took a chemistry class where he was on TV, I went to Texas A&M, and they had their own TV channel and his lecture would be on at 10 AM MWF, and so I basically treated

that like a class. There are a lot of people and we talked about this earlier that for a lot of this technology, you really have to have students that are self-disciplined. You could either watch that TV show live, or you could go and rent the videos from the library. I cannot tell you how many friends I have that would go the night before the test and check out 25 episodes and try to watch them all. They would wind up taking that class 2 and 3 times, because you just can't do that. A lot of this … the more … it is funny because the more you have technology and put these things out there, it almost like it becomes a self-study education. Not only are they trying to learn the new concepts, learn the new words, and all of that kind of stuff, but they also have to self-discipline themselves enough to go on there. It is amazing. In my classes right now, they look at me like I am a criminal if I do not print out the notes for them. You can print out your own notes; they are on Blackboard. I think the higher you get in your education like a Bachelors degree or even a junior/senior year of a Bachelors degree or a Masters degree; it is easier to do technology and do the self-education because at least you know the core concepts. Like me being in business, you can only learn so much about finance; you can only learn so much about accounting, eventually you basically know and you are just honing in on a certain thing. Freshman and Sophomore in college are 18/19 years old so how much can you really expect from them because they are still expecting the hand holding that they had in high school. That is a whole other area of issues, but getting it in a format that they can use like an iPhone or a droid or iPad helps, or if they can download it on iTunes or do a podcast or something like that. I found that podcasts really help too just the audio versions and talking about things and doing that . I think that there are definitely areas out there; it is just hard to be everything to everybody. Universities try to do … wow … when they pick something, you just have to go with it because of the cost involved.

Interviewer:

Yes, we will talk about cost in a minute. One of the things about ITV is it answers the problem with transactional distance, whereas many, many student feel that they need that interactivity that you were just talking about, the younger students feel like they need the hand holding, the discussion boards, so ITV does address that, but online classes and some of the downloaded lectures and podcasts are great for lecture material but they do not answer the question of one-on–one interaction. I know that they have tried to implement chat rooms and different things into Blackboard with a degree of success, so I think one of the things when you are looking at technology is to ask is it working or not working? Should we do away with ITV or not? I will ask you more about this at the end. For now, let's talk about cost right quick. The cost of technology today is always going to be a consideration. Especially with our current economic situation.

Questions #4:

Do you think the cost of technology would be a factor in implementing any new technology at your community college?

Interviewee:

Of course. I think it would be better instead of the university feeling like they have to do it all … that is why I would like to put it in mediums that the students already have, and they already have iPads and iPhones. They already have this technology, so why can't we do lectures that go to that instead of feeling like we have to provide everything. I know they add on technology fees and stuff like that. It is pretty amazing if you get done like that. I am getting my PhD through the University of Liverpool in England. It is amazing how much they have put into the infrastructure of that. But it is hard for a community college. A lot of people go to community colleges because 1) because it is less expensive than a 4 year university. You can get a lot of classes that would cost you a lot more somewhere else. It is a very hard balance when you think that we are charging less for our product, if you want to call it that, but we are held to the same technology standards that UT or Texas A&M offer. Is that fair bar to hold us to when it is a very hard line to walk? People come to junior colleges because they want smaller class sizes; they want to stay close to home. They want that small community feel. Why are we trying to fit ourselves in the box with UT & Texas A&M and try to compete with them on a technological level? It just seems like you are dead in the water before you begin. You can take five classes at MC or OC for what 1 and ½ classes at UT or Texas A&M would cost. Yet we are supposed to provide the same level of technological advances as they do. West Texas is a different area too so there is another challenge because there are so many people that are

scattered and rural. If you were at a community college in Dallas, you are not going to have to worry about people not having high speed internet or a weak signal, so it is a tough deal. Cost for a university is always going to be the number one because number one it cost so much to implement and the bad part about it is if you implement it campus wide you are committed. It is not like you have a couple of shots at it, you have maybe one shot if you are really going to overhaul it you have like one shot in 10 years probably and what happens if it change? People are talking about getting rid of Blackboard and going with something else. It is a give and take. I am going to go back to something that we talked about earlier when you were talking about the discussion boards. As a professor, I hate online discussion boards. The reason is the in class interaction is so much better because it is on the spot, and people do not have time to think about it. I hate discussion boards because I feel like it is always a one up competition. I always give more points to the person who posts first than the person that post last. The person that posts last gets the luxury of reading everybody else's stuff and then they comb through and find the one thing that they might have left off, and that drives me crazy as an instructor.

Interviewer:

Have you ever tried the actual chat room?

Interviewee:

I have but the chat room is "Hey, I couldn't get signed on," or the time for everyone to be on at the same time did not work. People are busy. There are just some things that you get in a classroom that you will never be able to get the same. I think another reason is that when you have people at home and they are watching things on TV; they could have kids coming in; it is hard to have their full attention that you have when they are sitting in front of you. When they are sitting in front of you, you have a dedicated audience. You have some of them on the computer, but you can kind of address that issue a lot better than when they are away or somewhere else. That is why I like to teach in person whenever possible for those reasons.

Question #5:

Interviewer:

I know you adjunct, so this may be different since you adjunct, but do you feel like your institution involves you in the purchasing of new technology, asks for your input on it, gets a committee together to look into it?

Interviewee:

Yeah, they do. I am probably a closer adjunct than most, but it is still like do a committee … We had a meeting a couple of weeks ago about doing away with Blackboard and looking at different options. The problem is I am a younger instructor obviously, but I am probably more advanced with technology than most. The problem is that you have the instructor that just caught onto how Blackboard works, and now you are going to yank it away from them and have them learn something else. That is dangerous when you have professors that are 60 years old, and they are just like "I am done with this; I am not going to learn something else." That was the push back that we had was like you got to be kidding me, I just learned how to do this and you are going to yank it away and put something else in. They do, but it has to come down to your budget and your cost structure and how many students is it going to effect, and it is hard to for a community college, because you want to match up because you only have those students for two years. If most of you students go to UT or A&M, you kind of want them to use the same technology that those students are going to use when they go there otherwise you are not really doing them any favors. It is not like we get concessions from them or anything but it is the nice neighborly thing to do. If Tech is going to be on Blackboard, then hey we use Blackboard so when these students get there they know how to use it.

Interviewer:

Today we are aligning with some of our major universities so this is an important aspect of the courses.

Interviewee:

My Masters is though UT Dallas, and I took a lot of classes where I took them through the University of Texas system, so I had somebody from UT Austin teaching the same online class with UT Dallas, UTPB, UT Tyler, UT Austin,. Everyone was

taking the same accounting class for all the MBA programs. It is important to think about aligning and making sure that you are using the same kind of stuff. At the end of the day, you will have the directors of the universities and the vice-presidents and all the instructors, but the one thing that people will sometimes forget about is that you are trying to give a better experience to the students. And sometimes people need to be reminded about that, so I always try to keep that in mind, and I always try to keep myself in the mindset or perception of a student and ask would I be able to learn from this, and would I be able to remember this, because at the end of the day, you want them to remember and to think that your class was useful. I think for the most part that they get as much instructor involvement as they can. It is just a daunting task when you think about a junior college as a small city basically, so you have a lot of different people who teach art versus people who teach business versus people who teach English versus people that teach technology like mechanics. It is hard. That is a hard group of people to try and please across the board.

Closing comments/reflections:

Interviewer:

As a final thought, would you say that ITV has a future, or is it going to go by the wayside for other types of technology like online courses?

Interviewee:

I think there will always be a piece of it. I think people gave it a good shot. It all comes down to the infrastructure. You have to have the technology and the infrastructure to get the information across and if people don't have that then it does not do any good. I am using another analogy again where AT&T and Sprint for years are showing these commercials about the 4G network, but nobody has it; everybody has 3G because they have not laid the infrastructure to be able to push the 4G, and they are running all these commercials for a 4G phone and nobody has it. The infrastructure has not kept up with the technology. That is the same thing that you have at these colleges. That is the best way that I can think of to put it. You just have to let some things catch up because people are so quick to jump. The next best thing…we are jumping… we are jumping. I understand the reasons because they think if they do that they can attract more people. I don't know if you have any numbers that show if you offer it through ITV or anything like that. It would be something interesting to look at anyway.

Interviewer:

I am going to transcribe this information and then I will e-mail it back to you, so I can make sure it is accurate and give you the opportunity to add or delete any information.

I want to thank you for making the time to give me this interview.

Appendix I
NVivo Screenshot

Appendix J

Coding from notes

Curriculum Vitae

Catrina V. Moody

EDUCATION
Current   Enrolled in Ed.D. in Teacher Leadership   Walden University
1995   Master of Arts in English   Sul Ross State University
1991   Bachelor of Arts in English, minor in   The University of Texas of
           Business Administration   the Permian Basin
           & Secondary Certification

PROFESSIONAL EXPERIENCE
1991 – 2004   Secondary English Teacher   ECISD/ Odessa, Texas
2005-Current Associate Professor II of English Odessa College

PROFESSIONAL MEMBERSHIPS
National Council of Teachers of English
Texas Community College Teachers Association (TCCTA)

PROFESSIONAL EXPERIENCE RELEVANT TO PROFESSIONAL RESPONSIBILITIES
Midland College writing contest judge
Student Mentor
University Interscholastic League (UIL) regional spelling competition director
Student Award of Excellence committee
Sigma Tau Delta sponsor
Odessa College Leadership Institute (OCLI)
AVID leadership training
Piloted several ITV classes for OC
P-16 CCRS liaison for Odessa College
Advanced Placement grader
Textbook committee
Development Education committee

COMMUNITY SERVICE
United Way donor
Odessa College Dollars for Scholars program donor
Odessa Humane Society