4-1995

A Study of the Awareness and Understanding of Distance Education by Leadership Roles at Community Colleges in Michigan

Douglas H. Lape
Western Michigan University

A STUDY OF THE AWARENESS AND UNDERSTANDING OF DISTANCE EDUCATION BY LEADERSHIP ROLES AT COMMUNITY COLLEGES IN MICHIGAN

by

Douglas H. Lape

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Educational Leadership

Western Michigan University
Kalamazoo, Michigan
April 1995

A STUDY OF THE AWARENESS AND UNDERSTANDING OF DISTANCE EDUCATION BY LEADERSHIP ROLES AT COMMUNITY COLLEGES IN MICHIGAN

Douglas H. Lape, Ed.D.

Western Michigan University, 1995

Community colleges are faced with the challenge of providing educational opportunities to an increasing and diverse population at a time of educational reform and decreasing financial resources. The colleges are expected to meet the changing needs of the communities they serve through open access, a diversity of high quality courses, and with schedules that accommodate the life styles of their students.

The study was designed to answer the following research question: Are there differences between the five leadership role groups, at Michigan's 29 community colleges, regarding levels of awareness and understanding about distance education as a means of providing courses to their diverse student populations. Survey items were developed, by the researcher, to measure the awareness and understanding of distance education in the areas of program planning, curricular issues, and cost effectiveness. A total of 145 college presidents, chief academic officers, chief financial officers, media services directors, and faculty leaders were mailed the survey. They were also asked about their college's current use of distance education

technology as a means of receiving and providing distance education courses to students on their campuses and to remote classrooms sites.

The study provides important information about the five leadership groups' awareness and understanding about distance education. The conclusions of the study will assist community college presidents, chief academic officers, chief financial officers, media services directors, and faculty leaders in making informed decisions about the implementation of distance education technology as a means of increasing curricular offerings for students.

The major conclusion in this study was that the awareness and understanding of distance education differs among the five leadership groups. There were major differences of opinion between the chief academic officers and the faculty on academic performance, interaction between students and faculty, course evaluation, and use of nationally prepackaged distance education courses. The study concluded that there is substantial support for distance education from all leadership groups, but there are important planning, curricular, and cost effectiveness issues that need to be resolved prior to implementation.

UMI Number: 9526763

ACKNOWLEDGEMENTS

I wish to express a special acknowledgement and appreciation to my advisor and committee chair, Dr. Eugene Thompson, for his continued encouragement, positive reinforcement, advice, and continued support throughout my course of study; and to my committee members, Dr. Uldis Smidchens and Dr. Timothy Quinn, for their advice, guidance, and assistance.

Appreciation is expressed also to my friend and colleague, Patricia Hart, at Northwestern Michigan College for her many hours of proofreading and support and encouragement throughout the many drafts of this study. I would like to thank my friend and colleague, David Donovan at Northwestern Michigan College for his interest, help, and assistance with the statistical analysis. Appreciation is also expressed to Ronda Edwards, Director of Media Services at Northwestern Michigan College for her interest and excitement in distance education, her assistance in data collection, and her encouragement for the study. Also, Holly Gorton from Northwestern Michigan College, for her editing and word processing assistance which was invaluable. The assistance and cooperation of the other faculty and staff members of Northwestern Michigan College and the other twenty-eight Michigan community colleges in which the study was conducted were key to making this dissertation possible.

Acknowledgements -- Continued

I would like to express my appreciation to my wife, Betty, and my daughters Anne Louise and Mary Alice, for their unquestioned encouragement and support. Without their help this dissertation could not be a reality. Many thanks to all involved. This dissertation is dedicated to them.

Douglas H. Lape

TABLE OF CONTENTS

CHAPTER

Table of Contents -- Continued

CHAPTER

APPENDICES

LIST OF TABLES

CHAPTER I

INTRODUCTION

Community colleges are faced with the challenge of providing educational opportunities to an increasing and diverse population at a time of educational reform and decreasing financial resources. Changes in the work force, the economy, legislative initiatives, community demographics, educational expectations, and technological developments necessitate that community college leaders reconsider what they will teach. In addition, questions about how they will teach, to whom they will teach, and how the instruction will be presented and delivered to the students are being asked. Community colleges are expected to meet the changing needs of the communities they serve through open access, a diversity of high quality courses, and with schedules that accommodate the life styles of their students. While community colleges have portrayed themselves in the past as "curricular and pedagogical revolutionaries, they are actually quite conservative. They have remained firmly committed to an educational wisdom which interprets reform and innovation narrowly" (McGrath & Spear, 1991, p 57).

Hart (1994) studied the cost effectiveness of distance education technologies and concluded, after an extensive review of the distance education literature, that distance education can be an effective method for providing courses for an increasing

and diverse population of students at remote sites. Distance education courses allow for flexibility in scheduling and delivery to remote locations. The use of such technology is accelerating the removal of the traditional barriers of competition among post-secondary institutions for students and institutional resources. Verduin and Clark (1991), report that administrators and faculty involved with the delivery of instruction into the classroom using technologies, such as distance education, feel confident about the methodology and request its use. Conversely, educators with little awareness or understanding about the application of technology-based delivery systems, such as distance education systems, question the viability and effectiveness of such technology.

"Successful distance education and training programs involve leaders at the highest levels of the organization" (Duning, Van Kekerix, & Zaborowski, 1993, p. 23). It is important that the leadership at Michigan's twenty-nine community colleges have both awareness and understanding about distance education technology. The use of distance education classrooms at the community college level in Michigan may require changes in job definition. The acceptance of technologies, such as distance education, to deliver courses to remote classroom sites or to receive courses from other institutions, may require changes in the awareness, attitudes, and behaviors of the community college staff. It appears reasonable that if the college presidents, chief academic officers, chief financial officers, media services directors, and faculty leaders do not know or understand the technology, they will not support the use of distance education technology as a method to receive or deliver courses to

remote classrooms. Conversely, if the college presidents, chief academic officers, chief financial officers, media services directors, and faculty leaders are aware of and understand the technology, they will support the faculty's use of distance education technology for the receiving and or the delivery of courses to students at remote classrooms. Therefore, if there is an understanding of the distance education technology, the college presidents, chief academic officers, chief financial officers, media services directors, and faculty leaders will be able to work collaboratively to resolve implementation issues which might be identified. Additionally any differences among the leadership role groups, in their level of awareness, will escalate the difficulty of implementing distance education systems.

Organizational and instructional change is achieved through the building of trust and confidence and is hindered by conflict and apprehension (Bennis & Nanus, 1985). Faculty desiring to implement distance education technology in their classrooms will need to build trust and confidence with the college administration for project approval and funding, the technical and the media services staff for classroom and equipment design, and the faculty leadership for instructional integrity, program coordination, and curricular articulation. Organizations are essentially very stable entities and remain unchanged. Staff roles, job descriptions and expectations are well defined within organizations. The organization maintains the "status quo" or equilibrium, between the restraining and driving forces of the institution (Owens, 1987). Lewin (1951) states that organizational change occurs only when the equilibrium is broken, the stability is challenged, and new ideas and ways of thinking

and working are introduced and considered. Hersey and Blanchard (1977) report that changes in awareness are the easiest to achieve, followed by changes in attitude. Changes in behavior are significantly more difficult to change than either changes in awareness or attitudes. It is therefore very likely that the acceptance of distance education technology, at the community college level, will require additional awareness and understanding at all staff levels. It is very plausible that there will need to be changes in the attitudes and behaviors of the college presidents, chief academic officers, chief financial officers, media services directors, and faculty leadership in order to accept and implement the distance education technology and any concomitant changes in the delivery of instruction.

Purpose of the Study

The purpose of the study was to assess the awareness and understanding, as well as the current status, of distance education courses and programs offered at Michigan's twenty-nine community colleges. The college presidents, chief academic officers, chief financial officers, media services directors, and faculty leadership were surveyed regarding their awareness and understanding of distance education. They were also asked about their college's current use of distance education technology as a means of receiving and providing distance education courses to students on their campuses and to remote classrooms sites.

The study will provide important data about the various leadership role groups awareness and understanding about distance education. The results of the study will

assist community college presidents, chief academic officers, chief financial officers, media services directors, and faculty leaders in making informed decisions about the implementation of such innovative technology as a means of increasing curricular offerings for students.

The community college leadership role was the unit of analysis. The independent variable of the study was the five leadership roles identified within each community college. The five leadership roles were: the community college president, the chief financial officer, the chief academic officer, the media services director, and the faculty leaders represented by the director of the social science division. The dependent variables were the levels of understanding and awareness of the planning, curricular, and cost effectiveness issues regarding distance education.

The study was designed to answer the following research question: Are there differences between the five leadership role groups regarding levels of awareness and understanding about distance education?

The study was limited to the twenty-nine community colleges in Michigan. It was intended that only the community college presidents, chief academic officers, chief financial officers, directors of social science, and the media services director were surveyed to determine their awareness and understanding of distance education systems for classroom instruction. No attempts were made to include all faculty members within the departments or divisions of the college. The director of the social science division was the only faculty member surveyed at each community college. No attempts were made to include support staff or students. While this

clearly eliminates support staff and students from the study, it does focus the study on those most likely to make planning decisions about the new innovative technologies.

The study did not attempt to inform the subjects surveyed about the concept of distance education systems for classroom instruction, but to learn what awareness and understanding about such technologies as distance education systems were already known.

Organization of the Dissertation

The dissertation has been organized into five chapters. An introduction to the problem statement and support for the study is provided in Chapter I. In Chapter II, a review of literature in relation to the study is presented. Chapter III contains a description and rationale for the survey methods used in the study. Chapter IV presents the data collected, treated, analyzed, discussed in order to make the conclusions of the study. A summary of the study, conclusions, and recommendations from the study are provided in Chapter V.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

Students have been taught for many years in the traditional classroom setting and in a variety of delivery systems which provide instruction to students outside the classroom and away from the school where the teacher resides. The delivery of instruction began with lectures off campus and correspondence courses (Sherow & Wedemeyer, 1990). Today the delivery systems integrate computer technology, fiber optics, and video images to provide instruction to students in remote locations using distance education technology. A common definition in the literature for the delivery of such courses to students at remote classroom sites is distance education or distance learning (Brey, 1991).

This chapter reviews literature pertaining to distance education. It is divided into four sections. Included in this chapter is a review of the historical development of distance education from the 1850's through the 1990's. Following that, an overview of the literature regarding the dependent variables; planning for distance education systems, curricular issues in distance education, and cost effectiveness issues regarding distance education systems are presented.

History of Distance Education

American higher education has been developed with a strong European influence. American educators studied German and English educational philosophies and adapted those principles into the American educational system (Sherow & Wedemeyer, 1990). It is not surprising that distance education, the teaching of students at remote locations, has evolved in much the same way. Alternatives to campus-based study began in England during the mid 1850's. Reverend W. Sewell of Exeter College, Oxford, suggested off-campus study through a system of lectures. This concept was expanded in 1871 by James Stuart who proposed a circuit of lecturing professors. This concept became the University Extension System at the University of Cambridge.

Written correspondence courses emerged in England as a response to the social taboo of personal interviews between men and women. Professor Stuart replaced the lecture courses for women with printed lessons, a syllabus, and examination sheet. The instruction was completed through the mail. Distance education came to the United States when Anna Elliot Ticknor established a similar correspondence course system for women in 1873. The correspondence courses were operated out of her home in Boston, Massachusetts (Sherow & Wedemeyer, 1990).

The mediums used for distance education have changed as technology has evolved. During the 1930's and early 1940's, approximately 20 educational radio stations were broadcasting on the AM band. WOI-TV in Ames, Iowa was the first

television station to broadcast educational television programming in 1950 (Garrison & Shale, 1990).

By the early 1980's, 71% of the colleges and universities in the United States had made use of either video recordings or television programs for classroom instruction. During this same time period the Public Broadcasting System for Adult Learning Service began its telecourse activities. By showing recorded telecourses on Public Television Stations additional higher educational institutions were able to offer distance education opportunities for students in remote classroom locations (Brey, 1991).

The 1990's introduced CD-ROM discs and players, interactive laser discs, interactive audio and video transmissions, and compressed digital video interactive technologies (Brey, 1991). The most important technological trend has been the integration of audio and video communication technologies with computer technologies. As audio and video communication technology has transcended from analog to digital transmission and storage formats; audio and video technology has increasingly resembled digital computer technologies (Simpson, Pugh, & Parchman, 1991).

Distance education technology has accelerated the removal of traditional barriers to competition among higher educational institutions for both students and institutional resources. In 1991, 58% of the two-year institutions in the United States had some type of distance education programs via telecommunications. Twenty percent of the institutions were planning some type of distance education program,

while 22% did not have, nor were planning, distance education courses. According to Brey (1991), it was expected that by 1994, 80% of all two-year institutions would have some type of distance education courses, while only 67% of the four year institutions would have distance education courses. Brey (1991) further reported that the primary reason why the two-year institutions might not have distance education courses in the 1990's will be due to the perceived imbalance between the costs for the courses and income received for such courses. For universities, the acceptance of distance education courses will relate more to the institutional mission, although cost will remain a factor (Brey, 1991).

Distance education technologies have made it necessary for educational institutions to analyze the educational value and cost effectiveness of such technology in relationship to the mission and goals of the institution. Levine (1992) states that the specific technologies for distance education are less important to the success of a program than are the people variables. Success of distance education programs will come from factors that allow the faculty and students alike to function effectively within the new technology, and provide the best educational value and cost effectiveness for both the students and the institution.

Planning for Distance Education Systems

To establish an effective distance education system there should be a basic understanding of the technology to be used and a planning process identified in order to implement the changes that will be required (Keeler, 1983; Johnson & Foa, 1989).

According to Levine (1992, p 13), who conducted extensive research on the planning of distance education programs, the following ten specific planning activities or steps were common in most of the successful distance education programs:

1. Determine whether a demand exists for a distance education degree program and if the college mission would be well served.

2. Identify policies, both internal and external, that will either affect the success of the distance education program or serve as barriers.

3. Build a broad base of support for the value of distance education program.

4. Examine the degree programs offered and determine if the courses can be adapted readily to distance education technologies.

5. Select the institutions and programs that meet the needs of the community college.

6. Develop campus based distance education programs to supplement or support the program or degree requirements.

7. Evaluate the cost effectiveness and cost benefits of the various distance education technologies to determine the delivery system that meets the course, student, and faculty needs best.

8. Ensure that student services are provided and meet the needs of the students.

9. Select and train the faculty in the effective distance education teaching methods and the use of the distance education technologies.

10. Develop an evaluation plan that involves the faculty, students, and administrative staff.

Hershfield (1986) illustrated the consequences of not completing a thorough planning process in a case study of the Learn Alaska Network. The State of Alaska invested approximately $30 million to install tele-communications equipment across the State to deliver college, secondary and elementary distance education courses. In 1986, the network was discontinued.

> The Alaskan case is a classic example of the consequences of focusing on telecommunications technology almost as an end unto itself rather than a means to serve a particular client group (Hershfield, 1986, p 11).

Technology within an organization is important, but even the best technology is not the reason an organization exists. Technology is only a means to an end (Carver, 1990). The motivation for distance education projects can often be due to the technology available. Duning et al. (1993) stress the point that distance education projects need to based on instructional design and identified student and staff needs. In order to minimize programmatic and financial risks, institutions need to develop action plans that recognize the dynamics of organizational change, employ good planning techniques, and have an understanding of the distance education technology.

Sedge (1990) describes organizational change as being inevitable and it is the leadership's responsibility to find ways for the staff to change their "mental models" or views. Sedge (1990) further states that change is evolutionary, not revolutionary, and it is the responsibility of the leader to take the role of designer of the change process. In planning for a distance education program it will be important that the leadership of the organization recognize the importance of the changes that will take

place due to the implementation of distance education programs and then manage the change in an effective and orderly way through a planning process.

Needs Assessment and Market Analysis

The planning process begins with a determination of whether a need exists for distance education courses (Duning et al., 1993). Aslanian and Brickell (1980) conducted a two-year study of 2,000 individuals that were twenty-five years of age and older to determine why, when, and what they wanted to learn. They reported that most needs assessment studies report only areas of interest and therefore overestimate what adults actually want to commit to with regards to educational courses or programs. Distance education course or program need assessments should focus on those individuals that are enrolled or have been enrolled in higher education courses to assess their current and past learning behaviors. The need assessment should also attempt to determine what the respondents understand about distance education and the preferences these students might have to such alternative delivery systems (Aslanian & Brickell, 1980).

Review of Mission Statement

Levine (1992) suggests that the planning process needs to review the mission statement of the institution and determine if the faculty and students will be well served as a result of the development of distance education courses and programs. O'Connell (1985) states that any new initiative should be tested against the mission

statement of an institution to determine if the purpose and intent of the program is compatible with mission statement and deserves institutional support. Duning et al. (1993) suggests that the offering of distance education programs and courses needs to be perceived as an extension of the college's mission. The introduction of distance education technologies will provide an opportunity to review and assess the college's mission and will often lead to new collaborative efforts with other institutions and organizations.

Policies and Practices

Institutions need to identify policies and practices, both external and internal, that might affect the success of distance education projects and work to revise those policies or practices that might serve as barriers to success of the project. The faculty, staff, and administration need to establish a broad base of support across the campus for the legitimacy and value of distance education. Although many colleges have no policies that would limit the institutions ability to offer courses or programs using distance education technologies, a review of the literature does indicate that some issues have been encountered. Brey (1990) reported that a few colleges, less than 2%, indicate specifically on the student's transcript what courses were taken using distance education technologies. Other reported issues involve the limitation of distance education hours allowed to be applied toward a degree, class size limitations, grading policies, and financial aid limitations for students enrolled in distance education courses.

Planning for distance education systems should also review student service policies and practices to ensure that student services and financial aid assistance provided meet the needs of distance learners. The selection of excellent faculty and the training of the faculty in effective distance education teaching methods and in the use of the tele-communications technologies are critical to the success of the implementation of distance education systems.

Program Evaluation

The final step in the planning process should be the development of an evaluation plan that involves faculty, administrators and students (Levine, 1992). Gooler (1977) has developed a model for the evaluation of distance education programs. His model evaluates the degree to which a distance education program expands access of courses to students, the degree to which the courses meet the needs of the students, and the cost effectiveness of the project for the institution. Gooler's model is a framework for evaluation, not an all inclusive model, for program evaluation. It is important that an evaluation model be established which defines the criteria for program success (Duning et al., 1993).

Curricular Issues in Distance Education

Academic Performance

The educational effectiveness of distance education, specifically instruction, is high. Studies focusing specifically on distance education delivery systems have revealed that there are no significant differences in academic performance for students in technologically delivered courses and traditional classroom settings (Clark & Verduin, 1989, Verduin & Clark, 1991, Gehlauf, Shatz, & Frey, 1991; Whittington, 1987). Researchers have acknowledged that although there are differences in instructional techniques in the two settings, there are no studies to indicate that the instruction is any less effective. Hayes (1990) appropriately points out that the question of instructional effectiveness of distance education or traditional courses are difficult to measure. Many of the issues regarding distance education or traditional courses are difficult to prove using empirical research.

The array of distance education technologies create opportunities for faculty to rethink content and make new decisions on how to present content (Levine, 1992). Time and effort must be put into developing in faculty the necessary technological skills and abilities to effectively present instruction in the interactive setting.

Changes in Teaching Patterns

Distance education technology causes instructors to make changes in familiar teaching patterns. Negative faculty attitudes are a barrier to successful

implementation of distance education. It appears, according to Verduin and Clark (1991), that those educators involved with some phase of distance education feel strongly about its use and potential, while those with little awareness or use question its viability. The key to greater acceptability is to encourage more awareness.

Interaction Between Faculty and Students

Markwood and Johnstone (1992) studied the interaction between faculty and students in both traditional and distance education classes teaching the same courses. They reported that the amount of interaction between the faculty and students has been significantly increased through distance education technologies. Outside of the distance education classroom students communicate to their teachers in a variety of ways. Brey (1990) reports that students communicate with each other and to the faculty using audiobridges which allow for many individuals to be on a conference call all at the same time. Moore (1990) describes computer conferencing as an effective communication tool. Coombs (1992) states that the use of E-mail for faculty-student communications has the potential of being a platform for out-of-class discussion groups about the course content and an effective way for students assisting each other in the learning process.

Facsimile machines and voice mail are used in many distance education programs to provide students with homework assignments, sending and receiving of articles, and getting answers to their questions. Levine (1992) reports that students who took distance education courses believed that the technology improved the

quality of their courses and made access to education more convenient and improved faculty access.

Preparation Time and Incentives

Incentives are needed to encourage participation by faculty (Dillon, 1989). Faculty selection and the extra effort made to entice quality faculty in the early stages of developing a distance education project in West Virginia provided credibility and long-term payoffs. Distance educators must spend additional time preparing and planning lessons so that they are effective within the technology by which they are delivered. This may result in compacting the amount of information transmitted within the instructional time unit and subsequently allowing more quality time-on-task learning situations. It is clear that students should not accept a simple transfer of old teaching methods to new technology. Adult students cannot be expected to respond positively to a "talking head" lecture style presentation. It is essential to the success of a distance education program that quality faculty are recruited, retained and trained.

Prepackaged Programs

One of the issues that needs to be resolved in the establishing of a distance education program is whether or not the institution should consider the use of prepackaged distance education courseware. Levine (1992) developed criteria for the evaluation of prepackaged distance education courseware for colleges. To receive an

acceptable rating, the courses had to have national distribution and contain at least eight topical units. Most, but not all of the acceptable courseware packages, had textbooks and faculty guides. Over 150 courses were considered to meet the evaluation standards and were grouped into sixteen curricular areas. A review of the literature did not produce any research studies indicating that the prepackaged distance education courseware was not equal to the traditionally delivered classroom based courses.

Accreditation does not automatically extend to off-campus delivery. Olcott (1992) reports that distance education courses may be considered either to be off-campus courses or courses that may in some way change the mission of the college. Gooler (1990) has taken the position that the equivalency of distance education to classroom-based courses should be demonstrated through applied research and observed practice.

Draw Students Away From Traditional Courses

Concerns are often expressed by faculty about enrollment competition within a department or division, or between instructional divisions. The production of credit hours is a vital part of the decision-making process to determine if a course or program will continue to be offered. The concern for competition of credit hours is no less between the traditional classroom courses and distance education courses (Levine, 1992).

A review of the literature does not find any studies to either support or reject the notion that distance education courses, do in fact, draw students away from traditional classroom courses. Perceiving is believing and the perceptions that the different leadership roles have about this issue are important to know as part of the planning process.

Cost Effectiveness and Efficiency Issues

Cost Effectiveness

It is important to relate the educational benefits of a course or program to the cost effectiveness of delivering the course or program to remote sites (Rumble, 1986 a). There are times when educators become so excited about an emerging technology that a thorough cost analysis is not conducted. If a resource is applied or committed for one use, then the resource is not available for another use. In economic terms, cost is the sacrifice of one option for another option. Costs are considered in relation to the benefits received (Mace, 1982).

Levin (1981) argues that despite the relevance of the analytical approach for decision making, there is very little use for cost-effectiveness analysis methods in education. Rossi and Freeman (1993) indicate that cost effectiveness analysis allows for the comparison and rank ordering of programs in terms of the costs, therefore a basis for decision making, whether the courses are offered in a traditional classroom setting or delivered through distance education technologies to remote classrooms.

Cost Comparisons

Generalized statements about the economics of distance education are not possible. Each statement must be differentiated since they may apply to most cases or only to well defined, specific applications. Seemingly similar distance education systems may include different functions and technologies. Some institutions use video recordings or films, while others limit their media to printed materials and audio tapes or computer discs.

Distance education telecommunications systems are assumed to be expensive. Although this myth is often voiced, the reality is that the cost of telecommunications based distance education systems range widely depending on the technology used and the design of the system. Distance education telecommunication systems are comprised of: a receive site or sites, an origination site, send and receive equipment, a medium for the transporting of the information, interactive dialogue between the sites, and staffing. In each segment of the system there are numerous decisions that have various performance and financial implications which will impact the fiscal stability of the telecommunications system. In addition to system considerations, the reliability of the system will be impacted by the decision as to the level of course and program activity, and the commitment of staff and fiscal resources (Duning et al., 1993).

To determine cost effectiveness of distance education courses, there must be decision alternatives. A cost analysis of the alternatives must be computed and be

accompanied by an evaluation of effectiveness of the alternatives. Both the costs and the benefits must be expressed in terms of monetary values, so they can be compared.

Cost effectiveness and cost benefit are terms that are used interchangeably in distance education literature to refer to a family of analytical techniques used to evaluate the most effective ways to use the financial resources (Levin, 1981). There are various methods and models for determining the cost effectiveness of distance education. Some models appear to address the costs of alternatives while ignoring the benefit side of the equation. When benefits are not quantified in the analysis, it is assumed that the benefits of the alternatives are considered equal.

In comparing technologically-based learning systems and conventional learning systems, Mace (1982) developed formulas for total cost and for average cost that considers the number of students, fixed costs, and variable costs. Using these formulas it is possible to determine at what number of students distance education becomes more cost effective than traditional learning systems. Mace (1982) also expanded the theory to take into account the long term costs that are annualized over the life of the project. This introduced the dimension of time that changes the break-even point for distance education systems when compared to conventional delivery systems (Mace, 1982).

Rumble (1988) argued that the cost structures for distance education and traditional education are so different that it is difficult for distance educators to describe the operation and economics of their delivery systems. Rumble (1988) asserted that the total cost of distance education is a function of the number of

students, the number of courses developed, the number of courses being presented to students, the fixed costs of the system, and the extent to which student support services are provided (Rumble, 1986b).

The costs for distance education systems will vary based on the nature and number of receive and origination sites, the quality and complexity of the equipment used to send or receive program signals, the method of program transport used and the distance required to move programs from origination to receive sites. The costs will also be influenced by the degree of interaction between faculty and students designed into the system, the nature of the instructional and support staff, whether the system is a full-time (dedicated) or part-time operation, and the level of reliability required (Duning et al., 1993).

Cost Effectiveness for Staff Training

Cost effectiveness studies have generally been in the area of staff development and training. The studies have compared the costs of training delivered at a central site versus the same training being provided via telecommunications technology. The studies compare the cost of providing distance education training with the cost of staff travel to the central site and the provision of replacement personnel, or the cost of bringing faculty to the remote location (Rule, et al., 1989), (Simpson et al., 1991). These studies have reported that cost effectiveness can be achieved using distance education technology.

Investments to Benefit Faculty and Students

Higher education institutions do not pay to bring students to the institution therefore, they do not factor transportation costs into the cost of providing instruction using traditional methods. There should, however, be a method within the decision making process to consider the cost effectiveness to the distance education student for the decreased travel time and expense, and loss of work hours. Ansari (1992) defines these costs as private costs. Included in private costs are the payment of tuition and fees, purchase of reading materials, stationery, travel, postage, and other personal and maintenance costs. Also contained in private costs are the value of a foregone opportunity. The focus of most studies in the economics of education have been on the analysis of the cost of educational programs while the benefits to the individual and/or society have been assumed to be equal to the private costs (Ansari, 1992).

Summary

The teaching of students at remote locations dates back to the late 1850's. The concept of providing students with courses has been well established. The mediums for the delivery of distance education have changed as technology has evolved. This chapter has attempted to review the historical developments of distance education from correspondence courses to the use of distance education technology. Chapter II has also reviewed the extensive planning required for the implementation of distance education courses, the curricular issues related to distance

education that need to be considered, and a review of the cost effectiveness issues related to distance education systems that need to be considered.

A search of the literature did not identify any research studies regarding the differences in awareness and understanding of distance education by presidents, chief academic officers, media service directors, chief financial officers, or faculty leaders at the community college level. Studies of this type have not been reported in the literature at any educational level.

CHAPTER III

METHODOLOGY AND PROCEDURES

Introduction

The purpose of this chapter is to discuss the procedures used to conduct the study. The chapter is divided into five sections: Selection of Survey Population, Development of Survey Instrument, Data Collection, Data Analysis Procedures, and Summary.

Selection of Survey Population

The population under study was the leadership at the twenty-nine community colleges in Michigan. The community college leadership roles were determined to be the unit of analysis for this study. Within each community college, five leadership role groups were identified and surveyed. Each of the five leadership role groups was represented by one individual within each institution. The five leadership role groups were: college presidents, chief academic officers represented by the deans of liberal studies, chief financial officers, media service directors, and faculty represented by the directors of the social science divisions.

The college presidents leadership role as chief executive officer is important to the success or failure of any new initiative. The position of president represents

the communication link between the board of trustees and the faculty and staff. It is the president, working with the board of trustees, who recommends policies and procedures that are adopted and provide the framework for decision making and program development for the college. The implementation of a new technology, such as distance education systems, will need the support of the presidents office.

The chief financial officer's leadership role will be important in the implementation of any new technology initiative because of the funding that will be required to acquire the capital equipment necessary to establish a distance education classroom. Issues of cost effectiveness and distance education economics will be of concern to chief financial officer. The support of the business and finance office will be needed to establish transmission contracts and purchase the equipment needed to establish the distance education classroom.

It was determined to select only one academic officer and one faculty leader as the representative program directors from each of the twenty-nine community colleges. It was not the purpose of the study to determine the feeling or attitudes regarding distance education, but to identify the differences between the leadership roles across the entire population. A search of the literature did not provide any research studies or rationale as to which academic officer or faculty leader would be most representative of the institution views regarding the implementation of innovative technology such as distance education classrooms. The dean of liberal studies was selected over other chief academic officers. It was assumed for this study that the occupational deans would likely have more receptivity towards technology

because of the technology and extensive use of laboratories that is infused in many of the occupational based programs of study. There were no studies reported in the literature to support this assumption.

The selection of one faculty content leader over others, at each of the twenty-nine community colleges, required considerable evaluation. A search of the literature included studies on the attitudes of faculty toward distance education (Burnham, 1988; Bunting, 1989; Dillon, 1989; Spondor, 1990; Clark, 1993) but did not provide any research studies or rationale as to which content area faculty leader would be most representative of the institutional views regarding the implementation of innovative technology such as distance education classrooms. Kozma (1985) as well as Tucker and Bryan (1989) reported on the influence department chairs or division directors have in providing leadership regarding program development and innovative change. Clark (1993) studied the attitudes of higher education faculty and department chairs toward distance education at two-year and four-year higher education institutions. Department chairs and two faculty members were chosen from each of three departments: Chemistry, Marketing, and Political Science. The study reported that the department chairs were relatively positive towards distance education, as compared to faculty, but did not report on the attitudes for any specific department.

The director of the social science division was selected to be the most representative faculty leader. The social science division offers a diversity of course offerings. The courses are generally lecture oriented and are easily adapted to the distance education classroom format. There were no studies reported in the literature

to support the idea that any particular curricular area is more or less supportive of distance education technology. Naber and LeBlanc (1994) reported that many community colleges have successfully offered distance education credit courses in business, general studies, liberal arts, social sciences, and laboratory science. Evans and Leppman (1968) reported that the receptivity to innovation is technology specific and the decisions by faculty members to accept innovational change is not based on content areas, but on the desirability, status, and familiarity with the innovations being considered. The media services director at each of the twenty-nine community colleges was the fifth leadership role to be surveyed. The media services directors and staff provide the technical design, equipment, and training support required to implement innovative technologies such as distance education instruction.

Development of Survey Instrument

The data for this study were collected from a systematic sample using a written survey questionnaire. A written survey questionnaire was used because it could be given to a large number of people in a fairly short time; it provided data that are easily tabulated and analyzed. The survey format would be familiar to most respondents and the subjects could respond at a time when it was convenient for them (Kish, 1967, Moore, 1983).

A significant portion of the survey data gathered was based on the awareness and the perceptions of the respondents with regard to their understanding about distance education. A limitation of this approach is that the facts and awareness the

respondents have about distance education concepts might not be the same as their perceptions about distance education with regard to any particular question.

The survey items were developed to measure the level of awareness and understanding of the community college presidents, chief academic officers, chief financial officers, faculty or division directors, and the media services directors had regarding distance education issues. Levine (1992) reviewed the literature on distance education and identified major issues that need to be examined in the planning process. Levine (1992) also identified issues that should be considered when building a broad base of organizational support for implementation of distance education courses. The identified issues reported by Levine (1992) and others (Clark, 1993; Bunting, 1989; Dillon, 1989; Kozma, 1985) were the basis for the development of the survey questions. Table 1 provides a listing of the survey questions and the citations which support each of the issues.

The researcher developed the survey to assess to what extent each of the community college presidents, chief academic officers, chief financial officers, faculty or division directors, and the media services directors had regarding the issues identified in the literature. The survey was reviewed by the dissertation committee and modifications were made as a result of their review. The survey was then field tested at Northwestern Michigan College with the academic deans, division directors, media services staff and faculty to determine if there were changes and modifications to be made to the survey questions, for clarity, prior to the final printing and mailing of the surveys to the twenty nine community colleges in Michigan (Appendix B).

Table 1

Listing of Survey Questions and Supporting Research Literature

Survey Questions	Literature Citations
Section I - Distance Education Planning	
A. Is there a need for distance education courses at your college?	Levine, 1992; Beaudoin, 1990; Duning et al., 1993.
B. Has there been a market analysis to determine need for distance education?	Levine, 1992; Duning et al., 1993; Aslanian & Brickell, 1990.
C. Would the mission of your college be well served through the implementation of distance education courses?	O'Connell, 1985; Levine, 1992; Duning et al., 1993.
D. Are there any policies or regulations that might serve as barriers to the success of a distance education program?	Brey, 1990; Levine, 1992; Garrison & Shale, 1987.
F. Should distance education courses be evaluated the same as non-distance education courses?	Gooler, 1977; Levine, 1992; Duning et al. 1993.

Table 1 --- Continued

Survey Questions	Literature Citations
Section II - Distance Education Curricular Issues	
G. There are no significant differences in academic performance for students in distance education courses and non-distance classroom courses.	Gehlauf, Shatz & Frey, 1991; Clark & Verduin, 1989; Hayes 1990; Whittington, 1987.
H. Distance education technologies will cause faculty to make changes in teaching patterns.	Verduin & Clark, 1991; Levine, 1992; Beaudoin, 1990.
I. The interaction between faculty and students is limited with distance education courses.	Elmore, 1991; Garrison, 1990; Verduin & Clark, 1991.
J. The nationally marketed, prepackaged courses are equal in quality to the courses prepared by the faculty on our campus.	Levine, 1992; Olcott, 1992; Gulliver, 1991; Verduin & Clark, 1991.
K. The courses delivered to students through distance education technologies does not draw students away from non-distance courses.	Gehlauf, Shatz & Frey, 1991.
L. Incentives are needed to encourage faculty participation to participate in teaching distance education courses.	Dillon, 1989; Duning et al., 1993; Levine, 1992.
M. Teaching distance education courses requires additional time preparing and planning lessons.	Dillon, 1989; Duning et al., 1993; Levine, 1992.

Table 1 --- Continued

	Survey Questions	Literature Citations
Section III -- Distance Education Cost Effectiveness		
N.	Distance education courses are cost effective.	Mace, 1982; Rumble, 1988; Levin, 1981; Levine, 1992.
O.	Both costs and benefits of distance education courses should be computed to determine the cost effectiveness of distance education courses.	Duning et al., 1993; Mace, 1992
P.	Cost structures of distance and traditional education are so different that it is difficult to compare the two delivery systems.	Rule et al, 1989; Simpson, 1992; Levine, 1992.
Q.	Distance education technologies can be cost effective for staff development and training.	Ansari, 1992; Duning et al., 1993
R.	The investment in distance education technologies is a benefit to the faculty, staff, and students.	Ansari, 1992; Hart, 1994

Prior to the implementation of the survey, exempt research status was requested from the Human Subjects Institutional Review Board of Western Michigan University. On September 30, 1994, Western Michigan University's Human Subjects Institutional Review Board granted permission to proceed with the study as exempt research (Appendix A). After the initial approval was granted by the Board, several modifications were made in the survey instrument. The changes were reported to the Human Subjects Institutional Review Board and the changes were approved October 25, 1994 (Appendix A).

Data Collection

In order to improve the sampling return rate, the media services director at each community college was requested to be the survey coordinator for their college. The media services directors were informed about the study in advance of the study and agreed to act as survey coordinators for the study. Names of the individuals in the various leadership positions at each of the twenty-nine community colleges were determined from college staff directories. Telephone calls were made to the community colleges to identify positions and individuals which were not listed in the staff directories. The names of the identified individuals for each college were provided to each media services director to assure that the distribution of the materials would go to the appropriate leadership positions and staff members. The media directors were instructed they could substitute staff names, not leadership role positions. If there had been either an incorrect identification of the appropriate

leadership positions or staff members, or if there had been a change in staffing at the college, the substitutions would improve the responses.

The individual survey packets included: the distance education survey (Appendix C), a letter from the President of Northwestern Michigan College requesting cooperation from all participants (Appendix D), a pre-addressed and stamped return envelope for the survey, and a pre-addressed business reply postcard for those who desired an executive summary of the survey results (Appendix E). To improve the response rate, each survey contained a two digit identification mark which was used to identify the institution. Survey participants were notified that a coding system was marked on each survey and was being used to increase the response rate (Appendix F). They were assured that identification of the institution was not to be used as part of the analysis.

The five surveys for each community college, along with three extra copies, were mailed to the media services directors on October 31, 1994 (Appendix G). The identity of the individuals was not requested on the survey. Each respondent was requested to complete the ten minute survey within 15 days and to return the survey in the stamped pre-addressed envelopes provided. Individuals were informed that the survey was voluntary and they were encouraged to complete the survey by offering them a copy of an executive summary of the study. Request for the executive summary were printed on a separate postcard which was mailed to the researcher separately. Upon the receipt of the surveys, the code was removed from the survey document. A separate listing was maintained to keep track of the surveys returned

from each community college by leadership roles. Data from the surveys was entered into the computer for analysis. At the end of the first fifteen days of data collection, the media service directors were notified by letter of the surveys that had not been returned by leadership role (Appendix H). Additional request letters were mailed to the media service directors at the end of thirty (Appendix I)and forty days (Appendix J). Personal telephone calls, requesting responses, were made to the media service directors at the end of fifty days. The survey collection period ended December 21, 1994 with 117 surveys returned.

Data Analysis Procedures

Survey responses were recorded by the participants on the survey instrument provided. Analysis of the data was done using the SPSS statistical data analysis software. To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level. Post hoc multiple comparison procedures were used to determine which pairs of groups appear to have different means at the 0.05 alpha level. Differences, at the 0.05 alpha level, in the pairs of means were identified using the least-significant difference (LSD) test.

Summary

Chapter III has discussed the methods and procedures used to survey college presidents, chief academic officers, chief financial officers, faculty program directors, and the media services director at the twenty-nine community colleges in Michigan. The data for this study were collected from a systematic sample using a written survey questionnaire. Survey items were developed to measure the level of awareness and understanding of the community college presidents, chief academic officers, chief financial officers, faculty or division directors, and the media services directors had regarding distance education issues. The identified issues reported by Levine (1992) and others (Clark, 1993; Bunting, 1989; Dillon, 1989; Kozma, 1985) were the basis for the development of the survey questions. A written survey questionnaire was used because it could be given to a large number of people in a fairly short time. The survey was field tested to determine if there were changes and modifications to be made to the survey questions, for clarity, prior to the final printing and mailing of the surveys to the twenty nine community colleges in Michigan.

To improve the sampling return rate, the media services director at each community college was designated to be the survey coordinator for their college. At the end of the first fifteen days of data collection, the media service directors were notified by letter of the surveys that had not been returned by leadership role. Additional request letters were mailed to the media service directors at the end of

thirty and forty days. Personal telephone calls, requesting responses, were made to the media service directors at the end of fifty days.

Analysis of the data was done using the SPSS statistical data analysis software. To determine if the means of the five leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level. Post hoc multiple comparison procedures were used to determine which pairs of groups had significantly different means at the observed significance level. Differences, at the 0.05 alpha level, in the pairs of means were identified using the least-significant difference (LSD) test.

CHAPTER IV

ANALYSIS AND DISCUSSION OF RESULTS

Introduction

The purpose of the study was to assess the awareness and understanding, as well as the current status, of distance education technology being used or planned at Michigan's twenty-nine community colleges. The college presidents, chief academic officers, chief financial officers, faculty leaders, and media services directors were surveyed regarding their awareness and understanding of distance education technology. They were asked questions regarding their awareness and understanding about planning, curricular issues, and cost effectiveness of distance education courses and programs.

Survey Findings

A total of 145 surveys were distributed to the five leadership roles at each of the twenty-nine community colleges in Michigan. Survey responses were received from 27 of the 29 community colleges with a total of 117 of the surveys being returned for a return rate of 80.6%. One of the surveys returned contained a response to only item "S"," college position" in "Section IV" of the survey. The response for the position was "finance officer" and the survey was not considered to

be a valid survey response, therefore the sample size for analysis was reduced by 1 to 116, which provided an adjusted return rate of 80.0%. Table 2 is a summary of the adjusted return rates for each of the five leadership groups surveyed. The return rates for the five leadership groups ranged between 68.9% (n=20) for the finance officers and 93.1% (n=27) for the chief academic officers. The remaining three groups; presidents, media directors, and faculty had return rates of 79.3% (n=23).

Table 2

Summary of Survey Return Rates by Leadership Role (N = 116)

Leadership Role	Number Sent	Number Returned	Return Rate
President	29	23	79.3%
Academic Officer	29	27	93.1%
Media Director	29	23	79.3%
Finance Officer	29	20	68.9%
Faculty	29	23	79.3%
Totals	145	116	80.0%

Characteristics of the Population

The participants were asked several demographic questions regarding their position at the community college, years of experience in that position, and total years of experience in education. Table 3 summarizes the population by leadership groups for years in their present positions and for total years in education. The presidents had the highest mean (11) and median (9) for the most years in their present position. The chief academic officers had the lowest mean (5) and median (4) for the most years in their present position. The presidents had the highest mean (30) and median (31) for total years in education. The chief financial officers had the lowest mean (17) and median (18) for total years in education. Two of the faculty did not respond to the survey questions on years in current position or total years of experience in education.

The participants were also asked about their use of an office computer. Table 4 provides a summary of the survey participants use of an office computer by leadership roles and as an overall group of users. Over 93.1% of those surveyed used an office computer with 46.3% using their computers often and 53.7% indicating some limited use with their computers. The participants using office computers were asked to indicate the types of software applications they used. Table 4 also provides a summary of the types of software used by the five different leadership roles. The software used most by the participants was word processing programs followed by spreadsheet applications and then E-Mail. The presidents used

E-Mail the most (75.0%), all of the chief financial officers (100.0%) used spreadsheet applications, and the media directors (95.5%), chief academic officers

Table 3

Years of Experience in Position and Total Years of Experience in Education by Leadership Role

Leadership Role	Mean	Minimum	Maximum	Median
President (N = 23)				
Years in Position	11	2	26	9
Years in Education	30	21	40	31
Academic Officer (N = 27)				
Years in Position	5	1	19	4
Years in Education	24	6	36	25
Media Director (N = 23)				
Years in Position	7	1	26	8
Years in Education	18	5	30	20
Finance Officer (N = 20)				
Years in Position	9	2	18	8
Years in Education	17	2	38	18
Faculty (N = 21)				
Years in Position	7	1	27	5
Years in Education	22	6	36	22
All Leadership Roles (N = 114)				
Years in Position	8	1	27	7
Years in Education	22	2	40	23

Table 4

Participants Use of Office Computers by Leadership Roles and Software (N = 116)

Leadership Role	N=	Distribution	E-Mail	Spread Sheets	Word Processing	Graphics	Commun-ications	Other Software
Presidents	23							
Use Often	8	38.4%	75.0%	12.5%	62.5%	25.0%	25.5%	25.0%
Use Seldom	12	52.2%	75.0%	58.3%	66.7%	33.3%	41.7%	41.7%
All Users	20	87.0%	75.0%	40.0%	65.0%	30.0%	35.0%	35.0%
Do Not Use	3	13.0%						
Academic Officer	27							
Use Often	8	29.6%	37.5%	62.5%	100.0%	50.0%	62.5%	25.0%
Use Seldom	16	59.3%	62.5%	43.8%	87.5%	18.8%	25.0%	68.8%
All Users	24	88.9%	54.2%	50.0%	91.7%	29.2%	37.5%	54.2%
Do Not Use	3	11.1%						
Media Directors	23							
Use Often	15	65.2%	53.3%	66.7%	100.0%	26.7%	73.3%	46.7%
Use Seldom	7	30.4%	71.4%	57.1%	85.7%	85.7%	57.1%	85.7%
All Users	22	95.7%	59.1%	63.6%	95.5%	45.5%	68.2%	59.1%
Do Not Use	1	4.3%						

Table 4 --- Continued

Leadership Role	N=	Distribution	E-Mail	Spread Sheets	Word Processing	Graphics	Commun-ications	Other Software
Finance Officer	20							
Use Often	6	30.0%	83.3%	100.0%	100.0%	16.7%	33.3%	33.3%
Use Seldom	13	65.0%	53.8%	100.0%	69.2%	23.1%	38.5%	38.5%
All Users	19	95.0%	63.2%	100.0%	78.9%	21.1%	36.8%	36.8%
Do Not Use	1	5.0%						
Faculty	23							
Use Often	13	56.5%	53.8%	46.2%	92.3%	23.1%	7.7%	53.8%
Use Seldom	10	43.5%	30.0%	50.0%	80.0%	10.0%	20.0%	20.0%
All Users	23	100.0%	43.5%	47.8%	87.0%	17.4%	13.0%	39.1%
Do Not Use	0	0.0%						
All Surveyed	116							
Use Often	50	43.1%	58.0%	56.0%	92.0%	28.0%	42.0%	40.0
Use Seldom	58	50.0%	58.6%	62.1%	77.6%	29.3%	34.5%	50.0%
All Users	108	93.1%	58.3%	59.3%	84.3%	28.7%	38.0%	45.4%
Do Not Use	8	6.9%						

(91.7%), and the faculty (87.0%) used word processing the most. All groups, except the faculty, used the graphic software applications the least. The faculty used the communication software the least. The percentage of participants not using an office computer was 6.9%. The presidents' group was the group with the largest percentage of non-computer users at 13.0% and the faculty reported that 100% used an office computer.

Survey participants were asked if their community college produced any distance education courses. Table 5 summarizes the responses for all participants. Analysis of the survey responses to the survey question indicated that a least one or more of the survey participants at 22 of the 27 (81.5%) community colleges indicated

Table 5

Summary of Survey Results - Question W (N=116)

Question: Does your community college produce any distance education courses?

Response	Frequency	Percent
Yes	41	35.3%
No	69	59.5%
I Don't Know	6	5.2%

that their college produced distance education courses. Only 5 of the 22 (22.7%) community colleges had all respondents in agreement as to whether or not their institution offered distance education courses.

Participants indicating that their college produced distance education courses were asked to list the course titles and type of technology used to provide the courses to students. A total of 19 courses or content areas were identified by the survey participants. Table 6 provides a listing of the distance education courses or content areas and the number of the community colleges that reported producing distance education courses. The chief academic officers identified 16 of the courses followed by 12 of the media services directors and 9 of the faculty leaders identified the distance education courses. The presidents and chief financial officers were least informed about the number of distance education courses offered at their community college and identified only six courses each. Six of the 19 courses were identified by only one survey participant at each of the community colleges. Four of the colleges reported producing their distance education courses using compressed two-way interactive audio and video technology. The remainder of the distance education courses reported were provided using video taped telecourse technology.

Survey participants were asked if their community college received any distance education courses; Table 7 summarizes the responses. Analysis of the responses to the survey indicates that a least one or more of the survey participants at 22 of the 27 (81.5%) community colleges indicated that their college

received distance education courses. Five of the 22 community colleges had all respondents in agreement as to whether or not their institution received distance education courses. The five community colleges were the same colleges that reported

Table 6

Listing of Distance Education Courses Produced at College Campus

Distance Education Courses or Content Areas	Technology Used	Number of Colleges Producing Courses
English / Composition	V, I	9
History	V, I	9
American Government	V, I	7
Sociology	V, I	7
Mathematics	V, I	6
Psychology	V, I	6
Business Accounting	V	2
Reading	V	2
Western Civilization	V	2
World Literature	V	2
Business Management	V	2
Business Marketing	V, I	2
Associate Degree Nursing	V	1
Anthropology	V	1
Child Care	I	1
Geography	I	1
Introduction to Data Processing	V	1
Science	V	1
Spanish	V, I	1

V= Video Telecourses I= Interactive Audio and Video

Table 7

Summary of Survey Results - Question X (N=108; Missing Response =8)

Question: Does your community college receive any distance education courses?

Response	Frequency	Percent
Yes	52	44.8%
No	30	25.9%
I Don't Know	26	22.4%
Missing Response	8	6.9%

producing distance education courses. The lack of agreement by the various leadership roles at each college suggest that: either the respondents had different operational definitions as to what are distance education courses and therefore answered the survey questions differently, or communications within the institution regarding distance education courses are lacking and therefore not all respondents were equally informed about distance education program and courses offerings. Four presidents, two chief academic officers, one chief finance officer, and one faculty leader did not provide a response to the survey question.

Participants indicating that their college received distance education courses were requested to list the course titles and the technology used to receive the courses. A total of 38 courses or content areas were identified by the survey participants. Table 8 provides a listing of the distance education courses or content areas received, the type of technology used, and the number of community colleges that identified the distance education courses or content areas. Thirteen of the distance education

Table 8

Listing of Distance Education Courses Received at College Campus by Course Offerings

Distance Education Courses or Content Areas	Technology Used	Number of Colleges Receiving Courses
Business	V, I	10
Bachelor of Science Nursing	V, I	9
Psychology	V, I	9
Economics	V	8
English / Composition	V, I	8
History	V, I	8
Humanities	V, I	7
Sociology	V, I	7
Teacher Education Courses	V, I	4
Anthropology	V	2
Business M.B.A. Degree	V, I	2
Government	V	2
Business Accounting	V, I	2
Business Marketing	V, I	2
Humanities	V, I	2
Literature	V, I	2
Economics	I	2
Music I	2	
Fitness	I	1

V= Video Telecourses I= Interactive Audio and Video

courses were received as either two-way interactive audio and video, satellite, or video taped telecourses, three course were video taped telecourse only, and three of the distance education courses were received using two-way interactive audio and video or satellite technology. The media services directors identified 18 of the distance education courses followed by 10 of the distance education courses identified by the chief academic officers. The presidents and faculty identified 10 of the distance education courses and the chief financial officers identified 6 of the distance education courses.

Planning for Distance Education Systems

Needs Assessment and Market Analysis

Survey participants were asked if they felt that there was a need for distance education courses at their college. Table 9 provides a summary of the results with 90.5% of the surveys indicating an affirmative response and 2.6% indicating that there was no need for distance education courses. Crosstabulation calculations revealed that 100% of the presidents indicated they felt that there was a need for distance education followed by the media services directors at 95.7%, chief financial officers at 95.0%, chief academic officers at 85.2%, and faculty at 78.3%. Only two leadership roles indicated that there was not a need for distance education; 5.0% of the chief financial officers and 8.7% of the faculty indicated that there was no need for distance education.

Table 9

Summary of Survey Results - Question A (N=116)

Question: Is there a need for distance education courses at your college?		
Response	Frequency	Percent
Yes	105	90.5%
No	3	2.6%
I Don't Know	8	6.9%

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 10). No additional analysis of the relationships between the groups was conducted.

Survey participants were asked if there had been a market analysis to determine if there was a need for distance education courses at their college. Table 11 provides a summary of the results with 29.3% of the surveys indicating an affirmative response and 41.4% indicating that there had been no market analysis to determine if there was a need for distance education courses. The remaining 29.3% of the respondents indicated that they did not know if a market analysis had been conducted. Although over 90% of the respondents conclude there is a need for

Table 10

Analysis of Variance Summary - Question A (N=116)

Question: Is there a need for distance education courses at your college?

Leadership Group	N =	Means	Significance Level
President	23	1.0000	
Chief Academic Officer	27	1.2963	
Media Services Director	23	1.0870	
Chief Financial Officer	20	1.0500	
Faculty Leader	23	1.3478	
Between the Groups			.0828

Table 11

Summary of Survey Results - Question B (N=116)

Question: Has there been a market analysis to determine need for distance education?

Response	Frequency	Percent
Yes	34	29.3%
No	48	41.4%
I Don't Know	34	29.3%

distance education, only 29.3% of the respondents reported that there had been a market analysis to determine the need for distance education.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 12). No additional analysis of the relationships between the groups was conducted.

The planning process should start with a determination of whether a need exists for distance education courses (Duning et al., 1993). Distance education

Table 12

Analysis of Variance Summary - Question B (N=116)

Question: Has there been a market analysis to determine need for distance education?

Leadership Group	N =	Means	Significance Level
President	23	1.7826	
Chief Academic Officer	27	1.8889	
Media Services Director	23	2.0000	
Chief Financial Officer	20	2.0500	
Faculty Leader	23	2.3043	
Between the Groups			.1923

course or program need assessments should focus on those individuals that are enrolled or have been enrolled in higher education courses to assess their current and past learning behaviors. The need assessment should also determine what the students understand about distance education and the preferences the students might have to such alternative delivery systems (Levine, 1992). The finding indicates that although there was overwhelming support for need for distance education, the determination for that need has not been established at a majority of Michigan's community colleges.

Review of Mission Statements

Survey participants were asked if they felt that their college mission would be well served through the implementation of distance education courses at their college. Table 13 provides a summary of the results with 89.7% of the surveys indicating that the college mission would be well served and 0.9% indicating that the college mission would not be well served through the implementation of distance education courses. The remaining 9.4% of the respondents did not have an opinion.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level (Table 14). Post hoc multiple comparison procedures were used to determine which pairs of groups appear to have significantly different means at the observed

Table 13

Summary of Survey Results - Question C (N=116)

Question: Would the mission of your college be well served through the implementation of distance education courses?

Response	Frequency	Percent
Yes	104	89.7%
No	1	0.9%
I Don't Know	11	9.4%

Table 14

Analysis of Variance Summary - Question C (N=116)

Question: Would the mission of your college be well served through the implementation of distance education courses?

Leadership Group	N =	Means	Significance Level
President	23	1.0000	
Chief Academic Officer	27	1.2222	
Media Services Director	23	1.0870	
Chief Financial Officer	20	1.0500	
Faculty Leader	23	1.6087	
Between the Groups			.0025

significance level. Differences, at the 0.05 significance level, in the pairs of means were identified. The means for the faculty were substantially different when compared to the means for the president, chief academic officer, media service director, and the chief financial officer groups using the least-significant difference (LSD) test. The finding indicates that although there was overwhelming agreement that the mission of the college would be well served through the implementation of a distance education program, the faculty response to the question had 69.6% agreeing with the statement and 30.4% of the faculty indicated that they did not know if the college mission would be well served.

Levine (1992) submits that the planning process for distance education programs needs to review the mission statement of the institution and determine if the faculty and students will be well served. It is very important that all employee groups within the college have a good understanding of the college mission. Duning et al. (1993) suggests that the offering of distance education programs and courses needs to be perceived as an extension of the college's mission. The survey results suggest that although there might appear to be overwhelming support for distance education courses and programs, it is possible that a substantial number of the staff might not be aware of the college mission and therefore they would not understand how distance education courses and programs would relate to the college mission.

Policies and Practices

Survey participants were asked if there were any policies or regulations that would serve as barriers to the success of a distance education program at their college. Table 15 provides a summary of the results with 32.8% of the respondents indicating that there would be policies and regulations that would be barriers, 40.5% indicating that there were no policies or regulations that would be barriers, 25.8% of the respondents did not have an opinion, and one academic officer (0.9%) did not respond to the survey question.

Table 15

Summary of Survey Results - Question D (N=115; Missing Response =1)

Question: Are there any policies or regulations that might serve as barriers to the success of a distance education program?

Response	Frequency	Percent
Yes	38	32.8%
No	47	40.5%
I Don't Know	30	25.8%
Missing Response	1	0.9%

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 16). No additional analysis of the relationships between the groups was conducted.

Survey participants indicating that there might be policies or regulations that might serve as barriers to the success of a distance education program were requested

Table 16

Analysis of Variance Summary - Question D (N=115; Missing Response =1)

Question: Are there any policies or regulations that might serve as barriers to the success of a distance education program?

Leadership Group	N =	Means	Significance Level
President	23	2.0435	
Chief Academic Officer	26	1.6923	
Media Services Director	23	1.8696	
Chief Financial Officer	20	2.1000	
Faculty Leader	23	2.0000	
Variance Between Groups			.3719

to indicate what they thought the barriers might be. Table 17 provides a summary of the identified issues. Employee contracts was identified by 16 of the respondents

Table 17

Listing of Distance Education Policies or Regulations Identified by Leadership Role Groups as Barriers to Success of a Distance Education Program

Policy and/or Regulations	N=	Percent
Employee Contracts	16	13.8%
Funding	6	5.2%
Tuition	6	5.2%
Class Size	2	1.7%
Faculty Resistance	2	1.7%
Staff Development	2	1.7%
Billing	1	0.9%
Curriculum	1	0.9%
Financial Aid	1	0.9%
Hardware	1	0.9%
Laboratory Courses	1	0.9%
Support from Top Staff	1	0.9%
Accreditation (NCA)	1	0.9%
Registration	1	0.9%
Schedules	1	0.9%
Seniority	1	0.9%
Staff Skills	1	0.9%
Transfer of Credits	1	0.9%

as being the most important issue or barrier to the success of the implementation of a distance education program. This was the only issue identified by all five leadership role groups. Funding and tuition costs were considered to be the next issues of concern by the survey participants. There were numerous other individual issues expressed by the survey participants.

The findings indicate that there are concerns about policies and regulations that might serve as barriers to the success of program implementation. Community college leaders will need to identify and resolve those policies and practices as a part of the planning process. Although many colleges do not have policies that would limit the institutions' ability to offer courses or programs, there are issues such as employee. contracts, project funding, tuition, class size, staff development, and faculty resistance that could become areas of concern. The findings did reveal that the concerns about college policies and regulations are a substantial issue within the media services directors leadership group.

Program Evaluation

Survey participants were asked if distance education courses should be evaluated differently than traditional classroom courses. Table 18 provides a summary of the results with 38.8% of the respondents indicating that distance education courses should be evaluated differently. Another 38.8% of the respondents had the opposing response and indicated that distance education courses

Table 18

Summary of Survey Results - Question F (N=115; Missing Response =1)

Question: Should distance education courses be evaluated differently than traditional courses?

Response	Frequency	Percent
Yes	45	38.8%
No	45	38.8%
I Don't Know	25	21.5%
Missing Response	1	0.9%

should not be evaluated differently. The remaining 21.5% of the respondents did not have an opinion. One academic officer did not respond to the survey question.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 19). No additional analysis of the relationships between the groups was conducted.

Table 19

Analysis of Variance Summary - Question F (N=115; Missing Response =1)

Question: Should distance education courses be evaluated differently than traditional courses?

Leadership Group	N =	Means	Significance Level
President	23	1.9130	
Chief Academic Officer	26	2.0000	
Media Services Director	23	1.6522	
Chief Financial Officer	20	1.8500	
Faculty Leader	23	1.6957	
Variance Between Groups			.4795

Curricular Issues in Distance Education

Academic Performance

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that there are no significant differences in the academic performance for students in distance education courses as compared to traditional or non-distance education classroom courses. Table 20 provides a summary of the

results with 57.0% of the respondents indicating that they either agreed or strongly agreed with the statement, 14.6% of the respondents indicating that they either disagreed or strongly disagreed with the statement. The remaining 26.7% of the respondents were neutral, or had no opinion regarding the statement. One president and one academic officer did not respond to the survey question.

Table 20

Summary of Survey Results - Question G (N=114; Missing Response =2)

Question: There are no significant differences in academic performance for students in distance education courses and non-distance classroom courses.

Response	Frequency	Percent
Strongly Disagree	2	1.7%
Disagree	15	12.9%
Neutral	31	26.7%
Agree	56	48.4%
Strongly Agree	10	8.6%
Missing Response	2	1.7%

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level (Table 21). Post hoc multiple comparison procedures were used to determine which pairs of groups appear to have significantly different means at the observed alpha level of 0.05. The means for the faculty were substantially different when compared to the means for the president, chief academic officer, media service

Table 21

Analysis of Variance Summary - Question G (N=114; Missing Response =2)

Question: There are no significant differences in academic performance for students in distance education courses and non-distance classroom courses.

Leadership Group	N =	Means	Significance Level
President	22	3.5455	
Chief Academic Officer	26	3.9231	
Media Services Director	23	3.6957	
Chief Financial Officer	20	3.4500	
Faculty Leader	23	2.8261	
Variance Between Groups			.0003

director, and the chief financial officer groups using the least-significant difference (LSD) test. The chief academic officers and the faculty have substantial disagreement with regards to the survey question. The faculty responses to the survey question indicate that they believe that there are significant differences in academic performance for students in distance education courses when compared to non-distance classroom courses. The population means for the chief academic officers' responses to the survey question were not substantially different from the population means for the media service directors', the chief academic officers', and the presidents' responses, therefore the four leadership groups supported the statement that there are no significant differences in academic performance for students in distance education courses when compared to non-distance classroom courses.

Studies on the academic performance of students in distance education courses and traditional classroom courses have revealed that there are no substantial differences in the academic performance. There are no studies reported in the literature to indicate that the instruction is any less effective for students who enroll in distance education courses (Clark & Verduin, 1989, Verduin & Clark, 1991, Gehlauf, Shatz, & Frey, 1991; Whittington, 1987; Duning et al., 1993).

Changes in Teaching Patterns

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that distance education technologies would cause the faculty

to make changes in their teaching patterns. Table 22 provides a summary of the findings with 95.7% of the respondents indicating that they either agreed or strongly agreed with the statement: 3.4% of the respondents indicated that they either disagreed or strongly disagreed with the statement. One academic officer did not respond to the survey question.

Table 22

Summary of Survey Results - Question H (N=115; Missing Response =1)

Question: Distance education technologies will cause faculty to make changes in teaching patterns.

Response	Frequency	Percent
Strongly Disagree	0	0.0%
Disagree	4	3.4%
Neutral	0	0.0%
Agree	64	55.2%
Strongly Agree	47	40.5%
Missing Response	1	0.9%

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five

leadership groups and the survey question were not significant at a 0.05 alpha level (Table 23). No additional analysis of the relationships between the groups was conducted. The survey responses from all five leadership groups were in agreement with regards to the survey statement. Distance education technology will cause instructors to make changes in familiar teaching patterns and the findings of this study support the findings reported in the literature (Beaudoin, 1990; Verduin & Clark, 1991; Levine, 1992).

Table 23

Analysis of Variance Summary - Question H (N=115; Missing Response =1)

Question: Distance education technologies will cause faculty to make changes in teaching patterns.

Leadership Group	N =	Means	Significance Level
President	23	4.3478	
Chief Academic Officer	26	4.4231	
Media Services Director	23	4.4274	
Chief Financial Officer	20	4.2000	
Faculty Leader	23	4.4783	
Variance Between Groups			.5460

Interaction Between Faculty and Students

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that the interaction between faculty and students is limited with distance education courses as compared to traditional classroom courses. Table 24 provides a summary of the results with 43.2% of the respondents indicating that they either agreed or strongly agreed with the statement, 37.0% of the respondents indicating that they either disagreed or strongly disagreed with the

Table 24

Summary of Survey Results - Question I (N=114; Missing Response =2)

Question: The interaction between faculty and students is limited with distance education courses.

Response	Frequency	Percent
Strongly Disagree	4	3.4%
Disagree	39	33.6%
Neutral	21	18.1%
Agree	42	36.3%
Strongly Agree	8	6.9%
Missing Response	2	1.7%

statement. The remaining 18.1% of the respondents were neutral, or had no opinion regarding the statement. Two of the chief academic officers did not provide a response to this survey statement.

To determine if the means of the leadership groups were equai, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 25). No additional analysis of the relationships between the groups was conducted.

Table 25

Analysis of Variance Summary - Question I (N=114; Missing Response =2)

Question: Is there a need for distance education courses at your college?

Leadership Group	N =	Means	Significance Level
President	23	3.0000	
Chief Academic Officer	25	2.7200	
Media Services Director	23	3.1739	
Chief Financial Officer	20	3.3000	
Faculty Leader	23	3.3478	
Variance Between Groups			.2448

The interaction between faculty and students in both traditional and distance education classes teaching the same courses is well documented. Numerous research studies have reported that the amount of interaction between the faculty and students has been significantly increased through distance education technologies (Brey, 1990; Moore, 1990; Markwood & Johnstone, 1992; Coombs, 1992). The findings of this study did not provide either agreement or disagreement with prior research reported in the literature.

Prepackaged Programs

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that nationally marketed, prepackaged courses are equal in quality to courses prepared by campus faculty members. Table 26 provides a summary of the results with 42.3% of the respondents indicating that they either agreed or strongly agreed with the statement, 20.7% of the respondents indicating that they either disagreed or strongly disagreed with the statement. The remaining 33.6% of the respondents were neutral, or had no opinion regarding the statement. Two chief academic officers and two chief financial officers did not respond to the survey question.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level

Table 26

Summary of Survey Results - Question J (N=112;
Missing Response =4)

Question: The nationally marketed, prepackaged courses are equal in quality to courses prepared by the faculty on our campus.

Response	Frequency	Percent
Strongly Disagree	3	2.6%
Disagree	21	18.1%
Neutral	39	33.6%
Agree	39	33.6%
Strongly Agree	10	8.7%
Missing Response	4	3.4%

(Table 27). Post hoc multiple comparison procedures were used to determine which pairs of groups appear to have significantly different means at the observed significance level. Differences, at the 0.05 significance level, in the pairs of means for the faculty and the chief academic officer groups were identified using the least-significant difference (LSD) test. The means for the faculty were substantially different when compared to the means for the president, chief academic officer, media service director, and the chief financial officer groups using the least-significant difference (LSD) test. The findings of this analysis supports previous

Table 27

Analysis of Variance Summary - Question J (N=112; Missing Response =4)

Question: The nationally marketed, prepackaged courses are equal in quality to courses prepared by the faculty on our campus.

Leadership Group	N =	Means	Significance Level
President	23	3.4348	
Chief Academic Officer	25	3.6800	
Media Services Director	23	3.2609	
Chief Financial Officer	18	3.1667	
Faculty Leader	23	2.8261	
Variance Between Groups			.0329

findings of this study; there are substantial differences between the faculty leaders and chief academic officers. The chief academic officers support the use of nationally marketed prepackaged courses and the faculty leaders do not agree that the use of nationally prepackaged courses are equal in quality to courses prepared on their college campus.

Draw Students Away From Traditional Courses

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that the courses delivered to students through distance education technologies do not draw students away from non-distance courses. Table 28 provides a summary of the results with 56.9% of the respondents indicating that they either agreed or strongly agreed with the statement; 20.7% of the respondents indicating that they disagreed with the statement. The remaining 21.5% of the respondents were neutral, or had no opinion regarding the statement. One of the chief academic officers did not provide a response to this statement.

Table 28

Summary of Survey Results - Question K (N=115; Missing Response =1)

Question: The courses delivered to students through distance education technologies do not draw students away from non-distance courses.

Response	Frequency	Percent
Strongly Disagree	0	0.0%
Disagree	24	20.7%
Neutral	25	21.5%
Agree	57	49.1%
Strongly Agree	9	7.8%
Missing Response	1	0.9%

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 29). No additional analysis of the relationships between the groups was conducted.

Table 29

Analysis of Variance Summary - Question K (N=115; Missing Response =1)

Question: The courses delivered to students through distance education technologies do not draw students away from non-distance courses.

Leadership Group	N =	Means	Significance Level
President	23	3.6522	
Chief Academic Officer	26	3.5769	
Media Services Director	23	3.3478	
Chief Financial Officer	20	3.3000	
Faculty Leader	23	3.3043	
Variance Between Groups			.5547

The survey findings suggest that there is a concern from all leadership groups, that distance education courses can create enrollment shifts from the campus

classrooms to the distance education classrooms. A review of the research literature contributes support for the enrollment concern (Gehlauf, Shatz, & Frey, 1991).

Incentives for Teaching Distance Education Courses

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that incentives are needed to encourage faculty to participate in teaching distance education courses. Table 30 provides a summary of the results with 75.9% of the respondents indicating that they either agreed or strongly

Table 30

Summary of Survey Results - Question L (N=114; Missing Response =2)

Question: Incentives are needed to encourage faculty to participate in teaching distance education courses.

Response	Frequency	Percent
Strongly Disagree	2	1.7%
Disagree	15	12.9%
Neutral	9	7.8%
Agree	67	57.8%
Strongly Agree	21	18.1%
Missing Response	2	1.7%

agreed with the statement, and 14.6% of the respondents indicated that they either disagreed or strongly disagreed with the statement. The remaining 7.8% of the respondents were neutral, or had no opinion regarding the statement. Two of the chief academic officers did not provide a response to this statement.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 31). No additional analysis of the relationships between the groups was conducted.

Table 31

Analysis of Variance Summary - Question L (N=114; Missing Response =2)

Question: Incentives are needed to encourage faculty to participate in teaching distance education courses.

Leadership Group	N =	Means	Significance Level
President	23	3.6087	
Chief Academic Officer	25	3.8000	
Media Services Director	23	4.0435	
Chief Financial Officer	20	3.6500	
Faculty Leader	23	3.8261	
Variance Between Groups			.5785

Incentives are needed to encourage participation by faculty. Faculty selection and extra efforts made to entice quality faculty into the early stages of developing distance education projects can provide credibility and long-term payoffs. Distance educators must spend additional time preparing and planning lessons so they are effective within the technology by which the courses are delivered (Dillon, 1989). The findings indicate that there is agreement from all five leadership groups on this distance education survey issue.

Distance Education Courses Require Additional Preparation Time

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that the teaching distance education courses requires additional time for preparing and planning lessons. Table 32 provides a summary of the results with 74.1% of the respondents indicating that they either agreed or strongly agreed with the statement, 12.1% of the respondents indicating that they disagreed with the statement. The remaining 11.2% of the respondents were neutral, or had no opinion regarding the statement. Two of the chief academic officers and one of the chief financial officers did not provide a response to this statement.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level

(Table 33). No additional analysis of the relationships between the groups was conducted.

Table 32

Summary of Survey Results - Question M (N=113; Missing Response =3)

Question: Teaching distance education courses requires additional time for preparing and planning lessons.

Response	Frequency	Percent
Strongly Disagree	0	0.0%
Disagree	14	12.1%
Neutral	13	11.2%
Agree	58	50.0%
Strongly Agree	28	24.1%
Missing Response	3	2.6%

The findings support the research literature, distance educators must spend additional time preparing and planning lessons so that they can be effective with the distance education technology (Dillon, 1989; Levine, 1992; Duning et al., 1993). No additional analysis was conducted.

Table 33

Analysis of Variance Summary - Question M (N=113; Missing Response =3)

Question: Teaching distance education courses requires additional time for preparing and planning.

Leadership Group	N =	Means	Significance Level
President	23	3.6522	
Chief Academic Officer	25	4.0000	
Media Services Director	23	4.1739	
Chief Financial Officer	19	3.4737	
Faculty Leader	23	4.0435	
Variance Between Groups			.0704

Cost Effectiveness and Efficiency Issues

Cost Effectiveness

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that distance education courses can be cost effective. Table 34 provides a summary of the results with 75.0% of the respondents indicating

Table 34

Summary of Survey Results - Question N (N=113; Missing Response =3)

Question: Distance education courses can be cost effective.

Response	Frequency	Percent
Strongly Disagree	2	1.7%
Disagree	6	5.2%
Neutral	18	15.5%
Agree	67	57.8%
Strongly Agree	20	17.2%
Missing Response	3	2.6%

that they either agreed or strongly agreed with the statement; 6.9% of the respondents indicated that they either disagreed or strongly disagreed with the statement. The remaining 15.5% of the respondents were neutral, or had no opinion regarding the statement. Three of the chief academic officers did not provide a response to this survey statement.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level

(Table 35). No additional analysis of the relationships between the groups was conducted.

The survey findings are supported by the research literature; distance education courses can be cost effective (Mace, 1982; Rumble, 1988; Levin, 1981; Levine, 1992). The methods reported in the literature for the cost effective analysis are varied and additional study would be needed to determine the appropriate methods.

Table 35

Analysis of Variance Summary - Question N (N=113; Missing Response =3)

Question: Distance education courses can be cost effective.

Leadership Group	N =	Means	Significance Level
President	23	3.8261	
Chief Academic Officer	24	3.9583	
Media Services Director	23	3.7391	
Chief Financial Officer	20	4.2000	
Faculty Leader	23	3.6087	
Variance Between Groups			.1786

Cost and Benefits of Distance Education Computed

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that both costs and benefits of distance education courses should be computed to determine the cost effectiveness of distance education courses. Table 36 provides a summary of the results with 92.3% of the respondents indicating that they either agreed or strongly agreed with the statement 6.0% of the respondents indicating they were neutral, or had no opinion regarding the statement. There were

Table 36

Summary of Survey Results - Question O (N=114; Missing Response =2)

Question: Both costs and benefits of distance education courses should be computed to determine the cost effectiveness of distance education courses.

Response	Frequency	Percent
Strongly Disagree	0	0.0%
Disagree	0	0.0%
Neutral	7	6.0%
Agree	80	69.0%
Strongly Agree	27	23.3%
Missing Response	2	1.7%

no responses indicating that the respondents either disagree or strongly disagreed with the survey statement. Two of the chief academic officers did not provide a response to this statement.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level (Table 37). Post hoc multiple comparison procedures were used to determine which pairs of groups appear to have significantly different means at the observed significance level. Differences at the 0.05 alpha level in the pairs of means for the media service directors' group were identified using the least-significance difference (LSD) test. The means for the media service directors were substantially different when compared to the population means for the president, the chief academic officer, the chief financial officer, and the faculty groups using the least-significant difference (LSD) test. Although the findings support the position that both the costs and benefits should be computed to determine the cost effectiveness of distance education courses, 30.4% of the media services directors selected a neutral response for the survey question. They were the only leadership group to select a response other than agree or strongly agree.

There are various methods and models for determining the cost effectiveness of distance education. Some models appear to address the costs of alternatives while ignoring the benefit side of the equation. When benefits are not quantified in the

Table 37

Analysis of Variance Summary - Question O (N=114; Missing Response =2)

Question: Both costs and benefits of distance education courses should be computed to determine the cost effectiveness of distance education courses.

Leadership Group	N =	Means	Significance Level
President	23	4.3043	
Chief Academic Officer	25	4.1600	
Media Services Director	23	3.8696	
Chief Financial Officer	20	4.3000	
Faculty Leader	23	4.2609	
Variance Between Groups			.0218

analysis, it should be assumed that the benefits of the alternatives are considered equal (Mace, 1982; Duning, et al., 1993; Hart, 1994). Institutions planning to conduct cost and benefit studies will need to define the methods and model that will be appropriate to their program goals and select a model that is accepted by all leadership groups.

Cost Comparisons

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that the cost structures of distance and traditional education are so different that it is difficult to compare the two delivery systems. Table 38 provides a summary of the results with 10.4% of the respondents indicating that they either agreed or strongly agreed with the statement, 56.0% of the respondents

Table 38

Summary of Survey Results - Question P (N=113; Missing Response =3)

Question: Cost structures of distance and traditional education are so different that it is difficult to compare the two delivery systems.

Response	Frequency	Percent
Strongly Disagree	3	2.6%
Disagree	62	53.4%
Neutral	36	31.0%
Agree	11	9.5%
Strongly Agree	1	0.9%
Missing Response	3	2.6%

indicating they either disagreed or strongly disagreed with the statement. The remaining 31.0% were neutral, or had no opinion regarding the statement. Two of the chief academic officers and one president did not provide a response to this statement.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 39). No additional analysis of the relationships between the groups was conducted. All five leadership groups indicated that the cost of distance education courses can be compared to the traditional classroom delivery systems.

The findings of this study are supported by the research literature. It is possible to compare distance education systems and traditional learning systems. Mace (1982) has developed formulas for total cost and for average cost that consider number of students, fixed costs and variable costs. It is possible to determine, at what number of students, distance education courses become more cost effective than traditional learning systems. Mace's (1982) cost and benefit model considers the long term distance education costs that are annualized over the life of the project.

Table 39

Analysis of Variance Summary - Question P (N=113; Missing Response =3)

Question: Cost structures of distance and traditional education are so different that it is difficult to compare the two delivery systems.

Leadership Group	N =	Means	Significance Level
President	22	2.3182	
Chief Academic Officer	25	2.6000	
Media Services Director	23	2.7391	
Chief Financial Officer	20	2.2500	
Faculty Leader	23	2.6087	
Variance Between Groups			.1437

Cost Effectiveness for Staff Training

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that the distance education technologies can be cost effective for staff development and training. Table 40 provides a summary of the results with 81.8% of the respondents indicating that they either agreed or strongly agreed with the statement, 0.9% of the respondents indicating that they disagreed with the

Table 40

Summary of Survey Results - Question Q (N=113; Missing Response =3)

Question: Distance education technologies can be cost effective for staff development and training.

Response	Frequency	Percent
Strongly Disagree	0	0.0%
Disagree	1	0.9%
Neutral	17	14.7%
Agree	73	62.8%
Strongly Agree	22	19.0%
Missing Response	3	2.6%

statement. The remaining 14.7% were neutral, or had no opinion regarding the statement. Two of the chief academic officers and one faculty did not provide a response to this statement.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were not significant at a 0.05 alpha level (Table 41). No additional analysis of relationships between the groups was conducted.

Table 41

Analysis of Variance Summary - Question Q (N=113; Missing Response =3)

Question: Distance education technologies can be cost effective for staff development and training.

Leadership Group	N =	Means	Significance Level
President	23	4.1304	
Chief Academic Officer	25	4.0400	
Media Services Director	23	4.0000	
Chief Financial Officer	20	4.2000	
Faculty Leader	22	3.7727	
Variance Between Groups			.2013

The survey findings indicate that the participants believe distance education can be cost effective for staff development and training. Research literature studies support this statement and have reported that staff development can be cost effective using the distance education technology (Ansari, 1992; Duning et al., 1993). The studies reported in the literature compare the cost of providing distance education training with the cost of staff travel to the central site and the provision of

replacement personnel, or the cost of bringing faculty to the remote location (Hart, 1994).

Investment to Benefit Faculty and Students

Survey participants were asked if they agreed or disagreed, or had no position regarding the statement that the investment in distance education technologies is a benefit to the faculty, staff, and students. Table 42 provides a summary of the

Table 42

Summary of Survey Results - Question R (N=113;
Missing Response =3)

Question: The investment in distance education technologies is a benefit to the faculty, staff, and students.

Response	Frequency	Percent
Strongly Disagree	0	0.0%
Disagree	2	1.7%
Neutral	16	13.8%
Agree	61	52.6%
Strongly Agree	34	29.3%
Missing Response	3	2.6%

results with 81.9% of the respondents indicating that they either agreed or strongly agreed with the statement, 1.7% of the respondents indicating they disagreed with the statement. The remaining 13.8% were neutral, or had no opinion regarding the statement. Two of the chief academic officers and one faculty leader did not provide a response to this statement.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level (Table 43). Post hoc multiple comparison procedures were used to determine which pairs of groups appear to have significantly different means at the observed significance level. Differences, at the 0.05 significance level, in the pairs of means for the faculty were identified using the least-significant difference (LSD) test. The means for the faculty were substantially different when compared to the means for the president, the chief academic officer, the media services director, and the chief financial officer groups using the least-significant difference (LSD) test. The faculty leadership group was the only participant group to disagree (9.1%) with the survey statement.

The findings of this survey study indicate that a substantial number of the survey participants (81.9%) believe that the investment in distance education systems is a benefit to the faculty, staff, and students. The focus of most studies on the economics of distance education has been on the analysis of the cost of educational

Table 43

Analysis of Variance Summary - Question R (N=113; Missing Response =3)

Question: The investment in distance education technologies is a benefit to the faculty, staff, and students.

Leadership Group	N =	Means	Significance Level
President	23	4.3043	
Chief Academic Officer	25	4.2400	
Media Services Director	23	4.1739	
Chief Financial Officer	20	4.2000	
Faculty Leader	22	3.6818	
Variance Between Groups			.0230

programs. Community colleges will need to include in their planning and evaluation process a listing of the benefits for the faculty, staff, and students that are desired through the implementation of a distance education system (Ansari, 1992; Hart, 1994).

Summary

Survey participants responded to seventeen survey questions about their awareness and understanding of distance education planning, curricular, and cost issues. Population means for the five leadership groups were calculated for each of the survey question using one-way analysis of variance and an alpha level of 0.05. Post hoc multiple comparison procedures were used to determine which pairs of leadership groups had substantially different means at the alpha level of 0.05. Table 44 is a summary of the survey questions and the significance level for each question. Five of the 17 questions had significant level values of 0.05 or less. Post hoc multiple comparison procedures were used with the five survey questions having significance values of 0.05 or less to determine the relationship between the leadership groups. Chapter V summarizes the results of this analysis.

Table 44

Summary of Analysis of Variance Observed Significance Levels for Survey Questions
A, B, C, D, F, G, H, I, J, K, L, M, N, O, P, Q, R
and the Leadership Roles Surveyed

	Survey Question Hypothesis	Analysis of Variance Observed Significance Level	Status Alpha Level 0.05
Section I - Distance Education Planning			
A.	There a need for distance education courses at community colleges.	.0828	No Conclusion
B.	A market analysis is needed to determine the need for distance education.	.1923	No Conclusion
C.	The mission of a community college would be well served through the implementation of distance education courses.	.0025	Hypothesis Supported
D.	There are policies or regulations that could serve as barriers to the success of a distance education programs.	.3719	No Conclusion
F.	Distance education courses should be evaluated the same as non-distance education courses.	.4795	No Conclusion

Table 44 --- Continued

Section II - Distance Education Curricular Issues

G.	There are no significant differences in academic performance for students in distance education courses and non-distance classroom courses.	.0003	Hypothesis Supported
H.	Distance education technologies will cause faculty to make changes in teaching patterns.	.5460	No Conclusion
I.	Interaction between faculty and students is limited with distance education courses.	.2448	No Conclusion
J.	Nationally marketed, prepackaged courses are equal in quality to the courses prepared by the faculty on our campus.	.0329	Hypothesis Supported
K.	Courses delivered to students through distance education technologies does not draw students away from non-distance courses.	.5547	No Conclusion
L.	Incentives are needed to encourage faculty participation to participate in teaching distance education courses.	.5785	No Conclusion
M.	Teaching distance education courses requires additional time preparing and planning lessons.	.0704	No Conclusion

Table 44 --- Continued

Section III -- Distance Education Cost Effectiveness			
N.	Distance education courses are cost effective.	.1786	No Conclusion
O.	Both costs and benefits of distance education courses should be computed to determine the cost effectiveness of distance education courses.	.0218	Hypothesis Supported
P.	Cost structures of distance and traditional education are so different that it is difficult to compare the two delivery systems.	.1437	No Conclusion
Q.	Distance education technologies can be cost effective for staff development and training.	.2013	No Conclusion
R.	Investment in distance education technologies is a benefit to the faculty, staff, and students.	.0230	Hypothesis Supported

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this chapter is to summarize the research problem, methodology, procedures, and results of this study. On the basis of the results, general conclusions, and recommendations are stated.

Summary

The study was designed to answer the following research question: Are there differences between the five leadership role groups regarding levels of awareness and understanding about distance education? The primary focus of this study was to survey the college leadership about their awareness and understanding distance education. The review of related literature assisted in forming the basis and impetus for the study. Current literature on distance education reports and discusses issues regarding the planning of delivery systems, curricular issues to consider and resolve, and cost effectiveness and efficiency issues. Studies on the awareness and understanding of distance education by leaders at community colleges, or at four year higher education institutions, has not been reported in the literature. The secondary focus of the study was to survey the participants about their college's current use of

distance education technology as a means of providing distance education courses to students on their campuses and to remote classroom sites.

The survey was divided into four sections: Section I - distance education planning, Section II - distance education curricular issues, Section III - distance education cost effectiveness, and Section V - background information. Questions were developed and pre-tested for each of the four sections based on issues identified from a review of current literature. The community college leadership role was the unit of analysis. The independent variable of the study was the five leadership roles identified within each community college. The five leadership roles were: the community college president, the chief financial officer, the chief academic officer, the media services director, and the faculty leaders represented by the director of the social science division. The dependent variables were the levels of understanding and awareness of the planning, curricular, and cost effectiveness issues regarding distance education.

To determine if the means of the leadership groups were equal, analysis of variance was employed. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level. Post hoc multiple comparison procedures were used to determine which pairs of groups appear to have significantly different means at the observed significance level. Differences, at the 0.05 significance level, in the pairs of means were identified using the least-significant difference (LSD) test.

Conclusions

College presidents, chief academic officers, chief financial officers, media services directors, and faculty leaders, represented by the directors of the social science divisions at Michigan's 29 community colleges were mailed distance education surveys. Valid responses were received from 116 participants from 27 of the 29 community colleges. The overall response rate was 80.0% with a response rate within the five leadership groups ranging between 69% and 93%. The survey analysis disclosed that a least one or more of the survey participants at 22 of the 27 community colleges were aware that their college produced distance education courses. Video telecourses were produced at 18 of the colleges and a combination of video telecourses and two-way interactive audio and compressed video courses were reported at the remaining 4 colleges. A total of 19 different courses were reported to be produced at the local community colleges. Twenty-two of the 27 colleges reported receiving 19 different distance education courses. Video taped telecourses and satellite downlink feeds were reported by 16 of the colleges and the remaining 6 colleges reported that they received, in addition to the video taped and satellite courses, two-way audio and video interactive compressed video courses.

The population surveyed had a mean of 8 years experience in their current position and a mean of 22 years of experience in education. Participants were asked about their use of office computers to determine if they had any experience with some type of emerging technology. The findings indicated that 93.1% of those responding

had experience working with office computers. Word processing software were used by 84.3% of those responding followed by experience with spreadsheet software (59.3%), and electronic mail (58.3%).

Planning for the implementation of distance education courses and programs, especially technology based delivery systems, requires a substantial commitment of human and financial resources. Leaders at all decision-making levels within the institution will need to work together to assure the success of a project, such as the implementation of distance education courses and programs. The integration of numerous departments and divisions within the college will require an understanding of the technology and the issues of concern or misunderstanding at the various leadership levels.

The conclusions of this study are based on the data collected from the distance education surveys and are assumed to be characteristic of the leadership at Michigan's 29 community colleges. The conclusions from the study are grouped into the three categories: planning considerations, curricular issues, and cost effectiveness.

Distance Education Planning

Survey participants were asked if they felt that there was a need for distance education courses at their college. Survey findings indicate that 90.5% of the respondents support distance educations courses at their college. The support for distance education was predominant in all five leadership role groups. To determine if the interest in distance education was based on a needs assessment, the participants

were asked if a market analysis had been conducted to determine the need. Only 29.3% of the respondents indicated that a market analysis had been conducted. Duning et al. (1993) stresses the point that distance education projects need to based on identified student and staff needs and good instructional design. In order to minimize programmatic and financial risks, institutions need to develop action plans that recognize the dynamics of organizational change, employ good planning techniques, and have an understanding of the distance education technology. The data would suggest that although the interest level for distance education is very high, the interest is not based on market analysis or needs assessment. Distance education course or program need assessments should focus on students that are enrolled or have been enrolled in community college courses to assess their current and past learning behaviors. The need assessment should also attempt to determine what the respondents understand about distance education and the preferences these students might have to the alternative delivery system (Brickell, 1980).

The planning process needs to review the mission statement of the institution and determine if the faculty and students will be well served as a result of the development of distance education courses and programs. O'Connell (1985) states that any new initiative should be tested against the mission statement of an institution to determine if the purpose and intent of the program is compatible with mission statement. Duning et al. (1993) suggests that the offering of distance education programs and courses needs to be perceived as an extension of the college's mission. The participants were asked if they felt that their college mission would be well

served through the implementation of distance education courses and programs. Although 89.7% of the participants stated that their college mission would be well served, the level of support was disparate. College presidents supported the position that their college mission would be well served as compared to 69.6%of the faculty indicating that their college mission would be well served with the implementation of distance education courses and programs.

Institutions need to identify policies and practices, both external and internal, that might affect the success of distance education projects and work to revise those policies or practices that might serve as barriers to success of the project. The faculty, staff, and administration need to establish a broad base of support across the campus for the legitimacy and value of distance education. Although only 32.8% of the respondents indicated that there might be a policy or regulation, the issues identified could disrupt the implementation process. The leadership role group most concerned that existing policies and regulations could be barriers was the media services directors. Over half (52.2%) of the media service directors recorded concerns on their surveys. The most important concern of the directors, as well as the other four leadership role groups, was employee contracts. Other concerns expressed were funding, tuition, and class size. The chief academic officers and media service directors reported the greatest number of concerns and would be the two leadership groups that will have to implement the distance education courses and programs with the support and assistance of the faculty. Although the faculty

identified the same issues, the frequency response to the issues was considerably smaller.

The evaluation of courses and programs is a complex and often highly debated issue on a college campus. Participants were asked if distance education courses should be evaluated the same as non-distance education courses. The overall responses to this question resulted in an equal split of respondents agreeing that the evaluation should be the same (38.8%) and disagreeing that the evaluation should be different (38.8%). Analysis of the data indicated a significant difference of opinion between the faculty leaders and the chief academic officers. The faculty (52.2%) favor different evaluation methods and the chief academic officers (61.5%) favor the same evaluation methods. The difference of position on the evaluation of courses is a major concern. The planning process needs to develop an evaluation plan that involves faculty, administrators and students (Levine, 1992). It is important that an evaluation model be established which defines the criteria for program and staff success (Duning et al., 1993).

The distance education planning section of the survey identified five issues or concerns, they can be summarized as follows:

1. There is widespread agreement that there is a need for distance education courses and programs at the community college level.

2. Less than one third of the respondents indicating that there is a need for distance education were aware of their college had conducted a market analysis to determine the need.

3. There is overall agreement that the mission of the respondents college would be well served through the implementation of a distance education courses and programs. Post hoc multiple comparison tests revealed that the means for the faculty were substantially different from the means of the other leadership groups, at the significance level of 0.05 or less. Thirty percent of the faculty responded that they did not know if their college mission would be well served through the implementation of distance education courses.

4. Policies and regulations of the college should be reviewed before the implementation of a distance education program. Issues cited as possible concerns include: employee contracts, funding, tuition, class size, and a variety of other staff and student concerns.

5. There is no agreement as to how the evaluation of distance education courses and programs should be conducted. Agreement on appropriate evaluation methodology should be reached by the leadership groups prior to the implementation of any distance education project.

Distance Education Curricular Issues

Survey participants were asked if there were no significant differences in the academic performances of students in distance education courses as compared to non-distance education courses. Over half (57.0%) of the participants stated that there was no difference in the academic performance of students. The responses amongst the five leadership groups was very disparate. Faculty leaders disagreed (39.1%)

with the statement and the chief academic officers agreed (80.7%) with the statement. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level. The means for the faculty were substantially different when compared to the means for the president, chief academic officer, media service director, and the chief financial officer groups using the least-significant difference (LSD) test. The faculty responses to the survey question indicate that they believe that there are significant differences in academic performance for students in distance education courses when compared to non-distance classroom courses. The population means for the other four groups were not substantially different, therefore they supported the statement that there are no significant differences in academic performance for students in distance education courses when compared to non-distance classroom courses.

Numerous studies on distance education systems have revealed that there are no significant differences in academic performance for students in distance education courses and traditional courses (Clark & Verduin, 1989, Verduin & Clark, 1991, Gehlauf, Shatz, & Frey, 1991; Whittington, 1987). Researchers have acknowledged that although there are differences in instructional techniques in the two settings, there have been no studies to support the position that the instruction in a distance education course is any less effective. The difference in viewpoint on this issue between the faculty leaders and the chief academic officers will need to be discussed and resolved.

Over 95% of the respondents agreed with the statement that distance education technologies will cause the faculty to make changes in their teaching patterns. According to Verduin and Clark (1991), faculty members do make changes in their teaching patterns. The distance education classroom format requires pre-planning and careful attention to details. The literature reports that faculty generally accept the change in teaching patterns as a positive experience.

The interaction between faculty and students in both traditional and distance education classes teaching the same courses is well documented. Numerous studies have reported that the amount of interaction between the faculty and students has been significantly increased through distance education technologies (Markwood & Johnstone, 1992; Brey, 1990; Moore, 1990; Coombs, 1992). The findings of this study did not provide either support or disagreement with prior research reported.

Survey participants were asked if nationally marketed, prepackaged courses are equal in quality to courses prepared by campus faculty. Almost half (42.3%) of the respondents agreed that the prepackaged courses were of equal quality, and 20.7% disagreed. The means for the faculty were substantially different when compared to the means for the president, chief academic officer, media service director, and the chief financial officer groups using one-way analysis of variance and the least-significant difference (LSD) test. There are substantial differences between the faculty leaders and chief academic officers. The chief academic officer's support the use of nationally marketed prepackaged courses and the faculty leaders do not agree that the use of nationally prepackaged courses are equal in quality to courses

prepared on their college campus. Faculty leaders overwhelmingly (94.8%) disagreed that the nationally marketed, prepackaged courses were equal in quality and the chief academic officers agreed (63.3%) that the courses were of equal quality. A review of the literature has not produce any research studies indicating that the prepackaged distance education courses are not equal to classroom based courses.

The survey findings suggest that there is a concern from all leadership groups that distance education courses can create enrollment shifts from the campus based classrooms to the distance education classrooms. A review of the research literature did not produce any studies that either support or reject the survey question.

Survey participants were asked if they felt incentives were needed to encourage the faculty to teach distance education courses. The leadership group that supported the payment of incentives the most was the chief academic officers at 84.0%, followed by the media services directors, then the chief financial officers, the faculty, and the least supportive group was the presidents at 69.9%. Incentives might be needed to encourage participation by faculty. It is recognized that distance education faculty spend additional time preparing and planning lessons so they are effective within the technology by which the courses are delivered (Dillon, 1989). The findings of this study indicate that there is agreement from all five leadership groups, incentives should be considered.

Survey participants were asked if teaching distance education courses requires additional time for preparing and planning lessons. Almost 75% of the respondents indicated that they agreed with the statement. The survey findings support the

research literature, distance educators must spend additional time preparing and planning lessons so that they can be effective with the distance education technology.

Survey participants were asked if the investment in distance education technologies is a benefit to the faculty, staff, and students. Approximately 82% of the respondents indicated that they agreed with the statement. Differences, at the 0.05 significance level, in the pairs of means for the faculty were identified using the least-significant difference (LSD) test. The means for the faculty were substantially different when compared to the other leadership groups using the least-significant difference (LSD) test. The faculty leadership group was the only participant group to disagree (9.1%) with the survey statement. The survey findings support the research literature, distance education is a benefit to the faculty, staff, and students.

The distance education curricular section of the survey identified seven issues or concerns, they can be summarized as follows:

1. There is not widespread agreement regarding the academic performance of students in distance education courses as compared to traditional classroom courses. The chief academic officers position is that there are no differences and the faculty leaders position is that there are differences. Research literature supports the chief academic officers position.

2. There is agreement that the teaching of distance education courses will cause the faculty to make changes in their teaching patterns.

3. Interaction between faculty and students is not limited according to the research literature. The survey findings did not provide either confirmation or rejection of the survey statement.

4. There is substantial disagreement as to whether or not nationally, prepackaged distance education courses are equal in quality to courses prepared by campus faculty. Chief academic officers believe the prepackaged courses are of equal quality and the faculty leaders do not accept the courses as being of equal quality.

5. The possibility that distance education courses draw students away from traditional classroom courses is a concern for all leadership groups. There is no research literature to support the enrollment concern.

6. There is general agreement that incentives might be needed to encourage faculty to teach distance education courses. The concern is supported by research literature.

7. Teaching distance education courses require additional time preparing and planning the lessons. Support for this position is documented in the research literature.

Distance Education Cost Effectiveness

Survey participants were asked if distance education courses can be cost effective. Three fourths of the respondents indicated that agreed with the statement. The findings support the research literature; distance education courses can be cost

effective. Survey participants were asked if both the costs and the benefits of distance education courses should be computed to determine the cost effectiveness of the courses. An overwhelming 92.3% of the respondents indicated agreement with the survey statement. There were no responses disagreeing with the statement. The findings support the research literature: both the costs and benefits should be computed to determine the cost effectiveness of distance education courses. There are various methods and models for determining the cost effectiveness of distance education. Colleges planning to conduct cost and benefit studies need to define the methods and model that will be appropriate to their program goals (Mace, 1982; Duning, et al., 1993; Hart, 1994)

Survey participants were asked if the cost structures of distance and traditional education are so different that it is difficult to compare the two delivery systems. Over half (56.0%) of the respondents disagreed with the survey statement. The differences in the population means between the five leadership groups and the survey question were significant at a 0.05 alpha level. Differences, at the 0.05 significance level, in the pairs of means for the media service directors' group were identified. The means for the media service directors' were substantially different when compared to the population means for the president, the chief academic officer, the chief financial officer, and the faculty groups using the least-significant difference (LSD) test. Although the findings support the position that both the costs and benefits should be computed to determine the cost effectiveness of distance education courses, 30.4% of the media services directors' selected a neutral response

for the survey question. They were the only leadership group to select a response other than agree or strongly agree.

The findings of this study are supported by the research literature. It is possible to compare distance education systems and traditional learning systems. Mace (1982) developed formulas for total and average cost that consider number of students, fixed costs and variable costs. It is possible to determine at what number of students distance education courses become more cost effective than traditional classroom courses.

Survey participants were asked if distance education technologies can be cost effective for staff development and training. The findings indicate that the survey participants (81.8%) believe distance education can be cost effective for staff development and training. Research literature studies have reported that staff development can be cost effective using the distance education technology (Rule, et al., 1989; Simpson, 1992; Hart, 1994).

Survey participants were asked if distance education technologies can be cost effective for staff development and training. The findings of this study indicate that the survey participants (81.9%) believe that the investment in distance education systems is a benefit to the faculty, staff, and students. The focus of most studies on the economics of distance education have been on the analysis of the cost of educational programs. Community colleges need to include in their planning process a listing of the benefits for the faculty, staff, and students that are desired through the implementation of a distance education system (Ansari, 1992; Hart, 1994).

The distance education cost effectiveness section of the survey identified five issues or concerns, they can be summarized as follows:

1. There is widespread agreement that distance education courses are cost effective. The survey results are supported by research literature.

2. There was agreement that both the costs and benefits of distance education courses should be computed to determine the cost effectiveness of the courses. Colleges planning to conduct cost and benefit studies need to define the methods and model that will be appropriate to their program goals

3. Over half (56.0%) of the respondents believe it is possible to compare the cost of traditional and distance education courses. It is possible to determine at what number of students distance education courses become more cost effective than traditional classroom courses.

4. Distance education technologies can be cost effective for staff training and development. Research literature studies have reported that staff development can be cost effective using the distance education technology

5. There is substantial agreement that the investment in distance education technologies is a benefit to the students, faculty, and staff. Colleges need to include in their planning process a listing of the benefits for the faculty, staff, and students that are desired through the implementation of a distance education system.

Recommendations

A number of important issues emerged as a result of this study. The following five recommendations and comments are directed not only to the leadership at community colleges, but to the leadership of any educational institution planning to implement a distance education program.

1. It is recommended that a market analysis be conducted to determine the need for distance education courses and programs should be conducted prior to the implementation of a distance education project. Although there is support for the implementation of distance education systems, it is important that a market analysis be conducted to determine the need. The findings of this study determined that less than one third of those supporting the need for distance education courses were aware of any market analysis. The assessment of need for distance education courses should include currently and previously enrolled students.

2. It is recommended that an analysis of employee contracts, college policies and regulations be done early in the planning process to avoid possible conflicts between the faculty and administrative staff. The survey findings identified employee contract, college policy, and college regulations that could become barriers to the successful implementation of a distance education project. The media services staff will be an important leadership group to assist in the identification of issues.

3. It is recommended that the faculty and chief academic officers need to be directly involved in all aspects of the planning process. Successful implementation

cannot be achieved if the two leadership groups do not work out their differences prior to implementation. The survey findings identified numerous issues that the faculty leaders and the chief academic officers had differing views or positions. Course evaluation and curricular issues such as academic performance, student interaction, and prepackaged courses will require considerable discussion if the two leadership groups are to reach agreement.

4. It is recommended that incentives be considered for faculty teaching in distance education classrooms. There is ample support in the research literature and the survey findings to recommend that faculty teaching distance education courses should be given incentives to teach the courses. The survey findings supported the need for incentives and the recognition that the teaching of distance education courses requires additional time preparing and planning the courses.

5. It is recommended that community colleges planning to conduct distance education cost and benefit studies define early in the process the methods and model that will be appropriate to their program goals. There is substantial agreement that distance education is cost effective for both course instruction as well as for staff development and training. The research literature provides a variety of costing models that can be considered (Hart, 1994). It will be important that the college leadership determine in advance of the program evaluation, what type of program goals are to be evaluated.

Appendix A

H.S.I.R.B. Approval Letters

Human Subjects Institutional Review Board

Kalamazoo, Michigan 49008-3899
616 387-8293

WESTERN MICHIGAN UNIVERSITY

Date: Sept. 30, 1994

To: Douglas Lape

From: Richard Wright, Interim Chair

Re: HSIRB Project Number 94-09-17

This letter will serve as confirmation that your research project entitled "A study of two-way interactive audio and video technology to deliver courses at the community college level in Michigan" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you must seek specific approval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date. In addition if there are any unanticipated adverse or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: Sept. 30, 1995

xc: Thompson, EDLD

Human Subjects Institutional Review Board

Kalamazoo, Michigan 49008-3899
616 387-8293

WESTERN MICHIGAN UNIVERSITY

Date: October 25, 1994

To: Douglas Lape

From: Richard Wright, Interim Chair Richard A. Wright

Re: HSIRB Project Number 94-09-17

This letter will serve as confirmation that your requested changes to your research project entitled "A study of two-way interactive audio and video technology to deliver courses at the community college level in Michigan" has been approved by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the changes to the research as described in the fax dated October 24, 1994.

Please note that you must seek specific approval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date. In addition if there are any unanticipated adverse or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: Sept. 30, 1995

xc: Thompson, EDLD

Appendix B

Listing of Michigan Community Colleges

LISTING OF MICHIGAN COMMUNITY COLLEGES

Alpena Community College	Alpena, Michigan
Bay DeNoc Community College	Escanaba, Michigan
Delta College	University Center, Michigan
Glen Oaks Community College	Centerville, Michigan
Gogebic Community College	Ironwood, Michigan
Grad Rapids Community College	Grand Rapids, Michigan
Henry Ford Community College	Dearborn, Michigan
Highland Park Community College	Highland Park, Michigan
Jackson Community College	Jackson, Michigan
Kalamazoo Valley Community College	Kalamazoo, Michigan
Kellogg Community College	Battle Creek, Michigan
Kirtland Community College	Roscommon, Michigan
Lake Michigan Community College	Benton Harbor, Michigan
Lansing Community College	Lansing, Michigan
Macomb Community College	Warren, Michigan
Mid Michigan Community College	Harrison, Michigan
Monroe County Community College	Monroe, Michigan
Montcalm Community College	Sidney, Michigan
Mott Community College	Flint, Michigan
Muskegon Community College	Muskegon, Michigan
North Central Michigan College	Petoskey, Michigan
Northwestern Michigan College	Traverse City, Michigan
Oakland Community College	Bloomfield Hills, Michigan
St. Clair County Community College	Port Huron, Michigan
Schoolcraft College	Livonia, Michigan
Southwestern Michigan College	Dowagiac, Michigan
Washtenaw Community College	Ann Arbor, Michigan
Wayne County Community College	Detroit, Michigan
West Shore Community College	Scottville, Michigan

Appendix C

Distance Education Survey

MICHIGAN COMMUNITY COLLEGE
DISTANCE EDUCATION SURVEY

Michigan's community colleges are faced with the challenge of providing educational opportunities to an increasing and diverse population at a time of educational reform and decreasing financial resources. Changes in the work force, the economy, legislative initiatives, community demographics, educational expectations, and technological developments necessitate that community college leaders reconsider what they will teach. In addition, questions about how they will teach, to whom they will teach, and how the instruction will be presented and delivered to students are being asked.

Community colleges are expected to meet the changing needs of the communities they serve through open access, a diversity of high quality courses, and with schedules that accommodate the life styles of their students. Distance education, the providing of instruction to students at remote locations, is one possible alternative to traditional classroom instruction.

The purpose of this survey is to access various leadership role groups at Michigan's community colleges regarding levels of understanding about distance education.

In order to get the views of all participants, answer the questionnaire at this time. The survey has been designed to take no more than ten minutes to complete. Then mail it today in the pre-addressed postage-paid envelope provided.

Thank you for your cooperation,

Douglas Lape

Douglas Lape

SECTION I - Distance Education Planning

A. Is there a need for distance education courses at your college?
_____ Yes _____ No _____ I Don't Know

B. Has there been a market analysis to determine need for distance education?
_____ Yes _____ No _____ I Don't Know

C. Would the mission of your college be well served through the implementation of distance education courses?
_____ Yes _____ No _____ I Don't Know

D. Are there any policies or regulations that might serve as barriers to the success of a distance education program?
_____ Yes _____ No _____ I Don't Know

If yes, Please list what the policies or barriers might be:

1. ____________________ 4. ____________________

2. ____________________ 5. ____________________

3. ____________________ 6. ____________________

E. If your college has distance education courses, how are they administered? (Select One)

_____ Through a distance education department / division.

_____ Through a continuing education department / division.

_____ Through the same on-campus course department / division.

_____ Other ______________________________

**For those colleges that do not have distance education courses, how would distance education courses be administered? (Select One)

_____ Through a distance education department / division.

_____ Through a continuing education department / division.

_____ Through the same administrative units as the on-campus courses and programs.

_____No opinion at this time.

F. Should distance education courses be evaluated differently than traditional courses?

_____ Yes _____ No _____ I Don't Know

SECTION II - Distance Education Curricular Issues

Please circle your response for each item choosing the one closest to your perception or understanding:

G. There are no significant differences in academic performance for students in distance education courses and non-distance classroom courses.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

H. Distance education technologies will cause faculty to make changes in teaching patterns.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

I. The interaction between faculty and students is limited with distance education courses.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

J. The nationally marketed, prepackaged courses are equal in quality to the courses prepared by the faculty on our campus.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

K. The courses delivered to students through distance education technologies do not draw students away from non-distance courses.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

L. Incentives are needed to encourage faculty to participate in teaching distance education courses.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

M. Teaching distance education courses requires additional time for preparing and planning lessons.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

SECTION III - Distance Education Cost Effectiveness

N. Distance education courses can be cost effective.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

O. Both costs and benefits of distance education courses should be computed to determine the cost effectiveness of distance education courses.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

P. Cost structures of distance and traditional education are so different that it is difficult to compare the two delivery systems.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

Q. Distance education technologies can be cost effective for staff development and training.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

R. The investment in distance education technologies is a benefit to the faculty, staff, and students.

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

SECTION IV - Background Information

S. Please indicate your position in the college:

_____ College President

_____ Dean of Liberal Arts / Liberal Studies

_____ Media Services Director

_____ Chief Financial Officer

_____ Director of Social Science Division / Department

T. How many years have you been in your position?
________ years

U. How many years of experience do you have in education (count all the years in all professional positions in formal institutions)?
________ years

V. Do you use a computer at your office?

_____ No I do not have a computer at my office.
_____ Yes I have a computer at my office but I use it seldom.
_____ If yes - What types of software applications do you use?
Please indicate the number of times you access the application per month.

_____ E-Mail
_____ Spreadsheets
_____ Word Processing
_____ Graphics
_____ Communications
_____ Other Software Programs

W. Does your community college produce any distance education courses?

_____ Yes _____ No _____ I Don't Know

If yes, Please indicate the following information regarding the courses:

Course Title	*Number of Semesters Course Offered*	*Technology Used: Correspondence, Video Tapes, Telecourses, Computers Interactive Video, Other*

X. Does your community college receive any distance education courses?

_____ Yes _____ No _____ I Don't Know

If yes, Please indicate the following information regarding the courses:

Course Title	*Number of Semesters Course Offered*	*Technology Used: Correspondence, Video Tapes, Telecourses, Computers Interactive Video, Other*

Thank you very much for completing the survey.

Please mail the survey today in the pre-addressed postage-paid envelope. All answers are confidential. Your name is not required.

Distance Education Survey
Northwestern Michigan College
1701 East Front Street
Traverse City, Michigan 49686

Appendix D

Cover Letter Sent With Surveys

128
Northwestern Michigan College

1701 East Front St.
Traverse City, Michigan 49686
616-922-1010

October 31, 1994

Dear Colleague:

I am requesting your participation in a survey involving community college leaders throughout the state of Michigan. The survey is designed to determine the status of and attitudes toward distance learning in Michigan's community colleges. The study is being conducted by Douglas Lape, Vice President of Administrative Services at Northwestern Michigan College.

This study will play a significant role in Doug's completing his doctoral dissertation at Western Michigan University. The data, however, will be of interest to us here at Northwestern Michigan College, as we are planning the creation of a University Center which will rely heavily on distance learning technology. Copies of the completed study will be made available by your completion of the enclosed reply card.

I am requesting that you complete the enclosed questionnaire, which has been designed to require no more than ten minutes of your time. Please mail the completed survey in the pre-addressed, postage-paid envelope no later than **Friday, November 11, 1994**. Thank you in advance for your cooperation. We value your opinion and are looking forward to receiving your response.

Sincerely,

Timothy G. Quinn

TGQ/lcd

Appendix E

Request for Survey Post Card

If you would like to know the results of this questionnaire please complete the information below, and mail this card back separately.

Please send (   ) copies of questionnaire executive summary.

Name ____

Address ____

_______________________________________ Zip Code ___________

Phone ____

Appendix F

Survey Disclosure Statement

YOUR SURVEY HAS BEEN CODED WITH AN INSTITUTIONAL NUMBER. THIS CODE WILL BE FOR SURVEY FOLLOW UP ONLY TO INCREASE THE RETURN RATE. **THE INSTITUTIONAL CODE WILL NOT BE PART OF THE DATA ANALYSIS.** THE SURVEY FORMS WILL BE DISCARDED AS SOON AS THE DATA HAS BEEN RECORDED.

Appendix G

Cover Letter Sent to Survey Contacts

Northwestern Michigan College

Administrative Services
1701 East Front St.
Traverse City, Michigan 49684
Phone 616-922-1045
Fax 616-922-1541

COPY

October 31, 1994

Lyle Beck, Media Services
Alpena Community College
666 Johnson Street
Alpena, MI 49707

Dear Lyle:

I would like to ask for your help. Douglas Lape, College Vice President, is completing his doctoral studies at Western Michigan University. His research topic is distance education using two-way interactive audio and video technology. Doug has been very supportive of my efforts to develop our interactive distance education network with the local schools and secure grants for the project.

Doug has identified five leadership groups at the community college level to study. Each of the five leadership groups is represented by one individual at each college. The five leadership groups are: College Presidents, Chief Academic Officers represented by the Deans of Liberal Studies, Chief Financial Officers, Social Science Division Directors, and Media Services Directors. We would like to solicit your help. Would you please deliver the four surveys to the individuals that represent these groups at your institution. The names of these staff members have been identified and listed for you on the outside envelope of each survey. Several extra copies of the survey have been included in case the names we were provided are either incorrect or if someone misplaces the survey. We would like to have a quick turn-around on the survey and therefore are asking that you deliver the survey to each individual and then check after several days to make sure that they have mailed it back to us. We are hoping to have all responses returned by November 11, 1994.

An executive summary will be provided to all that complete the survey and return the postcard that is enclosed with the survey. Thanks for your help. I am sure that Doug's survey will be of great benefit to us and I am looking forward to reading his conclusions.

Sincerely,

Ronda

Ronda Edwards
Media Services Director

Douglas Lape

Douglas Lape
Vice President

LAST MINUTE THOUGHTS & INSTRUCTIONS

DISTANCE EDUCATION SURVEY FOR

Alpena Community College

1. Thank you for assisting in the distribution of the survey packets to the other four individuals at you college.

2. Please complete your survey first and then distribute the other four (4) packets to the following representative groups:

   * College President
   * Chief Financial Officer
   * Academic Officer responsible for Liberal Studies
   * Faculty member responsible for Social Sciences Department

2. We have attempted to identify and list for you the names of these individuals for you. If you feel that either the incorrect individual has been identified, or the individual is no longer in the identified position, please make the appropriate corrections and forward the survey to the appropriate individual. The suggested names we have identified are:

   Donald L. Newport, President
   Thomas Bowman, Dean, Administrative Services
   Curtis Davis, Dean Instruction and Student Services
   Richard Clute, Director, Social Sciences

3. Would you please follow up in about a week to see if the survey's have been completed and returned. If we have not received the survey's by November 15th we will call to indicate which survey's are out and need to be returned.

4. Extra copies of the survey and return envelopes have been provided in case some are lost or misplaced.

5. Any questions ???? Please call Douglas Lape at 616/922-1045 or E-mail to dlape@nmc.edu

6. Thank you for completing your copy of the survey.

Appendix H

First Follow-up Letter to Survey Contacts

WE NEED YOUR HELP COMPLETING THE

DISTANCE EDUCATION SURVEY FOR

Alpena Community College

Approximately three weeks ago we mailed to your office a package containing five survey forms regarding distance education programs. To date, we have received only 40.3% of the distance education survey's and would like very much to increase the response rate significantly. Would you please distribute the surveys which were mailed to your office almost three weeks ago or if that has been done, please remind those listed below . You institution and staff responses are very important to us. As of this date, the following positions have not returned the survey forms:

Media Services
Director, Social Sciences
Chief Financial Officer

Thank you for your assistance in helping us to complete the survey. Should you have questions please don't hesitate either calling me at (616) 922-1045 or E-mail to dlape@nmc.edu.

Douglas Lape
Northwestern Michigan College
Traverse City, MI 49686

Appendix I

Second Follow-up Letter to Survey Contacts

COPY

WE NEED YOUR HELP COMPLETING THE

DISTANCE EDUCATION SURVEY FOR

Alpena Community College

Approximately five weeks ago we mailed to your office a package containing five survey forms regarding distance education programs. To date, we have received only 64.1% of the distance education survey's and would like very much to increase the response rate significantly. Would you please distribute the surveys which were mailed to your office almost three weeks ago or if that has been done, please remind those listed below . You institution and staff responses are very important to us. As of this date, the following positions have not returned the survey forms:

Director of Social Science
Chief Financial Officer

Thank you for your assistance in helping us to complete the survey. This is the last request for completed surveys. Should you have questions please don't hesitate either calling me at (616) 922-1045 or E-mail to dlape@nmc.edu.

Douglas Lape
Northwestern Michigan College
Traverse City, MI 49686

Appendix J

Third Follow-up Letter to Survey Contacts

WE NEED YOUR HELP COMPLETING THE

DISTANCE EDUCATION SURVEY FOR

Alpena Community College

Approximately six weeks ago we mailed to your office a package containing five survey forms regarding distance education programs. To date, we have received only 75.9% of the distance education survey's and would like very much to increase the response rate significantly. Would you please distribute the surveys which were mailed to your office almost three weeks ago or if that has been done, please remind those listed below . You institution and staff responses are very important to us. As of this date, the following positions have not returned the survey forms:

Director of Social Science

Thank you for your assistance in helping us to complete the survey. Should you have questions please don't hesitate either calling me at (616) 922-1045 or E-mail to dlape@nmc.edu.

Douglas Lape
Northwestern Michigan College
Traverse City, MI 49686

BIBLIOGRAPHY

Acerri, F. U. (1989). Distance education. Unpublished Manuscript. Wayne County Intermediate School District, MI.

Ansari, M. M., (1992). Economics of distance higher education. New Delhi: Concept Publishing Company.

Aslanian, C. B. & Brickell, H. M. (1980). Americans in transition: Life changes as reasons for adult learning. New York: College Entrance Examination Board.

Beaudoin, M. (1990). The instructor's changing role in distance education. The American Journal of Distance Education, 4(2), 21-29.

Bennis, W. & Nanus, B. (1985). Leaders: The strategies for taking charge. New York: Harper & Row, Publishers.

Bradshaw, D., & Brown, P. (1989). The promise of distance learning. Policy briefs number eight. (Report No. IR 014 463). Far West Laboratory for Educational Research and Development, San Francisco, CA. (ERIC Document Reproduction Service No. ED 323 909).

Brey, R. (1991). U.S. postsecondary distance learning programs in the 1990's a decade of growth. (Report No. JC 920 023). Washington, DC: The Instructional Telecommunications Consortium, American Association of Community and Junior Colleges. (ERIC Document Reproduction Service No. ED 340 418).

Bridges, E. M. (1992). Problem based learning for administrators. (Report No. SJJ69850). Eugene, OR: ERIC Clearinghouse on Educational Management. (ERIC Document Reproduction Service No. ED 347 617).

Bunting, L. D. (1989). First step in the feasibility of interactive satellite communication between the member institutions of the League for Innovation in the community college. (Doctoral dissertation, Northern Arizona University, 1989). Dissertation Abstracts International, 51(1), 61A.

Burnham, B. R. (1988). An examination of the perceptions and motivations of faculty participating in a distance education project. Paper presented at the Teaching as a Distance Conference, Madison, WI. (ERIC Document Reproduction Service No. ED 304 133).

Campbell, D. T., & Stanley, J. C. (1966). Experimental and quasi-experimental designs for research. Chicago, Il: Rand McNally.

Carver, J. (1990). Boards that make a difference. San Francisco, CA: Jossey-Bass Publishers.

Clark, T. (1993). Attitudes of higher education faculty toward distance education: A national survey. The American Journal of Distance Education. 7(2), 19-33.

Clark, T. A. & Verduin, J. R. (1989). Distance education: Its effectiveness and potential use in lifelong learning. Lifelong Learning, 12 (4), 24-27.

Congress of the United States, Office of Technology Assessment. (1989a). Effects of distance learning: A summary of the literature. Washington, DC: U.S. Government Printing Office.

Congress of the United States, Office of Technology Assessment. (1989b). Linking for learning, a new course for education. (OTA-SET-430). Washington, DC: U.S. Government Printing Office.

Coombs, N. (1992). Teaching in the information age. EDUCOM, March / April, pp 28-31.

Dillon, C. (1989). Faculty rewards and instructional telecommunications: a view from the telecourse faculty. The American Journal of Distance Education, 3(2), 35-43.

Duning, B. S., VanKekerix, M. J. & Zaborowski, L. M. (1993). Reaching learners through telecommunications. San Francisco, CA: Jossey-Bass Publishers.

Elmore, G. C. (1991). Technologies: an approach to establishing multimedia applications for learning. EDUCOM, January/February, pp 20-26.

Evans, R. I., & Leppman, P. (1968). Resistance to innovation in higher education: A social psychological exploration focused on TV and the establishment. San Francisco, CA: Jossey-Bass Publishers.

Garrison, D. R. (1990). An analysis and evaluation of audio tele-conferencing to facilitate education at a distance. The American Journal of Distance Education, 4(3), 13-23.

Garrison, D. R., & Shale, D. (1987). Mapping the boundaries of distance education: problems in defining the field. The American Journal of Distance Education, 1(1), 7-13.

Garrison, D. R., & Shale, D. (1990). Education at a distance: from issues to practice. Malabar, Fl: Robert E. Krieger Publishing Company.

Gehlauf, D. N., Shatz, M. A, & Frye, T. W. (1991). Faculty perceptions of interactive television strategies: implications for training. The American Journal of Distance Education, 5(3), 20-28.

Gellman-Buzin, B. (1987). Telecommunications as an element of competitive strategy. San Francisco, CA: Jossey-Bass Publishers.

Gooler, D. D. (1977). Criteria for evaluating the success of nontraditional postsecondary education programs. Journal of Higher Education, 68, 78-95.

Gooler, D. D. (1990). Evaluating distance education programs. Canadian Journal of University Continuing Education, 6(1), 43-55.

Gunawardena, C. N. (1990). Integrating telecommunications systems to reach distance learners. The American Journal of Distance Education, 4(1), 38-46.

Harroun, H. L. (1991). Using technology to improve equity of curriculum access for students in Michigan's upper peninsula. Unpublished doctoral dissertation, Western Michigan University, Kalamazoo, MI.

Hart, P. K. (1994). An investigation into the feasibility of interactive distance education courses at Northwestern Michigan College. Unpublished thesis, Ferris State University, Big Rapids, MI.

Hayes, E. (1990). Adult education: Context and challenge for distance educators. American Journal of Distance Education. 4 (1), 25-38.

Hersey, P. & Blanchard, K. H. (1977). Management of Organizational Behavior: Utilizing Human Resources, 3rd ed. Englewood Cliffs, NJ: Prentice-Hall.

Hershfield, A. F. (1986). Distance education: the promise and the confusion!. (Report No. EA 019 167). Paper presented at the annual international conference on improving university teaching (12th, Heidelberg, F. R. Germany, July 15-18, 1986). (ERIC Document Reproduction Service No. ED 019 167).

Holmberg, B. (1989). Theory and practice of distance education. New York: Routledge.

Johnson, K. A., & Foa, L. J. (1989). Instructional design: New alternatives for effective education and training. New York: Macmillan.

Johnson, R. (1986). Effectiveness and efficiency in distance education. (Report No. IR 012 671). Paper presented at the Conference on Productivity in Tertiary Education, Toowoomba, Queensland, Australia, July 3-6, 1986. (ERIC Document Reproduction Service No. ED 282 527).

Kabat, E. J., & Friedel, J. (1990). The development, pilot testing, and dissemination of a comprehensive evaluation model for assessing the effectiveness of a two-way interactive distance learning system. (Report IR 015 038). Eastern Iowa Community College District, Davenport, IA. (ERIC Document Reproduction Service No. ED 332 690).

Kaye, A. & Rumble, G. (1981). Distance teaching for higher and adult education. London: Croom Helm.

Keegan, D. (1986). The foundations of distance education. London: Croom Helm.

Keller, G. (1983). Academic strategy: The management revolution in American higher education. Baltimore: John Hopkins University Press.

Kish, L. (1967). Survey sampling. New York: Whiley.

Kozma, R. (1985). A grounded theory of instructional innovation in higher education. Journal of Higher Education. 56(3), 300-319.

Krebs, A. (1991). The USDLA funding sourcebook for distance learning and educational technology. New York: New Orbit Communications.

Levin, H. M. (1981). New techniques for evaluation. Beverly Hills: Sage Publications.

Levine, T. (1992). Going the distance. A handbook for developing distance degree programs using television courses and telecommunications technologies. Bethesda, MD: Author.

Lewin, K. (1951). Field theory in social science. New York: Harper & Row.

Lorenzo, A. L. (1993). Envisioning new horizons: Report of the commission on new directions for Michigan community colleges. Unpublished Manuscript. Michigan Community College Association, Lansing, MI.

Mace, J. (1982). Educational media and economic analysis. Media in Education and Development. June, pp. 91-93.

Markwood, R. A., & Johnstone, S. M. (Ed.S.) (1992). New pathways to a degree. Western Cooperative for Educational Telecommunications, Boulder, CO.

McGrath, D., & Spear, M. B. (1991). The academic crisis of the community college. Albany, NY: State University of New York Press.

McMillan, J. H., & Schumacher, S. (1989). Research in education: A conceptual introduction (2nd ed). Glenview, IL: Scott Foresman.

Moore, G. W. (1983). Developing and evaluating educational research. Boston: Little, Brown.

Moore, M. G. (1990). Contemporary issues in american distance education. New York: Pergamon Press.

Moore, M. G., & Clark, G. C. (1989). Readings in distance learning and instruction. American Center for the Study of Distance Education, Pennsylvania State University, University Park, PA.

Naber, D., & LeBlanc, G. (1994). A biology lab for distance learners. American Association of Community Colleges Journal. 64 (4), 7-8.

Norusis, M. J. (1990). SPSS: Statistical data analysis. Chicago, IL: SPSS.

O'Connell, B. (1985). The Board Member's Book. New York: The Foundation Center.

O'Hara, L., & Patton, S. (1992). A rural communiversity: teaching through developmental through graduate courses via two-way video. Unpublished manuscript, Paducah Community College, Paducah, KY.

Olcott, D. J., Jr. (1991). Bridging the gap: Distance learning and academic policy. Continuing Higher Education Review. 55 (1,2), 49-60.

Olcott, D. J., Jr. (1992). Policy issues in statewide delivery of university programs by telecommunications. The American Journal of Distance Education, 6 (1), 14-25.

Owens, R. G. (1987). Organizational behavior in education. Englewood Cliffs, NJ: Prentice Hall.

Perraton, H. (1982). The cost of distance education. IEC Broadsheets on Distance Learning No. 17, Cambridge, England: Russell Press Ltd.

Perraton, H. (1983). Secondary education at a distance. International Extension College, Cambridge, England: Russell Press Ltd.

Rossi, P. H., & Freeman, H. E. (1993). Evaluation: A systematic Approach. Sage Publications, NY.

Rule, S., DeWulf, M. J., & Stowitschek, J. J. (1989). An economic analysis of inservice teacher training. In M. G. Moore & G. C. Clark (Ed.), Readings in Distance Learning and Instruction: Number 2 in the series Readings in Distance Education (pp. 111-267). University Park, PA: American Center for the Study of Distance Education.

Rumble, G. (1986 a). Activity costing in mixed-mode institutions: A report based on a study of Deakin University. Deakin Open Education Monograph No. 2, Victoria, Australia.

Rumble, G. (1986 b). Costing distance education. Education Division, Human Resource Development Group, Commonwealth Secretariat. London: Marlborough House Pall Mall.

Rumble, G. (1988). The economics of mass distance education. Prospects. XVIII (1), 91-102.

Rumble, G. (1989). On defining distance education. The American Journal of Distance Education, 3(2), 8-21.

Russell, T. L., (1992). Television's indelible impact on distance education: what we should have learned from comparative research. Research in Distance Education. October, 3-4.

Saba, F., & Twitchell, D., (1988). Research in distance education: The American Journal of Distance Education. 2,(1), 9-24.

Self, C. C. (1983). An overview of educational technologies and implications for staff development at the community college level. (Report No. JC 830 308). Amherst, MA: University of Massachusetts. (ERIC Document Reproduction Service No. ED 231 460).

Sherow, S. & Wedemeyer, C. A. (1990). Origins of distance education in the United States. In Garrison, D. R., & Shale, D. Education at a distance: from issues to practice. Malabar, Fl: Robert E. Krieger Publishing Company.

Simpson, H., Pugh, L. & Parchman, S. W. (1991). An experimental two-way video teletraining system: design, development and evaluation. The American Journal of Distance Education, 12(2), 209-231.

Smith, N. L. (1981). New techniques for evaluation: New perspectives in evaluation, Volume 2. Beverly Hills, CA: Sage Publications.

Spondor, B. M. (1990). Distance education in rural Alaska: an overview of teaching and learning practices in audioconference courses. University of Alaska. (ERIC Document Reproduction Service ED 325 276)

Strain, J. (1987). The role of faculty member in distance education. The American Journal of Distance Education, 1(2), 61-65.

Tucker, A., & Bryan, R. (1989). The academic dean: Dove, dragon or diplomat. Washington: American Council on Education.

Verduin, J. R., & Clark, T. A., (1991). Distance education: The foundations of effective practice. San Francisco: Jossey-Bass Publishers.

Whittington, N. (1987). Is instructional television educationally effective? A research review. American Journal of Distance Education. 1 (1), 47-57.

Wiersma, W. (1991). Research methods in education. Needham Heights, MA: Allyn and Bacon.

Winston, G. C., (1993). The capital cost conundrum. NACUBO Business Officer. 26 (12), 22-27.

Withrow, F. (1990). Star schools distance learning: the promise. Technological Horizons in Education Journal. 62-64.

Worthen, B. R. & Sanders, J. R. (1987). Educational evaluation: Alternative approaches and practical guidelines. New York: Longman.

Woudstra, A. & Powell, R., (1989). Value chain analysis: A framework for management of distance education. The American Journal of Distance Education, 3(3), 7-82.