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Analysis of the relationship between student satisfaction and student perception of interaction in a compressed video setting

Monty E. Sullivan

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ANALYSIS OF THE RELATIONSHIP BETWEEN STUDENT SATISFACTION AND STUDENT PERCEPTION OF INTERACTION IN A COMPRESSED VIDEO SETTING

by

Monty E. Sullivan, B.A., M.Ed.

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

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We hereby recommend that the dissertation prepared under our supervision by Monty E. Sullivan entitled Analysis of the Relationship Between Students Satisfaction and Student Perception of Interaction in a Compressed Video Setting be accepted in partial fulfillment of the requirements for the Degree of Doctor of Education.

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ABSTRACT

This study used subjects participating in courses offered via the statewide Louisiana Compressed Video Network for the purpose of analyzing the relationship between student perception of interaction and student satisfaction. A correlation analysis was used to determine the relationship between student perception of interaction (sixteen interaction directionalities) and student course satisfaction (including instructional, technical, and overall satisfaction). Data were collected using the Compressed Video Student Perception of Interaction Scale and the Compressed Video Course Student Satisfaction Scale. The nine correlations used to answer the nine research questions resulted in a considerable number of significant correlations. The data generally indicated that there is a relationship between student perception of interaction and student satisfaction with the overall, instructional, and technical aspects of a compressed video course. The findings included the following: 1) There is a relationship between student perception of interaction and student satisfaction with the instructional aspects of a compressed video course. 2) There is a relationship between student perception of interaction and student satisfaction with the technical aspects of a compressed video course. 3) Both local and remote compressed video students indicated a set of needs to achieve satisfaction with the instructional aspects of a compressed video course. Those needs include encouragement to participate in class, inclusion in the class group, and access to the instructor outside class. Practical implications for instructors and administrators in compressed video settings are also presented.

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Author Monty Sell

Date 2-22-00

DEDICATION

Logan and Maci, this work is dedicated to you. My hope is that both of you will come to understand that education is a lifetime pursuit- not a means to an end. The greatest value is found in the journey. As my journey has been blessed, I hope that yours will also.

Logan, for your unconditional love, understanding, and thoughtfulness, I am eternally grateful. I'll treasure that rock forever. Maci, keep that sweet spirit alive. You are indeed a special child, and your life will bare that truth. I expect great things from both of you.

Happiness, health, love, and sanity, I wish for you both always.

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In addition to the committee there are a number of others who have provided various types of assistance throughout this process. First, I would be duly chastised if I failed to mention the role of my fellow LEC students. A special thanks to Dr. James Smith, who has been a colleague, a constructive critic, and most of all a true friend. Thanks to Dr. Debbie Silver and Dr. Tracie Ellerman for your assistance and encouragement. Thanks to Dr. Margo Wilder, your life is an example of lifelong

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CHAPTER I

INTRODUCTION

Distance education is increasingly becoming a common format for providing educational opportunities for students in every part of the world. With widespread use of distance technologies in secondary schools, colleges and universities, and workplaces, the import of student learning in such settings is continually growing (Buckland & Dye, 1991). Reports such as the National Education Association's Technology Committee report in 1990 suggest that the rapid flurry of technical improvements must not substitute for the age old teacher-student relationship with a student-- "teacher in an electronic box" relationship (Goode, 1990). Though this comment is politically charged, there is merit in maintaining healthy teacher-student relationships.

Distance education has changed drastically over the last 15 years because of the tremendous technical improvements that have been achieved. Widespread use of the Internet has brought a whole new dimension to distance education. The improvements in satellite delivery and terrestrial delivery systems have had an impact as well. Additionally, the technical improvements have yielded lower costs that have made distance delivery media more accessible to educational entities. For instance, the advances in video (and audio) compression and decompression have made compressed video a more viable and effective delivery system. Though there are many factors that influence the quality of instruction, it would seem that the better the technical quality of

the delivery system the more potential for a higher quality of instruction (Alaska, 1990; Alford, 1991; and Buckland & Dye, 1991).

In pursuit of the most efficient and effective system for delivering quality instruction, technicians are essentially in search of a system that allows distance learners to have the same experience that local site students enjoy. Though progress has been made, there is still somewhat of a gap that exists between the experience of the remote site student and that of the local site student (Buckland & Dye, 1991). This gap is the result of what will be referred to in this study as technologically-filtered communication. Technologically-filtered communication is partial concealment of communication signals or messages (i.e., body language, facial expressions, spoken language, etc.) between parties communicating via one or more technological medium. This loss is often the result of an inability of the technological medium to capture and transmit the exact image or audio transpiring.

While the technicians have been busy with the technical developments, educational researchers have been attempting to determine the effectiveness of distance education from many different perspectives. Reaching into the psyche of the distance learner and the climate of the setting, researchers have speculated at the factors that may impact the success of students in a distance education setting (Morgan, 1995; Schlosser & Anderson, 1994). The research pertaining to these factors has addressed a broad spectrum of issues. As is the case in traditional classroom research, student learning styles (Ehrman, 1990; Miller, 1997; Mood, 1995; Riddle, 1994; and Wilson, 1992) has received some attention. Student satisfaction has also been a factor identified in research as possibly having some impact on student learning (Bernt & Bugbee, 1993; Foell &

Fritz, 1995; Garland & Loranger, 1996; Haynes & Dillon, 1992; Martin & Rainey, 1993; McGreal, 1994; Pugh & Siantz, 1995; Riddle, 1990; Ritchie & Newby, 1989; Simmons, 1991; Smith & McNelis, 1992; Witta, 1996; Wolfram, 1994). The overall learning environment has increasingly become a focal point in distance education research. One of the more prevalent factors in this overall environment is interaction-- among students, teachers, and proctors (Burge & Howard, 1990; Evans, 1995; Fulford & Zhang, 1994; Garrison, 1990; Hackman & Walker, 1990; Harasim, 1990; Holmberg, 1987; Kahl & Cropley, 1986; Kozma, 1991; West, 1994; Zhang & Fulford, 1994). Specifically, the research targets student perception of interaction as having particular significance because the students' perception of interaction may be of more relevance than actual interaction (Coldeway, MacRury, & Spencer, 1980, Egan, et al., 1991; Fulford & Zhang, 1993; Fulford & Zhang, 1994; McHenry & Bozik, 1995). As will be explained in detail later, these researchers have found that the students' perception of interaction is more important and may have a greater impact than actual levels of interaction.

The research that is provided here will seek to determine if student perception of interaction may have an impact on the student's satisfaction with the course. If a student's impression of the classroom interaction is markedly negative, then the student's satisfaction with the course may be lowered. But more importantly, the student's academic performance in that environment could be affected.

Interaction Directionalities

Interaction has been researched and measured in a variety of ways. However, for the purpose of this study, interaction is discussed using a set of sixteen directionalities

that present various possibilities for interaction. The directionalities incorporate the three groups (local site students, remote site students, and the instructor), the location of the interaction (in-class or out-of-class), and the initiation of the interaction (student-initiated or instructor-initiated). For the purpose of this study all interaction, regardless of intentionality, medium, or location, is considered a part of the interaction rubric. The directionalities are presented in a format that categorizes the directionalities into instructor-to-student interaction, student-to-instructor interaction, and student-to-student interaction. These same directionalities are depicted in Figure 1 (page 14). The following is a list of those directionalities with an accompanying description of each:

Instructor-to-Student Interaction Directionalities

1. In-class interaction from the Instructor (I) to a Local Student (S_L):

   Interaction initiated by the instructor directed to a student at the local site during class time. For example, an instructor may ask a local site student a question in class. Distance is not a factor in this directionality.

   The significance of this directionality is evidenced by the volumes of research that have been produced over the years studying traditional classroom interaction (Flanders, 1970 and Barker, 1982). Higher levels of interaction in the traditional classroom lead to a better learning environment (Barker, 1982).

2. In-class interaction from the Instructor (I) to a Remote Student (S_R):

   Interaction initiated by the instructor directed to a student at the remote site during class time. For example, an instructor may ask a remote site student a question.

The significance of this directionality lies in the need for the instructor to create classroom environments that draw students into the class discussion or activity. The obstacles of time and place may cause remote students to feel as though they are not a part of the class or even that the instructor belongs to the local site students. Higher levels of interaction between the instructor and remote site students would likely create a greater sense of belonging for the remote students. Generally, greater interaction between the instructor and the remote student would create a more positive learning environment (Holmberg, 1987).

3. Out-of-class interaction from the Instructor (I) to a Local Student (S_L):

   Interaction initiated by the instructor directed to a student at the local site outside class time. For example, an instructor may call a local site student by telephone outside class hours to ask about an assignment that the student failed to submit.

   Once again this directionality is not impacted by distance. The significance of this directionality is not as clear as the in-class interaction from instructor to local site student. However, it is possible that out-of-class interaction may have some influence on student satisfaction with a course (Garrison, 1990 and Kozma, 1991).

4. Out-of-class interaction from the Instructor (I) to a Remote Student (S_R):

   Interaction initiated by the instructor directed to a student at the remote site outside class time. For example, an instructor may e-mail a remote site student outside class time to ask if the student is grasping a certain topic. The

significance of this interaction is that many remote site students may feel isolated from the class. Personal contact from the instructor outside class may well serve to bolster the remote site student's sense of belonging in the class (Garrison, 1990 and Kozma, 1991).

Student-to-Instructor Interaction Directionalities

5. In-class interaction from a Local Student (S_L) to the Instructor (I):

   Interaction initiated by a local student directed to the instructor during class time. For example, a local site student may make a statement about the difficulty of the material to an instructor during class time. Distance is not a factor in this directionality. The significance of this directionality is evidenced by the volumes of research on traditional classroom interaction that have been produced over the years (Flanders, 1970 and Barker, 1982). Higher levels of interaction in the traditional classroom lead to a better learning environment (Barker, 1982).

6. Out-of-class interaction from a Local Student (S_L) to the Instructor (I):

   Interaction initiated by a local student directed to the instructor outside class time. For example, a local site student may initiate a meeting with the instructor outside class to discuss a particularly difficult concept. Once again this directionality is not impacted by distance. The significance of this directionality is not as clear as the in-class interaction from local site student to instructor. However, it is possible that out-of-class interaction may have

some influence on student satisfaction with a course (Garrison, 1990 and Kozma, 1991).

7. In-class interaction from a Remote Student (S_R) to the Instructor (I):

   Interaction initiated by a remote student directed to the instructor during class time. For example, a remote site student may ask a question of the instructor during class. The significance of this directionality lies in the need for the remote site student to feel that the lines of communication are always open for questions or comments during class time (Kozma, 1991). This experience should create a classroom environment that draws students into the class discussion or activity. The obstacles of time and place often cause remote students to feel as though they are not a part of the class or even that the instructor belongs to the local site students. Higher levels of interaction between the remote site students and the instructor would likely create a greater sense of belonging for the remote students. Generally, greater interaction between the remote student and the instructor would create a more positive learning environment (Holmberg, 1987).

8. Out-of-class interaction from a Remote Student (S_R) to the Instructor (I):

   Interaction initiated by a remote student directed to the instructor outside class time. For example, a remote site student may call the instructor outside class time to explain why he/she will be absent from the next class meeting. The significance of this interaction is that remote site students may feel isolated from the class. Personal contact with the instructor outside class may serve to

bolster the remote site student's sense of belonging in the class (Garrison, 1990 and Kozma, 1991).

Student-to-Student Interaction Directionalities

9. In-class interaction from a Local Student (S_L) to another Local Student (S_L): Interaction initiated by a local site student directed at another local site student during class time. For example, a local site student may ask another local site student for help in understanding the directions for an in-class project. Distance is not a factor in this directionality. The significance of this directionality is evidenced by the volumes of research that have been produced over the years studying traditional classroom interaction (Flanders, 1970 and Barker, 1982). Higher levels of interaction among all parties in the traditional classroom lead to a better learning environment (Barker, 1982).
10. In-class interaction from a Local Student (S_L) to a Remote Student (S_R): Interaction initiated by a local site student directed at a remote site student during class time. For example, a local site student may present a remote site student with an alternate point of view on a given issue during class. The significance of this directionality lies in the need for interaction among students. Student-to-student interaction in the classroom contributes to the overall learning environment just as instructor-to-student interaction (Flanders, 1970). Interaction between local site students and remote site students seems to create a greater sense of group cohesion or connectedness (Holmberg, 1987).

11. Out-of-class interaction from Local Student (S_L) to Local Student (S_L):

    Interaction initiated by a local site student directed at another local site student outside class time. For example, a local site student may visit another local site student at home outside class time to obtain a handout that he/she did not get in class. Distance is not a factor in this directionality. The significance of this directionality is evidenced by the research that has been produced over the years studying traditional classroom interaction (Flanders, 1970 and Barker, 1982). Higher levels of interaction among all parties in the traditional classroom lead to a better learning environment (Barker, 1982).

12. Out-of-class interaction from a Local Student (S_L) to a Remote Student (S_R):

    Interaction initiated by a local site student directed at a remote site student outside class time. For example, a local site student may e-mail a remote site student outside class time to conduct some assigned group activity. The significance of this directionality lies in the need for interaction among students. Student-to- student interaction outside the classroom may contribute to the overall learning environment just as instructor-to-student interaction (Flanders, 1970). Interaction between local site students and remote site students seem to create a greater sense of group cohesion or connectedness (Garrison, 1990 and Kozma, 1991).

13. In-class interaction from a Remote Student (S_R) to Remote Student (S_R):

    Interaction initiated by a remote site student directed at another remote site student during class time. For example, a remote site student may ask another remote site student a question during class time. Because only single remote

sites are being considered in this study, this directionality is not impacted by distance. Multiple remote sites may yield a scenario where remote sites students from two separate remote sites might interact with one another. This situation may prove to be fertile ground for future research but is outside the scope of this project. The significance here is that student-to-student interaction will likely improve the overall learning environment (Flanders, 1970; Barker, 1982; and Holmberg, 1987).

14. In-class interaction from a Remote Student (S_R) to a Local Student (S_L):

    Interaction initiated by a remote site student directed at a local site student during class time. For example, a remote site student may initiate a conversation about a shared group project with a local site student during class. The significance of this directionality lies in the need for interaction among students. Student-to-student interaction in the classroom contributes to the overall learning environment just as instructor-to-student interaction (Flanders, 1970). Interaction between local site students and remote site students seems to create a greater sense of group cohesion or connectedness.

15. Out-of-class interaction from a Remote Student (S_R) to another Remote Student (S_R):

    Interaction initiated by a remote site student directed at another remote site student outside class time. For example, a remote site student may unintentionally meet another remote site student in a public setting outside class and briefly discuss some aspect of the course. Distance is not a factor in this directionality. The significance of this directionality is evidenced by the

research that have been produced over the years studying traditional classroom interaction (Flanders, 1970 and Barker, 1982). Higher levels of interaction among all parties in the traditional classroom lead to a more positive learning environment (Barker, 1982).

16. Out-of-class interaction from a Remote Student (S_R) to a Local Student (S_L): Interaction initiated by a remote site student directed at a local site student outside class time. For example, a remote site student may e-mail a local site student outside class time to discuss a research paper required in the course. The significance of this directionality lies in the need for interaction among students. Student-to-student interaction outside the classroom may contribute to the overall learning environment just as instructor-to-student interaction (Flanders, 1970). Interaction between local site students and remote site students seems to create a greater sense of group cohesion or connectedness (Garrison, 1990 and Kozma, 1991).

Problem Statement

This study used data gathered from students enrolled in distance education courses to determine if correlations exist between student perception of interaction in a distance education setting and student satisfaction with a distance education course.

Limitations of the Study

This study was conducted using a single mode of distance delivery-- interactive compressed video. The results of this study are not necessarily applicable to other

distance education settings. The variety of electronic delivery formats makes it difficult to apply the results of this research to other media such as Internet courses or satellite-delivered courses that may have fewer means of interaction. The prominence of compressed video in the educational world suggests that the mode may well be the most appropriate for this type of study. The high levels of interaction available with today's compressed video technology make it an ideal environment. The continued development of Internet-based and other technology-based courses will require similar studies in those particular environments.

Additionally, this study was conducted using five separate compressed video sites. Those sites have virtually identical compressed video equipment; however, it is acknowledged that there may well be environmental factors that vary from site to site. It is practically impossible to control all of the environmental factors at the five sites.

Research Questions

To address the research problem previously outlined, nine research hypotheses were developed. In order to understand the intricacies of the variables, each was segmented into distinct subgroups or subsets. The student satisfaction variable was segmented into student satisfaction with the instructional aspects of the course, student satisfaction with the technical aspects of the course, and overall student satisfaction. Also, the student perception of interaction variable was separated into student perception of instructor-to-student interaction, student perception of student-to-instructor interaction, and student perception of student-to-student interaction. The research design is depicted in Figure 1 (page 14). Each of the subsets for the two variables was used to

develop a hypothesis question seeking the relationship between each of the subsets of student satisfaction with each of the subsets of student perception of interaction.

The student satisfaction variable was segmented into instructional, technical, and overall subsets to gain a better understanding of students' feelings about the instructional and the technical aspects of a compressed video course. A student may feel as though the instructional aspects of a course were satisfactory, while the technical portion of the course was insufficient. The overall subset provides a global view of student satisfaction.

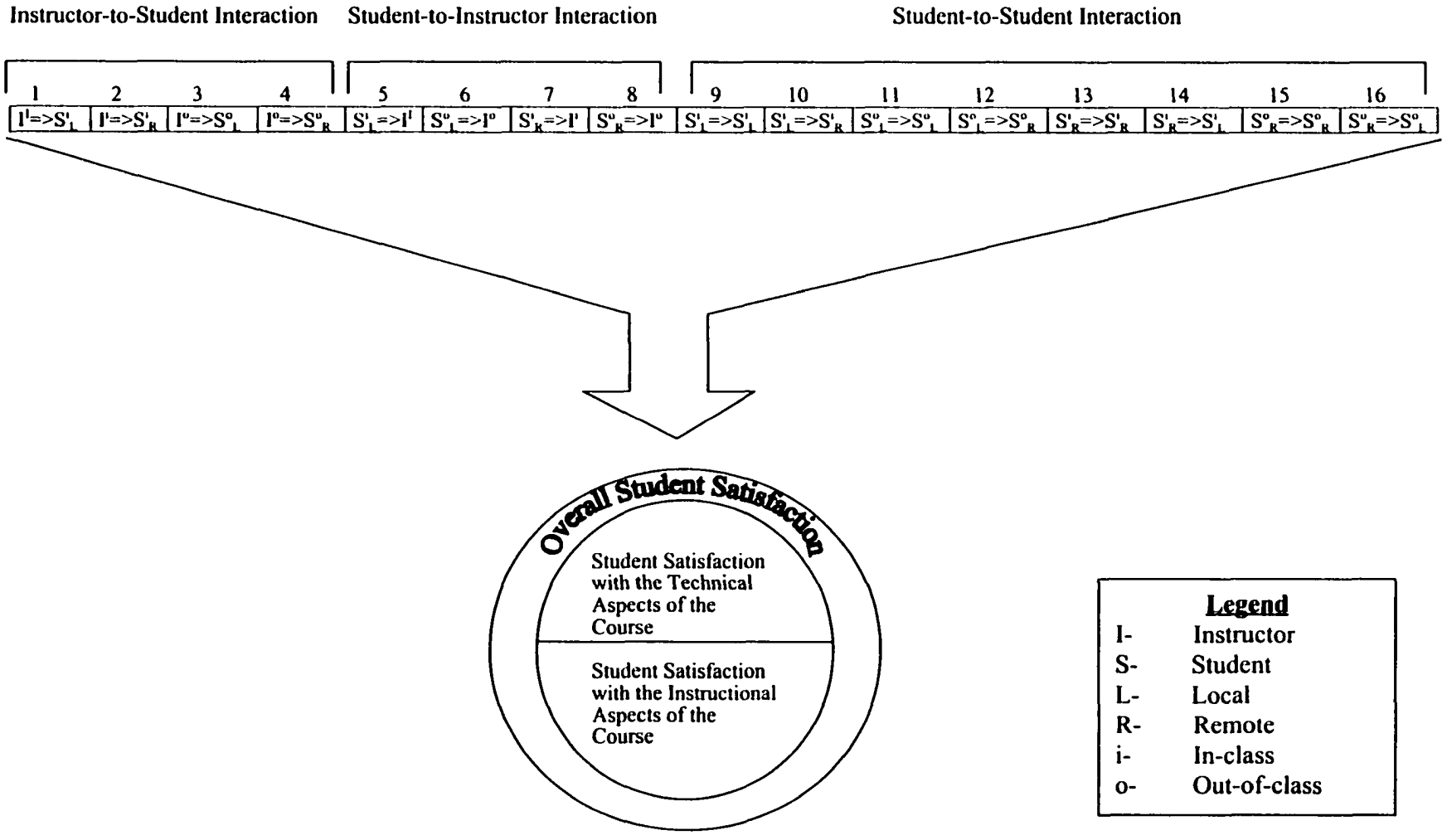
Similarly, the student perception of interaction variable was segmented into instructor-to-student, student-to-instructor, and student-to-student interaction to gain a better understanding of the overall variable. The research from a previous study (Yi & Majima, 1993) indicated that there were two groups involved in the majority of the interaction studies-- instructors and students. Some studies included proctors or site coordinators. However, due to the variation in personnel scenarios of the different campuses involved in this study, proctors were excluded. The three subsets were based on the two groups (instructors and students) and the initiation of interaction (student-initiated or instructor- initiated).

The following are the research questions:

Question 1:

Is there a correlation between the subset of student perception of instructor-to-student interaction and student satisfaction with the instructional aspects of a compressed video course?

Figure 1: Model of the Relationship Between Student Perception of Interaction and Student Satisfaction in a Compressed Video Course



Question 2:

Is there a correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the instructional aspects of a compressed video course?

Question 3:

Is there a correlation between the subset of student perception of student-to-student interaction and student satisfaction with the instructional aspects of a compressed video course?

Question 4:

Is there a correlation between the subset of student perception of instructor-to-student interaction and student satisfaction with the technical aspects of a compressed video course?

Question 5:

Is there a correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the technical aspects of a compressed video course?

Question 6:

Is there a correlation between the subset of student perception of student-to-student interaction and student satisfaction with the technical aspects of a compressed video course?

Question 7:

Is there a correlation between the subset of student perception of instructor-to-student interaction and overall student satisfaction with a compressed video course?

Question 8:

Is there a correlation between the subset of student perception of student-to-instructor interaction and overall student satisfaction with a compressed video course?

Question 9:

Is there a correlation between the subset of student perception of student-to-student interaction and overall student satisfaction with a compressed video course?

Operational Definitions

1. Attitude: A mental position, feeling, or emotion toward a fact, state, thing, or person (Webster, 1983).
2. Communication: An act or instance of information exchange or transmission between individuals using a common system of symbols, signs, or behavior (Webster, 1983).
3. Compressed video: Downsizing of video signals to be transported via phone lines and other media. This format allows the possibility for synchronous two-way video, audio, and data transmission (Distance Education at a Glance, 1998).
4. Distance education: A planned and systematic activity which comprises the choice, didactic preparation, and presentation of teaching materials as well as the supervision and support of student learning and which is achieved by bridging the physical distance (and time) between student and teacher by means of at least one appropriate technical medium (Keegan, 1986).
5. Interaction: Acting upon one another with mutual or reciprocal action or influence (Webster, 1983). Interaction includes both verbal and non-verbal actions or

influences. For the purpose of this study, interaction will be considered from a student-student, instructor-student, and student-instructor point of view.

6. Student-to-student interaction: Verbal and/or non-verbal communication that takes place between students, local and/or remote. The interaction is directional; the party listed first initiated the interaction.

7. Student-to-instructor interaction: Verbal and/or non-verbal communication that takes place between students and instructor/s. This interaction is directional meaning the student initiated the interaction.

8. Instructor-to-student interaction: Verbal and/or non-verbal communication that takes place between instructors and students. This interaction is directional meaning that the instructor initiated the interaction.

9. Student Perception of Interaction: Student perceived level of verbal and non-verbal communication that takes place among students and instructors.

10. Student Satisfaction: Measure of a student's affective perceptions regarding a course or instructional session.

11. Technologically-Filtered Communication: Partial concealment of communication signals or messages (i.e., body language, facial expressions, spoken language) between parties communicating via one or more technological medium. This loss is often the result of an inability of the technological medium to capture and transmit the exact transpiring image or audio.

CHAPTER II

REVIEW OF THE LITERATURE

Distance Education

The prominence of distance education in a variety of applications has produced reams of research focusing on a variety of topics. With widespread use of distance technologies has come a need to better understand the factors that contribute to student learning in distance education settings. The overall learning environment and individual student characteristics have increasingly become focal points in research (Mood, 1995; Schlosser & Anderson, 1994). Researchers have speculated at the factors that may affect the success of students in a distance setting. Some of the more prevalent factors are student learning style (Burwell, 1991; Riddle, 1994; Wilson, 1992), student satisfaction with the distance education course (Bernt & Bugbee, 1993; Foell & Fritz, 1995; Garland & Loranger,1996; Haynes & Dillon, 1992; Martin & Rainey, 1993; McGreal, 1994; Pugh & Siantz, 1995; Riddle, 1990; Ritchie & Newby, 1989; Simmons, 1991; Smith & McNelis, 1992; Witta, 1996; Wolfram, 1994), and student perception of interaction (Evans, 1995; Fulford & Zhang, 1993; Garrison, 1990; Hackman & Walker, 1990; Harasim, 1990; Holmberg, 1987).

For the purpose of this study, *distance education* can be defined as a planned and systematic activity which comprises the choice, didactic preparation, and presentation of teaching materials as well as the supervision and support of student learning and which is achieved by bridging the physical distance (and time) between student and teacher by

means of at least one appropriate technical medium (Keegan, 1986). Distance education was originally based in written correspondence. Evidence of distance education has been found to have been present as long ago as 1833 when a Swedish newspaper advertisement touted the opportunity to study using written correspondence and the post (Holmberg, 1987). However, technological advancements quickly transformed distance education. Radio and even television stations had become commonplace on college campuses by the 1950's (Buckland & Dye, 1991). Developments such as the audio tape, telephone, video camera, satellite, and video compression have contributed greatly to the drastic changes that have taken place in the last forty years.

The results of the technological advancements are vast. One result is compressed video technology. Modern compressed video classrooms contain interactive video, audio, and data exchange. The six-month regeneration cycle of the hardware and software manufacturers continually upgrades the possibilities for greater interaction and improved delivery. Compressed video will be the delivery format utilized in this study.

Student Satisfaction in Distance Education Courses

Concentration on better understanding the distance education student population, specifically the needs and attitude of that group, has led to much research on student satisfaction with distance education courses. In an attempt to make distance education more user-friendly and to address the needs of students, researchers have begun to focus on student satisfaction toward the overall distance education setting. For the purpose of this study, student satisfaction is a measure of a student's affective perceptions regarding a course or instructional session. Numerous studies have looked at

student satisfaction with regard to some aspect of the distance setting (Alford, 1991; Bernt & Bugbee, 1993; Foell & Fritz, 1995; Garland & Loranger, 1996; Haynes & Dillon, 1992; Martin & Rainey, 1993; McGreal, 1994; Pugh & Siantz, 1995; Ritchie & Newby, 1989; Simmons, 1991; Simmons, 1992; Smith & McNelis, 1992; Witta, 1996; Wolfram, 1994).

Results of an attitudinal survey administered by Ritchie and Newby (1989) as a part of a more comprehensive distance education research project indicated that distance students perceived less involvement, less ability to ask questions, and less overall enjoyment with the class. Ability to interact strongly influences students' attitudes and, therefore, commitment to learning. The strong impact of student interaction is further supported by other sources (Alford, 1991; Wolfram, 1994).

A comprehensive 1994 study suggested a relatively strong correlation between student field dependent status and attitude of the distance education student toward the distance education setting (Riddle, 1994). A separate study showed that learning outcomes are affected by student attitudes, especially by remote site students (Miller et al., 1993). Powers and Mitchell (1997) identified a possible relationship between student attitude and interaction in the distance setting. In non-distance education research, several studies have identified interpersonal behaviors (proximity, touch, feedback, and affirming) that influenced both satisfaction and attendance (Farley, 1982).

While many related studies have been broad in spectrum, student satisfaction with the distance education course has emerged as a particularly interesting aspect of student attitudes in several studies (Pugh & Siantz, 1995; Simmons, 1991). In a comprehensive 1991 study of student attitudes in distance education, Simmons made some very

interesting discoveries. Among the findings was the revelation that students held a high satisfaction rating of the technology delivery system; however, those same students saw the need for improvement in providing teacher-student interaction (Simmons, 1991). Also, results have indicated that overall satisfaction of students in remote and local distance education sites are similar except where the technological delivery medium is concerned. Remote student satisfaction levels differed only in their regard for the technology medium. The satisfaction level of the remote students was toward the technology medium was negative (Pugh & Siantz, 1995).

The research on student satisfaction in distance education settings is not complete. Several aspects are still undetermined. However, there is definitely adequate support for including student satisfaction as a variable in this study. In the study that most nearly parallels the present project, Fulford and Zhang have found that higher levels of classroom interaction corresponded to higher levels of satisfaction (1993). The possible relationship between student satisfaction with a distance education course and student perception of interaction seems to be worthy of a closer look.

Classroom Interaction

Interaction has long been viewed as a central process in the endeavor of teaching. Teaching in its most simplistic form is the imparting of knowledge through some form of communication. That communication requires interaction between the teacher and the student. Interaction may be verbal or non-verbal. Interaction involves an intricate set of cues that are transmitted and received by two or more parties. Those cues combine to form an interaction pattern between two or more parties that become associated with a set

of expectations or feelings. In the classroom this process is extremely important because it constitutes a large part of the learning environment (Sugai & Lewis, 1989).

Most of the research on interaction in the classroom has focused on verbal communication. Perhaps the most noted research on classroom interaction was that of Ned Flanders. Flanders and a group of other researchers developed an interaction analysis model that assisted teachers in consciously monitoring the interaction that took place during the teaching process. Though others recognized the importance of interaction to the teaching process before Flanders, it was the landmark 1970 publication of Analyzing Teaching Behavior in which he outlined the Interaction Analysis model that drew the attention of educational research to interaction.

A flood of interaction-related research followed in the 1970s. Kryspin and Feldhusen's 1974 book Analyzing Verbal Classroom Interaction was one of the writings that focused on the interactive teaching process. In that book the Teacher-Student-Interaction (TSI) Model of interaction was suggested as expressing the most basic elements of the teaching process. Such simplistic models soon gave way to more complex group-interaction theories, including as those outlined in Alfred Gorman's Teachers and Learners. It soon became apparent that classroom interaction was comprised of a complicated set of interactions involving the teacher and students. As interaction research continued, the research turned to student achievement. The question became a very simple one: How does classroom interaction impact student achievement? That question has still not been completely answered, but one of the most persuasive answers was provided by Gustav Friedrich in "Classroom Interaction," a chapter from the 1982 book Communication in the Classroom.

> It is teaching, not the teacher, and classroom environment, not physical characteristics, that influence school learning. Bloom's review of relevant literature suggests that the effects of quality of classroom communication [hence interaction] may account for up to 25 percent of achievement variance. Added to the 65 percent contributed by student ability and motivation, it is possible to account for 90 percent of the variance in student achievement. (Barker, Communication in the classroom, p.65-66)

Essentially, Friedrich maintained that the two most important elements of the student achievement formula are student ability/motivation and the communicative and interactive process of teaching.

Interaction in Distance Education

From some of the early studies of distance education, interaction has been identified as a contributing factor to the success or failure of students (Alaska University at Anchorage, 1990; Harasim, 1990; Holmberg, 1987; Leathers, 1986; and Nichol, 1994). *Interaction* at this stage was narrowly defined as dealing with communication between student and instructor (Omvig, 1989).

Comparisons of actual interaction in the traditional classroom versus that in the distance classroom dominated the field. The recurring theme of this research indicated that the instructional format should have minimal effect on student achievement or interaction (Ritchie & Newby, 1989; Martin & Rainey, 1993; Schuemer, 1993). Some researchers maintained that interactive technologies created a richer interaction environment than was typically present in a traditional classroom (Bard, 1996; Belton,

1994; Bork, 1995; Jansen & Lewis, 1996; McHenry & Bozik, 1995; Scholdt, 1995). Few researchers from either side of the argument questioned the underlying need for interaction in conveying instructional material.

Interaction is said to be the crux of the teaching and learning process, especially in distance education. Interactivity, according to Kozma (1991), is a psychological concept as well as a technical or procedural one. Research has found that student satisfaction and perceived learning are affected by the availability of interaction. According to Hackman and Walker (1990), when students had the opportunity to comment on lectures, satisfaction and perceived learning were greater. Also, when students interacted regularly with the instructor and other students, they reported increased motivation and higher quality learning experience (Garrison, 1990). Distance education students have also expressed a need to "maximize opportunities for uninhibited communicative interaction" (Leathers, 1986). Kahl and Cropley (1986) found that distance students were more isolated and experienced lower levels of self-confidence as compared to face-to-face students. These findings indicate a need for higher levels of interaction in the class setting. Distance students also expressed a higher desire for structure in the learning material. Structure is likely to come as a result of greater interaction between the instructor and the students.

Holmberg's guided didactic conversation, which falls into the general category of communication theory, "seems to have explanatory value in relating teaching effectiveness to the impact of feelings of belonging and cooperation as well as to the actual exchange of questions, answers, and arguments in mediated communication" (1986). There are seven supporting assumptions offered by Holmberg:

1. The core of teaching is interaction between the teaching and learning parties; it is assumed that simulatcd interaction through subject-matter presentation in pre-produced courses can take over part of the interaction by causing students to consider different views, approaches, and solutions and generally interact with a course.
2. Emotional involvement in the study and feelings of personal relation between the teaching and learning parties are likely to contribute to learning pleasure.
3. Learning pleasure supports student motivation.
4. Participation in decision-making concerning the study is favorable to student motivation.
5. Strong student motivation facilitates learning.
6. A friendly, personal tone and easy access to the subject matter contribute to learning pleasure, support student motivation and thus facilitate learning from the presentations of pre-produced courses, i.e., from teaching in the form of one-way traffic simulating interaction, as well as from didactic communication in the form of two-way traffic between the teaching and learning parties.
7. The effectiveness of teaching is demonstrated by students' learning of what has been taught (1986).

Holmberg maintained that these assumptions are the basis for his normative teaching theory:

> Distance teaching will support student motivation, promote learning pleasure, and make the study relevant to the individual learner and his/her

> needs, creating feelings of rapport between the learner and the distance education institution, facilitating access to course content, engaging the learner in activities, discussions, and decisions and generally catering for helpful real and simulated communication to and from the learner (1986).

Nurturing student relations with both the instructor and other learners is a positive element in building a fertile interaction, and thus learning, environment. A sense of inclusion or belonging by the student is also essential to the learning process (Holmberg, 1986). This lengthy and idealistic theory is not without its problems; however, there is merit in its explanation of essential characteristics (including interaction) or elements in effective distance education.

There are many sources of interaction that may impact the learning that takes place in a distance education setting. The former narrow definition has been replaced by a more comprehensive view. Student-student interaction, student-proctor interaction, quality and frequency of interaction, availability for interaction, and student perception of interaction, individually and in combination-- all became considerations in determining the overall importance and impact of interaction on a distance education setting. According to Main and Riise, *interaction* is comprised of six components that must be gauged to arrive at a single interaction composite: amount, type, timeliness, method, spontaneity, and quality of the interaction (1995). Multiple sources of interaction coupled with a broader definition of *interaction* grew into a concept of an interaction environment that encompassed much more than just the classroom walls, the period of the class, or student-teacher dialogue (Belton, 1994; Burge et al., 1991; Coldeway et al., 1980; Egan,

Sabastian, & Welch, 1991; Evans, 1995; Fulford & Zhang, 1994; Hillman et al., 1994; Main & Riise, 1995; Ritchie, 1993; Threlkeld & Brzoska, 1994; West, 1994; Yi & Majima, 1993). This research contributed to the use of interaction directionalities that include interaction outside class time and interaction between students. These directionalities are similar to those presented earlier which were developed for use in this study.

Student Perception of Interaction

For the purpose of this study, student perception of interaction will be the focus. Research suggests that student perception of interaction in a distance education setting may be more important than actual interaction (Bozik, 1996; Coldeway et al., 1980; Egan et al., 1991; Evans, 1995; McHenry & Bozik, 1995; Tiene, 1997). Regardless of how researchers define interaction, the important definition is that perceived by the student in the distance setting. Limited research has indicated that technology is not a significant negative factor in the formulation of student perception of interaction (Belton, 1994; Burge, 1991; McHenry & Bozik, 1995).

Terry Evans (1995) found evidence of a relationship between the student-teacher relationship and student self-concept. Also, the student-proctor interaction relationship is suggested as being a significant factor in the formulation of the student perception of interaction (Yi & Majima, 1993). Proctors are not included as a part of this study because of the variety of proctor scenarios found around the state of Louisiana. Also, including proctors as a separate group in the classroom environment would present a whole new set of directionalities. The issue of proctor involvement in the interaction rubric is a

consideration for another study at another time. Powers and Mitchell (1997) used a perception of interaction view to identify a community of learners in their distance education study. The study found that a positive perception of interaction contributed to the concept of the community of learners.

Conclusions from the Literature Review

The relationship between interaction and student satisfaction in a distance setting is not conclusive. Likewise, the relationship between student perception of interaction and student satisfaction with distance education courses is still not fully understood. It is the goal of this study to gain a better understanding of the relationship, if any, between the two variables in an effort to create an improved learning environment.

CHAPTER III

METHODOLOGY

Research Design

In general this study analyzed the possible relationship between student perception of interaction and student satisfaction with a distance education course. More specifically, the study attempted to determine if correlations exist between three subsets of the interaction directionalities and three subsets of students' satisfaction with a compressed video course. The three subsets of interaction directionalities are instructor-to-student interaction, student-to-instructor interaction, and student-to-student interaction. The three subsets of student satisfaction are student satisfaction with the technical aspects of the course, student satisfaction with the instructional aspects of the course, and student overall satisfaction.

Each of the three subsets of the student satisfaction variable was analyzed against each of the three subsets of the student perception of interaction variable. This produced nine separate correlations analyses. The results of the correlations were used to answer the previously stated research questions. The data were analyzed and discussed by inspection seeking patterns of significance. First, each of the nine correlations were analyzed in their totality looking for patterns within each correlation. Second, the data were analyzed seeking patterns within each interaction directionality category. And finally, the data were analyzed seeking patterns within each student satisfaction item and category. These patterns were reported and explained as conclusions.

Procedure

The study consisted of a one-time assessment of subjects participating in compressed video courses. The Electronic Learning Student Satisfaction Scale and the Electronic Learning Student Perception of Interaction Survey were administered uniformly via the compressed video system by a single trained assessment administrator and a group of site coordinators at university sites across the state of Louisiana. The results were translated into a manageable data form and analyzed as previously stated. The output of this process was statistical ratings of each correlation. This analysis is described in detail later. These ratings were used to answer the null hypotheses and to develop implication statements.

Description of the Setting

The setting for this study was multiple compressed video sites located at universities and one high school across the state of Louisiana. Students were located at Louisiana State University at Alexandria, Louisiana State University at Eunice, Louisiana State University at Shreveport, Louisiana Tech University, and Minden High School. The high school site included in this study was equipped with videoconferencing equipment equivalent to that at the university sites. Each site is fully equipped with essentially identical interactive compressed video classrooms. The classrooms have at least four large monitors (typically 35" ceiling-mounts in each corner of the classroom) for viewing far site and near site video, individual student microphones (occasionally shared between two students), two 180° panning, zooming cameras (one front view and one rear view), one document camera, an Internet accessible computer with full video display capability

via the compressed video system, a fax machine, a telephone line (often toll free), and compression hardware. All of these components are available to attempt to simulate the level of interaction available in a traditional classroom.

The classrooms have an approximate student capacity of 30; therefore, there are seldom more than 30 students at any given site. Instructors are able to pan the room and/or zoom in on particular students or portions of the room. Depending upon the bandwidth being utilized for a given class, there may be a slight asynchronization between audio and video or possibly a blurring effect when quick movement occurs.

Audio quality is very clear. Students have access to individual microphones at their seats. Pressing a button enacts microphones. Communication via these microphones allows all parties on the compressed video network to hear the conversation. Private audio communication is also available using the phone line in each classroom. Cameras are even able to focus on students who use the phone. Additional communication is available via e-mail and phone conversation outside the classroom to the extent that these media are available. The communication environment in the compressed video classrooms is important because it may have a significant impact on the student perception of interaction.

Subject Selection

The participants taking part in this study were undergraduate and graduate students enrolled in credit courses being offered via the State of Louisiana's Compressed Video Network. The random cluster sample was 131 students enrolled in 5 courses. These subjects were selected as part of existing classes.

The distance classes that participated in the study were selected using several criteria. First, the classes were selected to include both technical and academic course content. Second, the classes were chosen based on student enrollment numbers and willingness of the students and instructors to participate. Third, the classes were chosen based on availability for carrying out the assessment. And finally, each course selected to be included in this study had the origination site and one remote site included. Multiple remote sites would have presented some statistical and theoretical difficulties that are not the focus of this study.

Participation in this study was voluntary. The subjects were not informed of the purpose of the study until after the administration of the assessment instruments. Approval was sought and received from the Louisiana Tech University Human Subjects Committee because the research was conducted under the jurisdiction of that institution.

Instrumentation

Each participant completed the Compressed Video Course Satisfaction Scale and the Compressed Video Student Perception of Interaction Survey. The data gathered from the assessment of these two instruments were used to conduct the analysis.

There are a number of instruments that were available to measure classroom interaction (Educational Testing Service, 1990). However, the majority of these instruments are observational assessments. Additionally, none of the available instruments are specific to a distance education environment. None of the existing instruments measured student perception of interaction. Since no instrument was available to produce the desired data, an instrument was developed. That instrument is

the Compressed Video Student Perception of Interaction Survey. The instrument was field tested on a population similar to the research study population. The data yielded a Cronbach's Alpha of .8091, indicating a high level of reliability. Additionally, review of the instrument by three professionals in the field indicated a strong validity rating. Dr. Felicie Barnes, Instructional Design Specialist at Grambling State University's Distance Learning Program, indicated that the instrument appears to be on target in its attempts to measure student perception of interaction (Barnes, 1999). Similarly, Dr. Thomas Springer, Professor of Psychology at Louisiana Tech University, indicated that the instrument was sound in its design and content (Springer, 1999). Finally, Mr. Michael Abbiatti, Associate Commissioner for Information Technology with the Louisiana Board of Regents, recommended the instrument as adequate for measuring student perception of interaction (Abbiatti, 1999).

As previously described, the instrument was used to determine potential correlations between several subsets. Those subsets are made up of the following survey items. The instructor-to-student interaction subset consists of items 1-4 of the Student Perception of Interaction Survey. The student-to-instructor interaction subset consists of items 5-8 of the Student Perception of Interaction Survey. And the student-to-student interaction subset consists of items 9-16 of the Student Perception of Interaction Survey (See Appendix).

There are many student satisfaction instruments available. However, there are only a few that focus on electronic learning students. The Compressed Video Course Satisfaction Scale is an instrument that has been used in the state of Louisiana for the last few years by a variety of universities. However, the instrument had no concrete measure

of reliability. Therefore, the instrument was field tested on a population similar to that used in this study. The data yielded a Cronbach's Alpha of .7983, indicating a fairly strong reliability level. Additionally, review of the instrument by three professionals in the field indicated a strong validity rating. Dr. Felicie Barnes, Instructional Design Specialist at Grambling State University's Distance Learning Program, indicated that the instrument appears to be on target in its attempts to measure student satisfaction (Barnes, 1999). Similarly, Dr. Thomas Springer, Professor of Psychology at Louisiana Tech University, indicated that the instrument was sound in its design and content (Springer, 1999). Finally, Mr. Michael Abbiatti, Associate Commissioner for Information Technology with the Louisiana Board of Regents, recommended the instrument as adequate for measuring student satisfaction (Abbiatti, 1999).

As previously described, the instrument was used to determine potential correlations between several subsets. Those subsets are made up of the following survey items. The student satisfaction with the technical aspects of the course subset consists of items 13-17 of the Student Satisfaction instrument. The student satisfaction with the instructional aspects of the course subset consists of items 1-12 and 18-20 of the Student Satisfaction instrument. The overall student satisfaction with the course subset consists of items 21-24 of the Student Satisfaction instrument (See Appendix).

The instruments were administered uniformly by a single researcher. Packets containing the two instruments were mailed to the origination site and a single remote site and distributed by the site coordinator or instructor where appropriate. The assessments were administered simultaneously and uniformly per class via the

compressed video system. The completed instruments were collected by the instructor or site coordinator and returned via mail to the administrator.

Data Analysis

The data gathered were compared to determine what relationships exist between the variables. Results of the Compressed Video Course Satisfaction Scale and the Compressed Video Student Perception of Interaction Survey for each of the students was entered into a three by three model based on the subsets. The following is a listing of those correlation analyses:

1. Student perception of instructor-to-student interaction (items 1-4 of the Compressed Video Student Perception of Interaction Survey) correlated with student satisfaction with the instructional aspects of a compressed video course (items 1-12 and 18-20 of the Compressed Video Student Satisfaction Scale)
2. Student perception of student-to-instructor interaction (items 5-8 of the Compressed Video Student Perception of Interaction Survey) correlated with student satisfaction with the instructional aspects of a compressed video course (items 1-12 and 18-20 of the Compressed Video Student Satisfaction Scale)
3. Student perception of student-to-student interaction (items 9-16 of the Compressed Video Student Perception of Interaction Survey) correlated with student satisfaction with the instructional aspects of a compressed

video course (items 1-12 and 18-20 of the Compressed Video Student Satisfaction Scale)

4. Student perception of instructor-to-student interaction (items 1-4 of the Compressed Video Student Perception of Interaction Survey) correlated with student satisfaction with the technical aspects of a compressed video course (items 13-17 of the Compressed Video Student Satisfaction Scale)
5. Student perception of student-to-instructor interaction (items 5-8 of the Compressed Video Student Perception of Interaction Survey) correlated with student satisfaction with the technical aspects of a compressed video course (items 13-17 of the Compressed Video Student Satisfaction Scale)
6. Student perception of student-to-student interaction (items 9-16 of the Compressed Video Student Perception of Interaction Survey) correlated with student satisfaction with the technical aspects of a compressed video course (items 13-17 of the Compressed Video Student Satisfaction Scale)
7. Student perception of instructor-to-student interaction (items 1-4 of the Compressed Video Student Perception of Interaction Survey) correlated with overall student satisfaction with a compressed video course (items 21-24 of the Compressed Video Student Satisfaction Scale)
8. Student perception of student-to-instructor interaction (items 5-8 of the Compressed Video Student Perception of Interaction Survey) correlated with overall student satisfaction with a compressed video course (items 21-24 of the Compressed Video Student Satisfaction Scale)

9. Student perception of student-to-student interaction (items 9-16 of the Compressed Video Student Perception of Interaction Survey) correlated with overall student satisfaction with a compressed video course (items 21-24 of the Compressed Video Student Satisfaction Scale)

The data were analyzed using the SPSS-X (SPSS-X Inc., 1988) computer program. The SPSS-X Users Guide was also used for directing the manipulation of the data and for reading the results of the analyses. The strength of each relationship was measured using this same source. Any relationship that yields a significance value of >.05 was said to be meaningful, while a significance value of <.05 was said to be not meaningful. This .05 breaking point was not chosen at random; rather it is a widely accepted practice in statistical research.

Internal Validity

In order to protect the internal validity of the study, the researcher did not participate in the administration of the assessment instruments. The participants were not informed of the purpose of the study prior to the administration.

CHAPTER IV

RESULTS OF DATA ANALYSIS

This chapter describes the results of the study whose purpose was to determine if a correlation exists between student perception of interaction in a distance education setting and student satisfaction with a distance education course. Results are presented in the following order: (1) student perception of instructor-to-student interaction correlated with student satisfaction with the instructional aspects of a compressed video, (2) student perception of student-to-instructor interaction correlated with student satisfaction with the instructional aspects of a compressed video course, (3) student perception of student-to-student interaction correlated with student satisfaction with the instructional aspects of a compressed video course, (4) student perception of instructor-to-student interaction correlated with student satisfaction with the technical aspects of a compressed video course, (5) student perception of student-to-instructor interaction correlated with student satisfaction with the technical aspects of a compressed video course, (6) student perception of student-to-student interaction correlated with student satisfaction with the technical aspects of a compressed video course, (7) student perception of instructor-to-student interaction correlated with overall student satisfaction with a compressed video course, (8) student perception of student-to-instructor interaction correlated with overall student satisfaction with a compressed video course, (9) student perception of student-to-student interaction correlated with overall student satisfaction with a compressed video course.

Descriptive Data of Participants

Subjects in this study were 131 students enrolled in a variety of compressed video courses from across the state of Louisiana. There were 89 females and 42 males. The following is a breakdown of the classification of the population: freshman (25), sophomore (35), junior (13), senior (4), and graduate (54). The courses, locations, and number of students are depicted in Table 1.

Table 1: Descriptive Data of Participants

Course	Local Site	Remote Site	Local Students	Remote Students
Economics 202	LSU-S[3]	LSU-A[1]	10	12
Education 527	La Tech[4]	Minden[5]	34	20
Finance 1501	LSU-A[1]	LSU-S[3]	17	6
RADT 1000*	LSU-E[2]	LSU-A[1]	13	9
RADT 2031**	LSU-E[2]	LSU-A[1]	5	5
Total			79	52

* Radiologic Technology 1000
** Radiologic Technology 2031
1 Louisiana State University at Alexandria
2 Louisiana State University at Eunice
3 Louisiana State University at Shreveport
4 Louisiana Tech University
5 Minden High School

Hypothesis Testing

In order to test the null hypotheses a correlation analysis was used to determine the direction and strength of the linear relationships between the variables.

Null Hypothesis 1

There is no correlation between the subset of student perception of instructor-to-student interaction and student satisfaction with the instructional aspects of a compressed video course.

Results of the Student Perception of Instructor-to-Student Interaction and Student Satisfaction with the Instructional Aspects of a Compressed Video Correlation are depicted in Table 2. This correlation analyzed the relationship between student perception of instructor-to- (local and remote) student interaction both in class and outside class with the 15 items from the Student Satisfaction Scale that relate to instructional satisfaction. The results showed that ten of the correlations were significant at the >.05 level. An additional ten of the correlations were significant at the >.01 level. A total of twenty of the sixty correlations were significant at least at the >.05 level.

The Instructor-to-Local Student in Class Interaction item indicated a significant correlation with "Encouraged to participate in class discussion" (.202*) at the >.05 level and "Adequate ways to contact instructor" (.319**) at the >.01 level.

The Instructor-to-Remote Student in Class Interaction item indicated a significant correlation with "Instructor available for questions" (.199*), "Class is well organized" (.187*), "I would consider taking a compressed video course as a remote student" (.222*), and "Students at the other sites are a part of the class" (.198*) at the >.05 level. The item was also found to be significant with "Instructor pays attention to remote students" (.336**), "Encouraged to participate in class discussion" (.274**), "I am a part of the class" (.230**), "Instructor is speaking directly to me" (.275**), "Adequate access to resources needed for class" (.240**), "Adequate ways to contact instructor outside class" (.264**), and "Efficient system for exchange class materials" (.364**) at the >.01 level.

Null Hypothesis 1 was rejected.

Table 2: Results of the Student Perception of Instructor-to-Student Interaction and Student Satisfaction with the Instructional Aspects of a Compressed Video Course Correlation

	Instructor to Local Student in Class	Instructor to Remote Student in Class	Instructor to Local Student out of Class	Instructor to Remote Student out of Class
Student Attention to instructor on monitor	-.048	.168	-.051	.138
Instructor available for questions	.079	.199*	.022	.237**
Instructor pays attention to remote students.	.159	.336**	-.013	-.003
Class is well organized.	.122	.187*	.205*	.113
Attention in CVC equals attention in traditional course	-.026	.052	-.029	-.033
Encouraged to participate in class discussion	.202*	.274**	.147	.131
I am a part of the class.	.140	.230**	.166	.093
Instructor is speaking directly to me.	.117	.275**	.195*	.182*
I would consider taking a CVC as a remote student.	.020	.222*	-.057	.059
Students at other sites are a part of the class.	.045	.198*	.039	-.002
Being on television does not inhibit my participation.	.026	.029	.004	-.015
I enjoy interacting with students at other sites.	-.013	.067	-.096	-.050
Adequate access to resources needed for class.	.068	.240**	.077	.041
Adequate ways to contact instructor outside class	.319**	.264**	.239**	.164
Efficient system for exchanging materials	.079	.362**	.186*	.187*

* Significant at the >.05 level

** Significant at the >.01 level

Null Hypothesis 2

There is no correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the instructional aspects of a compressed video course.

Results of the Student Perception of Student-to-Instructor Interaction and Student Satisfaction with the Instructional Aspects of a Compressed Video Correlation are depicted in Table 3. This correlation analyzed the relationship between student perception of Local and Remote student-to-instructor interaction both in class and outside class with the 13 items from the Student Satisfaction Scale that relate to instructional satisfaction. The results showed that twelve of the correlations were significant at the >.05 level and another eleven of the correlations were significant at the >.01 level. A total of twenty-three of the sixty correlations were significant at least at the >.05 level.

The Local Student-to-Instructor in Class Interaction item indicated a significant correlation with "I am a part of the class" (.220*) at the >.05 level and "Class is well organized" (.319**), "Encouraged to participate in class discussion" (.299**), and "Adequate ways to contact instructor" (.258**) at the >.01 level.

The Local Student-to-Instructor out of Class Interaction item indicated a significant correlation with "Class is well organized" (.220*), "Encouraged to participate in class discussion" (.192*), and "I am a part of the class" (.199*) at the >.05 level and was significant at the >.01 level with "Adequate ways to contact instructor out of class" (.251**).

Table 3: Results of the Student Perception of Student-to-Instructor Interaction and Student Satisfaction with the Instructional Aspects of a Compressed Video Course Correlation

	Local Student to Instructor in Class	Local Student to Instructor out of Class	Remote Student to Instructor in Class	Remote Student to Instructor out of Class
Student Attention to instructor on monitor	.001	.067	-.008	.087
Instructor available for questions	.014	.171	.201*	.221*
Instructor pays attention to remote students.	.155	-.010	.205*	.035
Class is well organized.	.319**	.220*	.145	.019
Attention in CVC equals attention in traditional	.009	.061	.004	.125
Encouraged to participate in class discussion	.299**	.192*	.191*	.252**
I am a part of the class.	.220*	.199*	.253**	.239**
Instructor is speaking directly to me.	.149	.125	.172*	.216*
I would consider taking a CVC as a remote student.	.050	-.096	.132	.048
Students at other sites are a part of the class.	.144	.088	.175*	.092
Being on television does not inhibit my	.063	-.020	.069	.086
I enjoy interacting with students at other	.034	.023	.024	.095
Adequate access to resources needed for class.	.072	.154	.227**	.122
Adequate ways to contact instructor outside class	.258**	.251**	.219*	.239**
Efficient system for exchanging materials	.171	.167	.286**	.238**

* Significant at the >.05 level.
** Significant at the >.01 level.

The Remote Student-to-Instructor in Class Interaction item indicated a significant correlation with "Instructor available for questions" (.201*), "Instructor pays attention to remote students" (.205*), "Encouraged to participate in class discussion" (.191*), "Instructor is speaking directly to me" (.172*), "Students at the other sites are a part of the class" (.175*), and "Adequate ways to contact the instructor outside class" (.219*) at the >.05 level. The item is also significant with I am part of the class (.253**), "Adequate access to resources needed for class" (.227**), and "Efficient system for exchanging materials" (.286**) at the >.01 level.

The Remote Student-to-Instructor out of Class Interaction item indicated a significant correlation with "Instructor available for questions" (.221*) and "Instructor is speaking directly to me" (.216*) at the >.05 level. The item was also significantly correlated with "Encouraged to participate in class discussion" (.252**), "I am part of the class" (.239**), "Adequate ways to contact instructor outside class" (.239**), and "Efficient system for exchanging materials" (.238**) at the >.01 level.

Null Hypothesis 2 was rejected.

Null Hypothesis 3

There is no correlation between the subset of student perception of student-to-student interaction and student satisfaction with the instructional aspects of a compressed video course.

Results of the Student Perception of Student-to-Student Interaction and Student Satisfaction with the Instructional Aspects of a Compressed Video Course Correlation are depicted in Table 4. This correlation analyzed the relationship between student

perception of Local and Remote student-to-student interaction both in class and outside class with the 13 items from the Student Satisfaction Scale that relate to instructional satisfaction. The results showed that twenty-five of the correlations were significant at the >.05 level and another twenty-five were significant at the >.01 level. A total of fifty of the one hundred and four correlations were significant at least at the >.05 level.

The Local Student-to-Local Student in Class Interaction item indicated a significant correlation with "Instructor is speaking directly to me" (.201*) at the >.05 level. The item is also significantly correlated with "Encouraged to participate in class discussion" (.362**), "I am a part of the class" (.263**), and "Adequate ways to contact instructor outside class" (.382**) at the >.01 level.

The Local Student-to-Remote Student in Class Interaction item indicated a significant correlation with "Students at other sites are part of the class" (.181*) at the >.05 level. The item is also significantly correlated with "Instructor is available for questions" (.269**), "Encouraged to participate in class discussion" (.332**), "I am a part of the class" (.272**), "I enjoy interacting with students at other sites" (.324**), "Adequate ways to contact instructor outside class" (.249**), and "Efficient system for exchanging materials" (.237**) at the >.01 level.

The Local Student-to-Local Student out of Class Interaction item indicated a significant correlation with "Class is well organized" (.202*) and "Efficient system for exchanging materials" (.185*). The item is also correlated with "I am part of the class" (.258**) and "Adequate ways to contact instructor outside class" (.293**) at the >.01 level.

The Local Student-to-Remote Student out of Class Interaction item indicated a significant correlation with "Encouraged to participate in class discussion" (.185*), "I am part of the class" (.218*), "Instructor is speaking directly to me" (.192*), "Adequate ways to contact instructor outside class" (.184*), "Efficient system for exchanging materials" (.182*) at the >.05 level.

The Remote Student-to-Remote Student in Class Interaction item indicated a significant correlation with "Student attention to the instructor on the monitor" (.215*), "Attention in compressed video course equals attention in a traditional course" (.185*), "Instructor is speaking directly to me" (.181*), "I would consider taking a compressed video course as a remote student" (.210*), and "Students at other sites are a part of the class" (.182*) at the >.05 level. The item is also significantly correlated with "Instructor is available for questions" (.346**), "Encouraged to participate in discussion" (.242**), "I am part of the class" (.236**), "I enjoy interacting with students at other sites" (.339**), and "Efficient system for exchanging materials" (.331**) at the >.01 level.

The Remote Student-to-Local Student in Class Interaction item indicated a significant correlation with "Encouraged to participate in class discussion" (.196*), "I am part of the class" (.215*), and "Efficient system for exchanging materials" (.222*) at the >.05 level. The item was significantly correlated at >.01 level with "Instructor available for questions" (.242**) and "I enjoy interacting with students at other sites" (.265**).

The Remote Student-to-Remote Student out of Class Interaction item indicated a significant correlation with "Student attention to instructor on monitor" (.185*), "Attention in compressed video course equals attention in traditional course" (.172*), "I am part of the class" (.185*), "I would consider taking a compressed video course as a

Table 4: Results of Student Perception of Student-to-Student Interaction and Student Satisfaction the with Instructional Aspects of a Compressed Video Course Correlation

	Local student to local student in class	Local student to remote student in class	Local student to local student out of class	Local student to remote student out of class	Remote student to remote student in class	Remote student to local student in class	Remote student to remote student out of class	Remote student to local student out of class
Student Attention to instructor on monitor	.033	.107	-.027	.019	.215*	.095	.185*	.090
Instructor available for questions	.039	.269**	-.030	.097	.346**	.242**	.259**	.179*
Instructor pays attention to remote students.	.135	.113	.013	-.072	.096	.083	.020	-.028
Class is well organized.	.128	.035	.202*	.045	-.013	.012	-.008	.057
Attention in CVC equals attention in traditional	.059	.106	-.012	.048	.185*	.118	.172*	.150
Encouraged to participate in class discussion	.362**	.332**	.169	.185*	.242**	.196*	.268**	.334**
I am part of the class.	.263**	.272**	.258**	.218*	.236**	.215*	.185*	.284**
Instructor speaks directly to me.	.201*	.093	.167	.192*	.181*	.108	.104	.194*
Would consider taking CVC as remote student.	.036	.142	-.104	-.011	.210*	.125	.187*	.117
Students at other sites are part of the class.	.141	.181*	.046	.062	.182*	.147	.164	.176*
Being on television does not inhibit my participation.	-.005	.143	-.026	.035	.082	.079	.112	.100
I enjoy interacting with students at other sites.	.086	.324**	-.149	.124	.339**	.265**	.211*	.236**
Adequate access to necessary resources	.109	.165	.159	.020	.087	.070	.039	.049
Adequate ways to contact instructor outside class	.382**	.249**	.293**	.184*	.104	.140	.171	.197*
Efficient system for exchanging materials	.130	.237**	.185*	.182*	.331**	.222*	.312**	.273**

* Significant at the >.05 level.
** Significant at the >.01 level.

remote student" (.187*), and "I enjoy interacting with students at other sites" (.211*) at the >.05 level. The item also correlates significantly with "Instructor available for questions" (.259**), "Encouraged to participate in class discussion" (.268**), and "Efficient system for exchanging course materials" (.312**) at the >.01 level.

Null Hypothesis 3 was rejected.

Null Hypothesis 4

There is no correlation between the subset of student perception of instructor-to-student interaction and student satisfaction with the technical aspects of a compressed video course.

Results of the Student Perception of Instructor-to-Student Interaction and Student Satisfaction with the Technical Aspects of a Compressed Video Course Correlation are depicted in Table 5. This correlation analyzed the relationship between student perception of instructor-to- local and remote student interaction both in class and outside class with the five items from the Student Satisfaction Scale that relate to technical satisfaction. The results showed that three of the correlations were significant at the >.05 level.

The Instructor-to-Local Student in Class Interaction item indicated a significant correlation with none of the items from the student satisfaction with the technical aspects of a compressed video course.

The Instructor-to-Remote Student in Class Interaction item indicated a significant correlation with "Microphones are easy to use" (.214*) at the >.05 level.

The Instructor-to-Local Student out of Class Interaction item indicated a significant correlation with "Comments of students at other sites are easy to hear" (.201*) and "Graphics and visuals are easy to read" (.191*) at the >.05 level.

The Instructor-to-Remote Student out of Class Interaction item indicated a significant correlation with none of the student satisfaction with the technical aspects of a compressed video course.

Null Hypothesis 4 was rejected.

Table 5: Results of the Student Perception of Instructor-to-Student Interaction and Student Satisfaction with the Technical Aspects of a Compressed Video Course Correlation

	Instructor to local student in class	Instructor to remote student in class	Instructor to local student out of class	Instructor to remote student out of class
Microphones easy to use	.016	.214*	.062	-.044
Monitors easy to see	-.043	.007	-.103	-.105
Comments of students at other sites are easy to hear.	.160	.163	.201*	.015
Graphics and visuals are easy to read.	-.041	.008	.191*	.160
Technical problems do not interfere with my learning.	.020	.125	.121	.115

* Significant at the >.05 level.
** Significant at the >.01 level.

Null Hypothesis 5

There is no correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the technical aspects of a compressed video course.

Results of the Student Perception of Student-to-Instructor Interaction and Student Satisfaction with the Technical Aspects of a Compressed Video Course Correlation are depicted in Table 6. This correlation analyzed the relationship between student perception of local and remote student-to-instructor interaction both in class and outside class with the five items from the Student Satisfaction Scale that relate to technical satisfaction. The results showed that two of the correlations were significant at the >.05 level and another two of the correlations were significant at the >.01 level. A total of four out of twenty correlations were significant at least at the >.05 level.

The Local Student-to-Instructor in Class Interaction item indicated a significant correlation with "Technical problems do not interfere with my learning" (.194*) at the >.05 level and "Comments of students at other sites are easy to hear" (292**) at the >.01 level.

The Local Student-to-Instructor out of Class Interaction item indicated a significant correlation with "Graphics and visuals are easy to read" (.217*) at the >.05 level and "Comments of students at other sites are easy to hear" (.240**) at the >.01 level.

The Remote Student-to-Instructor in Class Interaction item indicated no significant correlations with the student satisfaction with the technical aspects of a compressed video course.

The Remote Student-to-Instructor out of Class Interaction item indicated no significant correlations with the student satisfaction with the technical aspects of a compressed video course.

Null Hypothesis 5 was rejected.

Table 6: Results of the Student Perception of Student-to-Instructor Interaction and Student Satisfaction with the Technical Aspects of a Compressed Video Course Correlation

	Local student to instructor in class	Local student to instructor out of class	Remote student to instructor in class	Remote student to instructor out of class
Microphones easy to use	.113	.050	.113	.053
Monitors easy to see	.067	-.047	.139	.009
Comments of students at other sites are easy to hear.	.292**	.240**	.125	.117
Graphics and visuals are easy to read.	.116	.217*	.070	.138
Technical problems do not interfere with my learning.	.194*	.161	.052	.114

* Significant at the >.05 level.
** Significant at the >.01 level.

Null Hypothesis 6

There is no correlation between the subset of student perception of student-to-student interaction and student satisfaction with the technical aspects of a compressed video course.

Results of the Student Perception of Student-to-Student Interaction and Student Satisfaction with the Technical Aspects of a Compressed Video Course Correlation are depicted in Table 7. This correlation analyzed the relationship between student perception of student-to-local and remote student interaction both in class and outside

class with the five items from the Student Satisfaction Scale that relate to technical satisfaction. The results showed that eight of the forty correlations were significant at the >.05 level.

The Local Student-to-Local Student in Class Interaction item indicated a significant correlation with "Comments of students at other sites are easy to hear" (.222*) and "Technical problems do not interfere with my learning" (.188*) at the >.05 level.

The Local Student-to-Remote Student in Class Interaction item indicated a significant correlation with none of the student satisfaction with the technical aspects of a compressed video course.

The Local Student-to-Local Student out of Class Interaction item indicated a significant correlation with "Comments of students at other sites are easy to hear" (.211*) and "Graphics and visuals are easy to read" (.193*) at the >.05 level.

The Local Student-to-Remote Student out of Class Interaction item indicated a significant correlation with none of the student satisfaction with the technical aspects of a compressed video course.

The Remote Student-to-Remote Student in Class Interaction item was significant with "Technical problems do not interfere with my learning" (.190*) at the >.05 level.

The Remote Student-to-Local Student in Class Interaction item indicated a significant correlation with "Technical problems do not interfere with my learning" (.180*) at the >.05 level.

The Remote Student-to-Remote Student out of Class Interaction item indicated a significant correlation with "Technical problems do not interfere with my learning" (.248*) at the >.05 level.

The Remote Student-to-Local Student out of Class Interaction item indicated a significant correlation with "Technical problems do not interfere with my learning" (.206*) at the >.05 level.

Null Hypothesis 6 was rejected.

Table 7: Results of the Student Perception of Student-to-Student Interaction and Student Satisfaction with the Technical Aspects of a Compressed Video Course Correlation

	Local student to local student in class	Local student to remote student in class	Local student to local student out of class	Local student to remote student out of class	Remote student to remote student in class	Remote student to local student in class	Remote student to remote student out of class	Remote student to local student out of class
Microphones easy to use	.036	.153	.047	.001	.145	.074	.104	.052
Monitors easy to see	-.069	.083	-.042	-.052	.167	.053	.091	.031
Comments of students at other sites are easy to hear	.222*	.129	.211*	.080	.002	.055	-.006	.060
Graphics and visuals are easy to read.	.148	.052	.193*	.116	.055	.080	.077	.129
Technical problems do not interfere with my learning.	.188*	.149	.120	.153	.190*	.180*	.248*	.206*

* Significant at the >.05 level.
** Significant at the >.01 level.

Null Hypothesis 7

There is no correlation between the subset of student perception of instructor-to-student interaction and overall student satisfaction with a compressed video course.

Results of the Student Perception of Instructor-to-Student Interaction and Overall Student Satisfaction in a Compressed Video Course Correlation are depicted in Table 8. This correlation analyzed the relationship between student perception of instructor-to-

local and remote student interaction both in class and outside class with the four items from the Student Satisfaction Scale that relate to overall student satisfaction. The results showed that none of the items correlated significantly.

Null Hypothesis 7 was accepted.

Table 8: Results of the Student Perception of Instructor-to-Student Interaction and Overall Student Satisfaction with a Compressed Video Course Correlation

	Instructor to local student in class	Instructor to remote student in class	Instructor to local student out of class	Instructor to remote student out of class
Learning in CVC equals learning in traditional class	-.015	.011	.003	.098
I would tell friends to take a CVC.	.015	.162	-.066	.018
I would take another CVC.	-.038	.162	-.022	.104
Overall student satisfaction	-.004	-.001	-.011	.164

* Significant at the >.05 level.
** Significant at the >01 level.

Null Hypothesis 8

There is no correlation between the subset of student perception of student-to-instructor interaction and overall student satisfaction with a compressed video course.

Results of the Student Perception of Student-to-Instructor Interaction and Overall Student Satisfaction in a Compressed Video Course Correlation are depicted in Table 9. This correlation analyzed the relationship between student perception of local and remote student-to-instructor interaction both in class and outside class with the four items from the Student Satisfaction Scale that relate to overall satisfaction. The results showed that none of the items correlated significantly.

Null Hypothesis 8 was accepted.

Table 9: Results of the Student Perception of Student-to-Instructor Interaction and Overall Student Satisfaction with a Compressed Video Course Correlation

	Local Student to Instructor in class	Local student to instructor out of class	Remote student to Instructor in class	Remote student to Instructor out of class
Learning in CVC equals learning in traditional class	.103	.097	.055	.123
I would tell friends to take a CVC.	.077	.022	.116	.065
I would take another CVC.	.036	-.008	.056	.095
Overall student satisfaction	.063	.095	.009	.157

* Significant at the >.05 level.
** Significant at the >.01 level.

Null Hypothesis 9

There is no correlation between the subset of student perception of student-to-student interaction and overall student satisfaction with a compressed video course.

Results of the Student Perception of Student-to-Student Interaction and Overall Student Satisfaction in a Compressed Video Course Correlation are depicted in Table 10. This correlation analyzed the relationship between student perception of local and remote student-to-student interaction both in class and outside class with the four items from the Student Satisfaction Scale that relate to overall student satisfaction. The results showed that two of the correlations were significant at the >.05 level and six of the correlations were significant at the >.01 level. A total of eight correlations out of thirty-two were significant at least at the >.05 level.

The Local Student-to-Local Student in Class Interaction item indicated a significant correlation with none of the items from overall student satisfaction in a compressed video course.

The Local Student-to-Remote Student in Class Interaction item indicated a significant correlation with none of the items from overall student satisfaction in a compressed video course.

The Local Student-to-Local Student out of Class Interaction item indicated a significant correlation with none of the items from the overall student satisfaction in a compressed video course.

The Local Student-to-Remote Student out of Class Interaction item indicated a significant correlation with none of the items of the overall student satisfaction in a compressed video course.

The Remote Student-to-Remote Student in Class Interaction item indicated a significant correlation with "Overall student satisfaction" (.193*) at the >.05 level and with "Learning in a compressed video course equals learning in a traditional course" (.225**), "I would tell a friend to take a compressed video course" (.261**), and "I would take another compressed video course" (.284**) at the >.01 level.

The Remote Student-to-Local Student in Class Interaction item indicated a significant correlation with none of the items of the overall student satisfaction in a compressed video course.

The Remote Student-to-Remote Student out of Class Interaction item indicated a significant correlation with "Learning in a compressed video course equals learning in a traditional course" (.208*) at the >.05 level. The item also correlated significantly with "I would tell a friend to take a compressed video course" (.241**), "I would take another compressed video course" (.268**), and "Overall satisfaction" (.235**) at the >.01 level.

Null Hypothesis 9 was rejected.

Table 10: Results of the Student Perception of Student-to-Student Interaction and Overall Student Satisfaction with a Compressed Video Course Correlation

	Local student to local student in class	Local student to remote student in class	Local student to local student out of class	Local student to remote student out of class	Remote student to remote student in class	Remote student to local student in class	Remote student to remote student out of class	Remote student to local student out of class
Learning in CVC equals learning in traditional class.	.046	.074	.005	.049	.225**	.089	.208*	.163
I would tell friends to take CVC.	.040	.060	-.003	.005	.261**	.072	.241**	.126
I would take another CVC.	.008	.062	.000	.036	.284**	.115	.268**	.137
Overall satisfaction	.028	.071	-.021	.061	.193*	.093	.235**	.158

* Significant at the >.05 level.
** Significant at the >.01 level.

Summary of Hypotheses Testing

Of the nine null hypotheses seven were rejected, while the remaining two were accepted. All three of the null hypotheses relating to student satisfaction with the instructional aspects of a compressed video course were rejected. All three of the null hypotheses relating to student satisfaction with the technical aspects of a compressed video course were rejected. One of the three null hypotheses relating to overall student satisfaction with a compressed video course was rejected, while the remaining two were accepted.

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Problem Statement

This study used data gathered from students enrolled in distance education courses to determine if correlations exist between student perception of interaction in a distance education setting and student satisfaction with a distance education course.

Limitation of the Study

This study was conducted using a single mode of distance delivery-- two-way interactive compressed video. The results of this study are not necessarily applicable to other distance education settings. The variety of electronic delivery formats makes it difficult to apply the results of this research to other media such as Internet courses or satellite-delivered courses that may have fewer means of interaction. The prominence of compressed video in the educational world suggests that the mode may well be the most appropriate for this type of study. Additionally, the high levels of interaction available with today's compressed video technology make it a highly suitable environment. Two-way interactive compressed video has permeated the educational world from secondary schools to universities and from rural locations to metropolitan sites. The continued development of Internet-based and other technology-based courses will require similar studies in those particular environments. Some of the methods used here will be applicable to any other studies using different media.

Procedure

The study consisted of a one-time assessment of subjects participating in compressed video courses. The Electronic Learning Student Satisfaction Scale and the Electronic Learning Student Perception of Interaction Survey were administered uniformly via the compressed video system by a single researcher and a group of site coordinators at university sites across the state of Louisiana. The results were translated into a manageable data form and analyzed. The statistical outputs were used to answer the research questions and to develop implication statements.

Description of the Setting

The setting for this study was compressed video sites located at universities and one high school across the state of Louisiana. University students involved in the study were located at Louisiana State University at Alexandria, Louisiana State University at Eunice, Louisiana State University at Shreveport, Louisiana Tech University, and Minden High School. Each site is fully equipped with essentially identical interactive compressed video classrooms. As previously, stated the high school site was equipped with videoconferencing equipment equivalent to that at the university sites.

Subjects

The participants taking part in this study were 131 university students. This group was made up of seventy-seven undergraduates and fifty-four graduate students enrolled in credit courses being offered via the State of Louisiana's Compressed Video Network. These subjects were selected as part of existing classes.

The distance classes that participated in this study were selected using several criteria. First, the classes were selected to include both technical and academic course content. Two of the five courses were Radiologic Technology courses (RADT 1000 and 2031), while the other three courses were two business-related courses (Economics 202 and Finance 1501) and an education course (Education 527). Second, the classes were chosen based on student enrollment numbers and willingness of the students and instructors to participate. Third, the classes were chosen based on access to carrying out the assessment. And finally, each course selected to be included in this study had at least one remote site included. Multiple remote sites would have presented some statistical and theoretical difficulties that are not the focus of this study.

Participation in this study was totally voluntary. The subjects were not informed of the purpose of the study until after the administration of the assessment instruments. Approval was received from the Louisiana Tech University Human Subjects Committee because the research was conducted under the jurisdiction of that institution.

Responses to the Research Questions and Conclusions

A response to each of the research questions is listed below:

Research Question 1

Is there a correlation between the subset of student perception of instructor-to-student interaction and student satisfaction with the instructional aspects of a compressed video course?

The results showed that ten of the correlations were significant at the >.05 level. An additional ten of the correlations were significant at the >.01 level. A total of twenty

of the sixty correlations were significant at least at the >.05 level. Overall, there is a significant correlation between the subset of student perception of instructor-to-student interaction and student satisfaction with the instructional aspects of a compressed video course.

In the interaction directionality categories, the significant correlations seemed to follow a pattern of more significant correlations involving Instructor-to-Remote Student in Class interaction. The Instructor-to-local student interaction in class category showed two significant correlations out of the fifteen items. Those items were "Encouraged to participate in classroom discussion" and "Adequate ways to contact instructor outside class." These data indicate that local students are positively impacted by encouragement from the instructor to interact and a sense of comfort in knowing that the instructor can be contacted outside class.

Eleven of the twenty overall significant correlations mentioned above involved in class interaction from the instructor to the remote student. Only four of the fifteen student satisfaction with the instructional aspect items did not correlate significantly with Instructor-to-Remote Student in Class interaction. The availability of the instructor in and out of class, attention of the instructor to remote students, organization of the class, instructor encouragement of interaction, access to resource materials for class, and development of a cohesive class group are all positive results of instructor-to-remote student interaction in class. These data indicate that classroom interaction initiated by the instructor with the remote student has a substantial relationship with nearly every facet of student satisfaction with the instructional aspects of a compressed video course.

The Instructor-to-local student interaction outside class category showed four significant correlations out of the fifteen items. Those items were "Class is well organized," "Instructor is speaking directly to me," "Adequate ways to contact instructor outside class," and "Efficient system for exchanging materials." These data indicate that local students are impacted by the organization of the course, ownership of the instructor, and efficient exchange of course materials.

The Instructor-to-remote student interaction outside class category showed three significant correlations out of the fifteen items. Those items were "Instructor available for questions," "Instructor is speaking directly to me," and Efficient system for exchanging materials." These data indicate that remote students are impacted by instructor availability, instructor attention, and efficiency of the exchange of materials.

In the student satisfaction with the instructional aspects item analysis, the data indicate a wide distribution of significant correlations among the fifteen items. The analysis showed several trends. First, instructor availability showed significant correlations for instructor-initiated interaction with remote students in class and outside class. Remote students need to feel as though the instructor is accessible for questions. That availability may serve as a safety net for the remote student.

Second, encouragement by the instructor to participate in classroom interaction showed significant correlations with both local and remote students in class. Apparently, both local and remote students need encouragement for in-class interaction. This finding is a strong indication that in-class interaction is a positive factor for both local and remote students.

And third, an efficient system for exchanging materials showed significant correlations with instructor-initiated interaction with remote students in class and outside class, as well as with local students in class. These data indicate that separation of the instructor and the student, as in the case of remote students or local students outside class, brings about a need on the part of students for an efficient system for exchanging materials.

Research Question 2

Is there a correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the instructional aspects of a compressed video course?

The overall results showed that twelve of the correlations were significant at the >.05 level and another eleven of the correlations were significant at the >.01 level. A total of twenty-three of the sixty correlations were significant at least at the >.05 level. Therefore, there is a significant correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the instructional aspects of a compressed video course.

In the interaction directionality categories, there was a trend toward more significant correlations in the categories involving remote students. In the local student-to-instructor in class and outside class categories, there were four significant correlations out of the fifteen items in both categories. These categories share the same items. This pattern will be addressed in the item analysis section. There appear to be no other significant patterns.

In the remote student-to-instructor in class category, there were nine significant correlations out of the fifteen student satisfaction items. In the remote student-to-instructor outside class category there were six significant correlations out of fifteen student satisfaction items. These items from both categories include areas such as instructor availability, encouraging interaction, development of class group cohesion, instructor attention, and access to course-related resources. These data indicate that interaction inside and outside the classroom initiated by the remote student with the instructor has a substantial relationship with nearly every facet of student satisfaction with the instructional aspects of a compressed video course.

In the student satisfaction with the instructional aspects item analysis, the data indicate a distribution of significant correlations among the fifteen items. The analysis showed a couple of trends. There were three items that showed significant correlations in all four interaction directionality categories. Those three items are "Encouraged to in class discussion," "I am a part of the class," and "Adequate ways to contact instructor outside class." These three items indicate that local and remote student-initiated interaction with the instructor in class and outside class are impacted by encouragement to participate in classroom interaction, a sense of inclusion in the class group, and access to the instructor outside class.

Additionally, three other items showed significant correlations with remote student-initiated interaction with the instructor in class and outside class-- "Instructor available for questions," "Instructor is speaking directly to me," and "Efficient system for exchanging materials." These items are likely related to the need of remote students to

feel a sense of security, including a need for instructor access and ownership and an efficient means of obtaining course-related materials.

Research Question 3

Is there a correlation between the subset of student perception of student-to-student interaction and student satisfaction with the instructional aspects of a compressed video course?

The overall results showed that twenty-six of the correlations were significant at the >.05 level and another twenty-five of the correlations were significant at the >.01 level. A total of fifty-one of the one hundred twenty correlations were significant at least at the >.05 level. Therefore, there is a significant correlation between the subset of student perception of student-to-student interaction and student satisfaction with the instructional aspects of a compressed video course.

In the interaction directionality categories, there was a good distribution of significant correlations. However, the categories that involved remote student-initiated interaction had more significant correlations (31) than the local student-initiated categories (20). The local student-to-local student in class (4), local student-to-local student outside class (4), and local student-to-remote student outside class (5) interaction categories showed no new significant trends. However, there are some strong trends involving these categories that will be addressed in the item analysis section to follow.

The local student-to-remote student in class interaction category showed seven significant correlations. These correlations involved several items, including "Instructor available for questions," "Encouraged to participate in class discussion," "I am part of the

class," "Students at other sites are part of the class," "I enjoy interacting with students at other sites," "Adequate ways to contact instructor outside class," and "Efficient system for exchange of course materials." These data indicate that there is a significant correlation between local student-to-remote student in class interaction and student satisfaction with the instructional aspects of a compressed video course. Further, higher in-class interaction from local students to remote students appears to impact the development of a class group cohesion.

The bulk, twenty, of the thirty-one significant correlations involving remote student initiated interaction are focused on five items. These correlations will be addressed in the item analysis to follow this section. However, it is important to note that the remote student-to-remote student in class interaction category showed ten significant correlations out of the fifteen student satisfaction items. Additionally, remote student-to-remote student outside class and remote student-to-local student outside class interaction both showed eight significant correlations out of fifteen student satisfaction items. The remote student-to-local student in class interaction category showed five significant correlations out of fifteen student satisfaction items. The data in these four interaction categories indicate a correlation between remote student-initiated interaction and student satisfaction with the instructional aspects of a compressed video course.

In the student satisfaction with the instructional aspects item analysis, there are four general themes that are evident in the data. First, three items-- "Encouraged to participate in class discussion," "I am a part of the class," and "Efficient system for exchanging course materials"-- each showed significant correlations with at least seven of the eight interaction categories. These data are a good indication that all student-to-

student interaction is impacted by these factors. There is a definite significant correlation between student-to-student interaction and the three items listed above.

Second, two items, "Instructor available for questions" and "I enjoy interacting with students at other sites," indicated significant correlations with all four of the remote student-initiated interaction categories. These data indicate that remote student-initiated interaction is dependent on the availability of the instructor and enjoyment of interacting with students at remote sites. Essentially, remote students need to feel a sense of access to the instructor and a comfort with fellow students in order to generate a positive interaction environment.

Third, the "Adequate ways to contact the instructor outside class" was a significant correlation with all four of the local student-initiated interaction categories. Local students need to feel a sense of accessibility to the instructor outside class in order to develop a positive interaction environment with fellow students.

And fourth, three items, "Student attention to the instructor on the monitor," "Attention in compressed video course equals attention in traditional course," and "I would consider taking a compressed video course as a remote student," correlated significantly with remote student-to-remote student interaction in class and outside class. The level of remote student-to-remote student interaction in class and outside class is likely to impact student attention level and willingness to repeat as a remote.

Conclusions from correlations of interaction directionality categories and student satisfaction with the instructional aspects of a compressed video course. Overall, the analyses of the interaction directionality categories and

student satisfaction with the instructional aspects of a compressed video course show a significant correlation. Student satisfaction with the instructional aspects of a compressed video course is definitely impacted by student perception of the various interaction directionality categories. These findings suggest that increasing student perception of interaction in a compressed video course would improve student satisfaction levels with the instructional aspects of the course.

The first theme that has emerged from the data is a general concentration of significant correlations involving remote students in the three student perception of interaction and student satisfaction with the instructional aspects of a compressed video course correlations. There are a total of two hundred forty item correlations in the three correlations. Of the two hundred forty, only one hundred fifty involve remote students. Of those one hundred fifty correlations, seventy-two have indicated a significant correlation. Approximately one-half of the correlations involving remote students are significant at least at the >.05 level. The high concentration of significant correlations involving remote students indicates a correlation between remote student perception of interaction and remote student satisfaction with the instructional aspects of a compressed video course. In essence, remote students are dependent upon the perception of interaction to formulate their satisfaction levels with the instructional aspects of a compressed video course.

The large number of significant correlations would seem to indicate that educators and administrators need to devote attention to ensuring a means of interaction between the remote student and all other parties involved in a compressed video course.

The interaction categories are evenly represented in the significant correlations. Interaction from all of the categories is important.

Remote site students are obviously in a distinctly different situation than the local site students. The situation is different in that the local student has the instructor available in person, while the remote student must rely on some technical means of communication to interact with the instructor. Further, the remote student must rely on additional means to receive course-related materials. It would seem that anything that can be done to provide a higher perceived level of interaction would improve a student's satisfaction with the instructional aspects of the compressed video course. For example, holding periodic office hours (telephone, e-mail, discussion board, etc.) specifically for remote students may help to enhance interaction outside class. Additionally, the instructor might purposefully call on remote students to conduct class activities or to answer questions to draw the remote students into the class discussion. And finally, the instructor and the administrators involved with the course must create a consistent means of delivering course materials. Remote students must feel comfortable that they will get the course materials. Delivery can be accomplished by posting the course materials on a class web site or composing a course resource guide to be obtained by the student at the outset of the course.

Miller, et al (1993) showed a strong correlation between student attitude or satisfaction and student learning outcomes in a distance education setting. This finding would seem to indicate that student learning outcomes are indirectly impacted by student perception of interaction. Improving student perception of interaction could conceivably improve student learning outcomes particularly for remote students.

Several items showed trends of significance across the three correlations. The "Instructor available for questions" item showed significant correlations with nine of the sixteen correlations. Students, especially remote students, may feel a sense of instructional stability as long as they know they have ready access to the instructor. If the student knows that the instructor is available for questions, then there is likely a sense of security that is developed by the student.

The "Encouraged to participate in class discussion" item was significantly correlated with a large number of interaction directionalities. The item was significantly correlated with thirteen of the sixteen interaction directionalities. This finding indicates that encouragement of the students to interact would yield higher levels of student perception of interaction. Students need to be encouraged to participate in class discussion and interaction. This task can be accomplished by employing some of the examples mentioned in previous paragraphs. Students need to know that their interaction in the course is a priority for the instructor. The instructor should be constantly aware of the involvement of all students, especially the remote students. If a student is seldom involved in the course discussion or activity, the instructor should make a point to call on that student to answer questions posed in class or to encourage the student to be more active in class discussion.

Also, the "I am a part of the class" item was significantly correlated with thirteen of sixteen possible correlations. This finding indicates that the development of class group cohesion is apparently impacted by student perception of interaction. Inclusion of all students into the class group should be a major concern of the instructor in a compressed video setting. For example, a student who perceives that he/she is simply an

on-looker in the course would likely not feel a sense of cohesion with the group. All students, regardless of location, should feel a part of the class group. To the extent possible, the instructor should be careful to treat all students the same regardless of location. The instructor should also encourage interaction between students at different sites. This student-to-student interaction will likely result in a stronger group cohesion that will span site differences.

The "Instructor is speaking directly to me" item is significantly correlated with all four of the correlations that involve interaction between the instructor and the remote student. These indicate that interaction between the instructor and the remote student in class and outside class impact the student's satisfaction with the instructional aspects of the compressed video course. This item could also be an indicator of student ownership of the instructor or a student's sense of belonging in the class group. Regardless of the breadth of the item, it is apparent that there is a significant relationship between remote student perception of interaction and the item.

Remote students indicated a correlation between remote student-initiated interaction with students and the "I enjoy interacting with students at other sites" item. In a total of four correlations involving remote student-initiated interaction with other students, all of the correlations were significant. Three of the four correlations were significant at the >.01 level. These data would indicate that remote student perception of student-initiated interaction would impact remote student enjoyment in interacting with other students.

The "Adequate ways to contact instructor outside class" item also indicated a significant correlation with all interaction directionalities. In sixteen correlations, twelve

showed a significant correlation. These data indicate that there is a relationship between the students' perception of interaction and the availability for contacting the instructor. This item parallels the results of the "Instructor available for questions" item. These findings indicate that the instructor should make himself/herself available through various media as well as at various times to accommodate student interaction needs. Instructors may hold office hours for phone calls, e-mail, discussion boards, etc. to complement the normal office hours dedicated to appointments. For this to work effectively, students must have contact information for the instructor and the instructor must consistently keep office hours.

The "Efficient system for exchanging materials" item showed a significant correlation with all interaction subsets involving the remote student. In ten analyses, all correlations were found to be significant. Remote student perception of interaction is greatly impacted by the remote students' feelings about the adequacy of the system for exchanging materials.

Perhaps the most significant finding in these three correlations is the apparent similarities between local and remote students. These data are particularly important because they suggest that local and remote students share a core of basic needs. The obvious differences that local and remote students experience in the daily activity of a compressed video course do not change the basic need for encouragement to participate in classroom interaction, a sense of inclusion in the class group, and access to the instructor outside class. Local students have the instructor available in person at each class meeting, and exchange of course materials is typically more simplistic for the local student. Because of these factors and others, the local student is likely to feel a sense of

security that he/she is keeping up in a course. Remote students could obviously feel left out or alienated without the same level of access to the instructor. However, what the data have shown here is that the basic needs of the remote student are no different than the basic needs of the local student. Student location does not change students' need for encouragement to participate in class, a sense of inclusion in the class group, and access to the instructor outside class. These data would seem to indicate that focusing on interaction levels in distance education courses is not meant to address the needs of the remote student only. Rather, these core needs are necessary for all students, local and remote. This finding suggests that local students and remote students may not be as different in their needs as was previously thought. Future research should attempt to identify and analyze these needs.

Research Question 4

Is there a correlation between the subset of student perception of instructor-to-student interaction and student satisfaction with the technical aspects of a compressed video course?

The overall results showed that three out of twenty correlations were significant at the >.05 level out of a total of twenty correlations. The data indicate a limited significant correlation between instructor-to-student interaction and student satisfaction with the technical aspects of a compressed video course.

An analysis of the interaction categories shows no significant trends. The significant correlations are distributed fairly evenly.

An analysis of the student satisfaction with the technical aspects items indicates no major trends. The limited significant correlations are distributed fairly evenly.

Research Question 5

Is there a correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the technical aspects of a compressed video course?

The overall results showed that two of the correlations were significant at the >.05 level and another two of the correlations were significant at the >.01 level. A total of four out of twenty correlations were significant at least at the >.05 level. These data indicate a limited significant correlation between the variables.

Within the interaction directionality categories, there were no significant correlations in the remote student-to-instructor in class and outside class categories. However, the local student-to-instructor in class and outside class both had two significant correlations each. These data would indicate that there is a significant correlation between the subset of student perception of student-to-instructor interaction and student satisfaction with the technical aspects of a compressed video course. The ability of local students to hear remote students and generally conduct a distance class impacts a local student's satisfaction with the technical aspects of a course. If a local student cannot hear the comments being made by a remote student, then the local student will likely have a lower perceived level of interaction. The instructor and administrators must work to ensure a consistent technical system that allows student-to-student interaction.

In the item analysis of the technical satisfaction items, there was only one trend. That trend reveals a pattern of correlations for the "Comments of students at other sites are easy to hear" item with local student-initiated interaction. As previously stated, local students need to be able to communicate with remote students to gain a high level of student satisfaction with the technical aspects of the course. Inability to communicate with the remote site will likely result in low technical satisfaction results. Local students want to interact with remote students. The technical system must not hinder that interaction.

Research Question 6

Is there a correlation between the subset of student perception of student-to-student interaction and student satisfaction with the technical aspects of a compressed video course?

The overall results showed that eight of the forty correlations were significant at the >.05 level. These data indicate a limited significant correlation between the variables.

In the interaction directionality categories, four of the eight significant correlations involved local student-to-local student interaction in class and outside class. Seemingly, the technical aspects of the compressed video system would not impact local student-to-local student interaction. These findings may be a function of the structure of this study; however, this may also be an area for further research. The remaining significant correlations are evenly distributed among the interaction categories.

In the technical satisfaction item analysis, five of the eight significant correlations involved the "Technical problems do not interfere with my learning" item. Technical

problems cause an impasse in the communication links between remote students and other parties in a distance education course. A stable connection is needed to maintain student satisfaction with the technical aspects of a compressed video course.

Conclusions from correlations of interaction directionality categories and student satisfaction with the technical aspects of a compressed video course. There are several general themes or conclusions from the correlations involving student satisfaction with the technical aspects of a compressed video course. First, six significant correlations out of sixteen correlations involving the "Technical problems do not interfere with my learning" indicate a need by students to have an operable technical system in order to gain a sense of satisfaction with the technical aspects of a compressed video course.

Further, in a total of thirty correlations that involved the local student as the initiator of interaction, eight of the correlations were significant. These findings indicate that higher levels of perceived interaction initiated by local students would yield higher levels of satisfaction with the technical aspects of a compressed video course. In a more specific item analysis, four of those eight significant correlations were concentrated on a single item-- the "Comments of students at other sites are easy to hear" item. Each time a local student-initiated interaction item was correlated with this technical satisfaction item (four times), there was a significant correlation. These data would suggest that local students' ability to hear comments of students at the remote site would impact local student perception of interaction. Local student satisfaction with the technical aspects of

a compressed video course are dependent upon those local students being able to hear comments made by the remote students.

Second, there were no significant correlation trends involving the "Microphones are easy to use" and/or "Monitors are easy to see." Just as the previous trend required communication to achieve a high level of student satisfaction with the technical aspects of a course, it was believed that ease of use of monitors and microphones would result in similar findings. Since the bulk of communication is either visual or auditory, it was anticipated that there would be some significant correlations between perceived interaction and technical satisfaction with the use of monitors and microphones in a compressed video course. However, of the two technical satisfaction items, "Microphones easy to use" and "Monitors easy to see," there was only one significant correlation out of a possible thirty-two correlations. This finding indicates that there is no relationship between student perception of interaction and ease of use of the monitors and microphones. These findings could be the result of high quality microphones and monitors that served students well. The students may have experienced such success with the current equipment that the ease of use of the microphones and monitors has become a given. If this is the case, the technology has achieved one of its goals, which is to become a transparent medium for communication. Students have become accustomed to focusing on the content of the course and not the technical medium of delivery.

And third, one issue that has plagued distance education courses and programs since their inception has been the sporadic technical problems that have caused class session cancellations. A correlation between remote student-initiated interaction subsets and remote student satisfaction with the technical aspects of the compressed video course

was anticipated. Simply stated, if a remote student cannot communicate via the technical system in place, the student satisfaction with the technical aspects of the course would likely suffer. Of the six correlations that involved remote student-initiated interaction, four were found to have a significant correlation with the "Technical problems do not interfere with my learning" item. These data would indicate that the expected relationship indeed does exist. Technical consistency is important to student satisfaction with the technical aspects of a compressed video course.

Overall, it appears as though the concept of technologically-filtered communication is to some degree a factor in a compressed video setting. The data seems to indicate that increased interaction and attention to the core needs of the remote students may alleviate some of the effects of the filtering that occurs as a result of the technical system. For example, continued interaction that leads to a relationship between the remote student and instructor, a sense of inclusion in the class group, and a perception that the instructor is available outside class may lessen the anxiety that students feel in communicating via a technical system.

Research Question 7

Is there a correlation between the subset of student perception of instructor-to-student interaction and overall student satisfaction with a compressed video course?

The overall results showed that none of the items correlated significantly. The lack of significant correlations will be discussed in a subsequent section.

In the interaction directionality category there is no significant correlation between instructor-to-student interaction and overall student satisfaction with a

compressed video course. The lack of significant correlations will be discussed in a subsequent section.

In the overall satisfaction item analysis, there were no significant correlations. The lack of significant correlations will be discussed in a subsequent section.

Research Question 8

Is there a correlation between the subset of student perception of student-to-instructor interaction and overall student satisfaction with a compressed video course?

The overall results showed that none of the items correlated significantly. The lack of significant correlations will be discussed in a subsequent section.

In the interaction directionality categories, there is no significant correlation between student-to-instructor interaction and overall student satisfaction with a compressed video course. The lack of significant correlations will be discussed in a subsequent section.

In the student satisfaction with the technical aspects item analysis, there is no significant correlation. The lack of significant correlations will be discussed in a subsequent section.

Research Question 9

Is there a correlation between the subset of student perception of student-to-student interaction and overall student satisfaction with a compressed video course?

The overall results showed that two of the correlations were significant at the >.05 level and six of the correlations were significant at the >.01 level. A total of eight

correlations out of thirty-two were significant at least at the >.05 level. These data indicate that a significant correlation exists between the variables.

In the interaction directionality categories, all eight of the significant correlations involve remote student-to-remote student interaction both in class and outside class. The data indicate that there is a significant correlation between remote student-to-remote student interaction and overall student satisfaction with a compressed video course.

In the student satisfaction with the technical aspects items, there were no trends. All four of the items had two significant correlations.

Conclusions from correlations of interaction directionality categories and overall student satisfaction with a compressed video course. There are two general themes that emerged from the three correlations involving overall student satisfaction. First, the data yielded no significant correlations in the thirty-two correlations involving interaction between instructors and students and overall student satisfaction. These data are somewhat surprising; however, the results show that there is no significant relationship between student perception of instructor-to-student nor student-to-instructor interaction and overall student satisfaction. It was expected that overall satisfaction would correlate significantly with the interaction directionalities. That was not the result of the data. Several studies have identified overall student satisfaction as a factor in distance education research (Alford, 1991; Farley, 1982; Powers & Mitchell, 1997; Ritchie & Newby, 1989; Wolfram, 1994). These data present evidence that overall student satisfaction may not be the only measure. It may be necessary to divide student satisfaction into instructional, technical, and overall student satisfaction.

Second, though there were no significant correlations found in the majority of the overall student satisfaction portion of this study, one particular segment seems to be of importance. In a total of eight item correlations that involve remote student-to-remote student interaction, there were eight significant correlations. This would indicate a significant correlation between remote student-to-remote student interaction and overall student satisfaction. Overall student satisfaction is impacted by the perceived levels of remote student interaction with one another. Remote students may well become dependent upon one another for success in compressed video courses. Remote students may interact with one another more frequently to supplement the lack of interaction that may be present if the student were at the local site.

Implications

The results of this study have provided some general implication statements that should be considered in development and delivery of compressed video courses. This section will serve to identify some of those themes and suggest how the results of this study should be applied to practical decisions in the day-to-day operation of compressed video programming.

First, instructors and administrators should make every effort to ensure that remote students perceive high levels of interaction in their compressed video course. This can be achieved by a variety of means including encouraging class participation, interactive activities, interaction modeling by the instructor, and providing grade-related rewards for interaction. Perceived interaction appears to act as somewhat of a safety net for remote students who may feel alienated from the benefits of a traditional classroom

setting. Greater levels of interaction or improving a remote student's perception of interaction would likely cause a greater sense of instructional stability. Improved student satisfaction with the instructional aspects and a greater sense of instructional stability would seemingly improve the remote student's chances for more positive learning outcomes.

Second, administrators and instructors should make every effort to ensure that the technical system is operational for every class meeting. Obviously, if the technical system is not functioning, then students will not develop a high sense of interaction in the classroom environment. This process begins with selecting a stable network environment and connection. The equipment should also be tested and subjected to regularly scheduled maintenance.

The instructor and administrators should keep in mind that remote students are often reliant upon one another for communication of course-related information. Administrators and instructors should work to build groups or cohorts at the remote sites. This should be considered when developing courses and degree programs to be delivered via compressed video. This statement may indicate a heavy reliance by remote students on one another for achieving higher levels of overall student satisfaction. Remote students will likely interact both in class and outside class to ascertain a feeling of inclusion in the class group or to create a clique of the remote students within the class group. This group may serve as a support network to help the remote students achieve a greater sense of instructional stability and security. Remote students may interact with one another to clarify an assignment made by the instructor. It appears as though remote students are more likely to interact with one another than with the instructor. Unlike in

traditional courses where the instructor has relatively equal access to all students, remote students are different. The instructor should use the remote students individually and as a group as a means of communicating with all remote students. Encourage course-related interaction in class and outside class. For example, the instructor may purposefully interact with the remote group through a select few members of the remote student group to encourage interaction among the remote student group. Higher levels of interaction will likely build stronger relationships, which will hopefully lead indirectly to improved learning outcomes. Especially in degree program situations, a cohort scenario may well serve to improve student retention and learning outcomes from the courses.

Further Research

There are several areas that could be considered for further research in expanding and clarifying this research project. First, additional research needs to be conducted on the communication filtering that occurs in distance education settings. The effects of technologically-filtered communication on instruction is a prime area for research. Second, the relationship between learning outcomes and the variables analyzed in this study should be studied. Since student satisfaction and interaction are connected as they have been established in this study, what impact does this new information have on student learning outcomes? Third, the shared basic needs of all students, local and remote should be analyzed. Fourth, there should be a continuation of the existing research that has focused on building interaction levels in distance education settings. And finally, student satisfaction should be analyzed from the technical, instructional, and overall perspectives to determine the value of each.

APPENDIX

LOUISIANA TECH
UNIVERSITY

RESEARCH & GRADUATE SCHOOL

MEMORANDUM

TO: Monty Sullivan

FROM: Deby Hamm, Graduate School

SUBJECT: HUMAN USE COMMITTEE REVIEW

DATE: September 3, 1999

In order to facilitate your project, an **EXPEDITED REVIEW** has been done for your proposed study entitled:

"Analysis of the relationship between student perception of interaction and student satisfaction in a compressed video course"

Proposal # 1-QN

The proposed study procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Further, the subjects must be informed that their participation is voluntary.

Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study.

If you have any questions, please give me a call at 257-2924.

Compressed Video Student Perception of Interaction/Course Satisfaction Scale

This survey is being conducted to provide information for improving distance education instruction and student learning. For the purpose of this survey, *interaction* is defined as any verbal or non-verbal contact between two or more parties resulting in the exchange of thoughts, ideas, feelings, attitudes, etc. Local site students are those students at the same site as the instructor, while remote site students are those students at a site other than that of the instructor.

Instructions: Using the scales/choices provided please mark the most appropriate choice.

Demographics:

I am ☐Male ☐Female

Are you taking this course at a local or remote site? ☐Local ☐Remote

My college classification is ☐Freshman ☐Sophomore ☐Junior ☐Senior ☐Graduate

Student Perception of Interaction:

	Frequently	Occasionally	Seldom	Never	Not Observed
The instructor initiated interaction during class with students at the local site	☐	☐	☐	☐	☐
The instructor initiated interaction during class with students at the remote site	☐	☐	☐	☐	☐
The instructor initiated interaction outside of class with the local site students ..	☐	☐	☐	☐	☐
The instructor initiated interaction outside of class with the remote site students ..	☐	☐	☐	☐	☐
The local site students initiated interaction in class with the instructor ..	☐	☐	☐	☐	☐
The local site students initiated interaction outside of class with the instructor ..	☐	☐	☐	☐	☐
The remote site students initiated interaction in class with the instructor ..	☐	☐	☐	☐	☐
The remote site students initiated interaction outside of class with the instructor	☐	☐	☐	☐	☐
The local site students initiated interaction in class with other local site students ..	☐	☐	☐	☐	☐
The local site students initiated interaction in class with the remote site students ..	☐	☐	☐	☐	☐
The local site student initiated interaction outside of class with local site students	☐	☐	☐	☐	☐
The local site students initiated interaction outside of class with remote site students .	☐	☐	☐	☐	☐
The remote site students initiated interaction in class with other remote site students ...	☐	☐	☐	☐	☐
The remote site students initiated interaction in class with local site students	☐	☐	☐	☐	☐
The remote site students initiated interaction outside of class with other remote site students	☐	☐	☐	☐	☐
The remotes site students initiated interaction outside of class with local site students	☐	☐	☐	☐	☐

Student Satisfaction:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Applicable
It is easy to pay attention to the instructor on the TV monitor .	☐	☐	☐	☐	☐	☐
I feel the TV instructor is available to answer my questions	☐	☐	☐	☐	☐	☐
The instructor pays attention to students at the remote site during class .	☐	☐	☐	☐	☐	☐
The class is well organized	☐	☐	☐	☐	☐	☐
I pay as much attention in the interactive TV class as I do in a regular class	☐	☐	☐	☐	☐	☐
I feel encouraged to become involved in class discussions and activities	☐	☐	☐	☐	☐	☐
I feel like I am a part of the class ..	☐	☐	☐	☐	☐	☐
I feel the instructor is speaking directly to me ..	☐	☐	☐	☐	☐	☐
I would consider taking a distance education course as a remote site student	☐	☐	☐	☐	☐	☐
I feel the students at the other site/s are very much a part of my class .	☐	☐	☐	☐	☐	☐
The fact that I am on TV does not Inhibit my class participation .	☐	☐	☐	☐	☐	☐
I enjoy interacting with the students at the other site/s	☐	☐	☐	☐	☐	☐
It is easy to use the microphone ..	☐	☐	☐	☐	☐	☐
It is easy to see the monitor .	☐	☐	☐	☐	☐	☐
It is easy to hear comments made by students at the other site/s	☐	☐	☐	☐	☐	☐
Graphics and other visuals are easy to read on the monitor .	☐	☐	☐	☐	☐	☐
Technical problems do not interfere with my learning .	☐	☐	☐	☐	☐	☐
I have adequate access to the resources I need for class, such as the library	☐	☐	☐	☐	☐	☐
There are adequate ways to contact the instructor outside of class	☐	☐	☐	☐	☐	☐
An efficient system is provided for students and instructors to exchange materials..	☐	☐	☐	☐	☐	☐
I am learning as much in the distance education class as I would in a regular class.	☐	☐	☐	☐	☐	☐
I would tell my friends to take a distance education class	☐	☐	☐	☐	☐	☐
I would take another distance education class .	☐	☐	☐	☐	☐	☐
Overall, I am satisfied with my distance education class	☐	☐	☐	☐	☐	☐

HUMAN SUBJECTS CONSENT FORM

The following is a brief summary of the project which you have been asked to participate. Please read this information before signing the statement below.

TITLE: "Analysis of the Relationship Between Student Perception of Interaction and Student Satisfaction in a Compressed Video Course"

PURPOSE OF STUDY/PROJECT:
This study is being conducted to determine the relationship, if any, between student perception of interaction and student satisfaction in a compressed video course. It is hoped that by better understanding these two variables, and any possible relationships, electronic learning instructors may be able to improve the learning environment in their compressed video courses. This project also serves as partial fulfillment of the project directors requirements for the Educational Doctorate in Curriculum and Instruction through the Louisiana Educational Consortium (LEC).

PROCEDURE: The project director will mail copies of the instrument, consent forms, and instructions to site coordinators at universities around the state of Louisiana. On set dates the project director will administer the instruments via the compressed video system with the assistance of the site coordinators. Approximately 100 students will voluntarily complete the Electronic Learning Student Perception of Interaction Survey and the Electronic Learning Course Satisfaction Scale. The responses will then be mailed via a courier service to the project director for scoring and analysis.

INSTRUMENTS AND MEASURES TO INSURE PROTECTION OF CONFIDENTIALITY, ANONYMITY:
The 16 item Electronic Learning Student Perception of Interaction Survey developed by the project director will be administered to determine student perception of interaction in a compressed video course. The 27 item Electronic Learning Course Satisfaction Scale developed and adapted by personnel from the Louisiana State University Compressed Video Network will be administered to determine student satisfaction with the compressed video course. All collected information will be sealed in an envelop and mailed via courier directly to the project director. The project director will hold the results in the strictest of confidence. The results will be viewed by the research team only.

RISKS/ALTERNATIVE TREATMENTS: There are no risks associated with participation in this study. It requires completion of the two surveys previously mentioned. There are no alternative treatments. Participation is voluntary.

BENEFITS/COMPENSATION: None

I, _____, attest with my signature that I have read and understood the description of the study, "Analysis of the Relationship Between Student Perception of Interaction and Student Satisfaction in a Compressed Video Course," and its purpose and methods. I understand that my participation in this research is strictly voluntary and my participation or refusal to participate in this study will not affect my relationship with Louisiana Tech University or my grades in any way. Further, I understand that I may withdraw at any time or refuse to answer any questions without penalty. Upon completion of the study, I understand that the results will be freely available to me upon request. I understand that the results of my survey will be confidential, available only to the researchers, myself, or a legally appointed representative. I have not been requested to waive nor do I waive any of my rights related to participation in this study.

_____ _____
Signature of Participant Date

CONTACT INFORMATION: The researcher listed below may be reached to answer questions about the research, subjects' rights, or related matters.

Monty Sullivan, P.O. Box 3188, Ruston, LA 71272

The Human Subjects Committee of Louisiana Tech University may also be contacted if a problem cannot be discussed with the researchers.

Dr. Mary Livingston (318) 257-4315
Dr. Terry McConathy (318) 257-2924

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