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ORGANIZING TECHNOLOGY FOR DISTANCE EDUCATION:
LESSONS FROM THREE COMMUNITY COLLEGES

By

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ABSTRACT

ORGANIZING TECHNOLOGY FOR DISTANCE EDUCATION: LESSONS FROM THREE COMMUNITY COLLEGES

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This study examined how three community colleges in the United States organize their technology units, including distance education, telecommunications, media and information systems. The study analyzed how administrators, faculty members, creative staff members and technical staff members perceive the benefits of and potential for growth and development of these technology units, as well as the effectiveness and the impact on teaching and learning, as well as on the organization structures of these units and the colleges. A major focus of the study was to identify critical issues which might suggest strategies useful for other community colleges when transforming these units.

The research methodology was field observation at each site, an analysis of college documents, structured interviews and case study. Fifteen respondents were interviewed representing administrators, faculty members, creative staff members and technical staff members from the three community colleges. The colleges were selected based on their national recognition in distance education programs, telecommunications

technologies and a revised organization structure.

This study reinforced previous findings that the changes occurring with demographics, technology and management philosophy have impacted community colleges in both the way they provide products and services to their customers and how they might remain viable in the future. The respondents from the three colleges reported their organization structures change frequently, their colleges have adopted total quality concepts, and they rely on strategic planning. It was suggested that there is a need for one person at the college to understand and manage all of the technology units.

It was determined in the study that reported changes in the organization structures involved changes in personnel, job titles and accountability and not with the redesign of the structure itself. All three colleges had and still have traditional, hierarchical, line-and-staff structures.

A variety of strategies were offered for assisting community colleges when designing new organization structures for effective practice. These innovative structures should remove barriers among the distance education and technology units and provide the support for collaboration and resource sharing among the units.

To the memory of Mary Jo, and my parents, Arden and Violet. To my family, Chris, Paige and Regan. Thank you for your support, love, patience and faith. I share this achievement with you.

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Significant contributions to the study were made by my committee, who helped redirect me when I needed it. Dr. James Snoddy deserves recognition for his patience and the time he spent with me throughout my doctoral studies and this research project. As my advisor and committee chairman, the bulk of the work and responsibility was placed on his shoulders; I am grateful for his willingness to assist me in this endeavor. Dr. Howard Hickey has encouraged me even before I was officially enrolled at Michigan State University as a doctoral candidate; I appreciate his sense of humor, insights and words of encouragement. Dr. Ann Austin offered suggestions to strengthen the study and asked insightful questions that needed to be answered. Dr. Bella Mody contributed significantly to the outcome of the study by her interest in the topic and suggesting I think about including other

perspectives, especially a business management correlation.

In addition to unlimited support from Chris, Paige and Regan, special recognition is in order for Rose Beane and Pat Graves, co-workers and friends at Delta College. Rose was especially generous with her time, expertise and energy in helping me to complete the study.

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CHAPTER I

INTRODUCTION TO THE STUDY

Technology is shrinking our universe by electronically transporting education and information to sites throughout the world. Education is benefiting from the technology, which increases the potential for higher education to facilitate teaching and learning to distant locations.

The 1980s were a time of incredible growth for distance education in community colleges. As technology was emerging and converging at an incredible pace, change was inevitable. This transformation is now challenging traditional roles of teaching and learning, and how and where the new and diverse activities associated with distance education are managed in community colleges.

Most distance education practitioners in the 1980s learned by doing and helping each other. Managers were pioneers in a new enterprise, in which conferences and workshops provided information on timely topics. After entering the world of distance education administration and consulting nearly a decade ago, and while researching a masters thesis, I realized that the barriers facing the

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distance education unit at my college were similar to those of other institutions. One persistent barrier has been procuring technology. Experience indicates this may occur because of insufficient planning, which particularly affects four technology units in community colleges: distance education; telecommunications; media; and information systems.

Statement of the Problem

The traditional community college organization structures may not provide the support needed for the future and long-term development and utilization of the four technology units. The managers of these units are usually accountable to various administrators and operate under separate cost centers within the college's organization structure. This may result in competition for scarce resources and a duplication of technology systems, products and services.

Some argue that most American institutions operate under 200-year-old, outmoded and counterproductive structures developed to handle the needs of the Industrial Age (Tomasko, 1993). Recent literature suggests that these hierarchical structures are not well-suited for the Computer and Communication Age (Hartz, 1992), which requires collaboration and planning. The issue is what organization structures are most appropriate for effective development and utilization of the four technology units in community colleges.

Research Questions

The principal research question that guided the study was "How do three selected community colleges in the United States, which are recognized nationally for their technology, distance education and organization structures, organize their distance education and technology units?"

Three subquestions emerged from the qualitative method of inquiry to guide the study:

1. How do administrators, faculty members, creative staff members and technical staff members perceive the benefits of and potential for the growth and development of their unit, the background of the development of the current organization structure, and its impact on teaching and learning?

2. What are the critical issues for community colleges to consider in organizing their technology units?

3. Do the experiences of these three colleges suggest strategies which might be useful in guiding the development of innovative and effective organization structures for the technology units in community colleges?

Purpose of the Study

This is a field-based, ethnographic research study designed to investigate how three community colleges organize their four technology units, and to search for implications for effective organization structures which could benefit other colleges. These three colleges were selected based on

input from distance education and technology professionals and consultants, who indicated these colleges have state-of-the-art technology, successful distance education programs, and have changed their organization structures. The study will identify and examine similarities and differences in terms of their four technology units, organization structures, strategic planning and leadership. The study will describe their structures, and examine the effectiveness of the structures for the technology units as seen by selected informants.

Methodology

A review of the related literature was conducted for current information on distance education and technology, new management and organization theories, trends, and guidelines and strategies for managing the change and growth in these areas, especially as it might shed light on innovative and effective organization structures. The primary data collection methods were structured interviews and field observation during site visits to the three community colleges, along with a review of college documents.

Significance of the Study

Distance education in community colleges has experienced growth in the past decade and will expand into the twenty-first century as it continues to serve new customers (Purdy, 1992). Today, all 50 states have distance education

activities, which include telecourses, teleconferences, satellite delivery, interactive television, computer-based and audio-based learning. TI-IN Network Programs (Satellite Transmitted Academic Resources) are available via cable television and satellite to subscribers, and offer credit bearing undergraduate and graduate courses through an affiliation with another proprietary vendor, Mind Extension University (ME/U), The Education Network, a 24-hour cable and satellite education network (TI-IN Network News, 1990).

Technological change is a major force that will affect the viability of community colleges. Limited research has been reported on organization structures as they relate to the distance education and technology units in higher education (Satyanarayana & Raghunath, 1991; Holmberg, 1987). Therefore, the results of this study may provide useful information to community college administrators as they attempt to create innovative and effective organization structures. These results may suggest strategies for designing new structures.

Changes in demographics, technology and management philosophy have been largely responsible for the growth experienced by the distance education and technology units. The Coast Communicator (1992) predicts that 80 percent of the community colleges will have distance education programs by 1994. This growth and the resulting changes will make the management of distance education and the other technology systems in the next decade, and beyond, a difficult and challenging job. How well the college of the future will

survive is partially based on the value-added services it provides, and not on its location (Gross, 1993).

Terminology

The following terms are useful to the understanding of this study. Definitions of some terms are provided in the context in which they were used in this study.

Organization structure. This involves the institution's reporting lines and levels, and where responsibilities are positioned within the institution. Institutions illustrate these lines and levels on their organization charts.

Unit. Unit refers to the broad administrative area, which may be a department and could have several technology divisions located within it. Each unit in the study may or may not have the same or similar systems, products and services, or serve the same customers, or be managed by the same administrator. The four technology units are distance education, telecommunications, media and information systems.

Distance education unit. This is a multifaceted enterprise that provides programs, training, information exchanges, meetings, certification, credit and noncredit courses, and academic degrees delivered via available technology, such as television, radio, cable, audio and videotapes, computers and modems, print-based materials, telephone and interactive videodiscs. Some institutions may include media, telecommunications, independent, extension and correspondence courses in the distance education unit.

Telecommunications unit. This includes television, radio, commercial and private cable, closed circuit, telephone, facsimile, modem, microwave, satellite, radio frequency, broadcast systems, information exchanges over telephone and data networks, fiber optical cable, or other electromagnetic channels to transmit and receive voice, video and data communication.

Media unit. This is technology used in multimedia labs, the library, media centers, graphic design, printing, audiotapes, word processing, desktop publishing and videocassettes.

Information systems unit. These consist of instructional and administrative computer systems, networking, the telephone system, wiring and cabling infrastructure within the physical plant to transmit and receive education and information, and to operate campus security systems.

Technology. This includes the equipment for voice, video and data technology, as well as the software used with the systems. Distance education requires voice, video and data technology to deliver products and services to customers located away from the source of these activities. These activities may include: live and interactive audio and video; individual work stations; synchronous services, which can be offered at the same time, but to different locations, e.g., television; or asynchronous, which can occur at different times and different locations, e.g., videotaped courses and electronic mail.

Products and services.   "Product" refers to the instructional technology commodities (Wagner, 1990), such as disks and tapes, and the competencies of the student who graduates (Aslanian, 1993).   It includes development and production of courses and programs, such as telecourses, audio courses, computer-based courses, satellite resource programs and teleconferences.   "Service" can be provided to customers by offering convenience and flexibility through new technology systems, continuous enrollment, interactive television, tapes and disks for home use, and classes on cable channels, over public television, or at local centers.

Customers. The users of distance education products and services are referred to in various ways, including the "new educational majority" (HEIRAlliance, 1992), traditional and nontraditional students, adult learners, customers, constituents, clients, internal staff, employers and agencies. The term "customer" is used in many colleges in reference to students (Zilinski, 1993), and will be used in this study to encompass all categories of individuals benefiting from technology and distance education products and services. In the past, distance education customers were identified as older adults attending college part-time. Today, they include people of all ages, as well as part-time and full-time students and staff.

Organization of the Dissertation

This study is presented in five chapters. Chapter I introduces the study, which is grounded in the organization structures of the four technology units in three community colleges. This chapter describes the growth of distance education and technology. The problem, purpose and significance of the study are included, as well as the research questions that guided the study, and the methodology used to collect data.

Chapter II consists of a literature review of several key areas, including distance education, technology, organization structures, planning, human resources and leadership. It covers changes in demographics, management philosophy, the needs of the customers and trends.

Chapter III lays out the design of the study. Personnel were interviewed from the four technology units, and site visits were made to the three community colleges in the study.

Chapter IV presents the research findings which resulted from analysis of the site visits, materials collected at each site, and the interviews.

The summary data are presented in Chapter V, along with conclusions for effective organization structures, discussion of implications for practice and research, and recommendations for designing organization structures for the best development and utilization of the four technology units in community colleges. The study is viewed as an inaugural to future research on organization structures related to these units.

CHAPTER II

REVIEW OF RELATED LITERATURE

Technology and Organization Structures

Distance education in the community college has evolved in response to the needs of the customers and availability of technology. Societal and technological change have created opportunities for community colleges to extend their services to distant locations (Reed & Sork, 1990), using formats suitable to the needs of the customers located in rural, urban and suburban communities (Lassner, 1992). This study focuses on the capacity of technology units in community colleges to handle future needs and change under the current line-and-staff organization structures.

Implications for Distance Education and Technology

Technology has been responsible for the growth of distance education. The more technology that distance education can access, the more products and services this alternative delivery system can provide. In a report prepared by Cummings, Toner, and Godfrey (1991), they note that the technology is very expensive and requires the technical and

administrative expertise and adequate staff to operate the systems, develop the products and provide the services. In addition, these authors indicate the technology requires planning and funding, as well as support from the administrators and users, and recommend consolidation of technology units under a single administrator.

Distance education operates in a competitive environment and must depend on feedback from customers for continued operation and future growth (Murgatroyd, 1990). Murgatroyd asserts that distance education and the technology resources and staff are affected by the following: limited budgets for purchasing equipment, technical assistance and expertise; unnecessary duplication of work efforts, equipment installation and maintenance, and systems design; and lack of leadership and decision-making power under the traditional organization structure. This author raises the issue of how innovation and development can be controlled in ways that organizations remain innovative to add to their competitive position without losing control over cost and human resources.

According to Keegan (1980), structure, organization and administration are of crucial importance for the existence of any distance education program, and need to be studied. In his remarks about the institutional contexts, organization, and administration of distance education, Donaldson (1990) notes the literature regarding description of distance education institutions and programs is filled to satiety, but

lacks analysis employing organization theory and research which would contribute to a deeper understanding of factors associated with organization and administration. This is in keeping with what Holmberg (1987) discovered, when he identified only four studies on the organization and administration related to this field.

Organization Structures

Technology, which is changing education by providing new methods for teachers to teach and students to learn, is creating a need to evaluate the effectiveness of the traditional organization structure and past management practices. Distance education is involved in this change process by serving as the interface between education and technology under the banner of educational opportunity (Peruniak, 1983). The use of technology requires managers to rethink the assumptions that are factors in the structure and management, and this reflection should be done at all levels of the organization both from the top down and the bottom up directions (Tomasko, 1993). This author concludes that while we work in the Information Age, our jobs have not been rethought since the Industrial Revolution.

Organization Structure Issues

The subject of organization structures for technology areas is only recently being recognized as an important part of governing the effective use of telecommunications to

increase educational access to college degree programs (Olcott, 1992). Practitioners in the fields of distance education and technology have expressed several concerns. There is the duplication of work and operations, the expense of the equipment, and the need for strategic planning and cooperative arrangements for sharing resources among units. Under the traditional line-and-staff structures, these units are typically segmented and responsible to different administrators, which makes teamwork difficult (Murgatroyd, 1990).

Community colleges are recognizing complementary relationships among separate operations (Katz & West, 1993), especially with distance education, media and information systems. New organization structures might enable these units to avoid costly duplication of expensive equipment and services, enhance resource sharing, and promote innovation. Colleges are beginning to address the changes resulting from the technology, and the need for transformation of organization structures (Woodsworth & Maylone, 1993) through rethinking (Tomasko, 1993), restructuring and reengineering the traditional organization structures (Penrod, 1992).

Murgatroyd (1990) indicates that old models of hierarchy are unlikely to produce constant improvement in the pedagogy of distance learning materials and in the quality of student learning experiences. Organizations need to be task-structured and integrated, and that change, which is a constant process, will be necessary for improvement of

educational services in the competitive world (Murgatroyd, 1990). By combining purchasing power and sharing technology expertise and resources on a cooperative basis, economies of scale increase and greater cost savings are realized (Loeb, 1989).

Management Philosophy

New management philosophies are having an impact on community colleges, as many academic leaders began adapting these innovative philosophies to educational applications in the 1980s (Cornesky, 1990). W. Edwards Deming (1982), who was the pioneer of the quality concept, advocated that management will need to consider planning and innovation, and focus on the future to remain viable, and this will necessitate new systems and structures. In 1950, Deming sold the Japanese on his philosophy of quality as a strategic advantage. Four years later, Joseph M. Juran coined "management for quality," followed by Philip Crosby's "quality is free" concept (Marchese, 1991). Total quality control focuses on zero defects and continuous improvement in all aspects of the organization (Murgatroyd & Woudstra, 1990).

In 1988, David Langford was one of the first educators to embrace the techniques of Deming and adapt them to this profession. In a live, six-hour videoconference workshop, Langford (1993) applied the tools of total quality management to the learning environment. He indicated that education should examine its management system, since the whole system

is preventing quality from happening.

Several authors, including Stark (1992) and Langford (1993), report that quality in education is important. Brown (1993) advises that practical applications for quality management can assist educational institutions in accomplishing strategic planning and reorganizing of the structure. Responsiveness by institutions to the changes in demographics, technology and management philosophy will be important in order for the technology units to remain viable and competitive in a rapidly changing global environment (Lucas, 1991). Tomasko (1987) corroborates the need for planning and reorganization in order for institutions to remain competitive, and Pollan and Levine (1992) describe what the European countries are accomplishing with training and education at the work site.

However, institutional success may depend less on the technology than on those factors allowing users to function effectively in these new technological environments (Johnstone, 1992). In a videoconference on distance education from Kirkwood Community College in Cedar Rapids, Iowa, Gross (1993) reports on the importance of people over technology, and the complex relationships created within the institution's environments. Visionary leadership is important for distance education to be successful (Feldman & Arnold, 1983). Whiteley (1992) explains the importance of leadership in which leaders put the customer first and promote their organization's visions: Leaders become students for life, constantly seeking

new ways to learn; they believe and invest in their people; these people build customer-focused teams, celebrating successes and encouraging collaboration; and most of all, they lead by example, personifying the organization's purposes. Whiteley maintains that when used together, the imperatives listed above can produce a well-integrated organization that can deliver high quality in products and services to the customer.

In his book, "The Fifth Discipline," Senge (1990) is concerned about traditional forms of leadership where individuals break apart problems and fragment the world. By doing this the connection to a larger whole is lost. Senge believes those organizations that discover how to tap people's commitment and capacity to learn at all levels in an organization will excel in the future.

Kinds of Organization Structures

Most community colleges have organization charts that illustrate traditional hierarchies, which are line-and-staff structures (Browne & Golembiewski, 1974). These structures use lines and boxes to illustrate the top-down level of authority and the reporting bureaucracy (Bennis, 1970). This diagram represents a division of tasks, a pyramid structure, and decision-making that is attached to a particular position (Weber, 1964). According to Hodge and Anthony (1984), this traditional model places the highest level officer, who has ultimate power and is responsible for final decisions

affecting the institution, at the top of the organization chart.

The role of technology in society, as well as its influence on organizations, was the basis for models developed by Thompson (1967), Woodward (1958 & 1965) and Perrow (1967). Their models show the technological effect on the organization, and the production and distribution of products and services. The linking pin structure (Likert, 1967), taxonomies and matrix management models were developed by business to deal with linking various parts and personnel of an organization to deal with mergers and coalitions (Hodge & Anthony, 1984).

In 1980, CAUSE, a membership organization focusing on the management of information technology in higher education, began collecting information on computing activities in community colleges with regard to administrative applications and staffing. The 1990/91 CAUSE ID Survey (Rudy, 1991) indicates the emergence of a position with responsibility for all or most aspects of information technology which has had a major impact on the typical campus reporting structure. Often this position, referred to in the literature as the Chief Information Officer (CIO), is directly responsible to the Chief Executive Officer, and the title may be vice president, vice chancellor, director or associate provost. Where the CIO is recognized, the major technology functions, including academic computing, administrative computing, networking and telecommunications, are all responsible to the CIO (Woodsworth

& Maylone, 1993). On campuses without a recognized CIO, academic computing tends to be responsible to the chief academic officer, administrative computing to the administrative vice president or chief financial officer, and telecommunications to the administrative vice president.

In his book, "Rethinking the Corporation," Tomasko (1993) proposes building domes, instead of pyramids. His idea is that the dome is an appropriate structure for our time and that it is both strong and economical. This author uses architectural logic for building an organization structure that provides speed, flexibility and focus when resizing capabilities and work processes, for reshaping the structure, and for rethinking the basics of how work is managed (Tomasko, 1993).

New structures are emerging that may have application for community colleges. A new corporate structure, referred to as "bubbles," is based on broad work skills, cooperation, flexibility, system learning and self-regulation where each worker learns all jobs and rotates jobs every few months (Hartz, 1992). The belief is that because the workers know more jobs, the company needs fewer people. Pay is based on the number of different jobs learned, and evaluation is done by all team members based on performance and abilities. Quaker Foods in Topeka, Kansas has established this system, in which supervisory roles are transferred back to workers who control themselves. This is also known as an amorphous structure (Hartz, 1992). This kind of structure enables

personnel, who are the basic foundation of any organization, to see the whole process and the bigger picture (McCoy, 1993).

New organization structures allow for teamwork, interaction and networking (Lucas, 1991). Krebs believes such structures centralize complementary units, but decentralize the day-to-day authority, operations and decisions pertaining to each unit and transform traditional hierarchical structures into democratically based ones (Krebs, 1992). Bi-modal organization structures, which are both centralized and decentralized, combine elements of traditional structures with new technologies and management processes. These structures appear to be operating in academe already, according to Woodsworth and Maylone (1993). Because of this need for change in organization structures, a twelve step process approach was developed by Hodge & Anthony (1984) for walking an organization through the various stages of planning and, ultimately, change.

Organization Theory

Distance education organizations are complex, ambiguous and filled with paradox (Morgan, 1986). Gerloff (1985) postulates that the design and structure of an organization are functions of its strategic mission, its culture, the leadership style of the top team, the nature of its production and operations, and the environment in which it is placed. The assumption is that organizations exist to achieve pre-established goals (Bolman & Deal, 1984).

Because an organization is a product of its environment, Anthony, Dearden and Vancil (1972) discuss the merits of environmental scanning to help colleges understand the three major environments affecting all organizations: macro (total environment including systems and forces outside the organization); intermediate (the link from the organization to the outside); and micro (internal systems and operations which produce the products and services required to satisfy the needs in the macro environment).

Personalities, tasks and technological innovations are factors in organization design and structure, and, because structure is both dynamic and particular, there may be no one correct structure for all distance education organizations (Murgatroyd & Woudstra, 1990). Shetty and Carlisle (1972) suggest that various structures should be considered appropriate for all organizations. Kovel-Jarboe (1990) implies there are various organization structures that could apply specifically to distance education.

Transformation of Organization Structures

The literature notes that management is changing, and that the strategies of the 1980s are no longer relevant in the challenging environment of the 1990s (Taking the Lead, 1993). Robert M. Tomasko stresses the importance of lowering the walls between line-and-staff and among the various operating divisions. He presumes that continued attention to employee training at all levels is what makes those leaner structures

with fewer layers function, and that staff can help to build businesses by selling their unit or department services for a fee (Tomasko, 1987).

Structural change is a powerful managerial tool within an organization because it modifies the organizational patterns of resource allocation and accountability, and redistributes authority for decision-making and action. The effect of structural change is demonstrated when distance education programs are relocated and placed in the mainstream of institutional planning; they are more likely to be successful than those on the fringe (Going the Distance, 1992). Gross (1993) agrees that programs which are a subunit of some other department will not have the longevity they would in the mainstream.

Technological change has come rapidly in the past decade, and with it the need to re-examine the missions of information technology units in academe, and organization structure and processes (Rudy, 1993). Many institutions now have Chief Information Officers (CIOs) and patterns for organizational realignment and merged components (Rudy, 1992). This has happened as such areas as academic and administrative computer centers, libraries, media, printing, telecommunications and distance education have come to overlap more and more, leading to turf battles, duplication of effort and confusion about service roles (McClure, 1992). McClure lists organizational strategies for information technology problems; among them are creating a CIO office to centralize leadership and linking

missions of existing technology units through joint strategic planning.

Strategic Planning

Technology is driving education to strategic planning, leading to new methods, products and structures, which may create positive change (Weick, 1979). Murgatroyd and Woudstra (1990), who suggest that colleges may have difficulty with strategic planning because they are too bureaucratic and operate on a top-down basis, offer four keys to effective strategic planning: 1) Organizational identity regarding mission, mandate and culture; 2) Sense of purpose; 3) Core business (understand and communicate it); and 4) Response to new opportunities (provides a framework for action and a process for responding in innovative and entrepreneurial ways).

Chaffee (1985b) notes that higher education is adopting the business practice of strategic planning which is replacing planning-programming-budgeting systems and management by objective. While educational administrators in the past have resisted business analogies, models and practices (Handy & Aitken, 1986), this is changing in today's competitive market as learning systems become more complex and are reaching beyond traditional boundaries. Quality control and service management will become increasingly important (Lewis, 1988).

Murgatroyd and Woudstra (1990) associate other activities to the strategic plan, including financial, marketing,

technology, human resources and capital, and conclude that planning is central to success and survival. Chaffee (1985a) echoes this view and believes that no institution is immune to competition, and in the face of increasing sophistication in the marketplace and the changes that new technology will afford, success will require a plan and a clear sense of purpose. According to Crosby (1979), service will provide competitive advantage, but it hinges on access, reliability and quality.

Future Organization Development

Many institutions are in a transitional environment which has evolved in piecemeal fashion. HEIRAlliance notes that now may be the time for the college president to bring about the real information technology revolution by adjusting organization structures to accommodate and exploit what is valuable in these technological developments, as well as to evaluate the services and integrate the systems into the structure. The role of the president is to establish a process and an atmosphere that will promote the integration of these inevitable new technologies, both with the mission and core values of the institution. The HEIRAlliance report mentions the outreach activities for the "new educational majority," the individualized learning environment and community service. Key to all of these is the development of organizational, instructional and informational infrastructures. It also requires a vision of an information

technology infrastructure which is integrated, efficient and functional (HEIRAlliance, 1992). Guidelines are discussed in HEIRAlliance (1992), which incorporate the experiences of institutions identified in surveys for their successful development and integration of information technology: 1) Focus overall coordination of information resources at a high administrative level; and 2) Develop a plan to fund technology as a vital capital asset.

Several trends in community colleges were cited by Ryland (1991), who notes that evolving organization structures will significantly change traditional hierarchical structures, and that the teaching and learning information infrastructure will change to accommodate a shift from a paper-based to a network-based system of sharing academic resources. Institutions may require their human resources departments to adopt new strategies for personnel development, career paths, staffing needs, and with their organization structures (Rudy, 1993).

Stedman and Bransford (1992) consider the need to develop and establish an educational telecommunications infrastructure and integrate the technology into educational systems. These authors inform the reader of the rapidly merging technology, and suggest that the use of the technology has been proposed as a solution to the problems of American education. The converging technologies are computing, television, printing and telecommunications, which are considered critical by many countries to their future productivity and competitiveness in global commerce (Aronson, 1992).

The rapid changes in technology, the cost of equipment and global competition for products and services will require distance education and technology administrators to make wise decisions. Wagner (1990) indicates we have passed the time in which the technologies are fairly simple and the consequences of making an inappropriate instructional delivery system decision were relatively inconsequential.

Effects of New Organization Theory and Design

Quality management has made its way into the vocabulary of higher education with remarkable speed, and higher education leaders are calling for dramatic restructuring of their institutions in order to meet the public's demands for higher quality at less cost (Cross, 1993). A new structure was developed over a period of eight years by Fox Valley Technical College in Wisconsin, which infused total quality management into its mission and goals. According to Zilinski (1993), in a workshop conducted at Delta College in Michigan, the new structure at Fox Valley was reported to be neither cumbersome nor complex, and has allowed management to move to the side where it facilitates the consensus process, eliminates the line management model, and places the customer at the top of the process. This flatter structure relies on the strategic plan and flow charts for process, work and control, and places deans, vice presidents and councils on the same level and with equal decision making power, with all responsible to the president. In this flatter organization

structure of the future, it is expected that communication and decision-making will be more open, outcome oriented and flexible (Creal, 1993).

Jane N. Ryland (1993) refers to complementary relationships with the technology areas as "family," and concludes that new alternatives are in order for organization structures and job definitions to best achieve institutional goals and objectives. This concept of "family" is noted by Woodsworth and Maylone (1993), who specifically reference distance education and technology as being part of the same "job family."

In the future it is likely that redesign of the organization structure for technology will occur frequently. As Paul Saffo from the Institute for Future in Menlo Park, California, notes in the Hartz (1992) television series, we are into 10 years of a 30 year period which will reshape society and the globe as profoundly as the Industrial Revolution did more than 100 years ago. It was "T & T" (transportation and technology) before, and now it is " C & C" (communications and computers). Tom Chase, executive director of Ecology of Work Conference, believes the need for information workers who can think for themselves has lead to a re-examination of traditional management structures which built up barriers, below, between and above levels (Hartz, 1992).

By examining the literature and investigating the three community colleges in the study who are nationally recognized

for their success with distance education, telecommunications technology and innovative organization structures, the research may suggest strategies for guiding the development of organization structures for the technology units in community colleges. The design and methodology for collecting the data, which supports the major research questions for this study, are the subject of the next chapter.

Summary

The education systems of the next century will be drastically different from those of today. Whether Americans lead the world in this educational transformation or play "catch-up" with more enterprising cultures will partially determine the extent to which the United States will continue to play an international leadership role in the increasing competitive world of the 21st century (Perelman, 1988).

Communications technologies are no longer an option for community colleges; they are vital for community colleges to fulfill their mission of education and training. Boyer (1992) indicates that work and education will blend into a more flexible education model, in which community colleges will become lifelong learning centers, adult education will increase, and self-directed education will expand. The HEIRAlliance (1992) Executive Strategies Report #1 advises colleges to develop effective organization structures which would assist in the delivery of quality instruction through distance education as a means of remaining competitive.

CHAPTER III

METHODOLOGY

This study was designed to investigate how three community colleges organize their distance education, telecommunications, media and information systems units, and to search for implications for effective organization structures which could benefit other colleges. Experience and previous research in the field have reinforced the belief that there has been little attention focused on the organization structures of these units in community colleges. With a paucity of research literature on organization structures related specifically to these technology units, an exploratory study is warranted.

Selecting the Colleges

The study identified those higher education institutions in the United States reputed to have successful distance education programs, extensive telecommunications capabilities and innovative organization structures. Identifying these institutions to include in the study was expected to be difficult because there appear to be few higher education

institutions which satisfy the criteria. The criteria were stringent. The colleges selected for the study needed to have distance education programs and telecommunications technologies; they needed to have national visibility for their programs and services in all of the related fields; and each should have addressed the need for change in the traditional organization structure.

A list of eight potential institutions was compiled after six months of preliminary research. Telephone calls were made to technology professionals in higher education, information was gathered from colleges in the League for Innovation, at national conferences, from technology and telecommunications publications, The Chronicle of Higher Education, and higher education membership associations. In addition, there was communication with strategic planners, engineering consultants and technical experts. The final list included five universities and three community colleges.

The decision to limit the study to the three community colleges was based on several factors. My ten year background in community colleges has provided some understanding of their mission and goals. There is some familiarity with these three colleges because I have worked with personnel from each in various capacities. Limiting the study to community colleges made the research more manageable because it was anticipated the community colleges would have more in common than might be the case if both colleges and universities were included in the study.

Identifying the Participants

The initial contact at each of the three institutions was with a higher level administrator associated with distance education. These administrators included a provost, a vice president and a dean, and each agreed for their college to participate in the study. They were asked to nominate from each of the four areas of distance education, telecommunications, media and information systems one administrator whom they felt would participate in and contribute to the study. To broaden the study's perspective, these higher level administrators were then asked to identify one person from each of the following groups: distance education faculty members; creative staff members; and technical staff members. With this selection process there was a potential for seven individuals from each college, for a total of 21 possible interviews. A total of 19 individuals were nominated by the higher level administrators, and with scheduling difficulties, 15 were interviewed.

The highest level administrator interviewed was a vice president for instruction. The others included two assistant vice presidents, two executive directors, four directors and two deans. The administrators represented all four technology units: distance education; telecommunications; media; and information systems.

The administrators in charge of distance education identified one or two faculty members who either facilitated

telecourses or taught through the interactive television system. I arbitrarily selected one faculty member from each college to interview. The creative staff members interviewed at each college represented the production and instructional support area, and are all administrators. The three technical staff members who were interviewed all work in the academic and administrative computer services areas. No technical staff members from distance education, telecommunications or media were nominated to be interviewed by the higher level administrators. Two administrators are listed as technical staff members, and the program director of the Instructional Technology Center from one of the colleges is directly responsible for both technical and creative support. Three to five administrators from each college were interviewed, while the interviews with faculty members, creative staff members and technical staff members at the three colleges were limited to one person from each of the three groups of respondents. (See Appendix A for the Respondents' Job Titles.)

Method of Inquiry

The method of inquiry for the study was qualitative in design, and included aspects of ethnography, field study, observation and case study. Time was spent at the three research sites, with research subjects and documents, recording data for analysis and writing descriptions of the findings, reporting conversations and dialogues as suggested by Erickson (1986).

Bogdan and Biklen (1982) define five features of qualitative research:

1) Qualitative research has the natural setting as the direct sources of data and the researcher is the key instrument.

2) Qualitative research is descriptive where the data collected is in the form of words or pictures rather than numbers, and the researcher asks questions to gather information.

3) Qualitative researchers are concerned with process rather than simply with outcomes or products.

4) Qualitative researchers tend to analyze their data inductively. Theory developed this way emerges from the bottom up and from many disparate pieces of collected evidence that are interconnected. Glaser and Strauss (1967) refer to this as grounded theory.

5) "Meaning" is important to the qualitative approach where the researcher is concerned with the perspectives of participants (Bogdan & Biklen, 1982, pp. 27-30).

Site visits and interviews were scheduled after the appropriately identified administrators, faculty members, creative staff members and technical staff members had been contacted by telephone and they agreed to participate in the study. Direct observation was used to collect data during the sites visits and the interviews. The field notes, which included audiotaping all but two of the interviews, collection of institutional documents and the literature review were used to develop a case study for each of the three colleges.

As a research strategy, the case study is appropriate for this study, since it uses histories, surveys and the analysis

of archival information, which is included as part of the research. According to Yin (1989), the case study is used in many settings, one of which is organizational and management studies. As a means of analyzing and reporting the data collected, the case study is a valid research tool for this research.

The goal was to examine the organization structure of these institutions out of which strategies might be proposed for other institutions to consider when developing organization structures for the distance education and technology units.

Site Visits

Visits were made to each institution. The intent of the visits to the colleges was to investigate their technology systems, to personally meet the staff and the respondents face-to-face, and to inquire into the equipment, products and services offered by the colleges. Most interviews were conducted at the time of the site visit; however, scheduling problems required five telephone interviews involving respondents from two of the three colleges.

Interviews

Interviews were conducted in person and by telephone with four groups: the administrators; faculty members; creative staff members; and technical staff members. They were scheduled at various times throughout January and February of

1993, and each required from one hour to one-and-one-half hours to complete.

Everyone interviewed was asked the same thirteen questions. (See Appendix B) These questions were provided to the respondents well in advance of the interview. Questions pertained to the products and services, customers and college support for distance education and the technology systems. They were asked how their unit benefits the institution and increases faculty and administrator awareness of the systems. They were asked to identify strengths and weaknesses of the organization structure and how the college measures the effectiveness of the organization structure. Finally, they were questioned about the future of the technology systems and the organization structure at the institution, and were asked about their recommendations for other colleges. The purpose of interviewing representatives of the four groups was to obtain information from a broader cross-section of college employees and to examine the responses of the participants.

Two of the 15 participants requested that no audiotaping be done during the interview. One person reluctantly answered the questions, which resulted in an incomplete set of notes for that interview. One person who was interviewed functions in three of the four categories, as an administrator, a creative staff member and a technical staff member.

Informed Consent

All those interviewed were assured anonymity for themselves and their colleges. Therefore, no respondents or colleges have been identified by name in the report of the study. Each respondent received a cover letter which described the purpose of the study and the method of data collection. (See Appendix C) They were asked to sign the Informed Consent if they agreed to participate in the study. All those interviewed and included in the study signed the form. (See Appendix D).

Documents

Additional information from print materials from each of the four groups was sought. It was expected that the highest level administrator interviewed at each college would be the one with access to the print materials, as well as the person who would oversee the collection of these materials. This was the case, although a few middle managers provided the researcher with print materials specific to their unit. All respondents had access to the list of requested documents. (See Appendix E)

Useful institutional documents included those related to the histories of the institutions, institutional statistics, organization charts, brochures on the various technology systems, related newspaper articles, copies of programs, degrees, courses and other services, institutional studies, internal and external newsletters, copies of strategic plans,

telecommunications and technology master plans, and mission statements.

Relevant Literature Review

Relevant literature included journals, professional magazines and organizations, dissertations, newsletters, reports, textbooks, videotapes, live and interactive videoconferences, audioconferences and newspaper articles. Current literature, especially from professional distance education and technology associations, was selected and analyzed in connection with the main research question and the three related research questions listed in this chapter and Chapter I. Research findings are presented in an expository format and in figures when appropriate.

Pilot Study

A pilot study was conducted at a community college in the Great Lakes region to pretest the interview questions. In the pilot study, two persons from each of the four groups, which consisted of administrators, faculty members, technical staff members and creative staff members from the distance education and technology units, were approached by telephone and asked to participate. Each agreed, and the interviews were conducted. The interview questions were changed slightly from the original using the feedback from this preliminary study.

Research Questions

The primary research question that guided the study was:

How do three selected community colleges in the United States, which are recognized nationally for their technology, distance education and organization structures, organize their distance education, telecommunications, media and information systems units?

This research question guided the investigation of three community colleges noted for their successful distance education, technology and innovative organization structures. Responses to this research question were analyzed in an attempt to identify the various organization structures, including levels of responsibility in current organization charts, and the integration of the technology with these four technology units.

Three other research questions support the main question:

1. How do administrators, faculty members, creative staff members and technical staff members perceive the benefits of and potential for the growth and development of their unit, the background of the development of the current organization structure, and its impact on teaching and learning?

Responses to this question were analyzed to ascertain the attitudes of the respondents toward cultural and financial aspects of the current organization structures in relationship to the development, organization, impact and effectiveness of the four technology units.

2. What are the critical issues for community colleges

to consider in organizing their technology units?

This research question was included because there appears to be no articulated process for community colleges to use in organizing these units in an effective and supportive manner.

3. Do the experiences of these three colleges suggest strategies which might be useful in guiding the development of innovative and effective organization structures for the technology units in community colleges?

After identifying factors which impact the organization structures for the technology units, similarities and differences that existed among these factors were identified to enhance the understanding of the development of the organization structures.

Analysis of Data

The design of this study was informed by Erickson's (1986) model for qualitative methods in research and is an analytical description (Sieker, 1973) based on grounded theory methodology (Glasser & Strauss, 1967), and survey research (Yin, 1989). Data collection was accomplished in three stages: site visit to each institution; compiling institutional documents; and personal interviews.

Much of the main analysis of the data took place after the collection of data was completed. The analysis involved writing observer comments in fieldnotes, reviewing the pertinent literature and institutional documents, transcribing audiotapes of the interviews, indexing data, and noting

observations and experiences from visits to the colleges. This analysis was performed in an attempt to determine the following:

1. The nature of the technology units in place at the three institutions,

2. The nature of the organization structures in place at the three institutions,

3. Similarities of the technology units in place at the three institutions,

4. Similarities in organization structures at the three institutions,

5. Differences of the technology units in place at the three institutions,

5. Differences in organization structures at the three institutions,

6. Effectiveness of the current organization structure as perceived by the different constituencies: administrators, faculty members, technical staff members and creative support staff members, and

7. Innovative, effective and unusual elements of the organization structures at the institutions.

The data include descriptive information about the technology systems and organization structures at the three institutions. They include budget and demographic information of each college, including size of the institution's student body and staff, general information about the college's location, off campus centers, and other information. The data contain the processes the institutions utilized to create their current organization structure. The analysis of the data includes a description of the organization structure and reports the respondents' assessment of the effectiveness and the impact of the structure on their unit and college.

Analysis was done on factors such as the various products and services and numbers of students served by each of the technology units. The budget of each institution was reported as it relates to the institutional support and revenue-generating nature of the technology units.

Summary

Structured interviews were held with four groups of respondents: administrators; distance education faculty members; creative staff members; and technical staff members. They were all associated with three community colleges in the United States and were involved in distance education, telecommunications, media and/or information systems. The interview questions were developed with responses and recommendations from the pilot study. The interview was designed to solicit information from the respondents on their colleges' organization structures as they are linked to the distance education and the other technology units. A total of 15 individuals were interviewed.

Additional data were collected through site visits to each college, documents provided by the respondents in the study, and a review of the related literature.

The results of these procedures are outlined in the next chapter in which the findings of the study are presented.

CHAPTER IV

FINDINGS, ANALYSIS AND SUMMARY

Chapter IV presents the findings and a summary of the findings for this study, which focused on the organization structures of four technology units at three community colleges in the United States. The technology units are distance education, telecommunications, media and information systems. The technology units are more specifically defined in Chapter I of this study, however, a brief description follows: Distance education uses voice, video and data technology to produce and deliver courses, degrees and training to distant locations; telecommunications uses television, radio, telephone, wiring and cabling to transmit and receive communication; media uses technology in multimedia labs, the library and desktop publishing; and information systems are the computer services and the telephone system.

As suggested by Yin (1989, pp. 84-104), data were obtained through four primary sources for conducting case studies: 1) documents; 2) archival records; 3) interviews; and 4) direct observation. The case study approach was useful in analyzing and summarizing the findings from the three

community colleges, which are presented in expository format. To maintain the anonymity of the three community colleges they are referred to by pseudonyms: Middle College; North College; and Lake College. When a respondent is quoted directly, a pseudonym is associated with the quotation. When exact wordings are used within the text, these are marked by quotation marks. Informal discussions are summarized and used within the body of the text. Interview questions are denoted by bold italics.

This chapter is organized around two parts: presentation of data, which is based on the thirteen interview questions (Appendix B) and the institutional documents requested (Appendix E); and summary of the findings, which is based on the four major research questions. The data collection assisted in answering the research questions, which helped form the conclusions, implications and recommendations listed in Chapter V.

Part I: Presentation of Data

The data obtained from the three community colleges are presented in case studies. Middle College is the first case study presented, next is North College, and the third case study is that of Lake College. The findings are presented in the following order for each case study: Respondents' Profiles; College Profile; and Organization Structure. The Respondents' Profiles are reported first in order to provide

the reader with pertinent information on those individuals who were interviewed for the study, since data are presented from the thirteen interview questions in each case study. In the sections on the Respondents' Profiles and the College Profile, data are presented from interview questions one through six, and under the Organization Structure section, data are presented from interview questions seven through thirteen.

Middle College

Respondents' Profiles

Six participants from Middle College were interviewed. Their pseudonyms, titles and responses to the first interview question, which is a two part question, are presented in this section. (See Appendix A for Respondents' Job Titles, Appendix B for Interview Questions and Appendix F for Respondents' Degrees and Work Experience.)

What are the types of activities you do in your job and why do you do these activities?

Middle College Respondents' Pseudonyms and Titles

Tam:	Vice president of instruction
Pat:	Dean of telecommunications
Mark:	Executive director of computer information systems
Ray:	Director of telecommunications services
Bobbie:	Program director of the Instructional Technology Center
Millie:	Traditional, alternative and distance education faculty member

The respondents, for the most part, provided descriptive information about their responsibilities. The following data were taken from Middle College (Interview Transcripts, 1/4/93):

> Pat: There are four aspects to my job: management; make sure the unit functions as it should and enhance the managers within the system to do their jobs; leadership within the state and nation to provide direction and remain competitive; and keep the college aligned with instructional technology in order to adjust the resources, personnel and strategies according to the cultural and the technological changes to make sure we are not obsolete.

Tam manages the instructional components and considers himself to be the college's educational leader. In this role he helps to develop the vision, constantly improves the programs and services, and keeps his skills upgraded through professional development activities, which he believes will assist him in managing more effectively.

Mark oversees the computer programming operation, the microcomputer support services, and the centralized computer lab to provide service to Middle College's customers.

Ray, the director of telecommunications services, is responsible for broadcasting, engineering and communications within the college. This includes data communications, technology expertise, repair, maintenance, installation, design, documentation and administrative work with the systems.

As Bobbie described it, she is in a position at Middle College for which her responsibilities are comprehensive:

> I wear several hats. I am program director of the Instructional Technology Center, and work with personnel and budgets. I am both the technical person who has to understand all technology that comes in, and the creative person who was hired to complete the development of videotapes. The job evolved and they centralized it in this area because of the technology and the need for faculty to get instructional design and technical support. (Interview Transcripts, 1/4/93)

As a traditional, alternative and distance education faculty member, Millie, has several responsibilities. She coordinates all adjunct faculty for technical writing and teaches business and technical writing courses, composition and literature. She described her feelings for her job:

> I like working with students, and the hands-on experience through the interactive television courses for two reasons: I can share something I am interested in with students who cannot get to campus; and it makes you organized and motivated to teach. (Interview Transcripts, 1/26/93)

Pat and Tam depicted their leadership functions at the college. Bobbie indicated that she has multiple responsibilities and that the support for the technology and instructional design activities has been relocated and centralized in the Instructional Technology Center.

What is your professional and educational background? (See Appendix F)

Pat, who arranged for the interviews at this college, has been an assistant director of a learning center and a director of testing at a university, and holds the doctorate in higher education and educational telecommunications. Pat has been with Middle College for nearly fifteen years as the first dean

of telecommunications and oversees six service areas in which the following administrators are responsible to him: director of telecommunications services; manager of telecommunications operations; manager of printing and graphics; manager of the radio station; director of telecommunications instructional services; and program director for the Instructional Technology Center. Pat's supervisor, Tam, is the vice president of instruction in charge of the applied sciences and technology, arts, sciences, the telecommunications unit, the library and off-campus centers. Tam explained his background:

> I was an executive director of planning and development, taught two years in a private college, and came to Middle College as an instructor. Later, I became a department head in social science, and then became dean of arts and sciences. I have a doctorate in higher education and have a masters in economics. (Interview Transcripts, 1/4/93)

The others interviewed included Ray, Bobbie, Millie and Mark. Ray is the director of telecommunications services, whose background is in broadcast television, and with twenty years of electronic experience in the Navy. Bobbie, the program director for the Instructional Technology Center, worked in radio and at a newspaper, and has the masters in instructional design. Millie, who did not provide information on her professional and educational background, is a faculty member who teaches both traditional and nontraditional students on campus and for the distance education and alternative systems. Mark, the executive director of computer information systems, explained his professional and

educational background:

> In 1966, I became a computer operator for the
> college, then went into computer programming,
> system analysis and through different levels of
> management. Since 1980, I have reported to the
> same person, but because of promotions this one
> person has had different titles, including vice
> president for instruction, vice president of
> administration, assistant to the president,
> director of vocational technology, and president
> since 1985. I graduated from Middle College in the
> first class in computer science. (Interview
> Transcripts, 1/4/93)

Pat and Tam both have the doctorate, Bobbie has the

masters, and Mark has the associate of arts in computer

science. Pat and Mark have both the professional and

educational credentials to support their current

responsibilities with the technology. Ray's military

electronic experience has a relationship to his current

position.

College Profile

Background information on Middle College. Middle

College, whose colorful glossy brochure highlighting their

state communications network is entitled "Information Highway

of the Future," is highly oriented toward technology. Other

promotional brochures state their claim that they have been,

and still are, a leader in their state and the nation in their

quest for building an expansive telecommunications network to

link people by technology. Middle College's "technology

story" begins in 1978 when the president and board of trustees

envisioned a cost-effective and timely two-way method of

communication to provide education, information and training to a seven county region. These leaders, who developed funding strategies as the system was designed, used the following analogy: The costs for constructing a telecommunications system for instruction were similar to the costs of constructing a building. However, instead of using bricks and mortar to house main campus classes, the telecommunications network "building" would encompass over 4,200 square miles through telecommunications. The college committed capital construction funds and received grant funding from the United States Department of Commerce National Telecommunications and Information Administration's (NTIA) Public Telecommunications Facilities Program (PTFP) to construct this "building" venture, which made them pioneers in the field of distance education. Today, thirty-two years after it was established as a community college, Middle College is involved in satellite downlinking and uplinking. Major television networks, including CBS, NBC, ABC, CNN, FOX, and Conus Satellite News Service, pay fees to utilize their uplinking system. In addition, this institution operates a public radio station, provides broadcast engineering and support for cable television, voice and data communications, audio and video production and distribution, as well as live credit and noncredit courses over interactive television networks, and an open learning lab.

Geographic orientation. Middle College is the smallest of the three institutions in the study. It represents a

largely rural population in a seven county area in a state with no major metropolitan areas.

Service area population. Middle College's service area population is 350,000.

Staff size. Middle College has 550 full- and part-time faculty and staff.

Enrollment. Credit enrollment is 9,000; non-credit enrollment is 55,000; and distance education enrollment is more than 6,000.

Off-campus centers. Middle College, which was established in 1961, has 13 off-campus centers in its seven county area and provides courses in 38 school building, plus business and industry sites. The total number of off-campus sites varies each semester because most of the sites are not college-owned and are used on an "as needed" basis, therefore, the above figures represent an accurate picture at only one point in time.

Customers. *Who are your customers and where are they located?* Customers are identified by the administrators of Middle College as all users, including those seeking degrees, those upgrading skills to gain employment or change jobs, and those seeking personal enrichment. They range in age from 15 to 75 years. Most students enrolled in academic credit classes are transfer students, who may be either transferring from other institutions or taking their credits to other institutions. Other customers are involved in vocational education and secondary school completion programs. According

to Pat, who is the dean of telecommunications, this college serves the following students:

> We have a large number of international students (250) and serve customers in every state and Canada through the uplinking of our teleconferences. Distance education serves students and the general public and reaches 38 different school buildings in a seven county area. We also serve business and industry on site. (Interview Transcripts, 1/4/93)

Sources of funding. *What are all of the sources of funding for the unit and the percentage of total funding which comes from the college's general fund?* The respondents indicated that their units are funded through their college's general operating fund. The distance education and telecommunications units receive $2.5 million, which is 8% of the general fund dollars. The college's total operating budget is $31.1 million. Middle College provided a breakdown of the sources of the distance education and telecommunications unit's budget: Pat provided a detailed description of his unit's budget; and Tam gave a detailed description of the college's funding sources.

> Pat: 80% comes from the general fund; 10% of the budget is generated from equipment repair and revenue from the sales of product development; and 10% of the budget comes from grants and other sources. (Interview Transcripts, 1/4/93)

> Tam: 47% comes from state aid; 40% from tuition and fees; 7% is local property taxes, and the remainder comes from the federal government and other service income. (Interview Transcripts, 1/4/93)

The college has received grants for purchasing equipment and technology systems.

Mission statement and strategic planning. *Does your unit*

operate with a mission statement and a strategic plan? The administrators indicated their unit's mission is compatible and in keeping with instruction, which is the college's primary mission, and all strategic plans revolve around this mission. The faculty member indicated that their college has mission statements and strategic plans, but did not believe that their unit operates under separate mission or strategic plans. Bobbie, the creative staff member, indicates that "the college sets one, two and five year goals in keeping with its mission and strategic plans" (Interview Transcripts, 1/4/93).

Technology systems. *What are the technology systems in your unit?* This college has state-of-the art audiovisual, audio and video production and editing equipment, and advanced telecommunications systems. It operates a public radio station, microwave and instructional television fixed services, and satellite downlinks. However, Middle College is the only institution in the study that owns and manages satellite uplink equipment. It has a fiber optic backbone (infrastructure) on campus for voice, video and data transmission, closed circuit and cable television systems, access to public television and commercial cable stations. It has CD-ROM, laser, interactive videodiscs, computer graphics, computer delivered instruction, voice mail, interactive television systems, multimedia and hypermedia; Tam described Middle College's central distributing system for tapes, slides and interactive video over microwave and computers.

Products and services. *What are the products and*

services provided by your unit? Middle College respondents lists their products as transfer students, courses, degrees and services, including the Open Learning Lab, distance education, library, teacher in-service, graphics, developmental services and outreach to high schools. Tam listed "transfer courses, vocational education, off-campus instruction, high school completion, the telecommunications division, developmental education and the library" as products and services provided by Middle College (Interview Transcripts, 1/4/93). Pat added that "telecourses, credit and noncredit live programming over the telecommunications system, multimedia support, computer assisted instruction, the Instructional Technology Center, public radio station and the communications media technology degrees which include radio and television production" as the products and services of that college (Interview Transcripts, 1/4/93).

Organization Structure

The data that follow are based on the participant responses to the interview questions seven through thirteen. (See Appendix B)

Benefits. *What are the ways your unit benefits the institution both financially and in the use of scarce resources?* Respondents felt that their units benefit their colleges by providing alternative services to faculty and to those students who could otherwise not take a traditional on campus class. Millie added that some Middle College students

could not take courses if not for television, and this means more enrollment, which means more money for the college. Pat indicated his unit benefits Middle College in three ways:

> 1) Distance learning extends college courses to more students who would not be able to take courses on campus--2,600 this semester in live and prerecorded course work through different transmission systems. 2) Production facilities and multimedia production for software and hardware give the college more instructional tools to allow faculty to have more diverse and powerful ways to present materials and information. 3) There is the direct benefit financially because what we do is entrepreneurial in nature. (Interview Transcripts, 1/4/93)

Pat provided examples of how his unit benefits the institution: "The satellite uplink generates revenue as we act as subcontractor for business and industry and for news needs, and also video and media-based products are marketed to other colleges. The college can share educational resources with a greater number of people in a greater geographic area through these delivery systems." (Interview Transcripts, 1/4/93)

Tam indicated why Middle College uses fewer state dollars to educate one full-time student than either the kindergarten through twelfth grade sector or the four year colleges:

> Distance education provides more student contact hours for the instructional unit through the efficiency of scheduling courses and added student loads, which maintain a relatively high contact hour per faculty. (Interview Transcripts, 1/4/93)

Middle College, according to Ray, has an entrepreneurial spirit, and Mark indicated that the computer services unit "develops software and installs it in other community colleges

who pay for the installation and maintenance. It is helpful to have the expertise and provide the support for academic and administrative computing. This is a better use of our resources." (Interview Transcripts, 1/4/93)

When responding to this question, Bobbie indicated that the Instructional Technology Center benefits Middle College faculty in the following ways:

> The Center allows faculty the opportunity to create or investigate technology and tools for teaching. The centralized nature of our operation allows the pooling of resources and technology, and makes effective and efficient use of the Center's staff and expertise to help the teacher in using the technology in their courses. Faculty don't have time to sit down and figure it out, so our staff does it for them. (Interview Transcripts, 1/4/93)

Awareness and potential. *How does your unit increase faculty and administrator awareness of the technology systems, and, from your perspective, what is its potential for teaching and learning?* The respondents believe that the potential for teaching and learning is excellent, and that the college promotes awareness and provides support for the technology systems. Middle College accepts a leadership role with distance education and technology, and because of that, Pat noted:

> The culture promotes awareness. In general, the larger culture [North America] is rapidly changing because of advances in technology, as is the pace of societal change and technological change. Community colleges will need to anticipate the nature and needs of students who require skills, and will have to do more than react to change. It will require colleges to predict when and where services are needed in cost-effective, efficient services. Technology can provide the tools to deliver critical services in a timely fashion. We

are beginning to see the potential for learning.
The critical demand of education is to serve it in
a timely and convenient manner. The larger array
of delivery systems will provide access on demand
and will occur wherever students are, and the
technology will match up to the learning styles.
(Interview Transcripts, 1/4/93)

Tam said that planning and instructional advisory

committees, which recommend equipment, technology and systems,

have helped inform faculty and administrators at Middle

College. They complete needs analysis and offer half day

technology workshops. Tam estimated that the "possibilities

[with technology] are endless; we have only scratched the

surface and have so far to go, yet we have gone further than

most colleges." He noted that telecommunications makes the

college more accessible and "enables us to envision the role

of education in the world" (Interview Transcripts, 1/4/93).

Middle College has plans to reach Russia and will deliver live

instructional courses with interactive television to anywhere

in the world. There is financial support from national

sources for projects with industry and the farmers in the

state. Pat expressed the feeling that the primary effect of

technology is access to the learners who could not attend

college, but have earned degrees without coming to their

campus.

Tam: The biggest impact in the future is with new
ways of learning and access to information,
networks, vast amounts of information to enrich
learning. The new age of teaching will be the
biggest service to the learner. (Interview
Transcripts, 1/4/93)

Bobbie shared her perspective as the program director of

the Instructional Technology Center at Middle College:

> A bulletin goes out when something new comes along.
> We formed an advisory committee made up of one
> instructor from each of the instructional
> departments to survey and review the needs. The
> technology changes how the teacher teaches;
> computerized classes solved the learning process
> because of immediate feedback, which eliminates the
> long, tedious process of students writing, teachers
> correcting, students rewriting and faculty re-
> editing. The technology is more efficient and
> effective and makes learners more responsible for
> their own learning, which we now recognize as
> lifelong learning. Faculty feel more like a mentor
> and a coach, which they are comfortable with.
> (Interview Transcripts, 1/4/93)

Millie, who is a faculty member at Middle College, said there are technology days where anyone can look at and try the systems. She added that departments encourage faculty to try new things and that faculty can get help with their ideas. She felt that the technology saves driving time for both faculty and students, who like the options, and that the potential for learning is excellent:

> The interactive classes are the same as my on
> campus classes; the interactive classes do as well
> and sometimes better than my on campus classes. I
> would say the outcomes are very comparable to on
> campus; in fact, people are more motivated and more
> likely to show up for an interactive class than an
> on campus class. (Interview Transcripts, 1/26/93)

Evolution and development. *As you know it, how did the organization structure for the distance education and technology units evolve, and what is the background for its development?* Four of the six respondents credited the college president as the major reason for the development of technology and change in the organization structure. Pat suggested that their founding president "had the idea for

distance education and was effective in communicating that to the board, and the development of telecommunications became the top priority of the board. When telecommunications was first developing, the president made sure that the responsibility was spread throughout the college, so it was a shared program." (Interview Transcripts, 1/4/93)

Tam was one of several respondents who noted Middle College has experienced many organizational changes over the years. He said:

> For twenty five years there were deans and vice presidents, but one year ago the college eliminated the dean layer. Telecommunications and off-campus operations have had numerous organizational changes. So many changes are based on people in a position, their availability, talents and skills. (Interview Transcripts, 1/4/93)

Ray added that Middle College once had the director of the library accountable to his technology unit and that Pat was responsible directly to the president. Ray indicated that these changes were made by the president. Millie concurred with this assessment and indicated that their staff was committed to technology and, therefore, there was support for it. Mark added that the president's philosophy was to take into consideration the personnel when designing the organization structure. Bobbie indicated that when Middle College remodeled, they found space for computing, because their administration supports experimentation.

Effectiveness and impact. *How do you measure the effectiveness of the organization structure for ease of implementation and use by customers, its cost-effectiveness,*

and the impact on teaching and learning? Respondents remarked
that their institution uses feedback from questionnaires,
interviews, evaluations and surveys with both staff and
students. This information is used for planning and goal-
setting. The following is how Tam expressed his feelings
about Middle College:

> We gauge faculty comments through surveys and
> interviews with colleagues. We keep careful
> records of use and problems in the computer center
> with an eye on keeping up with demand. We measure
> the effectiveness by the feedback from our
> customers. The ideal would be to put ourselves
> against other benchmarks to see how the amount of
> resources devoted to technology and television
> instruction rates. We need more advanced planning
> and organizing with materials and to develop good
> habits for classroom instruction, which will
> benefit students. Performance is better with
> telecommunications than on campus, and we find that
> students with television do superior performances
> over those in the traditional classroom. Our
> studies show benefits for students and teachers and
> think we will find the same thing with computer
> aided learning and computer writing lab. The
> structure works well. We offered 80-85 courses
> through telecommunications instruction last year
> and because this area is under my responsibility,
> it is easier to manage and helps with the
> credibility of academic programs. We are planning
> to add another 20-25 sections. (Interview
> Transcripts, 1/4/93)

Ray felt that Middle College lacked the human resources
needed to put more systems into place, and that the
organization structure is not as important as the person in
charge. On the other hand, Bobbie felt that their
organization structure enables their unit to get more
equipment, and that visuals have an effective impact on
teaching and learning. Millie also found that the
organization breaks down barriers:

> Distance education is cost-effective because it costs more to put teachers out face-to-face on site, but we often cannot get enough students in one site to justify teachers; distance education overcomes this problem. Outcomes are good; the attrition rate is lower than on campus. Some teachers think technology will replace them, so this issue may contribute to difficulty in setting up these kinds of courses. (Interview Transcripts, 1/26/93)

Strengths and weaknesses. *What do you see as the strengths and weaknesses of the organization structure?* Pat was convinced that Middle College's strength was in placing the support for the use of the technology and distance education system campus-wide to avoid turf battles. Conversely, he felt that their weaknesses are that they use too many committees and trying to build consensus, which slows the process down to a point at which they cannot respond quickly. Bobbie said they are willing to try new things, but bureaucracy at Middle College makes some things difficult to happen. She indicated that any major change in curriculum has to be approved by everyone, and when this procedure goes up the ladder, it creates problems with grants and projects. She ended with the comment: "Education is conservative and avoids change, where competitive business responds to changes." (Interview Transcripts, 1/4/93)

The organization structure at this college appears to be flattening. Tam noted:

> There has been an effort to flatten the organization structure to shorten the time to respond to needs. We have allowed individuals with talent to charge off in new directions, and the technology has enabled us to do more with less. There is more consistency and strengths are in our

policies and procedures. Our weaknesses are that we have grown so much that the staff is worked hard, and we are restricted in adding new personnel. Technology is the reason for growth. (Interview Transcripts, 1/4/93)

Mark made a reference to the low amount of turnover with personnel in that unit, which provides Middle College with people who have considerable experience. He added: "We also have support from the top, but there is frustration for not having the resources for faculty and staff to increase productivity." (Interview Transcripts, 1/4/93)

Future. *What do you see in the future for the technology systems and the organization structure for the distance education and technology units?* The following are comments from respondents from this college:

Pat: The nature of the mission will expand greatly in the near future because of the technology and social changes. We will respond through the use of educational technology, where the mission of the college and technology will have the same mission. It will be necessary to build faculty and administrative experts in educational technology as in other aspects of educational services. (Interview Transcripts, 1/4/93)

Tam: There will be tremendous growth in telecommunications, greater utilization of uplinking and hybrid systems. We have just scratched the surface for the use of computers, where applications with technology will grow. The organization structure will continue to evolve, but with no major changes in the near future. When someone retires or leaves, the first thought is replacement, the second thought is how can we replace and should we restructure. (Interview Transcripts, 1/4/93)

Ray felt that the use of technology will increase, which will require Middle College to add 50% more classes and hire more personnel. He said that the library will again become a

part of the telecommunications area in the near future.
Bobbie also felt that college's technology areas will continue
to grow, and that their organizational structure is flattening
out. Bobbie remarked:

> We just went through budget cuts and offered early
> retirements. We eliminated the deans' level, so
> assistant deans report to the vice president."
> (Interview Transcripts, 1/4/93)

Recommendations. *What recommendations would you make for
other institutions in organizing their distance education and
technology units?* Pat articulated the need to be proficient
with technology, that there must be support for faculty to use
these tools, and that the responsibility for the technology
must be distributed so it is not viewed as one person's or
department's program.

Tam felt that Middle College must be customer driven, and
that the structure should be a blend between the driver with
the vision who can take instruction to the cutting edge and
those real needs of instruction.

Ray was concerned about having the number and proper
staff in place to do all jobs with the technology systems, as
he felt many colleges try to do it with half the staff not
qualified in the areas they are working.

Both Millie and Bobbie believed that colleges should
survey the faculty to see what they use and how they use it.
Bobbie made the following recommendations:

> Look at goals to see if the technology can help
> achieve those goals. You need one person in the
> institution to find out what is going on, what is
> needed, and what new is going on elsewhere. Do

> analysis and set good goals; technology is not the goal, but should help achieve the goal. Education should follow business and industry examples who do internships, like in Europe. (Interview Transcripts, 1/4/93)

Mark believed that colleges should search for ways to share resources both within the college and between other colleges:

> Compatibility with the technology lends itself to connectivity which provides better utilization of resources and facilitates teaching and learning. Do not take the lowest price. Share one pool of people to support these tools; know what department A is doing so it meshes with department B. Form a technology committee with faculty who provide guidance in the planning and acquisition of computers. Consolidate equipment into a neutral lab; check out computers for faculty and staff. Support from the CEO is important, because whatever is decided he will support. (Interview Transcripts, 1/4/93)

Chuck was supportive of putting all units under one umbrella for control. He felt that there should be a long term planning process, a clear vision of where to go and how to get there, what the costs are and what needs to be implemented. (Interview Transcripts, 1/4/93)

North College

Respondents' Profiles

Five participants from North College were interviewed. Their pseudonyms, titles and responses to the first interview question, which is a two part question, are presented in this section. (See Appendix A for Respondents' Job Titles, Appendix B for Interview Questions and Appendix F for Respondents' Degrees and Work Experience)

What are the types of activities you do in your job

and why do you do these activities?

North College Respondents' Pseudonyms and Titles

Dale: Dean of academic alternatives

Jeff: Executive director of computing and information
            systems

Ken: Director of instructional design

Chuck: Lead academic analyst, distributed computing

Adam: Distance education faculty member

At North College, Chuck works in the Computer Center, is responsible for the technical support and is a full-time consultant to faculty. Ken indicated he manages people, projects and information. Adam teaches full-time and loves what he is doing. Dale attempts "to facilitate programs and deal with finances and projects" (Interview Transcripts, 1/25/93). Jeff said:

> I manage the whole computer operation by giving reliable support to the users and keeping the mainframes running. My job is to integrate technology into academic instruction, support the faculty, manage 40 full-time and 35 part-time staff. I work on strategic planning for computers and information technology. (Interview Transcripts, 1/25/93)

Respondents indicated that strategic planning is practiced at this college. The administrators, Dale and Jeff, as well as Chuck, the lead academic analyst for distributed computing, felt that consolidation of the computer services unit was a good move for the college.

What is your professional and educational

background? (See Appendix F)

Dale, the dean of academic alternatives, provided details

of his professional and educational background:

> I first started in student services and crossed
> over to administration. I was an associate dean,
> then a dean, and before that a director of testing,
> a counselor, and a secondary school teacher. My
> bachelors is in applied science and technology. My
> masters is in guidance and counseling, and I am
> working on a doctorate in adult and continuing
> education. (Interview Transcripts, 1/25/93)

Dale arranged interviews with several staff members, but

because of scheduling problems, some interviews were canceled

or delayed, and substitutions were made during the site visit.

Jeff, the executive director of computing and information

systems, did not respond to this question. Ken, who is the

director of instructional design, holds the bachelors and the

masters in history. Dale had arranged for an interview with

a faculty member, but that person was not in when I arrived at

the Learning Center. An interview was arranged with Adam, a

faculty member who was waiting for telecourse students to come

into the Center for help. Adam had been in the Air Force for

twenty years, received the bachelors in history and language,

and the masters in history, and is working on the doctorate.

A technical staff member, whose title is computer lab manager,

was scheduled for an interview. However, when I arrived at

the Computer Center, this person was not available for either

the interview or a tour of the computer facility, which is an

impressive building that was completed two years ago. It was

disappointing there might not be a tour of the facility that

was talked about and written about nationwide. As I started

to leave the Computer Center, there was a young man who asked a series of questions:

> Where are you from? Why are you visiting North College? What do you need? Is there anything I can help you with? (Site Visit, Informal Conversation, 1/25/93)

He listened intently to my responses to his questions, then he introduced himself as Chuck, the lead technician for the Computer Center, and provided the following information:

> I would be happy to give you a tour of the facility and answer the interview questions. I helped design the Computer Center and have experience in design, networking and interactive media. I have a masters in computer-based education and a bachelors in vocational education. (Interview Transcripts, 1/25/93)

There were no respondents with the doctorate, but Dale has completed all of the requirements except the dissertation for the doctorate in adult and continuing education, and Adam is working on the doctorate. Chuck and Ken have the masters.

College Profile

Background information on North College. This college has created a distinctive role in the nation, and has captured the esteem of many community colleges in the United States because of its centralized computer lab and structure, and full-time faculty dedicated to the alternative academic system. My first introduction to this college was three years ago when Ken, their director of instructional design, gave a presentation at a statewide conference held at my institution. When I was seeking to identify colleges to include in this

study, North College was suggested several times by different sources. One source was from the League for Innovation who said, "They are not a League school, but they are leaders in the computer field, telecommunications and distance education. You have to talk with them." The North College district encompasses 360 square miles and includes most of one county and portions of two other counties, all with large populations. Enrollment is over 36,000 students per quarter who range in age from 16 to 100 years with the average age at 31.2. Documents indicate this college believes in serving its students through different delivery systems and off-campus learning centers. The planning documents are impressive, and the "Institutional Plan for Computing" is comprehensive and covers short term (two years) and long term (five years) planning. Other documents include an institutional portrait which was organized to answer the most frequently asked questions about the institution. It includes a planning model which does a needs survey and a scan of the institutions's mission, vision, plans and goals.

Geographic orientation. North College is located in a suburban area near one of America's largest commuter cities and the student body is attracted mainly from the county in which it is located.

Service area population. North College's service area population is 900,000.

Staff size. North College has 2,518 full- and part-time faculty and staff.

Enrollment. Credit enrollment is 36,000; noncredit enrollment is 75,000; and distance education enrollment is more than 5,000.

Off-campus centers. North College, which opened in 1967, serves primarily one county, but overlaps into small portions of two nearby counties. The college has more than 80 satellite centers and three in-district regional centers. It should be noted that the total number of off-campus sites varies each semester because most of these sites are not college-owned and are used on as "as needed" basis, therefore, the above figures represent an accurate picture at only one point in time.

Customers. *Who are your customers and where are they located?* The computer information systems administrator at North College indicates their customers are those faculty and staff members who use computers at the college and those in other colleges in three states who purchase and use their software programs. Dale, the dean of academic alternatives who oversees distance education, identifies their customers as ranging from traditional age students to senior citizens:

> These students report that they like the pace of distance education courses and the opportunity to take classes at the various sites because of their time constraints, life style demands and learning needs. Most students reside in the county in which the college is located, although the college serves small sections of two adjoining counties. (Interview Transcripts, 1/25/93)

Jeff, the computer information services administrator remarked that their customers are 40,000 full-time and part-

time students, faculty and staff. Ken, the director of
instructional design who is the college's creative staff
member, indicated the customers are primarily faculty, but
business and others outside the institution are also
customers.

Sources of funding. *What are all of the sources of
funding for the unit and the percentage of total funding which
comes from the college's general fund?* The respondents
indicated that their units are funded through their college's
general operating fund. They have received grants for
purchasing equipment and systems. Dale indicated that North
College "looks at needs and projections, and where we are
underfunded, we write for grants" (Interview Transcripts,
1/25/93). The administrators all reported that their units
are not considered profit centers, but in those instances in
which contracts and fees are sources of revenue, these
revenues usually are retained by the unit rather than going
directly to the general fund. North College's total operating
budget is $55.5 million, and the information systems unit
receives $3.9 million, which is 7% of this sum.

Mission statement. *Does your unit operate with a mission
statement and a strategic plan?* The administrators, the lead
academic analyst and the faculty member indicate their unit's
mission is compatible and in keeping with instruction, which
is the college's primary mission, and all strategic plans
revolve around this mission.

Technology systems. *What are the technology systems in*

your unit? North College has state-of-the art audiovisual, audio and video production and editing equipment, and advanced telecommunications systems. It operates a public radio station, microwave and instruction television fixed services, and satellite downlinks. It has installed a fiber optic backbone (infrastructure) on campus for voice, video and data transmission, closed circuit and cable television systems, access to public television and commercial cable stations. It has CD-ROM, laser, interactive videodiscs, computer graphics, computer delivered instruction, voice mail, interactive television systems, multimedia and hypermedia. North College is the only one of the three colleges using compressed video. Adam indicated that North College plans to use computers for testing. Jeff said:

> North College is installing a cabling system to support a campus-wide telecommunications systems for all three modes (voice, video and data) to every office and classroom. This system will connect all regional centers and my office will manage this system. (Interview Transcripts, 1/25/93)

Products and services. *What are the products and services provided by your unit?* North College respondents indicate their products are credit and noncredit programs and courses, and their services are public television, flexible learning and telecourses. Dale offered "television, flexible learning, and training credit and noncredit courses" as products and services of that college (Interview Transcripts, 1/25/93).

Organization Structure

The data that follow are based on the participant responses to the interview questions seven through thirteen. (See Appendix B) Respondents were asked a series of interview questions to assist the researcher in formulating strategies for developing organization structures for effective practice.

Benefits. *What are the ways your unit benefits the institution both financially and in the use of scarce resources?* Adam indicated that North College draws more students because of the alternatives provided by the institution. Dale was descriptive in answering this question:

> My division is the third largest of the nine divisions in the college. We serve 8,500 students and 5,000 of these are distance education students. We serve students in ways that meet their time and place needs. It provides an alternative for the community that is a sound, viable program that generates significant enrollment. The alternative delivery saves space and does not require building more buildings, and this will help the college as we expect growth of 36,000 to 55,000 more students by the year 2015. (Interview Transcripts, 1/25/93)

Revenue is generated by most of the technology units. Ken's unit generates revenue through telecourses, tape rental, videoconferences and marketing courses. The centralized nature of operations was mentioned by Chuck and Jeff at North College. (Interview Transcripts, 1/25/93):

> Chuck: All computing is consolidated and shared across disciplines. We provide labs in one building for everyone. We can manage our 300 computers for students and all the PCs [personal computers] on campus with less manpower, which includes one full-time person and three lab aids. We have saved $100,000 through the CAD lab.
>
> Jeff: We have seen an increase in production

because of applications and support for the hardware. We have over 1,600 computers available for faculty and in our labs. We operate a help desk from 8:00 a.m. - 5:00 p.m. every day. We got rid of overlap to a critical situation [equipment and service] and offer over twenty-one different short courses for faculty and staff in use of computer applications and programs.

Awareness and potential. *How does your unit increase faculty and administrator awareness of the technology systems, and, from your perspective, what is its potential for teaching and learning?* Chuck indicated that all new faculty at North College have a full afternoon orientation in the Computer Center, and training is on-going on a quarterly basis. Faculty do not need to know technology, they just need an idea. He said that while computers can now compete with television and will replace pen and paper, teachers will always be an important part of the process.

North College communicates information to the staff through a newsletter. In addition, the college has established planning committees in every division. According to Jeff:

> The potential is unlimited with technology, and distance learning can deliver to the home and on site, and multimedia has a higher learning curve, students learn more quickly, and we can offer training courses. We have self-paced courses, individual work stations and video servers for lectures. We have to continuously evolve because everything below us is evolving. We are looking at a mobile van to take our products and services to businesses. (Interview Transcripts, 1/25/93)

Dale indicated that North also offers seminars and in-service programs as a part of their alternative programs, and that distance education is "a sign of current times and the

wave of the future. Our customers are more comfortable with technology; their lifestyle needs demand more flexibility; and learning style is expecting more of us as teachers and facilitators. Technology will help us do it [teaching] better."

Adam, the distance education faculty member with the alternative program, said that there are faculty enhancement programs on two levels: orientation for new faculty; and for those at the college more than a year, there are professional development opportunities. According to this respondent, there are "Spread the Word" sheets from deans and other department, and he, too, felt that the potential with technology is good for a significant number of students.

Evolution and development. *As you know it, how did the organization structure for the distance education and technology units evolve, and what is the background for its development?* Chuck indicated that seven years ago, North College was very traditional, but Jeff consolidated all computer areas, not for the purpose of control but to maintain continuity. The college saved $100,000 on maintenance because of the way in which they coordinated their campus-wide computing efforts. Jeff said:

> I made the recommendation in 1985 [to consolidate the computer services areas] and since then the department has evolved based on needs. I didn't follow an institutional model; I read, attended conferences and looked at the services and support needed. (Interview Transcripts, 1/25/93)

As Dale noted, in 1979, their new president initiated a

study on the existing structure. He looked at new ways to do business, which resulted in two campuses: the central campus which is traditional; and the open campus for three programs, which include off-campus noncredit, nontraditional programs, and the business and professional institute.

Effectiveness and impact. *How do you measure the effectiveness of the organization structure for ease of implementation and use by customers, its cost-effectiveness, and the impact on teaching and learning?* Chuck responded that North College uses feedback and interviews with students and staff for planning purposes, and there is a formal procedure for evaluating the Computer Center every year. Jake related that Lake College also uses feedback from faculty and students, and that the learning for distance education students is comparable to on campus.

Jeff indicated that users rate the unit and the personnel in the unit set the goals. They survey students, have suggestion boxes and prioritize projects based on need. Adam noted that North College evaluates telecourses like any other course.

Strengths and weaknesses. *What do you see as the strengths and weaknesses of the organization structure?* Chuck felt that at North College, because all computer operations are responsible to a single administrator, there is not competition for the same funds and the unit is better organized to respond to issues. There was concern, however, that even though the organization structure is good, that

North has personnel problems, and this was thought to occur because of those individuals in charge of areas who have neither professional nor educational background in their areas.

Jeff indicated that North College's strengths are a commitment from the president and the institution from the top, and on down, where people are involved and there is support for the systems and the staff.

Dale, who is the dean of academic alternatives at North College, said specifically:

> The first major strength is that these projects are given the same stature as any other academic program, and the dean has the authority. The associate dean has more autonomy and authority than the other associate deans on other campuses, because he reports directly to the provost and on traditional campuses there is at least one tier in between. (Interview Transcripts, 1/25/93)

Dale felt that the weaknesses were due to the nature of the organization structure with the open campus and the central campus, which prevented some things from getting communicated as quickly as needed. Adam, who is accountable to Dale, reported that "I have a boss I can go to with my problems and he's been told he is the only boss." (Interview Transcripts, 1/25/93)

Future. *What do you see in the future for the technology systems and the organization structure for the distance education and technology units?* Ken indicated there will be intelligent wiring systems that will accept any electronic technology. Jeff offered his perspective of the organization

and management structure at that institution and mentioned a vice president of technology:

> There will be a vice president for information technology involved at the cabinet level. There will be a melding of information technology, such as library, telecommunications, academic and institutional services, telephony, printing, multimedia and wiring. (Interview Transcripts, 1/25/93)

Dale talked about what his institution will be doing in the next two years with comprehensive planning, updating their phone service, interactive video, fiber spine and networks. He added that North College is planning to be available to every home in their district to connect students and instructors.

Chuck indicated that North College "will double the number of computers in five years, and operate in a graphical environment with Windows on the DOS side." He added:

> There will be networking for all computers; it will be easy to upgrade; there will be more faculty use of software; computers and communications will come together. It will change education; students will be computer literate. There will be no big change in structure; we need someone with institutional power. (Interview Transcripts, 1/25/93)

Recommendations. *What recommendations would you make for other institutions in organizing their distance education and technology units?* Institutional commitment from the board and the president on down was seen as important. Jeff felt that there should be a formal organization planning process, a technology committee, project teams and committed resources. Involvement at all levels serves to create a sense of ownership, and he added that a formal document defines

strategies and goals, and evaluates the project and helps the staff to carry through. Continual feedback is important; "inform people as to what's going on" (Interview Transcripts, 1/25/93).

Dale commented that whatever is done must fit the organizational culture:

> To make it work, distance education has to have the same stature as on campus and the same level of authority as to who is in charge of classroom instruction; otherwise, it is a stepchild. The class retention and attrition rates are identical to on campus. The telecommunications plan will change the structure somewhat. (Interview Transcripts, 1/25/93)

Lake College

Respondents' Profiles

Four participants from Lake College were interviewed. Their pseudonyms, titles and responses to the first interview question, which is a two-part question, are presented in this section. (See Appendix A for Respondents' Job Titles, Appendix B for Interview Questions and Appendix F for Respondents' Degrees and Work Experiences)

What are the types of activities you do in your job and why do you do these activities?

Lake College Respondents' Pseudonyms and Titles

Jim: Assistant vice president of educational and technical resources

Darren: Assistant vice president of technology systems

Jake: District director of the telecourse office

Katy: Faculty member teaching on campus and distance

education health education courses

The faculty member interviewed teaches health education

courses and loves teaching.   Darren provides planning and

management of technology resources in his unit.   Jake works

with division heads and faculty to determine which telecourses

are to be offered, negotiates with other colleges for air time

and licensing.   This college schedules courses one year in

advance.   Jim described his responsibilities as follows:

> Jim: I   have   district-wide   management
> responsibility for my unit, and develop policy and
> procedures.   I handle major issues, but stay out of
> day-to-day operations.   I develop long range
> planning for technology and cross over into all
> major technology systems used by the college.   We
> have committees, which can fall by the wayside and
> are   revived   when   needed,   that   do   long-range
> planning and special projects.   There is one
> committee where every major technology and
> operational   decision   must   pass   through   this
> committee. (Interview Transcripts, 2/5/93)

Respondents noted that Lake College uses strategic

planning and establishes committees that provide planning and

evaluation of the technology.   There are committees with the

authority   to   oversee   technology   policies,   procedures,

purchases and other decisions pertaining to the operations of

the technology.

What   is   your   professional   and   educational

background?   (See Appendix F)

Selected staff members were unavailable for interviews at

the time of the site visit because they were involved with

projects and productions with imminent deadlines.   I had met

most of the respondents on previous trips to their college, and at the time of the site visit for the study I talked with the administrators informally and followed some of them around as they performed their duties that day. After the site visit, I arranged to do telephone interviews. Those interviewed include Jim, assistant vice president of educational and technical resources, who has the bachelor of arts in history and the masters in elementary education, and Jake, director of telecourses. Jim and Jake described their professional and educational background:

> Jim: I designed elementary and junior high media centers, was a consultant for media development, and worked in a grants and planning office. I have a bachelor of arts degree in history, a masters in elementary education with emphasis in media centers. (Interview Transcripts, 2/5/93)

> Jake: I have worked in health care in hospitals. I am a licensed psychologist with a masters in higher education and educational psychology, and an MBA. (Interview Transcripts, 2/9/93)

Darren, assistant vice president of technology systems, has worked in data processing for thirty years and has the bachelors in management. Katy, a telecourse faculty member, has the masters and has completed all but the dissertation for the doctorate in health education.

College Profile

Background information on Lake College. Lake College's document, "Responding to the Challenge: The First Twenty-five Years," is its historical account of the college's first twenty-five years as a community college. It highlights their

distance education programs and technology, and their proposed future with telecommunications and outreach. This document chronicles American education, which was influenced by principles dating back to Thomas Jefferson, who advocated universal education for the public. Lake College is committed to universal education and training in a diverse environment and has taken its mission to serve its district seriously. Plans include the continuance and expansion of technology to provide access and excellence for their products and services within and beyond their physical geographic boundaries. For twenty-five years, Lake College and the community college at which I am employed have been very closely tied through projects and national organizations. This closeness carries over in cooperative roles of friendship and mentoring. My first visit to Lake College's central campus occurred four years ago when eight community colleges from various states met at Lake College's new Technology Center to undertake a huge telecommunications and distance education project. I was impressed with how easy it was to find the main campus, which is located in a large metropolitan area. It is a short distance from the interstate, easily accessible to its customers.

Geographic orientation. Lake College is situated in a densely populated county in a large metropolitan area served by three district campuses and several off-campus centers.

Service area population. Lake College's service area population is 1,500,000.

Staff size. Lake College has 1,050 full and part-time faculty and staff.

Enrollment. Credit enrollment is 25,000; non-credit enrollment is 55,000; and distance education enrollment is more than 4,000.

Off-campus centers. Lake College opened in 1963, serves a large metropolitan community, operates three district campuses, and has 10 off-campus centers. It should be noted that the total number of off-campus sites varies each semester because most of these sites are not college-owned and are used on an "as needed" basis, therefore, the above figures represent an accurate picture at only one point in time.

Customers. *Who are your customers and where are they located?* Jim, the assistant vice president of educational and technical resources, identifies their customers as faculty, administrators, staff and students. They reach out to three district campuses and 45 off-campus centers. Jim was familiar with all of the distance education, telecommunications and alternative delivery systems, because all of these departments had been in his unit, until recently, when the telecourse office was placed with the dean of continuing and professional education. Jim identified the customers as:

> Traditional and nontraditional students; half are
> enrolled in telecourses and 85% are female; [they]
> take distance education courses because of job,
> family, scheduling and transportation problems.
> (Interview Transcripts, 2/5/93)

Jake, the Lake College telecourse administrator, had been the director only a short time when he was interviewed for

this study, but concurred with Jim's assessment of telecourse students. Jim also indicated that instructors and academic administrators are customers of his department because he oversees instructional support. The computer information services program serves the faculty and staff and Darren, the administrator for this area, refers to them as customers.

Sources of funding. *What are all of the sources of funding for the unit and the percentage of total funding which comes from the college's general fund?* The respondents indicated that their units are funded through their college's general operating fund. The college has received grants for purchasing equipment and systems. While the administrators all reported that their units are not considered profit centers, in those instances in which contracts and fees are sources of revenue, these revenues usually are retained by the unit rather than going directly to the general fund. Jim indicated that "small amounts of money come back to my unit from generated income, mostly from small contracts for production." (Interview Transcripts, 2/5/93) The college's total operating budget is $121 million, and distance education, media and telecommunications receive $3.7 million.

Mission statement. *Does your unit operate with a mission statement and a strategic plan?* The administrators indicate their unit's mission is compatible and in keeping with instruction, which is the college's primary mission, and all strategic plans revolve around this mission. Katy, the faculty member, indicates that her "unit has recently

completed both a mission statement and a strategic plan, and these are separate from, but compatible with, the college's mission and plan." (Interview Transcripts, 2/8/93)

Technology systems. *What are the technology systems in your unit?* The college has state-the-art audiovisual, audio and video production and editing equipment, and advanced telecommunications systems. It operates a public radio station, microwave and instructional television fixed services, and satellite downlinks. It has a fiber optic backbone (infrastructure) on campus for voice, video and data transmission, closed circuit and cable television systems, access to public television and commercial cable stations. It has CD-ROM, laser, interactive videodiscs, computer graphics, computer delivered instruction, voice mail, interactive television systems, multimedia and hypermedia. Katy, the faculty member from Lake College, feels "comfortable with the technology" and uses computers, filmstrips, films, video and audio tapes, telecourses, multimedia and two-way interactive television in her classes. (Interview Transcripts, 2/8/93) Jim added that this college has "two television production studios with full control room and edit suites, and portable studios to generate programs from the field for remote programming." (Interview Transcripts, 2/8/93)

Products and services. *What are the products and services provided by your unit?* Those responding from Lake College report that their products are software development, health care courses, and their services are distance education

and training. Jim noted that his areas "supply technical support to make programs happen, get information out about teleconferences, and production comes from someone with an idea or a need." (Interview Transcripts, 2/5/93)

Organization Structures

The data that follow are based on the participant responses to the interview questions seven through thirteen. (See Appendix B) Respondents were asked a series of interview questions to assist the researcher in formulating strategies for developing organization structures for effective practice.

Benefits. *What are the ways your unit benefits the institution both financially and in the use of scarce resources?* While Jim's unit at Lake College is "set up to be a service unit for instructional purposes for faculty, students, staff and community, it does generate small amounts of money through services to the community, mostly from productions, namely teleconferences for business, for which we charge a fee" (Interview Transcripts, 2/5/93). Jake indicated that telecourses generated tuition through the 4,000 students enrolled last year at Lake College.

Awareness and potential. *How does your unit increase faculty and administrator awareness of the technology systems, and, from your perspective, what is its potential for teaching and learning?* Jim noted that they increase awareness with brochures for faculty and students and through their librarians and workshops. He felt that the technology

increases the ability to learn by providing multiple ways to learn; it gives students more options and makes it more real and interesting.

As the assistant vice president of technology systems at Lake College, Darren had these comments:

> Technology will completely change how education is delivered in the next five to fifteen years. The role of faculty in a technologically rich environment, especially in labs, will be technical advisor to students. Students want help with problem solving and to interact with other systems, and they want someone to help them with this process. Technology allows the student to go over the content a hundred times and doesn't yell at him. (Interview Transcripts, 2/9/93)

Jake indicated that telephone calls, memos, personal visits, the telecourse committee and human relations create awareness, and that there is an undetermined potential with the technology.

Evolution and development. *As you know it, how did the organization structure for the distance education and technology units evolve, and what is the background for its development?* Lake College grew similarly to North College. According to Jim:

> The college started as a single campus and grew to three campuses. Initially, technology and creative services were one unit, the libraries on all three campuses were a single operation, as was the learning resources center. The decision in 1980 was to combine the library and the learning resources center under single administrative leadership, and to combine under single coordination with technology and creative units. These decisions grew out of the need to get more economy of staff and bridge the gap between faculty and turning their ideas into products. (Interview Transcripts, 2/5/93)

Darren indicated the structure at Lake College just changed recently in which the telephone system, computing, office automation and telecommunications, which were the responsibility of various administrators, are now consolidated under one vice president, the vice president of telecommunications and educational resources.

Katy commented that about every five years Lake College reorganizes, because new presidents change things around and people power play for influence. (Fieldnote Transcripts, 2/8/93)

Effectiveness and impact. *How do you measure the effectiveness of the organization structure for ease of implementation and use by customers, its cost-effectiveness, and the impact on teaching and learning?* Respondents noted that their college uses feedback from questionnaires, interviews with students and faculty, evaluations and surveys with staff and students, and that this information is used for planning and goal-setting. Jim added that surveys are done every quarter, and the college just completed an intensive self-study for the North Central Association. Jim further noted that there was a revision of the official college plan, for which they looked at areas that needed to expand, such as the library, media and technology services. He felt that the revised organization structure makes it easier for those doing the job to reach him for help.

Strengths and weaknesses. *What do you see as the strengths and weaknesses of the organization structure?*

According to Jim at Lake College, they have a group of well trained, dedicated, capable people with a strong technology base, and support from faculty and administrators. Jim indicated that their weaknesses were in not having enough staff and getting everyone to agree on an issue is difficult.

Darren believed that Lake College's strengths are their centralization of technology units, technology council, ability to deal with projects, and the recognition that they are accessible to the end user. One drawback, according to Darren, is that people do not understand the impact of the technology on the instructional delivery systems.

Jake felt that Lake College has a great foundation because of their people and programs. He felt that their weakness was that the telecourse office had no separate budget until this past year when he was appointed to the position of district director of the telecourse office and this position was made responsible to the dean of continuing and professional education. On the other hand, Katy thought that Lake College has no strengths, and therefore, she reasoned that was why their structure keeps changing. She felt that faculty, division chairmen and students have little or no influence, because the directions only come from the top and then move to the bottom.

Future. *What do you see in the future for the technology systems and the organization structure for the distance education and technology units?* Jim, Darren, and Jake said that Lake College would be using technology to avoid

duplication and to increase instructional opportunities and improve instruction:

> Jim: Our staff is 20% smaller than ten years ago, but we may start to grow in certain areas. There will be consolidation in areas that overlap. As people retire, reporting lines will change. (Interview Transcripts, 2/5/93)

> Darren: Consolidation of the reporting structure under a vice president of technology was the right direction because coordination is a problem otherwise. (Interview Transcripts, 2/9/93)

> Jake: The institution will have to look at changing the structure to deal with the different technology systems. (Interview Transcripts, 2/9/93)

Respondents mentioned that areas would consolidate and that the organization structure is flattening. Respondents expressed their belief that there would be a vice president of technology. Jim indicated that the technology needs someone in charge with institutionally invested authority. According to Katy, there is a strong commitment to technology and delivering education with it, and at Lake College, they are bringing total quality management concepts into education and administration. Respondents indicated that the technology systems will continue to experience growth and be an important part of the institution. The fact that the organization structure was changed many times in the past was noted by several respondents in previous responses to other interview questions, and it was noted again in the responses to this question. Darren referred to a vice president of technology when he talked about the person to whom he is responsible, the vice president of telecommunications and educational

resources. Many respondents referred to the need for consolidation of the reporting structure under a single manager. Darren indicated that some decentralized support systems may be necessary, but that planning and management should be centralized to improve coordination.

Recommendations. *What recommendations would you make for other institutions in organizing their distance education and technology units?* Jim expressed his views: "Everything should be need based and program driven." He indicated that centralized structure works best because it provides a "single thrust and image, and works best for budget and planning." He believes that a commitment from the top executive staff is mandatory, and this support must include the president and vice presidents. He felt the structure should be responsive to what students and faculty want and need, and that committees are "important to give a mechanism for ideas to have a way to move through the system and make it easier for implementation to happen." (Interview Transcripts, 2/5/93)

Darren and Jake also believed in a centralized structure for Lake College:

> Darren: A vice president of technology brought six major functional areas together and provided a cohesive direction, a common ground. You need a strong central core with academic taking a leadership role with technology. (Interview Transcripts, 2/9/93)

> Jake: A centralized structure has advantages because everyone is in one location, one office, and one person is pulling together the diverse levels of responsibilities, especially in multiple disciplines. This one person can follow through in a specific area. (Interview Transcripts, 2/9/93)

Respondents appeared to favor centralized structures, and felt that technology needs leaders with vision, and that there must be commitment from all levels, but especially at the president's level. Others indicated the need for staff with the proper credentials. Long term planning and feedback were important to the respondents, as was the need for a council to oversee the technology issues.

Part II: Summary of the Findings

The data presented in this section are organized and summarized around the four research questions as follows:

* organization of the technology units

* benefits and potential for growth and development

* critical issues

* suggested strategies for innovation and effectiveness

Organization of the Technology Units

How do three selected community colleges in the United States, which are recognized nationally for their technology, distance education and organization structures, organize their distance education, telecommunications, media and information systems units?

The organization charts for the three colleges indicate that their four technology units are organized in somewhat traditional, hierarchical, line-and-staff structures. This information is listed in the following subsections under Middle, North and Lake Colleges.

Middle College

Three higher level administrators oversee the technology units; they are a vice president of instruction, a vice president of planning, development and international education and an executive director. (See Figure 1.)

Distance education. The director of telecommunications and instructional services is accountable to the dean of telecommunications; the dean is responsible to the vice president of instruction, who is accountable to the president.

Telecommunications. The director of telecommunications services, the manager of telecommunications operations, the manager of printing and graphics, the radio station manager and the program director of the Instructional Technology Center are responsible to the dean of telecommunications.

Media. The director of the library is accountable to the vice president of planning, development and international education, who is accountable to the president.

Information systems. The executive director of computer information systems is directly accountable to the president.

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  │     (TAM)        │   │     SYSTEMS*              │
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  │ DEAN, TELECOMMUNICATIONS*  VICE PRESIDENT           │
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PRESIDENT

VICE PRESIDENT INSTRUCTION* *(TAM)*

EXECUTIVE DIRECTOR COMPUTER INFORMATION SYSTEMS* *(MARK)*

DEAN, TELECOMMUNICATIONS* *(PAT)*

VICE PRESIDENT PLANNING AND DEVELOPMENT/ INTERNATIONAL EDUCATION

DIRECTOR TELECOMMUNICATIONS SERVICES* *(RAY)*

DIRECTOR LIBRARY

MANAGER TELECOMMUNICATIONS OPERATIONS

MANAGER PRINTING/GRAPHICS

MANAGER RADIO STATION

*Persons interviewed for the study.

DIRECTOR TELECOMMUNICATIONS/ INSTRUCTIONAL SERVICES

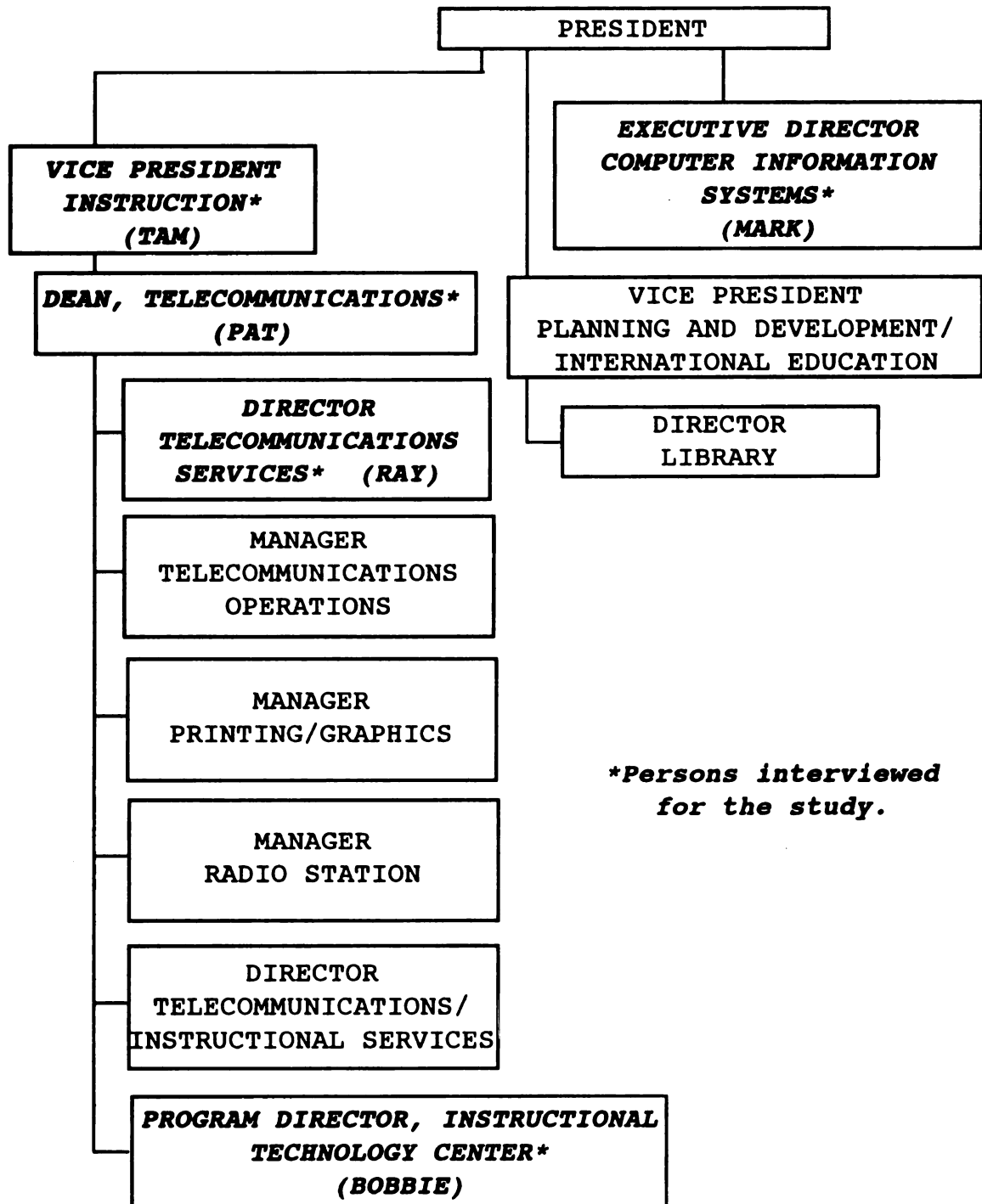**PROGRAM DIRECTOR, INSTRUCTIONAL TECHNOLOGY CENTER*** *(BOBBIE)*

Figure 1. Line - and - staff organization chart for the technology units at Middle College.

North College

Three higher level administrators oversee the technology units; they are a provost of the open campus, a vice president of planning and information and a provost of the central campus. (See Figure 2.)

<u>Distance education</u>. The director of telelearning, the director of flexible learning opportunities and the associate dean of instructional alternatives are directly responsible to a dean of academic alternatives; the dean is accountable to the provost of the open campus, who is responsible to the president.

<u>Telecommunications</u>. The manager of radio, the television services manager and the manager of audio services are responsible to the associate director of audio, radio and television services. The associate director is accountable to the director of instructional design, who is responsible to the dean of academic alternatives.

<u>Media</u>. The dean of the Learning Resources Center is responsible to the provost of the central campus, who is accountable to the president.

<u>Information systems</u>. The manager of distributed computing, the communications, systems and operations manager and the manager of the mainframe are accountable to the executive director of computing and information systems. The executive director is responsible to the vice president for planning and information, who is accountable to the president.

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DEAN OF ACADEMIC ALTERNATIVES* (DALE)

EXEC. DIR., COMPUTING & INFORMATION SYSTEMS* (JEFF)

DEAN, LRC

DIRECTOR OF INSTRUCTIONAL DESIGN* (KEN)

MANAGER, MAINFRAME

COORDINATOR WEEKEND COLLEGE

MANAGER, COMMUNICATIONS, SYSTEMS, OPERATIONS

ASSOCIATE DIRECTOR AUDIO, RADIO & TELEVISION SERVICES

MANAGER, DISTRIBUTED COMPUTING

ASSOCIATE DEAN INSTRUCTIONAL ALTERNATIVES

MANAGER AUDIO SERVICES

LEAD ACADEMIC ANALYST* (CHUCK)

ASSOCIATE DEAN ADULT BASIC ED

MANAGER TELEVISION SERVICES

DIRECTOR FLEXIBLE LEARNING OPPORTUNITIES

DIRECTOR TELELEARNING
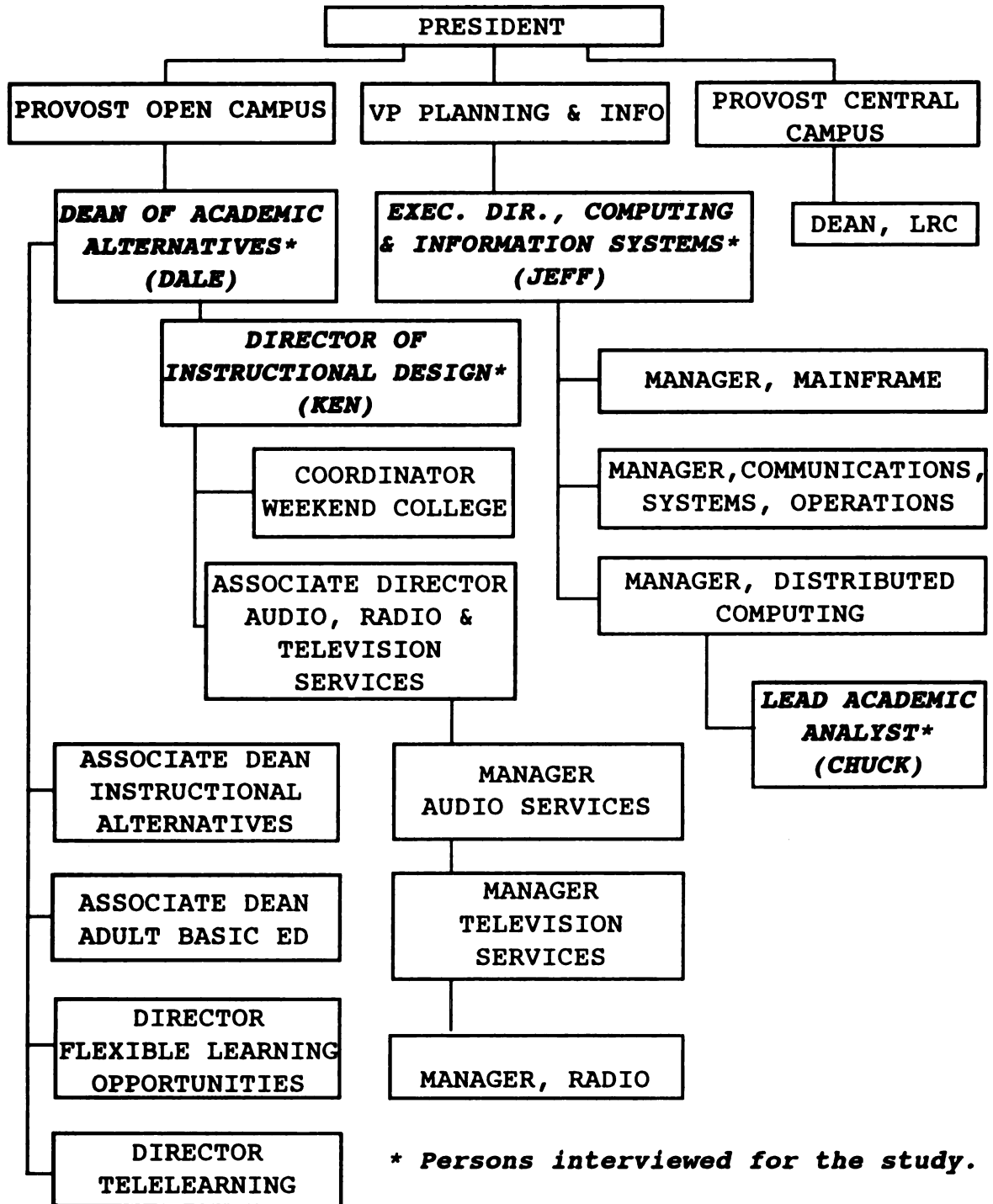
MANAGER, RADIO

* Persons interviewed for the study.

Figure 2. Line - and - staff organization chart for the technology units at North College.

Lake College

Two higher level administrators oversee the technology units: an executive vice president of academic and student affairs and a vice president of telecommunications and educational resources. (See Figure 3.)

Distance education. The director of the telecourse office is accountable to the dean of continuing and professional education, who is responsible to the provost of the metropolitan campus. The provost is responsible to the executive vice president for academic and student affairs, who is accountable to the president.

Telecommunications. The director of technical and creative services and the director of the television center are accountable to the assistant vice president of educational and technical resources. This assistant vice president is responsible to the vice president of telecommunications and educational resources, who is accountable to the president.

Media. The director of learning resources programs is accountable to the assistant vice president of educational and technical resources.

Information systems. The managers in charge of office systems and computer services, telephone service and office automation are accountable to the assistant vice president of technology systems. The assistant vice president is responsible to the vice president of telecommunications and educational resources, who is accountable to the president.
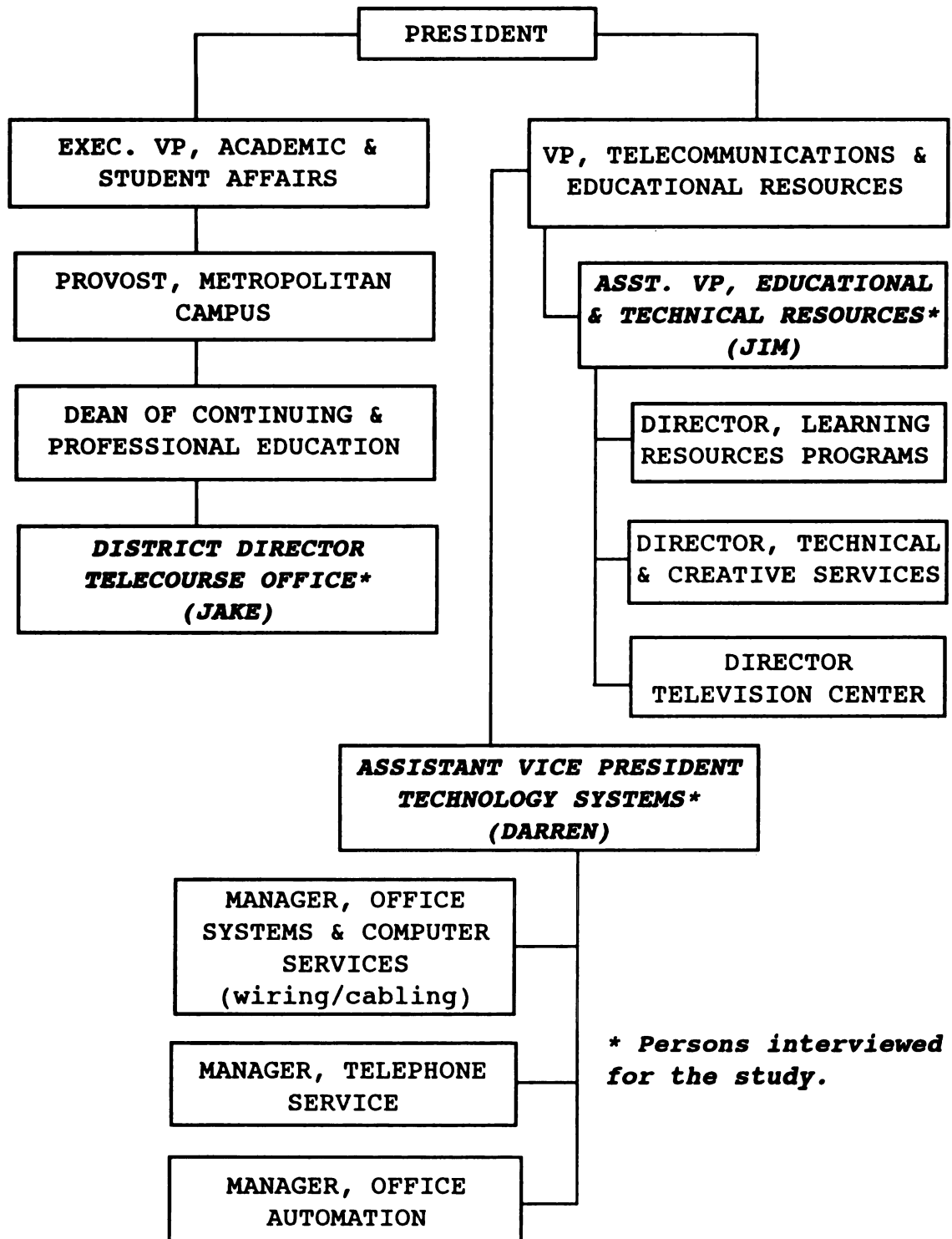
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EXEC. VP, ACADEMIC & STUDENT AFFAIRS		VP, TELECOMMUNICATIONS & EDUCATIONAL RESOURCES
PROVOST, METROPOLITAN CAMPUS		*ASST. VP, EDUCATIONAL & TECHNICAL RESOURCES* (JIM)
DEAN OF CONTINUING & PROFESSIONAL EDUCATION		DIRECTOR, LEARNING RESOURCES PROGRAMS
DISTRICT DIRECTOR TELECOURSE OFFICE (JAKE)		DIRECTOR, TECHNICAL & CREATIVE SERVICES
		DIRECTOR TELEVISION CENTER

ASSISTANT VICE PRESIDENT TECHNOLOGY SYSTEMS* (DARREN)

MANAGER, OFFICE SYSTEMS & COMPUTER SERVICES (wiring/cabling)

MANAGER, TELEPHONE SERVICE

MANAGER, OFFICE AUTOMATION

* Persons interviewed for the study.

Figure 3. Line – and – staff organization chart for the technology units at Lake College.

Benefits and Potential for Growth and Development

How do administrators, faculty members, creative staff members and technical staff members perceive the benefits of and potential for the growth and development of their unit, the background of the development of the current organization structure, and its impact on teaching and learning?

The data relative to this research question have been organized around the perspectives of the respondents regarding the three themes embedded in this question:

* <u>benefits and potential</u> for their unit's growth and development

* <u>history of the development</u> of their current organization structure

* <u>impact</u> of their organization structure on teaching and learning

Benefits and Potential

<u>Middle College</u>. Administrators and the faculty member indicated distance education extends college courses to more students who are unable to come on campus, provides the college with more instructional tools, and uses fewer state dollars to educate full-time students. There is a direct financial benefit from the units' involvement in entrepreneurial businesses, such as the satellite uplink services that generate revenue for the college through subcontracting for business, industry and news. There is also revenue from marketing software, video and media-based products. The administrators noted that the college shares resources with more people in a larger geographic area. Specifically, one respondent said that the centralized

operation merges resources and technology to make effective use of staff and expertise.

North College. Administrators and faculty described their programs as sound and viable, and as generating significant enrollment and revenue with telecourses, tape rental, videoconferences and marketing courses. They serve students in ways that meet their time and place needs. Two administrators noted that the consolidation of all computing areas eliminated redundancy and saved money.

Lake College. The educational and technical resources unit provides service to faculty, students, staff and community, and generates funds through its services to business. The technology systems unit provides planning, management and support of computer technology for both academic and administrative areas.

History of the Development

Middle College. The position of dean of telecommunications was formulated 15 years ago when the founding president effectively communicated the idea of distance education to the governing board. This area became a high priority of the board, and the president spread the responsibility throughout the college so it could become a shared program. Administrators indicated that there have been many organization changes over the past 25 years, and that change has been based on the availability, talents and skills of the personnel. One administrator noted that faculty wanted

computers, so computer space and support was consolidated. Respondents noted that the president's philosophy is to consider personnel when redesigning the organization structure.

North College. Administrators were interested in the increased utilization and availability of technology, but they did not follow a model when designing the units or the organization structure. It was a new president who initiated a study on the existing structure and looked at new ways to do business, and this resulted in two campuses: the central campus which is traditional; and the open campus which is off-campus noncredit, nontraditional programs, and the business and professional institute. The technical staff member indicated that the computer unit was traditional, but the new administrator consolidated all computer areas, which saved money and provided a focus to campus-wide computing.

Lake College. At one time, the technical and creative services areas were one unit, the library was another, and the learning resources center yet another. These units were combined in 1980 to allow faculty to turn their ideas into products and for reasons of economy and service. Managers indicated the structure had changed recently to realign the telephone system, telecommunications, computers and office automation, which had been under other areas and were now consolidated under one vice president. The faculty member thought the college reorganized about every five years because new presidents bring change and people influence change.

Impact

Middle College. The technology administrators analyze feedback from their customers to attempt to understand the impact of their units on teaching and learning. They indicated the students' academic performances with television courses is superior to that of the traditional classroom, and that the technology brings out the best in the teacher. Their studies show that nontraditional delivery benefits both students and teachers because of visuals. Respondents felt the outcomes for teaching and learning with distance education and technology are good and the attrition rate for students is lower than for those traditional on campus classes.

North College. The college field-tests their products with students for two quarters. They set goals based on student surveys and suggestion boxes, and projects are prioritized based on need, and managers are expected to commit to the projects. The faculty member indicated that the college should treat telecourses like any other course, because the outcomes from nontraditional programs are good and the attrition rate for students is lower than for those traditional on campus classes. The technical staff member responded that the unit uses feedback from interviews with staff for planning purposes, and that there is a formal procedure for evaluating their computer center each year. This unit also uses student evaluation sheets and institutional research studies appear to demonstrate the effectiveness of using computers in instruction. Respondents

believe that technology is a powerful tool and the potential for teaching and learning is unlimited.

<u>Lake College</u>. The units conduct surveys and recently completed a self-study for the North Central Association. There has been a revision of the official college plan which identified areas that needed to grow, such as the library, media and technical services. They use feedback from the staff and their counterparts on campus to determine concerns and make recommendations. The director's council, whose membership consists of faculty, administrators and staff, meets weekly to handle operations and procedural issues. Respondents noted there is an undetermined potential for teaching and learning with technology, and agreed that the telecourse service is easy to use, and that learning through this nontraditional method is comparable to traditional on campus classes.

Critical Issues

What are the critical issues for community colleges to consider in organizing their technology units?

Respondents' views of the critical issues for community colleges to consider in organizing technology units are reported here. The relevant interview questions asked respondents to consider three issues:

* <u>strengths and weaknesses</u> of the organization structure

* <u>future</u> for the technology systems and the organization structure

* __participants' recommendations__ for other institutions in organizing their technology units

__Strengths and Weaknesses__

__Middle College__. The strengths were in placing support for the technology and distance education programs campus-wide to obtain a commitment from all areas. Also, when some retire or leave, the first thought is replacement, then how the college can replace and restructure. Respondents noted problems with too many committees, trying to build consensus, and the bureaucracy makes it difficult to do business because everything goes up the ladder and everyone has to agree, and this creates problems with grants and projects.

__North College__. Strengths were seen as the commitment and support from the president and the college staff to the technology, and that their deans and associate deans have so much authority. It was also felt that technology projects receive as much stature as other projects. Problems identified were having people in charge with no background in the area of responsibility.

__Lake College__. Respondents noted that their greatest strength comes from their dedicated, well-trained, capable people and programs, and that committees are important to provide a mechanism for ideas to move through the system, which makes implementation easier. According to respondents, the centralization of the structure under a vice president of technology, which brought six major functional areas together

and provided cohesive direction, was considered the right course for this college to take because coordination is a problem otherwise. Weaknesses were identified as not enough staff, lack of personal influence, especially at the division chairman level, and the fact that the college does not understand the impact of technology on instruction.

Future

Middle College. It was suggested by the vice president of instruction that the organization structure should be a blend between the driver with the vision and the needs of instruction. This respondent added that there will be tremendous growth in telecommunications and the applications, and the organization structure will continue to evolve. Some respondents felt the organization structure will flatten out, and that the library will be reassigned to the telecommunications unit, as was the case at one time for Middle College and most recently for Lake College. Others felt that technology will partially compensate for the lack of resources, and the organization structure will become more efficient and increase communication. Technology and social change will expand the college's mission, and it was indicated that as the use of technology increases, the college will add 50% more classes and hire more personnel.

North College. It was felt that interactive video, a fiber infrastructure within the physical plants, networks and the combining of audio, video and data were in the college's

near future, as was the presence of the college in every home to connect students and instructors in the future. It was felt that the telecommunications master plan will change the organization structure, which should allow for better communication between units. According to the executive director of computing and information systems, there will be a melding of information technology, library, telecommunications, academic and institutional services, telephony, printing, multimedia and wiring operations. There was no indication when this would happen, but it was felt that this will lead to the position of a vice president for technology at the president's cabinet level, and that when units are under a single administrator, there is less competition for the same funds.

<u>Lake College</u>. Respondents indicated there will be consolidation in areas that overlap, and as people retire, lines of responsibility will change and the institution will have to look at changing the structure to deal with different technology systems. Technology will increase institutional opportunities and the college will introduce total quality management concepts.

Participants' Recommendations

<u>Middle College</u>. Respondents felt that support from the chief executive officer is important, as is support for the faculty and the customers. Some respondents said there is a need for more consistency and good policies and procedures,

and that it will be necessary to build faculty and administrative experts in technology as in other aspects of educational services.

North College. Several respondents articulated the need to obtain institutional commitment from the governing board, the president and other personnel. They believe there should be formal documents for strategic planning, goal-setting and mission statements. Other important things to consider are evaluation and feedback, a long term planning process, a clear vision of where to go and how to get there. Respondents felt that involvement at all levels creates a commitment to the project, but whatever is done must fit the organization's culture, and that to make it work, distance education must have the same stature as on campus classroom instruction.

Lake College. The assistant vice president of educational and technical resources indicated there must be a commitment from the president and the top executive staff, and that the operations should be need based and program driven. The structure should be centralized for budget and planning purposes.

Suggested Strategies for Innovation and Effectiveness

Do the experiences of these three colleges suggest strategies which might be useful in guiding the development of innovative and effective organization structures for the technology units in community colleges?

The experiences of these three colleges, as represented by the participants in the interviews, suggest approaches that

might be useful in guiding the development of effective organization structures for the technology units in community colleges. Four strategies are suggested from the experiences of the three colleges in the study:

* institutional support for its <u>human resources</u>
* <u>leadership</u> for the technology
* <u>centralization</u> of the organization structure
* <u>institutional planning</u>

<u>Human Resources</u>

<u>Middle College</u>. Respondents affirmed the need for an adequate and a qualified staff, and that well trained, dedicated, capable people with a strong technology base and skills to match the job are necessary. Middle College allows talented individuals to follow their own leads in development of new courses and technology use in current courses. This college generates revenue through entrepreneurial ventures, such as production, fees and subcontracting services.

<u>North College</u>. Respondents indicated the same need for personnel with skills that Middle College respondents noted. North College conducts a technology orientation program for new and existing faculty, and training for staff is on-going. This college generates revenue through its programs and services.

<u>Lake College</u>. The data suggest that as the potential for the technology continues to grow, human resources will be increasingly important to the community colleges. Respondents

believed that they have dedicated, capable staff and there appeared to be appreciation for the skills of their personnel. This college generates revenue through business ventures, products and services.

Leadership

Middle College. The necessity for leadership from the top, and on down, and from the bottom up, was mentioned by respondents from this college. Middle College indicated that commitment begins with the president's support for the technology and for the people who support the technology. The data suggest that this college has commitment to the technology from their governing board, their president and the college staff, all of which appear to have impacted the successful development and use of the technology. Respondents recognized their leadership role within their state and this country. They are leaders in production, satellite uplinking and teleconferences.

North College. The importance of leadership at all levels was mentioned by the respondents, who noted that their governing board, the president and the college staff are supportive of the technology. Respondents were aware of their national stature with their computer labs and the reorganization of their technology units. The respondents realized that their alternative educational services make them a leader in the state and the nation.

Lake College. The need for leadership everywhere in the

institution was noted by the respondents. The board of trustees, the president and the college staff seem to be committed to the technology. Respondents believed that personnel at this institution support the technology, and they are also aware of their national recognition as leaders in teleconferencing and production.

Centralization

Middle College. This college's movement toward the centralization of technology units may lead to a flatter organization structure. Respondents indicated that Middle College has eliminated one dean's position, and that there is an effort to lessen the time required to respond to needs.

North College. There is a movement toward the centralization of the technology units so that they are accountable to a single administrator. This college appeared to provide their personnel with more autonomy and authority than the other two colleges with similar positions.

Lake College. Respondents noted the movement toward consolidating similar units, and that these technology units may be accountable to a single administrator, referred to as a vice president of technology. One administrator was informally referred to as the "vice president of technology," as this position has most of the technology units accountable to it, with the exception of the telecourse office.

Institutional Planning

Middle College. This college stressed the need for planning through the development and use of strategic plans, technology and telecommunications master plans. Councils provide guidance for overall policies, procedures, planning and purchases of technology. Middle College has planning and advisory committees that recommend equipment, technology and systems, and communicate information to faculty and administrators. It relies on feedback from the users, surveys and pilot studies. Staff set goals and objectives and update mission statements to include technology.

North College. This college does extensive planning for all technology units. It has master plans for technology that guided the installation of the campus fiber optic backbone. A technology council provides guidance for comprehensive policies, procedures, planning and purchasing technology, especially as it relates to their computer area. This college conducts surveys, evaluates programs, operates with mission, goals and objectives.

Lake College. This college has strategic plans and master plans for technology. Surveys are used to gather feedback from the technology users, and provide data for program evaluation. Plans are revised on a regular basis, and the technology units operate with mission and goal statements, and a technology council.

Summary of the Data Combined for the Three Colleges

The following represents a summary of the findings organized around the four research questions with the findings combined for the three colleges.

Technology Organization

The organization charts for the four technology units at the three colleges each reflect traditional, hierarchical, line-and-staff structures. However, respondents from all three colleges noted that their organization structures for technology are flattening and that units are consolidating in order to better utilize resources. It appears that all three colleges may be heading more toward a centralized management structure, which might be organized with a vice president of technology position in charge of the four technology units.

The three colleges refer to similar technology positions by different titles and at various levels within the organization structure. Of the eleven administrators interviewed for the study, four of the technology managers are responsible to a dean, four to a vice president, one to a provost, and two to the president. The only similarity in the level within the hierarchy was for the distance education managers, all of whom are responsible to a dean at the three colleges.

Growth and Development of the Technology Units

Benefits of technology. According to the respondents at the three colleges, technology has created opportunities for the community colleges to extend services and programs to distant locations, as suggested by Reed and Sork (1990). The data from respondent interviews indicate the technology provides alternatives for both faculty and students, distance education and technology accommodate various learning styles and preferences, and students' grades, retention and the attrition rate are the same as for traditional on campus classes. The learning was considered at least the same, and in some cases, was recorded as superior to those of on campus traditional classes, as indicated by college documents.

Respondents from the colleges believe that the technology can help build a better product, create efficiency and larger enrollments, result in lower costs per student, reduce duplication and allow for the sharing of expertise and human resources. Distance education and technology can generate revenue, as well as reduce costs and the need for constructing more physical plants. Instead of building new buildings, Middle College built a telecommunications network; these efforts have paid off in revenue and more services for faculty and students. The three colleges have a history of receiving support for the technology from their governing boards, their presidents and staffs, and providing alternative educational programs and services within and beyond their geographic boundaries.

<u>History of the development</u>. The respondents from the three colleges generally believe that there has been a historically strong commitment from their presidents, governing boards and staffs for the initiation of the technology programs. Respondents observed that their structures had changed frequently; however, none of the colleges attempted to emulate an organization structure in place in another community college or as described in the literature when developing their technology units or changing their structure.

<u>Impact</u>. These three colleges conduct surveys, evaluate their programs, and rely on planning documents and technology councils to deal with policy and procedural issues. Respondents noted that the rate of completion of courses by students and academic performances of students are comparable to or better than traditional on campus courses.

Critical Issues for Community Colleges

<u>Strengths and weaknesses</u>. The commitment and support from the president, governing boards and staffs, the centralization of the technology units in the organization structures, as well as the qualifications of their personnel, were seen as strengths by some respondents. The use of too many committees, the bureaucracy, unqualified and too few personnel were identified by some as weaknesses.

<u>Future</u>. Respondents felt that the use of technology will increase, services will have the potential to extend into

every home and that the consolidation of similar units would continue. Technology will provide the colleges with opportunities to add more classes and to hire more personnel. The colleges seem to be looking at potentially different structures to manage the four technology units; one possibility might lead to a cabinet level position to oversee all technology units.

Participants' recommendations. Respondents from the three colleges indicated that commitment to the technology from the presidents, the governing boards and the staff is necessary for success. It was noted that building faculty and administrative experts is also important, as is the need to build sound policies and procedures.

Strategies

Human resources. Personnel with appropriate skills and training were seen as important assets. Respondents at all three colleges recognized the value of their human resources and several respondents noted their appreciation for having qualified and dedicated staffs.

Leadership. Leadership from the top and throughout the organization seemed to be a high priority for the respondents and necessary for the support and success of the technology. The respondents were aware that their colleges are nationally recognized for their state-of-the-art technology and facilities and successful distance education programs.

Centralization. There is a movement at all three

colleges to consolidate the technology units, and this movement has lead, to a limited extent, to the units becoming responsible to fewer administrators at all three colleges. The respondents believe that the flattening of the organization structures will continue.

Institutional planning. Planning occurs through the development of strategic plans, as well as master plans for technology and telecommunications. Planning, which is sometimes based upon the results of surveys and pilot studies, then results in establishing and updating goals and purpose.

Summary

The data collected from the site visits, documents and interviews were analyzed around the four major research questions in this chapter.

Chapter V includes the summary of the study, the conclusions, a discussion of the implications for research, and implications and recommendations for colleges in developing or re-organizing their technology units.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Summary of the Study

The study examined how three community colleges in the United States organize their distance education, telecommunications, media and information systems. The intent was to exam these colleges in terms of their organization structures for these four technology units, and to draw upon the experiences of these colleges to generate strategies for other colleges to consider when developing or reorganizing organization structures for technology.

The method of inquiry used for the study was a qualitative design utilizing field study, which included observation, interviews with college personnel and a collection of college documents. The findings were drawn from analyses of the college documents, interview transcripts taken from the structured interviews with the administrators, faculty members, creative staff members and technical staff members, and fieldnote transcripts of the site visits at the three community colleges. The case study method was used to organize the data from the colleges, then the data were

summarized to address the four research questions below.

1. *How do three selected community colleges in the United States, which are recognized nationally for their technology, distance education and organization structures, organize their distance education, telecommunications, media and information systems units?*

2. *How do administrators, faculty members, creative staff members, and technical staff members perceive the benefits of and potential for the growth and development of their unit, the background of the development of the current organization structure, and its impact on teaching and learning?*

3. *What are the critical issues for community colleges to consider in organizing their technology units?*

4. *Do the experiences of these three colleges suggest strategies which might be useful in guiding the development of innovative and effective organization structures for the technology units in community colleges?*

The three colleges organize their four technology units around traditional, hierarchical, line-and-staff structures. Each college has successful distance education programs that reach from kindergarten through higher education, business, industry and the global community. While both staffs and presidents have been supportive of the technology, it was the presidents who were pivotal in envisioning the future with technology and in implementing the technology programs. Each college surveys their customers and the community and relies on planning documents for the technology. The three colleges anticipate a more centralized organization structure for technology under a single manager who will be a member of the president's cabinet.

Conclusions

Organization of the Technology Units

Existing structures. None of the three colleges in the study has what the literature suggests as an innovative or transformed organization structure. As part of the selection process for this study, League for Innovation members, technology consultants and professionals in higher education were asked which community colleges had innovative organization structures. It was perceived by the individuals above that Middle College, North College and Lake College have innovative and, therefore, possibly reorganized organization structures. The organization charts for the three colleges reflect traditional, hierarchical, line-and-staff structures. In such structures, the units are separate and usually are responsible to different administrators (Murgatroyd, 1990). However, the data in the study indicate that these traditional organization structures in the three community colleges currently support successful distance education, telecommunications, media and information systems. This is demonstrated by the college documents, marketing brochures, national and institutional statistics, site visits and respondents' interviews.

Trends. Two trends in organization structures reported by Ryland (1991) emerged from the data:

* There is a trend beginning toward flattening the

organization structures. This appears to be occurring at the three colleges as similar functions are merged and complementary units are centralized under fewer administrators. This flattening was reported by Middle, North and Lake Colleges' respondents to have produced cost-savings because fewer administrators oversee more technology areas. The literature concludes that new alternatives are needed for structures and job definitions to best achieve institutional goals and objectives related to complementary units, referred to by Ryland (1993) as "family." Katz and West (1993) suggest community colleges are recognizing complementary relationships among separate operations, such as distance education, media and information systems. Consolidating the technology units facilitates the reduction in the number of levels of administrators and increases autonomy, decision-making and stature lower in the organization structure, which is recommended by Zilinski (1993).

* **There is movement toward a single manager of the complementary technology units who will serve at the president's cabinet level.** Respondents felt that North College will have a vice president of technology as the telecommunications, media and information systems merge, and respondents from Lake College also indicated this likelihood. The literature suggests that colleges are hiring chief information officers to function in this capacity and at this institutional level (Woodsworth & Maylone, 1993). The data

suggest that this has nearly occurred at Lake College, when respondents referred to one of their managers as the vice president of technology, although the official title of this cabinet level person is vice president of telecommunications and educational resources.

Benefits and Potential for Growth and Development

Serving customers. It appears very likely that technology and distance education at these community colleges will be retained and increased as resources allow to serve customers at locations convenient to their needs and preferences. The technology provides alternative methods to serve students and extends services to customers in a wider geographic area. The technology units operate in an entrepreneurial, cost-effective and revenue generating environment. The colleges felt that their technology programs are vital and healthy, that they enroll large numbers of students and that their centralization of units makes for more effective utilization of resources.

Distance education programs. The results indicated that distance education is given about the same stature and support as the traditional academic programs at these colleges. The consensus was that the distance education and technology units are sound, viable programs which generate revenue through enrollment, services and production. These programs serve the diverse student learning needs by taking the college to the community via alternative and experiential learning modes, as

suggested by Lassner (1992).

Critical Issues

Personnel. It appears that the respondents at these three colleges consider their greatest asset to be their human resources. The data indicate that staffs were supportive of the technology. Respondents at Lake College considered their staff to be dedicated, well-trained and capable, and at Middle College talented personnel are encouraged to develop new products and services.

Institutional planning. The need for institutions to plan for the future will be especially critical as institutional funds diminish. These three colleges rely on planning for most phases of their operations with the major exception in the area of organization structures. This is indicated by the respondents and the college documents. A document written by a consultant for Lake College notes the need for a different organization structure for this college because of technological change, to consolidate units for resource sharing and to cut costs. Yet no formal document exists for restructuring the current organization structures at this college or at the other two colleges. All three colleges operate with strategic plans, technology and telecommunications master plans, and they conduct internal and external surveys related to the technology. The data from the three colleges indicate that these institutions plan for programs and technology, but not necessarily for an innovative

and effective organization structure that may support the technological future.

Commitment. These three colleges feel that they have benefitted from leadership committed to the technology and new management philosophies. Respondents noted that the skills and talents of people were important, as change with technology and structure was based on peoples' abilities. These abilities will be important to the future of the institutions, because, as one respondent indicated, jobs will require expertise in educational technology; this is supported by Cornesky (1990). Respondents indicated their structures will continue to evolve as personnel are hired or leave the college. The governing boards, the administrations and the staffs of the three community colleges appear committed to technology, and this commitment was viewed as essential because of the growth and change with telecommunications and technology. Whiteley (1992) feels that commitment from the leadership committed to the staff and technology can produce high quality products and services for customers.

Concerns. Respondents, who underscored the need for qualified and adequate staff to operate the units, were troubled over too few staff, too many committees, and problems in reaching consensus, and they were especially concerned by employees in positions for which they lacked credentials or had limited previous experience in the area. Practitioners in the fields of distance education and technology have expressed concern about the problems associated with poor credentials.

This is because quality of programs and services may suffer when there is insufficient personnel or people are not qualified for their particular responsibilities. The data indicate that many of the respondents at these colleges are without degrees, training or previous experience related to their current responsibilities. However, as indicated by the research, reported in professional journals and other literature, the practice of hiring technology administrators appears to be moving toward a college degree in educational technology, computer-based education or telecommunications and with experience related to the technology.

Suggested Strategies for Innovation and Effectiveness

Restructuring. Innovative restructuring of the traditional, hierarchical, line-and-staff organization structures supporting the technology units may very well occur in the future. This is likely partially because of budget and personnel cuts. Fewer dollars usually mean fewer workers doing more work and restructuring may provide greater utilization of these scarce resources. This is happening at Middle College where they are restricted in adding personnel even at a time when their technology units are generating revenue. The Lake College telecommunications planning document suggests the need for restructuring the technology areas. The notion of restructuring organizations is supported by Tomasko (1993), and restructuring for teamwork, interaction and networking by Lucas (1991).

Commitment. The president of each college was seen as the key figure in assisting the development of the technology units. In each case, the president was able to transmit the vision of technology to the governing board and to the college staff, who then interpreted, planned and implemented the vision. Feldman and Arnold (1983) regard leadership, which can transfer the vision to others, as important for distance education to be successful.

Implications and Recommendations

Organization of the Technology Units

Delivering distance education. Distance education delivers its products and services with available technology to customers in times, places and formats suitable to their needs. Respondents from the three colleges suggest that barriers exist for distance education in the form of scarce resources, decentralized units and various problems with personnel in key technology positions. Murgatroyd (1990) notes that distance education is cost-effective and extends college courses to more students, and technology will be used more in the future to avoid duplication, increase instructional opportunities and improve instruction. These arguments were also made by the respondents in this study. The implication is that consolidating the technology units should result in better use and distribution of resources, which would in turn benefit distance education programs and customers.

Change with the structure. Tomasko (1993) discusses change in the organization structures, but in this study the respondents' interpretations are different from that of Tomasko's. Respondents are convinced their organization structure have changed, and in some instances, they feel these structures have experienced several changes. But what the respondents referred to as change had to do with relationships in personnel, job descriptions and responsibility levels. The literature (Penrod, 1992), however, refers to change as a redesigning and reordering of the organization structure that includes transformation of the traditional, hierarchical, line-and-staff structures. While it could be that the respondents are not aware of what those in the literature are recommending with regard to organization structures, it might also be that the respondents think of change in organization structures in terms of what can be done with existing structures rather than in terms of radical change.

Designing the structure. Tomasko (1993) argues that the organization structure should be designed to work in harmony with the personnel, job classifications and responsibilities across the institution. Job descriptions and accountability levels should be evaluated and changed as indicated, and individuals should be given responsibility for their work performance. Respondents from the three colleges and recent literature (Rudy, 1993) suggest the changes with the organization structures reflect the changes with technology, new management practices and society. Because it has been

suggested that various structures can lead to successful operations (Shetty & Carlisle, 1972), different organization structures should be considered viable. One useful strategy would be to develop a structure based on an institution's culture and specific needs. This is what North College did when they reorganized their telecommunications and information systems units. The administrator in charge did not follow an institutional model, but researched, attended conferences and looked at the services and support needed by the college. The college has reaped benefits from this move, as service is up and costs are down. This recommendation to consolidate the technology units is supported by Woodsworth's and Maylone's (1993) study.

Benefits and Potential for Growth and Development

Surveys. Community colleges should solicit and rely on feedback from their customers and staff to evaluate the effectiveness of the organization structure. Anthony, Dearden and Vancil (1972) suggest that needs analysis, surveys and feedback from environmental scanning and from customers, all of which are done by the three colleges, has the potential to create a firm knowledge foundation upon which to prioritize projects and make decisions for the future.

Professional development. Senge (1990) suggests that organizations learn only through individuals who learn. Managers with credentials and work experience in the technology related areas are crucial in designing effective

organization structures, in which personnel will receive support for continuing professional development. In interview transcripts and fieldnotes, respondents from Middle College suggested that lifelong learning and staff training are important to the institution's future growth. This was indicated also by the respondents from North College and Lake College, who expressed the importance of qualified staff.

Critical Issues

Institutional leadership. The presidents, past and present, of these three colleges had vision and commitment to the technology, and this leadership carries over to the other managers and staff, as well. Technology leaders should possess organization and human resources skills and have a broad knowledge of the technology units. This was supported by the interview transcripts and fieldnote transcripts taken during site visits.

Delegated authority. The responsibility for overseeing all of the technology units could be to someone in a cabinet position, who might be referred to as a chief information officer, as suggested by Rudy (1992) or a vice president of technology, which was suggested by respondents from North and Lake Colleges, and somewhat similar to the organization structure at Lake College. Rudy (1993) also suggests that institutions may require their human resources departments to adopt new strategies for personnel development, career paths and staffing needs for the technology professionals.

Suggested Strategies for Innovation and Effectiveness

Need for a nontraditional response. Respondents from
Middle College believed that to fulfill their mission as a
community college, new ways to overcome traditional barriers
to education are required. As a result, Middle College became
the first community college to conceive of a
telecommunications system that would replace the need for
constructing a building in order to develop what is now an
eight county and global network. The educational need was
identified and the systems were designed to meet the need for
education to drive the technology and not the reverse. The
college committed capital construction funds and additional
funding came from outside sources. The time frame from
conception to implementation was five years. This is an
example of how innovative thinking and creative approaches can
lead to unique solutions to problems associated with
technology.

Restructuring. Placing the technology units under a
single unit and manager would maximize the effective use of
resources. Krebs (1992) discusses centralizing complementary
units and consultants who prepared planning documents for Lake
College suggested the need for a single manager and a
centralized organization structure. Some respondents
indicated the importance of a vice president of technology,
which exists to a certain extent at Lake College. Data
suggest the need for a flatter structure by consolidating the
technology units under one administrator at the president's

cabinet level. Recently, some institutions have created a chief information officer position to define, manage and convey their information technology and telecommunications priorities (Woodsworth & Maylone, 1993).

Support for technology and personnel. One of the reasons reported by respondents for the success of their technology systems and distance education programs is related to the extent to which these systems are integrated across all units of the colleges. Project teams, committed resources, mission and continual feedback are important, and the technology requires someone from the college with institutional power, appropriate educational credentials and work experience related to the responsibilities.

Technology council. The establishment of a technology council seems to have promise. Such a council might have representatives from the administration, faculty, creative and technical staff. This council might have the responsibility for setting policies and procedures, and guide, coordinate and make recommendations concerning all technology activities. The council could be charged to envision the future, propose and direct plans to make the vision a reality, and guide the overall direction of the technology to the benefit of the institution.

Implications for Research

The data collected in this study have raised further questions that researchers may want to investigate.

1.   It has been suggested by Kovel-Jarboe (1990) that there are administrative and organization structures appropriate to distance education programs.   But little research is available on what configurations are best suited to certain situations. This was not researched for the study, because the study went beyond distance education programs to include four technology units.

2.   A recent development in the management of technology at community colleges is that of viewing the technology areas as businesses able to generate revenue.   This view raises questions such as which of these areas could and should provide a means of self-support, and is the ability to provide organizations or individuals external to the college with technology services and systems in conflict or competition with others.

Reflection

This study suggests there is a need for the effective development and utilization of the technology units.   It appears at this time that successful distance education programs and technology utilization that exist under traditional organization structures may face problems in the future.   This is because technology is expensive, resources are diminishing, there is the need to respond expeditiously to changes with technology and services in cost-effective ways, and because education is now operating in a competitive, global community (Lucas, 1991).   Murgatroyd (1990) suggests

that innovation and development can be managed by institutions to increase their competitive position through cost containment and wise use of their human resources. Therefore, strategies are needed for community colleges when organizing their technology units for effective practice.

As this study is completed, I am convinced that there is value in the research findings. The results reinforce for me the need for community colleges to consider transforming their traditional organization structures into innovative structures designed to be effective and responsive to the changes taking place in this technological, competitive and global marketplace.

APPENDICES

APPENDIX A

RESPONDENTS' JOB TITLES

RESPONDENTS' JOB TITLES

Middle College

TAM: Vice President, Instruction

PAT: Dean, Telecommunications

MARK: Executive Director, Computer Information Systems

RAY: Director, Telecommunications Services

BOBBIE: Program Director, Instructional Technology Center

MILLIE: Traditional, Alternative and Distance Education Faculty Member

North College

DALE: Dean, Academic Alternatives

JEFF: Executive Director, Computing and Information Systems

KEN: Director, Instructional Design

CHUCK: Lead Academic Analyst, Distributed Computing

ADAM: Alternative and Distance Education Faculty Member

Lake College

JIM: Assistant Vice President, Educational and Technical Resources

DARREN: Assistant Vice President, Technology Systems

JAKE: District Director, Telecourse Office

KATY: Telecourse Faculty Member

APPENDIX B

RESPONDENT INTERVIEW QUESTIONS

RESPONDENT INTERVIEW QUESTIONS

In order to answer the research questions and to identify the organization structures, a set of questions was developed for all interviews. Each respondent was asked the following questions, although not necessarily in this order.

1. What are the types of activities you do in your job and why do you do these activities? What is your professional and educational background?

2. Who are your customers and where are they located?

3. What are all of the sources of funding for the unit and the percentage of total funding which comes from the college's general fund?

4. Does your unit operate with a mission statement and a strategic plan?

5. What are the technology systems in your unit?

6. What are the products and services provided by your unit?

7. What are the ways your unit benefits the institution both financially and in the use of scarce resources?

8. How does your unit increase faculty and administrator awareness of the technology systems, and, from your perspective, what is its potential for teaching and learning?

9. As you know it, how did the organization structure for the distance education and technology units evolve, and what is the background for its development?

10. How do you measure the effectiveness of the organization structure for ease of implementation and use by customers, its cost-effectiveness, and impact on teaching and learning?

11. What do you see as the strengths and weaknesses of the organization structure?

12. What do you see in the future for the technology systems and the organization structure for the distance education and technology units?

13. What recommendations would you make for other institutions in organizing their distance education and technology units?

APPENDIX C

COVER LETTER

COVER LETTER

January 2, 1993

Dear Colleague:

As part of a research project for my doctoral dissertation, I am investigating three community colleges in the United States which have been identified as having successful distance education programs, telecommunications and innovative organization structures. Because there appears to be no articulated management structure for higher educational institutions involved in these technology systems, this study will advance the fields of distance education, technology and effective management structures.

Your institution, which has agreed to participate in the study, has been identified as having these technology systems and an innovative organizational structure in place. The research will include an interview which will consist of thirteen questions and will take approximately one hour, and a site visit to tour your facility to see firsthand your technology systems. I will be requesting printed materials that will be useful in this study.

The results of the study will be treated with strict confidentiality and you and your institution will remain anonymous in any report of research findings. All materials will be stored in a secured, locked location. Your participation in the study is voluntary. You may refuse to respond to questions, discontinue the interview at any time, and/or decline to provide materials and information. You may request that no audiotaping be done, or if it is done, then you can ask that the taping be stopped at any time. You indicate your agreement to participate by completing and returning the Consent Form.

If you have any questions or concerns about your participation, please contact the undersigned as principal investigator at (517) 686-9402. Thank you for your participation in the study.

Sincerely,

Judith P. (JP) Thompson

APPENDIX D

INFORMED CONSENT

INFORMED CONSENT

I understand the details of the Cover Letter as it relates to this study and my participation in this study. I understand my participation in this study is voluntary and that all identifiers, such as names, materials and information, will be kept strictly confidential. By signing my name below I agree to participate in this study.

NAME _____

TITLE_____

INSTITUTION_____

ADDRESS_____

_____

_____

TELEPHONE_____

FAX_____

APPENDIX E

DOCUMENTS REQUESTED FROM RESPONDENTS

DOCUMENTS REQUESTED FROM RESPONDENTS

All respondents were given this list and were asked if they could provide the information. Documents were provided only by the administrators at all three colleges in the study.

PRINT MATERIALS:

1) History of the institution

2) Demographic studies

3) Organization charts

4) Brochures from the four technology units

5) Newspaper articles

6) Copies of the following from your area:

    a) Programs

    b) Degrees

    c) Courses

    d) Services

    e) Internal newsletters

    f) Statistics

    g) Strategic plans

    h) Mission statements

    i) Other information pertinent to the study

7) Student enrollment in the unit/at the institution

8) Staff size:

    a)   Institution (including full-time and part-time workers, but excluding student workers)

    b)   Unit (including full-time, part-time and student workers)

9) Number of students served by the unit

10) Off campus centers (number/locations)

11) Budget

    a)   Institutional support

    b)   Grants

    c)   Self-supporting

    d)   Other

APPENDIX F

RESPONDENTS' DEGREES AND WORK EXPERIENCES

RESPONDENTS' DEGREES AND WORK EXPERIENCES

Middle College

TAM: Vice President of Instruction
Doctorate in Higher Education
Masters in Economics

Dean of Arts and Sciences at Middle College
Department Head in Social Science at Middle College
Instructor at Middle College
Faculty Member at a Private College
Executive Director of Planning and Development

PAT: Dean of Telecommunications
Doctorate in Higher Education and Educational Telecommunications

Assistant Director of a Learning Center
Director of Testing at a University

MARK: Executive Director, Computer Information Systems
Associate of Arts, Computer Science

Computer Operator for Middle College
Computer Programming for Middle College
Systems Analysis for Middle College
Different computer management levels at Middle College

RAY: Director of Telecommunications Services
(The question about educational background was not answered.)

Broadcast Television
20 Years Electronic Experience in the Navy

BOBBIE: Program Director, Instructional Technology Center
Masters, Instructional Design

Radio and Newspaper Experience

MILLIE: Traditional, Alternative and Distance Education Faculty Member
(The question about educational background was not answered.)

(The question about work experiences was not answered.)

North College

DALE: **Dean of Academic Alternatives**
(All But Dissertation (ABD) in Adult and Continuing Education)
Masters in Guidance and Counseling
Bachelors in Applied Science and Technology

Student Services
Associate Dean
Dean
Director of Testing
Counselor
Secondary School Teacher

JEFF: **Executive Director, Computing and Information Systems**
(The question about educational background was not answered.)

(The question about work experiences was not answered.)

KEN: **Director of Instructional Design**
Masters in History
Bachelors in History

(The question about work experiences was not answered.)

CHUCK: **Lead Academic Analyst, Distributed Computing**
Masters in Computer-based Education
Bachelors in Vocational Education

Experience in Design, Networking and Interactive Media

ADAM: **Distance Education Faculty Member**
(Working on the doctorate)
Masters in History
Bachelors in History and Language

Air Force for 20 years

Lake College

JIM: **Assistant Vice President of Educational and Technical Resources**
Masters in Elementary Education
Bachelor of Arts in History

Designed Elementary and Junior High Media Centers
Consultant for Media Development
Grants and Planning Office

DARREN: **Assistance Vice President of Technology Systems**
Bachelors in Management

Data processing for 30 years

JAKE: **District Director, Telecourse Office**
Masters in Higher Education and Educational Psychology
Masters in Business Administration

Health Care in Hospitals
Licensed Psychologist

KATY: **Traditional and Distance Education Faculty Member**
Teaching Health Education
(All But Dissertation (ABD) in Health Education)
Masters in Health Education

APPENDIX G

**PERMISSION LETTER FROM UNIVERSITY COMMITTEE ON
RESEARCH INVOLVING HUMAN SUBJECTS**

MICHIGAN STATE UNIVERSITY

December 30, 1992

TO: Ms. Judith P. Thompson
       1862 Avalon
       Saginaw, MI 48603

RE: **IRB #:**   92-624
      TITLE: DISTANCE EDUCATION AND TECHNOLOGY SYSTEMS: A STUDY OF
                     ORGANIZATIONAL STRUCTURES IN THREE COMMUNITY COLLEGES
      CATEGORY: 1-A, 1-E
      REVISION REQUESTED: N/A
      APPROVAL DATE: December 29, 1992

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must seek updated certification. Request for renewed approval must be accompanied by all four of the following mandatory assurances.
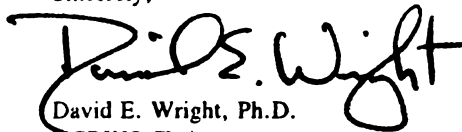
1.   The human subjects protocol is the same as in previous studies.
2.   There have been no ill effects suffered by the subjects due to their participation in the study.
3.   There have been no complaints by the subjects or their representatives related to their participation in the study.
4.   There has not been a change in the research environment nor new information which would indicate greater risk to human subjects than that assumed when the protocol was initially reviewed and approved.

There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. Investigators must notify UCRIHS promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:pjm

cc: Dr. James E. Snoddy

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BIBLIOGRAPHY

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