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UMI
LEADERSHIP CHANGE RELATED TO TECHNOLOGY USE FOR STUDENT LEARNING AT AN URBAN COMMUNITY COLLEGE

Dissertation

Presented in Partial Fulfillment of the Requirements for the Requirements for the Degree of Doctor of Philosophy
In the Graduate School of
The Ohio State University

By

Polly Sue Owen

The Ohio State University
2001

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ABSTRACT

This is a case study of one community college's journey in the integration of technology into teaching and learning at the college. Specifically examined are the leadership strategies used to facilitate this process. Both successes and challenges are identified as organizational change has and is occurring at the college surrounding technology use.

A qualitative research design and methodology were used in this study. The findings suggested that the integration of technology use has been the catalyst for significant organizational change. While leadership strategies have facilitated the change process, the complexities of change dynamics have continually challenged the senior leadership at the college and created multiple opportunities for leadership within the faculty. Further, the study findings indicates the need to reexamine the traditional role of faculty as well as the college planning processes as they related to faculty workload, budgeting and funding allocation for technology integration. The use of technology in the teaching and learning paradigm needs continued study as an emerging and significant learning methodology.

To maintain confidentiality of this mid-western community college and the study participants within the college, the college is referred to throughout the study as “Mid-Western Community College” or “Mid-Western”. This title is simply a descriptor and does not reflect any part of the actual name of the college.
ACKNOWLEDGMENTS

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To the real administrators, faculty, staff and students of the community college under study, who so graciously shared their stories with me so that I might learn of their triumphs and challenges, I thank you for your openness, honesty and hospitality. Because of your willingness to continually learn about yourselves through others, you have truly created a learning college.

Finally, to my family Bill, Billy and Matthew, thank you for your patience, encouragement and love.
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Major Field: Education
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Chapter 1

Introduction

Problem Statement

*Technology is, and will remain a primary driver of change. Regardless of size or location, all colleges are experiencing the impact of technology and being stretched further than they have been able to anticipate. (p. 4)*

*Carter and Alfred 1996*

As we enter the 21st century, American society is in the midst of an evolutionary process the like of which has not been experienced since the Industrial Revolution. This evolution is an expansion of knowledge at an extraordinary pace and a connectedness with the rest of the world with such ease as to create a global communication community. At the heart of this evolution is technology. Because of the technology available today, the amount of information that is communicated on a daily basis is phenomenal. The result is, “The volume of new information is increasing at such a rapid pace that the class of 2000 will be exposed to more new data in a year than their grandparents encountered in a lifetime” (Oblinger, 1996, p. 28).

The very fact that technology is increasing the amount of knowledge and available information at such a rapid pace and that higher education is in the business of
knowledge, should lead to the unmistakable conclusion that the educational process at these institutions will be profoundly affected. Botkin and Davis (1994) state that:

"The joining of computers and communication has only begun, and it has already refined entire value chains in many industries. As it emerges, the mega-industry created by the union of computers, communications, entertainment, media and publishing will deliver education and learning in such new ways and in vast amounts that it will parallel, rival and in some instances even replace educational institutions as the major deliverer of learning" (p. 65).

The manner in which the faculty and administrators of these institutions of higher education choose to engage the students in the integration and synthesis of this massive amount of information through the use technology, will determine whether they are valuable to their consumers. Finding a solution will not be easy. It calls for a change in the educational paradigm from which institutions of higher education have been operating for several hundred years. Barr and Tagg (1999) talk about the current educational paradigm as being focused on the teacher, usually employing lecture as the primary method of delivering instruction. College offerings are organized and compartmentalized by the 50 minute class time and a course credit system that is finalized at the end of each quarter/semester. In this environment time is constant and learning varies. After the successful completion of each of the courses specified, an undergraduate degree is awarded for the appropriate accumulation of credit hours. It is rare that synthesis of knowledge and total program outcomes are assessed for a level of competency and of interrelated knowledge and skills. The use of technology has the
potential to remove many of the time, place and structure barriers of higher education and concentrate on the learner and outcomes of that individual’s learning.

The primary pressures for change in institutions of higher education are not internal, but external. Consumers of higher education, specifically those younger than 30 years of age, are coming to college with the expectation that technology will play a major role in their education. They expect campus communication to be handled with a variety of technology. They expect the infrastructure of the organization to have a degree of technology sophistication and they expect their learning experiences to represent the newest knowledge delivered using a variety of methodologies. Employers are seeking graduates that can demonstrate some degree of competency in the educational areas that they have completed as well as the ability to continually increase their knowledge. Holmes (1999) describes the successful institutions of higher education as those that develop, nurture and guide the learner in lifelong learning by taking advantage of every technical advancement to create a learning environment to match the student’s learning needs.

Another strong external force is the growing competition of the “corporate universities” (MacDonalds, IBM, Phillips ect.). These universities are the fastest growing segment of education today. Holmes (1999) states that, “Higher education institutions have a relatively short time to make the changes necessary to retain their huge market share of adult learners. Some major corporate information and entertainment providers are preparing learning modes that promise to capture a large share of the traditional adult learner market. They are working to establish a national, or global system for validating learner outcomes and competencies”(p. 15). Davis and Botkins
(1995) describe several corporate education systems. In each system, technology plays a critical role in the educational process. The instructor and students are networked to actual consultants and corporate branches of the business they are studying via state of the art laptop computers. The class deals with actual business data and problems. Davis and Botkins (1995) further identified the best of these corporate universities as superior in their ability to educate than many lower-tier public and private diploma mills. They teach competence, and they are cost effective.

A powerful external force for any institution of higher education is funding. For public colleges and universities, state government has a major influence, as a significant amount of funding is allocated to these institutions from the state. Over the last five to six years, that pot of funding has decreased for higher education as other funded programs around the state have demanded more. The State legislatures have been very clear in their message that higher education has not been fiscally prudent with its funding and should do more with less. There is, however, one arena of education that has received extra funding consideration: educational technology. The Technology in Education Steering Committee, sanctioned by the Ohio Board of Regents, is composed of representatives from higher education, K-12 and business. This group has been asked to make statewide recommendations about to educational technology and funding needs. Performance based funding is now part of the Ohio Board of Regents funding Model for Higher Education. While a small portion of the total budget at this time, innovative technology initiatives are receiving considerable attention as colleges report their progress biannually. In a time of zero-based budgeting in the state, it is clear that the legislature is interested the progression of technology use in higher education.
O'Banion (1996) said that, "community colleges are often the first institutions of higher education to feel the impact of change because they are positioned so closely to the main stream values of American society" (p. 9). One of the hallmarks of the community college has been responding to the educational needs of their communities. The flexibility to meet these needs has historically been greater than their more complex four- year college and university counterparts. This time is no different, many community colleges are developing strategies to engage this challenge. However, meeting this challenge will be no small task. To participate in the developing vision for the information/knowledge revolution, community colleges will need to undergo significant change initiatives in the philosophy of education, teaching/learning paradigm and most certainly methodologies of knowledge delivery and reception. Gone are the days when the only method to collect information is fifty minutes of seat-time with the sage on the stage presenting hopefully, the latest and greatest information on a particular subject. For the 21st Century learner to be current, knowledge will be obtained from multiple sources. The sage on the stage will become the guide on the side to facilitate synthesis and skill building along with challenging the learner to think critically about the information that is being gathered.

The change initiative that community colleges, and inevitably all of higher education, are facing is massive. A little departmental tweaking here or there, a reorganization of what units contain certain content and the addition of a few network assignments to round out the syllabus won't work this time. Carter and Alfred (1998) warn that, "In order to manage and thrive in today's virtual, global, turbocharged, just-in-time world, every college must undergo continuous change, or wither. No part of the
They go on to describe the total structure changing as well as relationships between faculty, staff and students. The once stable ideation of what constitutes quality education and successful achievement of learning objectives are troubled. Backoff and Nutt (1997), in an article “Organizational Transformation”, identify the type of change that has just been described as transformational. They exemplify this type of change as being revolutionary, a change in paradigm that alters the rules of the game and changes core processes, cultural commitments, products/services, and strategic alliances. The terminology “new market realities” is often found in literature that is describing a major catalyst for organizational change. Community colleges are definitely facing new market realities. As previously described, the expectations of consumers of higher education as well as those providing funding for community colleges, are changing. The demand is for technology use within the colleges to facilitate college processes and enhance the teaching/learning interactions. While this is language thought by some as only suitable for business organizations, it is exactly the type of change that community colleges planning to remain viable into the 21st Century are facing.

With such a sea of change, the anchor of leadership is essential. The establishment of vision and direction in a manner that allows for the flexibility and growth of the educational institution in a continuous mode, is a tall order. A 1989 study by Roueche, Baker and Rose entitled, *Shared Vision*, investigates transformational leadership in American community colleges. Identified in the conclusion were specific behaviors employed by these transformational community college leaders in order to manage change. Within these behaviors, collaboration around an organizational vision
was identified as the most important element of leadership. The most effective CEO's sought institutional change through the development of a cohesive leadership team. Those teams developed other teams throughout the organization. Baker, in a 1998 monograph, further discussed the *Shared Vision* study and described this transformation as an inversion of the hierarchy whereby the adult learners and their faculty appeared on the top of the model and the layers of support appear as foundation. This illustrates a model that identifies multiple points of leadership. While the administrative leadership, with input, sets the vision and direction, it is the leadership within the faculty and subsequently students that will actually do the work of change and provide the creative initiatives needed for continuous change.

Community Colleges across the nation are experiencing increasing external pressures to change from the traditional models of course delivery to flexible and creative methodologies involving the use of emerging and existing technology. Within business, industry and health care, the need for a knowledgeable workforce is growing rapidly. Technical expertise, learner centered educational development, flexibility in modes of educational delivery and rapidity, all while retaining quality, are the demands for community colleges of the 21st century.

**Importance of This Study**

The purpose of this study is to gain an understanding of the role of leadership in guiding the institution through technology changes that are emerging as imperative for the success of community colleges in the new millennium. The further purpose is to explore the extent of transformational change that will be needed on community college campuses to support the initial and continued direction of this educational paradigm shift.
While there are many opinions, papers, articles, consortium critical issues papers and futurist predictions regarding the impact that technology will have on higher education, very little research exists regarding technology as a major change initiative effecting how higher education is developed and delivered. This research provides an opportunity to analyze actual changes occurring on a progressive urban community college campus.

Change strategies and outcomes are examined to identify those strategies used by leaders that have been successful in actually altering teaching/learning paradigm, organizational culture, and the structure of educational delivery in response technology use on campus.

Emerging themes in relation to successes and barriers are identified as the change process on a community college campus is examined.

Overview of Methodology

The purpose of this research is to identify change patterns related to use of technology at Mid-Western Community College in the state of Ohio. The broad questions that provide the framework for this research are:

1) What leadership strategies have been used in promoting college change toward the increased use of technology in the teaching/learning paradigm; which are successful, which are less so?

2) What change dynamics exist and are emerging at Mid-Western Community College in relation to increased use of technology?

Qualitative research methods are used in this study. An instrumental case study approach was chosen. Stake (1995) identifies an instrumental case study as, “a way to gain insight into the questions of interest by studying a particular case where the phenomena is occurring” (p. 3). In this case Mid-Western Community College has been the subject of
several publications highlighting a college wide transformational change that focuses on the learner, learning outcomes and the technology used to meet these needs. In studying this exemplar institution, insight into how this college community has implemented technology, the leadership strategies used and the dynamics that developed, provided a better understanding of this particular change phenomena.

Semi-structured interviews were conducted with individuals at multiple levels of this institution. Participants in the study were identified based on their involvement and knowledge about the changes related to technology that supports and/or is related to student learning. Morse (1994) states that, "as the researcher learns the roles and relationships among participants, he or she may identify appropriate informants. A good informant is one who has the knowledge and expertise the researcher requires" (p. 228). Interviews with the most obvious participants on this campus lead to the identification of other key individuals.

Data was also gathered by observation and document analysis. Appropriate observational opportunities and documents related to change and technology use on this campus were in part identified during the interview process. Morse (1994) states that, "data collection and sampling are dictated by and become directed entirely toward the emergent model." (p. 229) Observations and document analysis may in turn lead to an interview not originally planned.

A conceptual framework was used to guide and analyze the data collected using the above identified methodologies. Alfred and Carter (1998) in their critical issues paper, "Making Change Happen", present a change model that was developed by the Consortium for Community Colleges. This model allows for the integration of leadership
strategies, participatory involvement, environmental scanning and communication.

Carter and Alfred (1998) advocate what they call “open book management” (p.17). This is a strategy that breaks down the traditional community college bureaucratic processes and creates a climate for change by the college administrators sharing information and inviting participation in the development of the new process. This leadership philosophy closely mirrors the thinking of transformational leadership as identified by Bennis and Nanus (1985). They discuss transformational leaders as motivational individuals that promote and shape the goals of their followers thus achieving change that benefits both the leader and the followers. The Alfred and Carter (1998) model could easily fit any major change initiative in a community college system and thus is used to frame the collection and analysis of data regarding organizational change and leadership strategies related to the use of technology. Although the model does prescribe a suggested process for change, the broad categories will be useful as a way to frame the change process that occurred and is occurring at Mid-Western Community College. Use of the model as a framework does not in anyway assert that a predetermination has been made by the researcher as to change process, but simply provides a way to collect and analyze the data. The model and discussion of use will be presented in chapter three with the detailed discussion of the study methodology.

While the results of the study can not be generalized to all community colleges by virtue of the qualitative nature of the study, there is much to be learned from another institution’s journey, successes, mistakes and outcomes. The external pressures described in the problem statement portion of the chapter impact all community colleges across the nation. Many are in the process of sculpting their ways in to a turbulent future
of continual change and educational demands that are significantly different than has been the norm for the last 40 years of community college emergence in the higher education system. Very little research has been done to chronicle this educational transformation of community colleges. While the study is of a single exemplar case, important insights emerged and some benchmarking activities identified for consideration and encouragement of further study.
Chapter 2

Review of Literature

Introduction and Overview

This research explores the changes that are occurring at SC Community College as a result of technology integration at the college. The technology investigated is both teaching and learning technology, as well as technology that is changing the operation and administration of the college. The study of organizational change provides a framework from which to view the process that is occurring at this college and thus is a key body of knowledge.

Inherent in organizational change is the role of leadership. Strategies used by leadership individuals to promote significant change within an organization are identified. There exists a growing body of literature that describes the changes that are occurring at community colleges. Rationale for change, change process and leadership strategies are identified along with some efforts to identify benchmark activities. The theoretical foundation that promotes an understanding of this research is drawn from the areas of literature identified above and presented in the following format.

First, a brief historical background of the higher education system is presented, with the community college placed in the context of the larger system. This provides a foundation for an understanding of some of the changes that are currently confronting community colleges. Literature that identifies changes occurring at community colleges
is then presented. Many of these changes taking place in different areas of the college, have some link to technology use. Literature that identifies the external and internal pressures for change within the system is presented, as well as how community colleges in general are responding to these pressures. Literature will be presented that highlights the changing role of community colleges within the broader context of higher education. This body of information will provide an understanding as to the scope of change that is being faced by community colleges.

Second, literature involving the broader scope of organizational change is identified. Change of the magnitude described in the community college literature falls into the category of organizational transformation. Therefore, findings from this body of knowledge are needed to comprehend the change initiatives that community colleges are dealing with. While this literature is primarily based in business and industry, processes identified are applicable to restructuring and redefining community colleges in relation to technology.

Third, the area of technology used in higher education, specifically community colleges, is outlined. This literature encompasses the technology being used in the day to day operations, communication, and networking of the college. Of larger controversy, is the use of technology in the educational process of students. A discussion of the role of technology in the teaching and learning process is addressed.

Lastly, literature is presented that examines the role of leadership. Leadership is then discussed in relation to each of the three other concept areas of technology, community college change and organizational change. Leadership strategies and the outcome of these strategies in an environment of change are presented. This body of
knowledge is needed to compare and contrast change initiatives and to analyze leadership approaches to organizational change.

Changes in Community Colleges

To have a comprehensive view of today’s changes in community colleges, it is important to be grounded with an understanding of the history of community colleges in the United States, as well as their context within the larger higher education system. To this end, a brief review of the growth of the general college and university system will be presented, followed by the initiation, growth and role of community colleges.

From the founding of Harvard in 1636 until the middle of the 19th century, colleges in America were teaching institutions. The first major transformation from this model occurred when the distinctive concept of public service was added as a new component of the higher education mission (Awbry and Scott, 1993). The public service component was enhanced by the growth of land-grant colleges. Public service to the community was in the form of knowledge enhancement of the community members. Rice (1996) adds that colleges of these early times were committed not only to the development of character but to the building of community; they were envisioned as a social investment. Land-grant colleges were established by an act of Congress in 1862 primarily for the purpose of applying knowledge to the enormous agricultural and technical problems confronting society.

The second transformation, as explained by Awbry and Scott (1993) began in the last quarter of the 19th century. This is the timeframe when research activities began as a strong component of college activity. The first half of the 20th century saw a tremendous growth of research activities and the separation and distinction of research universities.
from other colleges. Kennedy (1995) identified these new universities as the centers where the future faculties for the higher education system were prepared. This gave them an enormous influence over the character of an enterprise that would soon grow faster than anyone could have dreamed.

During the first two decades of the 20th century, the Ph.D. degree evolved from a highly advanced scholarly qualification held by very few individuals into a required credential for teaching at the college and university level (Kennedy, 1995). World War II had a major impact on the research universities. Kennedy (1995) identifies the postwar conversion of military research into university science as a tremendous impetus to the domination of the universities by research. While teaching and service remain as part of the mission in the universities and colleges today, it was at this point in history that research began to emerge as a major focus for many of the institutions. Lovett (1993), identifies the service component as one that historically brought the college teacher closer to the students and community. The college teacher of the late 19th century was expected to be a leader of local literary societies and reading clubs. The teachers in these early years of higher education provided an important link between the community and the college. Lovett (1993) also identifies that the strong emphasis on the professor as a researcher implied a negative and somewhat condescending view of the more familiar and traditional teaching, mentoring and service roles. She further postulates that this role of researcher lead to isolation of the college professorate from the local community and that this was the beginning of the ivory tower concept.

The Community college had its roots in the early 20th century. Cohen and Brawer (1996) identify the inception of these institutions to be based on several factors. In the
early nineteen hundreds, expanding industries needed trained workers. This was not the type of education occurring at the colleges of the times, and even if it were, access to these institutions for the common man was very uncommon. Access for the common woman was almost unheard of, and the demand for a female worker in the industries of the times was not in the skilled jobs, if at all. In 1925 the label “Junior College” was coined for institutions that developed a different type of curriculum, one that was suited to the larger and ever changing civic, social, religious, and vocational needs of the entire community in which the facility was located (Cohen and Brawer, 1996).

In the 1940’s, birth rate in the United States increased significantly. Therefore, many more individuals were ready to go to college by the late 1950’s. The GI Bill that was introduced following World War II increased college attendance to a level for which the four-year institutions of the day were not prepared. They were also unprepared for the lack of academic preparation that accompanied some of the GI’s attending college through the use of the GI Bill. Many of these individuals were the first in their families to attend college. Their original intent upon leaving high school was probably not college, however, financial support from the GI Bill made college a possibility for many that would not have attended otherwise. According to Cohen and Brawer (1996), there were several strong proponents of the 1950’s who suggested that two year colleges provide the first two years of general education for the four year institutions, so that the advanced institutions could concentrate on professional education and research. This concept never gained universal acceptance.

Cohen and Brawer (1996) continue to explain that during the 1950’s and 1960’s, the term “Junior College” was applied more often to the lower-division branches of
private universities and that the two-year college and technical institutions were church supported or organized independently with state support to meet the educational needs of local business and industries requiring a level of technical expertise in many of their job roles. By the 1970’s, the term community college was usually applied to both types of two-year institutions. The early 1970’s saw a massive expansion of community colleges across the United States, with the focus being access. In many states these institutions were built such that 90-95% of the population lived within reasonable commuting distance, about 25 miles (Cohen and Brawer, 1996).

It is somewhat ironic that as the universities became more involved in research activities, and many of the four-year private colleges took the role of liberal arts education, that both of these internal foci moved these colleges away from their earlier roles in the community. At the same time, community college growth increased with their emphasis strongly focused on the needs of their surrounding community. Cohen and Brawer (1996) explain:

"The community colleges reached out to attract those who were not being served by traditional higher education; those who could not take the time to attend a college on a full-time basis; whose ethnic background had constrained them from participating; whose background had inadequate preparation in the lower schools; whose educational progress had been interrupted by some temporary condition; who had become obsolete in their jobs or had never been trained to work at any job; who were confined in prison; had physical disabilities; or otherwise unable to attend classes on a campus; or who were faced with a need to fill increased leisure time meaningfully; their goals were to serve the people with whatever the people wanted" (p. 29).

Since the late 1980’s, the community external to colleges and universities education have become very opinionated regarding the business of higher education.
There was dropping enrollment at almost all colleges and universities. Community colleges were no exception. State and federal government(s) began a trend of decreased funding allocation to higher education. The general legislative feeling was that higher education was not budgeting money wisely and students were not getting a good return on their investment. Colleges and universities were being told to do more with less and to be accountable for quality education for the undergraduate population. It is no surprise that the cost of higher education has become a major issue for the consumer. Burd (1998) reports that the National Commission on the Cost of Higher Education issued a statement saying that if colleges did not rein in their costs, Congress would be forced to intervene. They further said that colleges must be responsible for controlling their own costs. O'Banion (1997) notes that the current model of higher education has become economically unsustainable and there is a growing public dismay over increasing tuition costs. He also suggests that there has been no apparent increase in benefits to parallel the rise in cost. The public has voiced concerns related to what they are paying for in higher education and questioning if they are getting an appropriate return on their investment.

Carter and Alfeed (1998) identify a call for accountability that permeates many of the issues community colleges are attempting to address. Students, business and industry leaders, state legislators and federal government officials are increasingly interested in knowing not only what colleges are doing, but how well they are doing it. They also add that like technology, it is certain that accountability demands are and will remain a significant catalyst for institutional change.

There is a troubling level of public dissatisfaction regarding colleges and universities. This is evidenced by negative media coverage of higher education and by
books that have been devoted to academic muckraking. Zemsky, Massy and Odel (1998) discuss student expectations of their college experience by emphasizing that the college student of today expects the same of colleges and universities that they demand elsewhere: lower cost, better service, higher quality and a mix of products that satisfies their own sense of a good education. The government has even become opinionated about how higher education delivers educational opportunities. While general funding dollars are decreasing, government grant sources are increasing in relation to the use of technology in higher education. Carnvale (2000) reported that the University of Colorado received a four-year $405,733 grant from the Department of Education’s, Learning Anytime, Anywhere Project. This project supports the development of Internet-based courses. The appropriations bill that finances the Labor, Health and Human Services and Education Department, signed in December by President Clinton, more than doubled the funds for grants under the program up from $10 million for 1999 to $23.94 million for the 2000 fiscal year. Carnvale (2000) reported that the Senate was interested in using these federal grants help colleges and universities follow the lead of private sector companies and that the money would allow them to stay competitive in the market. He further indicated that the impression of the appropriations committee was that colleges and universities must begin to innovate, or they will die.

With public and governmental forces at work pressuring the general higher education system of the 1990’s, the impact on the community college system is phenomenal. Community colleges have traditionally adapted to the needs of the community and change is expected to occur at a much swifter pace than at four-year colleges or universities. However, the demand for technology, meeting the needs of the
learner and answering the call for a knowledgeable workforce, have significantly stressed these institutions. Good education for the community college is being redefined both internally and externally. Roueche and Roueche (1998) state:

“Community colleges are now players in a highly competitive, market driven economy where they must identify their niche; analyze their competitor’s strengths; remain viable by offering the best services in the most economic, efficient and convenient manner; and expand and strengthen bases of economic, and constituent support for further growth and development” (p. 31).

These demands can not be met by adjusting the current way community colleges due their business, significant change will be needed.

There is growing support for the need to foster learner focused education. The expanding use of technology can be used to shift the focus to the learner. Technology is one of the keys to building a solid foundation for the creation of the learning college (O’Banion 1996). Designing the education experience around the needs of the learner instead of that of the faculty, expands the creative potential and allows for a greater variety of ways the learner can gather the knowledge needed to meet the learning objectives. Duderstadt (1999) agrees that knowledge and distributed-intelligence technology will increasingly foster the construction of learning environments that are not only highly customized but adapted to the needs of the learner. Twigg and Doucette (1992) build on this idea by identifying that, “the current model of higher education will inevitably change because it is economically unsustainable. The key to success is the transformation of the teaching learning process from one that is teacher centered to one
that is learner centered, to transform the community of scholars to one that is defined by communities of learners” (p. 2). Duderstadt (1999) draws an interesting analogy when he compares the land-grant model of colleges that focused on developing the nation's vast natural resources, to the current situation that identifies the nation's most important resource for the future as its people. Thus a 21st century analog to the 19th century land-grant college might be termed a “learn-grant” college designed to develop human resources as its top priority along with the infrastructure necessary to sustain a knowledge driven-society.

Chapman (1996) explains that, “the most important task higher education institutions can accomplish in this time of change is to move students from dependent to independent learners and to instill in them an aptitude for life-long learning” (p. 70). Senge (1990) identifies a shift in total organizational thinking as he discusses the learning organization as one in which people continually expand their capacity to create the results they truly desire, where collective aspiration is set free, and where people are continually learning how to learn together. O'Banion (1997) concludes that, “if learning is to become the central focus for educational institutions, the traditional architecture of education will need to be demolished and a new system created, one that is not time-bound, efficiency bound, and role-bound” (p. 47).

Another major factor driving the change imperative for community colleges is the growing need for individuals in the workforce who have some degree of specialized training or knowledge base. DeAlva (1999) states that, “in 1950, only one in five U.S. workers were categorized as skilled by the Bureau of Labor Statistics. By 1991, the percentage had risen to 45 percent, and it will reach 65 percent in the year 2000” (p. 52).
He further notes that the education of the knowledge-based worker is quickly becoming an expanding focus in the nation's community colleges. The economic pressures pushing higher education to fulfill this need, can not be ignored.

The concept of the knowledge worker and the increasing need for colleges, specifically community colleges, to become heavily engaged in the education of this workforce has been discussed by: Twigg and Doucette (1992), O'Banion (1997), Duderstadt (1994), Davis and Botkins (1994), Drucker (1994) and Baker (1998). It is generally agreed on by these authors that, there are growing economic forces pushing higher education to fulfill this educational need. The average business, industry and service institutions that used to provide periodic training and workshops for their employees, are now finding this task close to impossible due to the high rate of industry change and the continual evolution of their computer systems. Many institutional leaders are insisting on and will only support systems of higher education that produce graduates with the kinds of skills their companies need to remain competitive. The education required today and into the future needs to provide the learner with the skills for life long learning, as it is predicted that the learner will need to be re-skilled numerous times in their working lives if they wish to remain employed. Several of the authors indicate that by the beginning of the 21st century, one third of the workforce will need to be knowledge workers.

In a 1998 government poll of 50 State Governors, titled "Transforming Postsecondary Education for the 21st Century", the top priorities identified by the Governors were:

- "Encourage life-long learning"
- "Allow students to obtain education at anytime and in any place via technology"
- "Require post-secondary institutions to collaborate with business and industry in curriculum and program development”.
- "Integrate applied or on-the-job experience into academic programs”

Those items at the bottom of the list of priorities were:

- "Ensuring a campus based experience for the majority of students”
- "Maintaining traditional faculty roles and tenure”

In an attempt to tie all of this thinking regarding the knowledgeable workforce together, a quote from De Alva (1999) is helpful,

“In a world where technology expenditures dominate capital spending and the skills that accompany it have half-lives measured in months, not years; where knowledge is accumulating at an exponential rate; where information technology has come to affect nearly every aspect of one’s life; where the acquisition, management and development of information are the key competitive advantages; where electronic commerce already accounts for more than 2.3 million jobs and nearly 500 billion in revenue; education can no longer be seen as a discrete phenomenon, an option exercised only at a particular stage in life or a process following a linear course. Education is progressively becoming for the social body what healthcare has been to the physical and psychic one. It is the sinequa-non of survival, maintenance, and vigorous growth”.

(pg. 52)

This conclusion is further reinforced by Zuboff (1988) with his observation that, learning is no longer a separate activity that occurs either before one enters the workplace or in remote classroom settings. The behavior that defines learning and the behaviors that define productivity are one in the same. Learning is not something that requires time out from being engaged in productive activity; learning is the heart of productive activity.

He states, “to put it simply, learning is the new form of labor” (p. 32).

Certainly the implications of actualizing what is being demanded of higher education even at the community college level, is a massive challenge. There exists a
generation of educators that while extremely knowledgeable in their fields of study and for the most part quite excellent in teaching, are unprepared and often are unwilling to engage in such a transformation effort. With this educational shift in paradigm, the basic premise of teaching and learning is questioned, restructured, measured differently, engaged in using still evolving modes of learning and heavily influenced by the consumers. New measures for quality education will be based on what is learned, not what is taught and the faculty that are progressing with this process are on a learning curve closer to that of the student than when they first began their role as new faculty.

Another area of concern for the community college is that of the proprietary schools and the growth of corporate universities. Businesses approaching these institutions with a specific training need, are not hampered by academic calendars, curriculum change cycles and student services beaurocracy. According to Holmes (1999) corporate universities, represent the fastest growing segment of higher education. Finn (1998) predicts in the new academic marketplace that students and business/industry will choose providers of educational services based largely on the strength of their feelings about affordability, speed, and convenience that dominate one end of the spectrum, or about status that dominates the other.

It is easy to see that change is the emphasis of the day for community colleges that wish to remain viable into the 21st century. "The largest and easily the most volatile segment of higher education is the community college. Enrolling an estimated 5.5 million students by 1995 and capturing 40% of the higher education market, community colleges can be expected to be a major player in employing new technologies to "harness the winds of change"(Bleed 1993 p. 28). An analogy set forth by De Alva (1999)
parallels the current situation of community colleges with that of the railroad system of many years ago. He states that the railroads should have asked themselves if they were in the business of trains, tracks and warehouses or of transportation. Their narrow thinking lead them to unanimously adhere to the former position, and thus their fate. De Alva (1999) suggest that college leaders should decide if they are primarily in the business of brick and mortar classrooms and self created curriculum or in the business of education. O'Banion (1998) reports that community colleges need a new model of education, a model that incorporates the best practice and philosophies of its past with the expanding base of new knowledge about learning technology. An expansion of that thinking is presented by Holmes (1999) who postulates that successful community colleges will focus on perpetual learning for adults with primary emphasis on workplace learning and occupation preparation in virtual classrooms. The value of community colleges to their local communities will depend on their ability to apply learning solutions for increasingly complex local issues. Carter and Alfred (1998) conclude that in recent years, almost all community college institutions have experimented with some type of change process aimed at improving service and quality. Whether it was called marketing, strategic planning, or continuous quality improvement, colleges have invested significant resources in trying to make change happen. The impetus behind many of these efforts has been the astounding change in the markets that our colleges are serving. To succeed, institutions must meaningfully depart from traditional ways of doing things, from partnerships to networks, from synchronous to asynchronous learning, from teaching to learning. Change is no longer the exception, it is the rule. An overall guiding philosophy may be best as stated by Drucker (1992), in his book, *Trimming the Branches of a Dying*.
Tree: Managing for the Future, "Every few hundred years throughout Western History, a sharp transformation has occurred. In a matter of decades, society altogether rearranges itself; its world view, its basic values, its social and political structures, its arts, its key institutions" (pg. 95). Drucker believes that education will play a major role in this transformation and will also be transformed in the process. It is a safe prediction that in the next 50 years, colleges and universities will change more and more drastically then they have since they assumed their present form 300 years ago when they organized themselves around the printed book.

The following table (Table 1), represents a synthesis of the concepts that have just been discussed in this section of the review of literature regarding community college change.
<table>
<thead>
<tr>
<th>Types of Change</th>
<th>Internal Focus</th>
<th>External Focus</th>
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<tbody>
<tr>
<td>Economic Driven</td>
<td>Administration</td>
<td>Government funding</td>
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<tr>
<td>- Restructure</td>
<td>- Program needs analysis</td>
<td>Public concern for increased tuition cost and not increased value/quality to match</td>
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<td>- Call for increased accountability</td>
<td>- Do more with less directives</td>
<td>Student expectations</td>
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<td>- Changing modes of delivery to</td>
<td>- Institutional decisions are cost driven</td>
<td>- need to lower cost</td>
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<td>capture funding</td>
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<td>- need for better service</td>
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<td>Proponents for a total shift in organizational thinking to a learning</td>
<td>Students</td>
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<td>organization strategy.</td>
<td>- Learner needs</td>
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<td>Internal struggle/cultural change</td>
<td>- Customization</td>
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<td>Transition in architecture to facilitate educational offerings that are not</td>
<td>Other consumers of education</td>
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<td>time bound, efficiency bound or role bound.</td>
<td>- Business and industry for</td>
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<td>Institutional structure changes to accommodate these demands.</td>
<td>workforce development and</td>
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<td>Internal accountability</td>
<td>specific training/skills sets</td>
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<td>- Outcome assessment of learning as a validation of learning and a measure of</td>
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<td>- Increased development of educational offerings delivered by alternative</td>
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<td>- Specific to needs of business</td>
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<td>- Change from on campus only course</td>
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<td>Cultural change</td>
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<td>- Refocus and reflect on being in the business on education not</td>
<td>Societal commitment to train individuals to fit into a changing</td>
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<td>the business of brick and mortar classrooms</td>
<td>workforce and world economy.</td>
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<td>- Learner focused not faculty focus curriculum</td>
<td>Societal commitment to train individuals to fit into a changing</td>
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<td>workforce and world economy.</td>
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Table 1: Community College Change: Synthesis of Concepts
Organizational Change

To provide a basis from which to discuss organizational change, it is important to provide some background that identifies the dynamic of organizations. The organizational systems approach that will be described is the open system. This approach best fits the type of organizations that are the subject of this study. Drawing upon the work of Burns and Stalker (1961), Morgan (1996) identifies that when change in the environment becomes the order of the day, as when changing technological and market conditions pose new problems and challenges, open and flexible styles of organizations are required. This need for flexibility in open systems is important when the organization is dependent upon its surrounding environment to support the very existence of the organization. Wheatley (1992) states that, "to stay viable, open systems maintain a state of non-equilibrium, keeping the system off balance so it can change and grow" (p. 78).

The significant association between an organization and its environment is well illustrated as Morgan (1996) describes the components of Contingency Theory within organizations:

a) "Organizations are open systems that need careful management to satisfy and balance internal need and to adapt to environmental circumstances."

b) "There is no best way of organizing. The appropriate form depends on the kind of task or environment with which one is dealing."

c) "Management must be concerned, above all else with achieving alignments and good fit."

d) "Different approaches to management may be necessary to perform different tasks within the same organization."

e) "Different types or species of organizations are needed in different types of environments." (pg. 44)
Morgan (1996) further explains how organizations that use the open systems approach differ greatly from those that operate in alternative systems. He states that the open system works in those organizations that are dependent upon their environment. The environment is identified as the organizations direct interactions with customers, competitors, suppliers, unions and government agencies, as well as the broader contextual or general environment. In other words, any organization whose existence is dependent upon external interaction with people in any capacity, function best as an open system. This works like a checks and balances system if the leaders within an organization are paying attention to the signals being sent by their significant environment, they can adjust their organizational function to meet the needs of the environment. If on the other hand, organizational leaders are not sensitive to changing needs in the environment and adjustments are not forth coming to meet these needs, the usefulness of that organization to its environment may decline and it eventually ceases to exist.

Drucker (1997) discusses some similar thinking, but describes his view of organizations specifically in the realm of businesses. He states that a theory of business has three parts. “First, there are assumptions about the environment of the organization; society and its structure, the market, the customer, and technology. Second, assumptions about the specific mission of the organization. Third, there are assumptions about the core competencies needed to accomplish the organization’s mission” (pg. 29). The core competencies are discussed as those processes that the organization does well in order to provide the product or service needed by the environment. Collins and Porras (1997) add to this thinking with a more in-depth presentation of internal functioning that identifies
the essential components of the organization. They identify the organization’s core values as the enduring tenets of the organization. These are a small set of timeless guiding principles that require no external justification; they have intrinsic value and importance to those inside the organization. The core values are part of the organization’s culture, but are rooted deep in the founding make-up of the organization.

An example given of an organization’s core values is Disney Inc, whose core values are: imagination and wholesomeness. Collins and Porras (1997) caution that it is important to stay clear in relation to the difference between values that are core to the organization and values that are related to the operating practice and business strategies. They identify this first set of values with the term “core purpose” (p. 76). The core purpose is the fundamental reason for being, or the soul of the organization. The core purpose taps into the deeper reasons for an organization’s existence beyond just making money. Collins and Porras (1997) state that the core purpose should last at least 100 years and not be confused with specific goals and business strategies. For example, Disney’s core purpose is to make people happy. These two elements of organization discussed by Collins and Porras are much deeper than the core competencies, describing what an organization does well, as discussed by Drucker (1997). These elements get to the cultural, emotional, personal side of an organization that begins the foundation for the human side of the business. This thinking is easily adapted to higher education institutions where it may be common to identify a core value as knowledge and a core purpose as learning.

Wheatley (1996) also discusses core competencies of organizations. She, as Drucker (1997) treats these organizational elements as flexible. She states that companies organized around core competencies provide a good example of how an
organization can obtain internal stability that leads both to well-defined boundaries and to openness over time. A business that focuses on its core competencies identifies itself as a portfolio of skills rather than business units. It can respond quickly to new opportunities because it is not locked into rigid boundaries of pre-established end products or businesses. Wheatley (1996) further states that, “such companies are remarkably sensitive to their environment, staying wide open to new opportunities and ventures that welcome their skills” (p. 93).

Problems begin in an organization when adjustments are not made to meet the needs of a changing environment. When the environment is such that changes are rapid, confusion is increased and the predictability of the near future is unclear, a turbulent environment exists. Several authors describe turbulent environment as a major catalyst for significant change: Drucker (1997), Hammer and Champy (1993), Conner (1998), Wheatly (1996), and Backoff and Nutt (1992). Organizations that fail to recognize environmental turbulence as an indicator for change and do not realign their business practices, services, products and processes with the changing environment, will struggle in the future to remain viable. Total reengineering is taking place in many organizations for the purpose of aligning with an environment that in many cases is expanding to include a global market and thus global competition. Traditional boundaries for organizations that were once well defined, in many instances no longer exist. Organizations are facing a new world. Gone are the luxury days when planning, development and implementation of incremental changes within an organization could take place over an extended period of time and occurred with very little external pressure. Today, globalization, increased pressure by stakeholders, and the pace of environmental
change, have forced organizations into a reactionary stance that demands change of a more radical nature than the incremental adjustments of yesterday. The authors agree, although in somewhat different terms, that the environment for all organizations is chaotic.

It is this turbulence in environment that has stimulated many organizations to begin the path toward major change. Backoff and Nutt (1997) identify a change concept called second order or transformational change. This type of significant organizational change is a "transformation that goes beyond fostering growth which adds to existing capability by serving existing customers more efficiently and effectively. Transformation suggests a developmental organization that engages in a continuous appraisal of visionary possibilities and systematically integrates viable ideas into its repertoire of capabilities and other aspects of the organization's strategy" (pg. 239). Backoff and Nutt (1997) further discuss the fact that transformational change must be revolutionary to the extent that core processes, organizational culture, products/services, markets and strategic alliances change to meet the evolving visionary possibilities. Many are in agreement with the need for organizations to proceed with transformational change and that this change process needs to be significantly more radical, extending into the very paradigm upon which the organization operates. This change is far different than the old paradigm of occasional incremental changes and adjustments. There is however, far less agreement about the best process for transformational change within an organization.

One author discusses the transfer or diffusion of information regarding technology or innovations as mechanism that causes organizational change. Von Hippel (1988) talks about competitive edge, if the information regarding the use of a technology is diffused
within an organization and not outside. He also talks about experts within an organization only sharing information about how to use the technology with a few individuals thus those individuals know how to use the technology or innovation while others in the same organization do not. This scenario could create a sector of elite users and potential hard feeling by those who were not the chosen to receive the information.

Further, Von Hippel (1988) discusses the role of the expert in a new technology within an organization as the "lead user" as one that keeps the organizational leadership informed of any changes in the use of the technology by the industry that created it or by other users. He also discusses the fact that dissemination of the new technology into working aspects of the organization usually causes some degree of organizational change depending on the importance and use of the technology.

In this section, an overview will be presented of several current theories of organizational change. This is not intended to present these processes/theories in any detail, but to pull out the major premise for change. Ingrained within each of processes is the component of leadership. Because there is a literature review section that deals specifically with the leadership aspect of organizational change, the role of leadership will be mentioned only briefly in the following examples and then revisited in greater detail in the leadership section of chapter II.

Carter and Alfred (1997) identify many of the concepts that were discussed above as rationale for organizations to engage in the process of significant change. They echo the concern related to the astounding change in the markets for most organizations and identify that institutions must meaningfully depart from traditional ways of doing things as change is no longer the exception, it is the rule. Carter and Alfred (1997) consider
organizational change as having three forms: "operational change, framebreaking change and stretch" (pg. 7). They discuss operational change as those changes that would be considered "in the box", those initiatives done to assess and modify the system to modify performance and increase effectiveness. The description of this level is very similar to first order change as described by Backoff and Nutt (1997). Framebreaking change initiatives are identified as those that stand-alone. They represent out of the box thinking and while considered as innovative and on target by some, they are disruptive since they involve suspending current practices or systems. For Carter and Alfred (1997) attempting to combine these two types of change simultaneously has the potential to produce chaos or resentment and may polarize the organization. They identify that this is where the concept of "stretch" enters the process to complete the change tapestry. Stretch strategies help the organization reach for the future while maintaining equilibrium and preserving the past. Carter and Alfred (1997) state that the stretch strategies reach beyond the present by isolating the beneficial aspects embedded in framebreaking change and exploring ways to incorporate these innovations into current practice. Stretch strategies also identify better alternatives by reexamining past practices, emerging practices and rethinking structure, systems process and organizational balance.

Backoff and Nutt (1992) present a change model that was developed for use with public and third sector organizations. This is a strategic management model that is designed to guide the organizational change team through a comprehensive assessment and planning process. They state that to be successful, strategic change must deal with the developments that trigger action. The developments must pose questions that engage the team in the "what" and "how" of the strategic management process. Like Carter and
Alfred (1997), it is important in this model that the strategy or change team have an understanding of the history of the organization and founding ideas. This is important if a shared interpretation of where the organization should be headed in the future is to be developed. In the next step, Backoff and Nutt (1992) build on the work done by Ansoff (et. all 1976 and Anoff 1980) as they identify an assessment process used to outline the organization’s strengths, weaknesses, opportunities and threats or SWOTs followed by the development of an action plan. The identification of these issues, both internal and external to the organization, helps the team identify tensions in the organization that are pulling and pushing it away from its ideals. Also of interest in the identification of tensions, is the discovery of competing values within these tensions. From the lists of SWOTs, the most crucial tensions can be identified and a strategic management plan identified. In the development of the plan, a further assessment is done to identify possible barriers.

Contingency factors are identified as those factors that may have either a positive or negative effect on the implementation of the plan. Constraints are those forces that are pulling the organization in a certain direction. These forces may or may not be controllable, but need to be identified. At this point the actual action plan is developed using all of the assessment information that has been identified. Plans for continuous assessment and realignment toward the identified organizational future are included in the strategic process.

A third model to be presented on organizational change was developed by Michael Heifetz (1993). This model has been used in a variety of organizations, mostly private sector/for profit organizations. Heifetz (1993) describes change as a tension
between two opposing forces. He states that change is neither good nor evil; it simply is. Change is a force of nature that will take place around us unless the choice is made to manage change in a direction that is of benefit. For him, the choice of change establishes a positive environment for growth and development. Heifetz (1993) identifies eight energies involved in the change cycle as dominant forces throughout the process. These energies are:

- “Allowance (state of being in which new ideas and possibilities are allowed into the mind for consideration)”
- “Will (a static force, provides direction and impetus, goal setting)”
- “Capability (power of individual or collective, initiating action)”
- “Chaos (continued barrier, resistance)”
- “Connectedness (physical property of attraction)”
- “Harmony (rebalancing to accommodate the change)”
- “Evolution (consolidating the learning)”
- “Transition (moving to the next cycle)”

The tension that is identified in each part of the change cycle is chaos. Because chaos is defined as resistance, it is the opposing force in each of the stages of the change process. Heifetz displays the dynamic of this tension in the following grid.

<table>
<thead>
<tr>
<th>Dominant Energy</th>
<th>Traits of Chaos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1. “Allowance”</td>
<td>Tends toward status quo. Unreceptive to new possibilities.</td>
</tr>
</tbody>
</table>
Stage 5. Harmony       | Agitated and destabilizing force. Tends toward imbalance and disharmony.
Stage 6. Evolution     | Tends to push backwards toward older forms. Tends to block recognition of new emerging forms.
Stage 7. Transition    | Tends toward holding pattern. Blocks recognition of the potential of the next cycle. (pg. 73)

As change is cycled through the stages, the dynamics of the dominant energy shifts. The successful progression through the stages to transition means that the capability and will of the change agents are such that the force of chaos is decreased and the change effort is able to progress through the stages of harmony, evolution and transition. By the time transition is reached, chaos is significantly lessened and the force is turning toward the next potential threat to the status quo. Heifetz (1993) promotes change in businesses as a necessity to the well being and growth of the organization. He states that change management assures that new product, services, and technology innovations are continually being developed and that the organization's future direction is constantly identified.

The last model to be presented comes from the literature on change in community colleges. Carter and Alfred (1998) have identified a model they believe to be useful in the community college arena. They state that despite different approaches, a successful design for change appears to involve several clearly identifiable steps: "Understanding
the fundamentals; forging strategy; identifying champions; supporting innovation; and communicating and celebrating success" (pg 27). Carter and Alfred (1998) identify fundamentals as creating a foundation for organized change through appreciation of, and respect for, the college’s culture, mission, vision and values. They state that it is important to work with the college culture rather than to fight it, as culture is one of the primary contributors to resistance in the change process. The change initiative needs to be linked to the college mission. A significant way to establish the legitimacy of the change process is to engage college community in articulating a future vision for the college. This also provides a valuable opportunity to educate the college community as to the environmental changes occurring around them that will impact the future of the college. Carter and Alfred (1998) state that a valuable by-product of this beginning process is the definition of the college’s core values, in concert with its future vision.

Forging a strategy is the second stage in Carter and Alfred’s process. This involves developing a clear statement of the problem underlying the need for change, a shared vision of the outcomes being sought, and a well-defined plan of action. Building a plan of action is attended to in detail in the operational description of the model but will not be presented in this overview. In the third stage, the identification of champions within the organization is important. Carter and Alfred (1998) state that this step can play a critical role in legitimizing the need for change and in framing strategy in ways that increase the receptivity of stakeholder groups. These champions become leaders in the change process and their credibility with their constituent groups is important in the process.
In the fourth stage, Carter and Alfred (1998) discuss the importance of supporting innovation. They also make the point that this stage, along with stages two and three are not to be thought of in a sequential manner as they can occur concurrently with the other stages. In the concept of supporting innovations, they make the point that much of the success of change appears to depend on the extent to which the institution remains open to a variety of approaches and processes. They state that it is counterproductive to limit approaches to past practice or to tradition. Experimentation needs to be encouraged and the institutional reward system must acknowledge and promote innovation.

Finally, Carter and Alfred (1998) make the point that communication is extremely important in this process of change. They state that no matter how tired we are of hearing that communication is important or that it is the one thing that every college needs to improve, it is a critical step in successful change. They add three insights to the elusive problem of communications. First, a sound communication plan is advocated. This plan should be dynamic and detail a mechanism for keeping stakeholders and constituents informed. Secondly, importance should be placed on sensitivity to language. Carter and Alfred (1998) state that, “finding a lexicon that fits the culture of the college is important. The language of change can become a disabling “red herring” or even a call to arms that can easily be avoided with some planning in relation to language” (p. 35). Third, the importance of taking time to celebrate the success along the way allows for the feeling of achievement and enhances the potential of success in further steps in the process as well as future system changes.

There are many more processes for change in organizations discussed in the literature. The four presented above represent some diversity focused upon their intended
audience as well as some common themes. Many of the concepts addressed in these processes for change are discussed across the literature on organizational change. A common thread that is found in all of the models discussed is that there is a need to assess current status and future direction of the organization and to plan for change. Some models such as the Carter and Alfred’s Community College Change model are very prescriptive in relation to steps and process combined with the importance of organizational culture. Others such as Anoff (1980), Nutt and Backoff (1992) SWOT analysis provide the organization with an assessment process that will then lead to a plan for changed based on the outcome of the assessment. Heifetz focuses not on the identification of the needed change, but totally on dealing with the organizational culture during change implementation. Lessons are to learned by all of the examples as an organization is moving towards a transformational change effort. Higher education has little background experience in making changes of this magnitude. Each institution will need to put together a model for assessment and change that makes sense for them. Borrowing model pieces to assemble a change process that fits with the organization is a good place to start. Wheatley (1992) simply states that, “out of chaos comes order”(p. 123). Unpacking the reality of this statement for an organization such as a college is not so simple but is inevitable.

The following table (Table 2) represents a synthesis of the concepts just discussed in this section of the review of literature regarding organizational change.
<table>
<thead>
<tr>
<th>Stimuli for Change</th>
<th>Types of Change</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing Environment</td>
<td>First Order or Operational Change:</td>
<td>Organizational and Environmental Analysis</td>
</tr>
<tr>
<td>- Products not longer meet</td>
<td>- Adjustments within current</td>
<td>- SWOT</td>
</tr>
<tr>
<td>consumer needs</td>
<td>organizational structure and function.</td>
<td>- Contingency planning</td>
</tr>
<tr>
<td>- Size of environment</td>
<td>- Minor effect on organizational</td>
<td>- Constraint identification</td>
</tr>
<tr>
<td>changing</td>
<td>operations and culture.</td>
<td>- Continuous assessment and realignment process</td>
</tr>
<tr>
<td>- Consumers changing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turbulent environment</td>
<td>Second Order or Framebreaking Change:</td>
<td>Continuous Change Cycle</td>
</tr>
<tr>
<td>- Rapid change</td>
<td>- Revolutionary</td>
<td>- Assessment</td>
</tr>
<tr>
<td>Chaos</td>
<td>- Paradigm change</td>
<td>- New direction</td>
</tr>
<tr>
<td>- Unpredictability</td>
<td>- Visionary</td>
<td>- Tension/chaos</td>
</tr>
<tr>
<td>- Instability</td>
<td>- Beginning of a continuous</td>
<td>- Organizational learning</td>
</tr>
<tr>
<td>Globalization of markets</td>
<td>cycle of change.</td>
<td>- Change</td>
</tr>
<tr>
<td>New Technology</td>
<td></td>
<td>- Reassessment</td>
</tr>
<tr>
<td>- Increased access to</td>
<td></td>
<td>Use of mission, core values,</td>
</tr>
<tr>
<td>knowledge and information</td>
<td></td>
<td>environmental scanning and inclusion</td>
</tr>
<tr>
<td>- Increased competition</td>
<td></td>
<td>of organizational membership to:</td>
</tr>
<tr>
<td>Demand for:</td>
<td></td>
<td>- Forge a strategy</td>
</tr>
<tr>
<td>- Quality</td>
<td></td>
<td>- Define plan of action</td>
</tr>
<tr>
<td>- Value</td>
<td></td>
<td>- Identify organization</td>
</tr>
<tr>
<td>- Accountability</td>
<td></td>
<td>champions</td>
</tr>
<tr>
<td>- Convenience</td>
<td></td>
<td>- Support innovation</td>
</tr>
<tr>
<td>- Competitive cost</td>
<td></td>
<td>Facilitate organizational</td>
</tr>
<tr>
<td></td>
<td></td>
<td>communication and learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Celebrate achievement</td>
</tr>
</tbody>
</table>

Table 2: Organizational Change: Synthesis of Concepts

Technology

The technology changes occurring at community colleges are expanding constantly. Shifts in the direction of technology use in higher education are becoming evident in a growing number of community colleges across the United States. Wenger (1996) predicts that institutions that integrate technology will thrive and succeed into the 21st century. Those institutions that fail to make this change will find their usefulness significantly diminished in the marketplace. Duderstadt (1999) expands on this thinking as he states that, the weakening influence of traditional regulations and the emergence of new competitive forces driven by changing societal needs, economic realities and technology, are likely to drive a massive restructuring of the higher education enterprise.
The call for change related to technology in higher education is identified in two broad categories. The first category relates to the technology needed to more efficiently and effectively accomplish the business interactions and communication of the college. In a 1996 national survey of the use of information technology, Kenneth Green reported, "that over 50 percent of all faculty across academia, and close to 100 percent on many campuses, had their own office computer" (p. 4). He further discovered that the use of information technology resources is often greater in community colleges than other sectors. O'Banion (1997) reports that information technology has been widely adopted in colleges and universities for administrative functions. The technology is being used to manage data, course schedules, student transcripts, institutional budgets, admissions information and campus communications. Chand (1996) identifies the need for colleges to develop performance workplaces, lower operational costs, increase customer responsiveness and demonstrate accountability through the use of technology. Integrated and relational databases are creating a mechanism to efficiently track student enrollment and retention. Chand (1996) touts the value of technology in the ability to synchronize several different student support systems with one entry point for the student. These may include registration, fee payment and financial aid information.

As colleges are being held more and more accountable for student outcomes and employment information, longitudinal tracking systems are being designed via computer to prepare reports and statistical analysis. Paradoxically, even as the adoption of informational technologies is not commonly the natural or preferred choice of employees, any successful deployment is absolutely dependent upon their acceptance and use of the new system (Chand 1996). Today and in the future, information technology will play a
strategic role in the way colleges do business. It is very important for colleges to be leaders in information technology in their own operation (Wenger 1996). Baker (1998), observes that community colleges will need a nervous system (information system) that gives the employees instant access to databases across the college and to extended places where college business is done. All individuals who provide services to the students will need to work cooperatively and be able to access student information via computer.

The second category to be outlined in relation to technology in higher education is the use of technology for the purpose of educating students. There is an emerging revolution in education to place learning first. Proponents of the new learning paradigm suggest that the traditional model of education, developed in response to an earlier agriculture and industrial society, no longer serves the new information society (O'Banion, 1996). Holmes (1999) identifies societal change that is technology based. Driving the technology transformation is the shift of power from products to knowledge in the world economy. Information technologies are fueling this shift in power and threaten to make higher education institutions obsolete in the next century. He draws an analogy between institutions of higher education who lack awareness of the need to change with canoeists still paddling in relatively placid waters when they first hear the faint roar of mighty rapids. Oblinger and Verille (1998) maintain that information technology is the first technology ever to impact higher education to the point of opening fundamentally different options in how the business of higher education is run, and how teaching and learning is carried out. They insist that information technology makes significant structural changes inevitable. Duderstadt (1999) identifies that information technology eliminates the barriers of space and time, and that new competitive forces,
such as virtual colleges and for profit education providers are entering the market place to challenge the process of credentials such as accreditation of institutions and sanctions of state boards of regents.

Consumers of higher education are changing their expectations of learning opportunities. Increasing availability of information technology is the expectation of the information society. They expect the most current information to be available quickly and from original sources. Further the learner wants the information to be available in multiple formats such as; video, text, online, illustration, demonstration, three dimensional diagram, audio and in combinations of the above that enhance the understanding of the subject matter being studied. The learner also wants to be able to review the information several times to enhance the learning process. These increasing societal demands for learning can only be fully met by the integration of technology into the teaching and learning process. Kenneth Green (1999) also agrees that the use of technology is a significant event in higher education. He discusses this process as an evolutionary event in American higher education, specifically in relation to the emergence of distance education and distributive learning. He believes that these events are fostered largely by societal issues of access to higher education, the trend toward lifelong learning and the availability of information technology. Privateer (1999) observes that micro-information technologies are proving to be powerful forces in shaping the destiny of higher education, he compares this phenomena to how Gutenberg’s movable type revolutionized the production and dissemination of information in Western culture.
Much controversy exists as to the role and appropriateness of technology use in the teaching and learning process within higher education. Ehrmann (1998) points out that pressing teaching and learning needs compel educators and legislators to see the use of computers, video and telecommunications as essential in the rebuilding of educational offerings. The needs he identifies are:

- "To widen and expand educational access for a variety of currently underserved groups, such as working adults, homebound and handicapped individuals.
- To draw on and share a wider range of intellectual resources.
- To implement creative teaching techniques" (p. 30).

At a think tank initiative in 1996 that was attended by community college leaders from across the country, the use of technology at community colleges as a major educational paradigm change, was the major topic of discussion. Carter and Alfred (1996) discuss this event in a monograph synopsis of discussions and recommendations from that group. Broadly they concluded that, "all colleges are struggling to conceptualize and capitalize on technology's potential while addressing its human resource, curricular and financial implications" (pg 4). All participants agreed that technology was rapidly growing as an educational tool that will be part of the teaching and learning paradigm in those community colleges who are successful institutions of higher education into the 21st century. It was noted that faculty needed to be able to teach about the technology changes in their particular areas of expertise as well as to teach with technology. The learner needs to have access to the most up-to-date information and be encouraged to continually use this media to expand their learning.

Carter and Alfred (1998) expand this thinking by discussing some of the community college initiatives identified at the 1996 think tank experience. They suggest
that a new challenge would be the use of the new technology resources to establish partnerships with community businesses and industry in bold new directions, and recommend that colleges begin to view technology as a strategic link to the communities they serve. Technology is seen as an important vehicle in improving responsiveness to community needs and for renegotiating community relationships.

One of the many areas of concern identified by those writing in opposition to the use of technology as a prominent mode of learning in higher education, is lack of face to face human contact and interaction. Lazarick (1998) addresses this issue by noting the increasing interaction between students and teachers, and students and students as one of the main benefits achieved when computer technology is used extensively for instruction, whether in a computerized classroom or in an on-line course. Mersotis and Phipps (1999) add to this thinking in their review of research that studied the difference between student’s experience in distance learning versus the typical classroom. They identified three broad measures of effectiveness of distance education that were most often examined in the 40 studies they reviewed. These measures where, student outcomes (such as grades and test scores), student attitudes about learning through distance education and overall student satisfaction. Mersotis and Phipps (1999) report that a significant number of these students conclude that regardless of the technology used, distance learning courses compare favorably with classroom based instruction. They do however identify some concerns regarding the quality of some of the research studies reviewed. The validity and reliability of some of the instruments used were questioned, as was the lack of attention to the feelings and attitudes of the students and faculty. Hull (1999) discusses another aspect related to the use of technology in higher education. He
states that, technology provides an effective alternative to traditional, abstract teaching by enabling faculty members to look at and to include real-world applications of their subject matter. He gives the following examples to make the point that the use of technology in the teaching and learning process is invaluable:

“When students in different parts of the globe interact by means of an Internet chat to solve a problem, when teachers bring experts into their classrooms via video conferencing to discuss real-world issues related to academic subject matter, or when students use multi-tasking to develop complex or innovative solutions, thereby taking advantage of cognitive processes never before possible, previously abstract knowledge becomes based on reality. Students understand why they have to learn, and their motivation is increased.” (pg. 40)

These authors are describing the technology version of active learning.

Educational scholars have reported for years that a student’s ability to actively use the concepts they are studying significantly enhances learning. An early unidentified philosopher noted, “tell me and I will listen, show me and I will see, allow me to do it and I will learn”.

Doucette (1993), after studying several decades of computer use in community colleges, has identified a two-part typology for characterizing instructional use of technology. He states, “that there are those that improve current practice by automating processes or by otherwise helping faculty and students do better what they already know how to do, and those that actually transform the way faculty teach and students learn” (p. 203). He defines transformation as changing the nature of the interaction between.
students and faculty in the process of student learning. Much of the most current
literature discusses this same concept of transformation when identifying appropriate and
successful use of technology in higher education. Adding a technology assignment here
or there in a course without ever changing the intentions or flow of the learning
experience does little more than adding an extra resource. When faculty change how the
student meets the objective of the course, guided information seeking using technology
replaces lecture experience with activities that engage the student seeking the knowledge
needed to be successful in the course, then the teaching-learning paradigm will changed.
O'Banion (1997) identifies that the primary issues involved in applying information
technology to improve teaching and learning are not technical in nature; the principle
issues are educational and those related to human organization. The learner seeks the
information from a variety of resources which requires active engagement and decision
making, thus the knowledge becomes meaningful and relevance is identified by the
learner, the learner becomes educated.

The faculty must become major drivers of this type of transformation. They are
the experts in relation to the outcomes that the student must achieve, as technology is
only a tool from with to gain information. The faculty must guide the student’s discovery
in the direction that will allow them to meet the learning objective of the course. Support
will be needed to assist the faculty to learn to unpack, reorganize and create new paths
toward the learning objectives by using technology.

Daniel (1997) speaks about one technology mode used to change the comfortable
arena of the classroom. He sees distance education as the offering of educational
programs designed to facilitate a learning strategy which does not depend on day to day
teacher contact, but makes the best use of the potential of students to study on their own. It provides interactive study material and decentralized learning facilities where students can seek assistance as needed from the faculty. Willis (1998) notes that distance learning has become a touchstone for those seeking to keep post-secondary education relevant. At the same time, it has become a lightening rod for detractors claiming that higher education is unwilling or unable to hold its own in the potentially lucrative and increasingly competitive education market. He further states that the use of technology to reinvent, not mimic traditional instruction is the reform needed.

As noted throughout the section, many initiatives have begun to move higher education toward the use of technology to promote learning. The current activities look to be scattered and organized only by pockets of forward-thinking advocates and/or campuses with funding for technology and technology support. The realization of an educational paradigm shift in higher education is futuristic at this point in time, but a worthwhile goal for colleges and universities of today to remain viable and competitive into the 21st century.

The following table (Table 3) represents a synthesis of the concepts just discussed in this section of the literature review regarding technology changes.
<table>
<thead>
<tr>
<th>Technology Changes</th>
<th>Types of Change</th>
<th>Internal System Implications</th>
<th>External System Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure Operations in the College&lt;br&gt;- Business operation&lt;br&gt;- Academic transactions&lt;br&gt;- Communications</td>
<td>On-line business transactions&lt;br&gt;Information access&lt;br&gt;- Course registration&lt;br&gt;- Cost&lt;br&gt;- Course schedules&lt;br&gt;- Grades&lt;br&gt;- Transcripts&lt;br&gt;- Programs&lt;br&gt;- College documents&lt;br&gt;- Policies&lt;br&gt;Communication&lt;br&gt;- Faculty&lt;br&gt;- College offices&lt;br&gt;- Students</td>
<td>Coordination of Systems for:&lt;br&gt;- Internal system analysis&lt;br&gt;- Reporting out to external agencies&lt;br&gt;- Student tracking&lt;br&gt;- Data base creation</td>
<td>Student access to information and transactions from off campus. Access for other consumer of higher educational offerings. Marketing at a low cost. Information about other markets and competition.</td>
</tr>
<tr>
<td>Information Technology</td>
<td>Global information networks.&lt;br&gt;Massive increase in the information and communications possible through the World-Wide-Web</td>
<td>Knowledge for internal growth&lt;br&gt;- Current trends&lt;br&gt;- New advances&lt;br&gt;- Course assignments&lt;br&gt;- Market information&lt;br&gt;Real world application of course subject matter&lt;br&gt;Learning emphasis not on memorizing information but on analyzing, creativity, problem solving and application&lt;br&gt;Need to provide access to this media for all students</td>
<td>The students can obtain new and up-to-date information as quickly as the faculty. Multiple sources of information.</td>
</tr>
<tr>
<td>Learning Methodologies</td>
<td>Online courses and testing.&lt;br&gt;24 hours access to faculty and peers via chat rooms set-up for specific courses.&lt;br&gt;E-mail assignments.&lt;br&gt;Increased sophistication of video courses, some with on-line interface and CD-ROM.</td>
<td>Technology and support for development of these modalities.&lt;br&gt;Faculty willingness to change course delivery methods.&lt;br&gt;Faculty learning curve in development of this type of course delivery.&lt;br&gt;Security of course and testing materials.</td>
<td>Multiple providers many of which are non college based, for profit organizations. Quality control.</td>
</tr>
<tr>
<td>Increased use of technology to teach real-life scenarios</td>
<td>Use of advance technology for many high skill areas&lt;br&gt;- Simulators&lt;br&gt;- Virtual labs&lt;br&gt;- Gaming</td>
<td>Learning curve of the faculty in how to use the equipment to assist the student.&lt;br&gt;Equipment Cost.</td>
<td>Competitiveness with institutions such as corporate universities that have almost limitless funds for such equipment.</td>
</tr>
<tr>
<td>Use of telecommunication for distance classes and learning experiences.</td>
<td>Real-time telecommunication&lt;br&gt;- Two-way interaction verbal and visual.</td>
<td>Resources and funding.&lt;br&gt;- Equipment&lt;br&gt;- Computer support&lt;br&gt;- fiber-optic cabling</td>
<td>Other Institutions. Quality of product. Increasing societal access for some.</td>
</tr>
<tr>
<td>Teaching about technology.</td>
<td>Growing amount of technology. Rapidly with which technology is changing.&lt;br&gt;Linking of the different technologies requiring a broader knowledge base.</td>
<td>Knowledge gap. Time to stay current.&lt;br&gt;Cost for the latest and greatest. Need to develop partnerships to pool resources and learn from one another.</td>
<td>B&amp;I stay current in technology or lose their competitive edge. Less and less cost efficient to provide internal educational up-dates. Proprietary and corporate training facilities are filling this gap.</td>
</tr>
</tbody>
</table>

Table 3: Technology Change: Synthesis of Concepts
Leadership

The concept of leadership central to all three of subject areas already reviewed in this chapter. It is a common thread that flows through all of organizational change whether it is in a corporation, educational setting or the focus of a major change initiative such as technology. Although mentioned in several of the previous sections, detailed discussion was purposely delayed until this section of the chapter. To this end, an overview of leadership will be presented followed by a discussion of the importance of leadership in: community college change, organizational change and technology in higher education.

For a functional definition of leadership, the ideas of Howard Gardner (1995) are reviewed. He defines leaders as "persons who, by word and/or personal example, markedly influence the behaviors, thoughts and/or feelings of a significant number of fellow human beings" (p. 8/9). He views leadership as "a process that occurs within the minds of individuals who live in a culture, a process that entails the capacity to create stories, to understand and evaluate these stories, and to appreciate the struggle among stories" (pg. 8-9). Gardner (1995) studied eleven individuals, who are identified as exemplary world leaders in their time, he found that each had a story of leadership. Within the stories of leadership a common thread was that of identity. The stories of the eleven leaders were for the most part created in response to the pervasive human need to understand oneself, the groups that exist in and beyond one's culture, and issues of values and meaning.

To identify the difference between what has historically been known as management and the concept of leadership, the work by Belasco and Stayer (1994)
provides a useful analogy. They identify the old paradigm of management to a herd of buffalo. The buffalo are very loyal to one leader and will do or go wherever that lead buffalo takes them. There is no communication or decision making on the part of the herd, they just follow the leader. Early Indians knew if they wanted to stop the buffalo herd, all they had to do was kill the leader and the rest of the buffalo would stop. The new paradigm of leadership is presented as a gaggle of flying geese. The geese fly in a V formation, the leadership changes frequently with different geese taking the lead. Each one is responsible for itself and the roles of scout, follower and leader. When the task changes, the geese are responsible for changing the structure of the group to accommodate. Belasco and Stayer (1994) discuss leadership as a role that requires constant learning. They state that the world has changed significantly since the old realm of management. Today the markets are global, electronic highways enable instant communication and competitive response, work involves creation, transmission and manipulation of information and knowledge. To accomplish all of this, workers are more knowledgeable than ever before. To effectively operate at this level requires constant learning and teamwork and leadership must come from a variety of individuals in the organization.

Some individuals who have studied leadership, investigated the traits and characteristics of an "effective" leader. Birnbaum (1992) studied leaders in higher education. He identifies the strong need for people skills in the leadership role. He states that the perception of others is key in the ability to lead and that the leader must be perceived to have integrity. Birnbaum identifies eleven principles for leadership, these are:
1. “Make a good first impression.
2. Listen with respect.
3. Find a balance for governance.
4. Avoid simple thinking.
5. Don’t emphasize bureaucratic frame or linear strategies.
6. Emphasize strong values.
7. Focus on strengths.
8. Encourage leadership by others.
9. Improve faculty leadership, value and encourage participation across campus.
10. Check your own performance, outcomes and constituents assessment.
11. Know when to leave.”(p. 26)

The similarity of Birnbaum’s (1992) work to that of Belasco and Stayer (1994) is the promotion of leadership in others. Most of the current studies and papers regarding leadership have moved completely away from the old bureaucratic, authoritarian thinking and on to a more participative model.

Dupree (1989) identifies characteristics that are important for successful leadership. The background context from which Depree gains his insight, is the corporate setting. He also has chosen integrity as a high priority in leadership. Many of the other characteristics that he has identified are related to people skills such as: communication, understanding, diplomacy and valuing the skills and talents of others. What has not been identified from either Birnbaum (1992) or Dupree (1989) is how they are defining successful or effective leaders. Are these individuals that stayed around a long time or who engendered particularly good things in their organizations while they
were there, or for whom the people they work with had a lot of respect and thought they
did a great job? The context for identifying the “good” leader is a little hazy. The
people on the list that Gardner (1995) studied, were all identified as leaders that made a
specific impact on the immediate group they lead or, in some instances, the world.

Green and McDade (1991) wrote a handbook of leadership development. They
also make the distinction between management and leadership. Management is identified
as the implementation of structures and routine tasks. Leadership implies imagination,
innovation and vision. Their discussion of leadership relates to the art of stimulating
human resources. Aspects of leadership are identified as being attributes that an
individual may develop over time but are not necessarily able to be taught. The attributes
identified are: judgment, values, courage, integrity and creativity. Green and McDade
(1991) identify most effective leaders as those that know themselves, their values, their
strengths and weaknesses and have a steady point of moral reference.

Kouzes and Pozner (1997) studied leaders with the guiding question, “what did
leaders do when they were at their personal best in leading others” (xxi). To obtain this
information, they started with the assumption that they did not have to interview and
survey star performers in excellent companies to discover best practices. Rather, they
asked ordinary people to describe extraordinary experiences. The assumed that they
would find within this data, patterns of success and claim that they did. At the conclusion
of their study, five fundamental practices of exemplary leadership were identified. These
practices are: “challenge the process, inspire shared vision, enable others to act, model
the way, and encourage the heart (pg. 31). Kouzes and Pozner (1997) further identify that
exemplary leaders are constantly searching for the right opportunity, they are never
willing to just sit by and let fate decide their direction. Leaders need to be willing to step out into the unknown and take risks. They also identify leaders as learners that constantly gathering information and listening to all that is going on around them. The one trait that is discussed in their study is that of credibility. They state that, “without the establishment of credibility, leadership would be impossible. To establish credibility, the leader must be honest and competent” (p. 29).

Bennis and Nanus (1985) discuss the difference between leadership and management. They recognize leaders as those who influence and inspire others through a vision that is value driven. They refer to this type of leadership as transformational in that significant change takes place both within the leader and the constituents as they move together to accomplish goals leading to the vision set for the by the leader. Conversely, they describe management as, the function of an individual that leads by employing the skills necessary to get the job done. They refer to this type of interaction as transactional leadership. Bennis and Nanus (1985) integrate this thinking as they conclude that, both types of leadership are needed and that the balance of styles differs depending on the maturity level and development of the individual and/or group. They agree that groups with higher levels of education and self-motivation usually do well with a more transformational leadership style.

To further strengthen the ideation that human interaction and relationships seems to work well in many situations of leadership, a research study was done by Yammarino, Dubinsky, Comer and Jolson (1997) to investigate, “Women and Transformational and Contingent Reward Leadership”. The premise of the study was related to the use of transformational and transactional leadership by females and the positive reaction to
these leadership styles by subordinates. Curiously a positive correlation was identified between both transformational and transactional leadership and subordinate commitment and performance and female leaders effectiveness. The study concluded that, a key implication for leadership theory is that female leaders appear to form, operate and maintain relationships regardless of the style of leadership used. It was the relationships that were correlated with the positive reaction from subordinates.

At a deeper level of human interaction, several theorists incorporate values and participant consideration within the context of leadership. Covey (1998) conveys that,

“Old forms of traditional, hierarchical, high-external-control, top-down management is being dismantled. They are being replaced by a new form of control that the chaos theory people call the “strange attractor”, a sense of vision that people are drawn to, and united in, that enables them to be driven by inner motivation toward achieving a common purpose. This has changed the role of manager from one who has driven results and motivation from the outside in to one who is a servant-leader, one who seeks to draw out, inspire, and develop the best and highest within people from the inside out” (p. xxi).

What is leadership if there are no people to lead? Being placed in a position on the organizational chart with units beneath, does not make anyone a leader. This philosophy is true of any organizational setting however, in higher education, it is especially true. This is a group of highly intelligent individuals who do not often need a manager. They need a listener, an advocate, a facilitator, a cheerleader, a planner, a motivator; they need a leader.

Wheatley (1992) expands the thinking about the importance of relationships and leadership by stating that,

“Leadership, is an amorphous phenomenon that has intrigued us since people began studying organizations, is being examined now for its relational aspects. More and more studies focus on followership,
empowerment, and leader accessibility. And ethical and moral questions are no longer fuzzy religious concepts but key elements in our relationships with staff, suppliers and stakeholders. If the physics of our universe is revealing the primacy of relationships, is it any wonder that we are beginning to reconfigure our ideas about management in relational terms" (pg. 12).

Leadership and Technology

As discussed previously, the call to significantly increase the use of technology in higher education, both as a tool for the operating system of the college and as an emerging learning paradigm, is significant. To usher in such an imperative without an implementation plan, financial stewardship and leadership support is almost impossible.

Kearsley and Lynch (1992) state that, “leaders are expected to shape the culture by creating new visions that organizational members can believe and act upon. Culturally, the success of technology leadership is measured by the ability of the leadership to influence organizational values and practices” (p. 50). Van Dusen (1997) adds to this thinking by cautioning higher education leaders that difficult decisions will need to be made as they determine what portion of already shrinking budgets, should be allocated to technology.

Because budget choices are always grounds for controversy, if technology is tied to institutional mission and goals and groundwork has been done to bring as many stakeholders on board as possible prior to financial decision making, the road to securing the needed financial support should be less rocky. He further states that institutions must plan for technological innovation by developing organizational strategies such as cultivating technology leadership and encouraging innovating behaviors. Curry (1992) adds to the process by stating that although trustees and academic administrators must
possess and articulate a vision, communication and decision-making in professional organizations must be two directional in order to foster the culture emerging to support and use this technology.

It is not enough to engage the trustees as well as the faculty in the need for a large financial expenditure to usher in a technology package or series of technology packages that will forever change the structure, function and educational mission of the college. Implementation must be well planned and will need strong leadership from a multidisciplinary team. This team will plan the implementation as well as engage other college participants in the process. Chand (1996) identifies the importance of an implementation assessment plan and the involvement of the human resources of the college. An institutional change of the magnitude that is being identified with technology in higher education, is an example of the need for participatory leadership in a transformational change of an organization.

Bates (2000) takes the whole idea of the integration of technology use in higher education for the purpose of teaching and learning one step further. He suggests that effective use of technology in higher education will require a "revolution" in the thinking about teaching and learning, a restructure of the college that will accommodate this change in thinking and practice, as well as provide a planning process to handle the cost of technology. He also discusses the fact that while it is important for the senior leadership of the college to set the vision in relation to technology, it is also important to facilitate the leadership of the faculty in planning teams and in implementation.
Community College Leadership

Community College leaders are facing many challenges in the 21st century. Howdyshell, Zeiss and Myran (1995) warn that community college leaders in the new century will be facing the most profound and fundamental change for community colleges since the 1960's. They state that in the 1960's, there was a transformation from campus based colleges to community based colleges; today community colleges are becoming learner-based colleges. Howdyshell, et. al (1995) also point out that many community college leaders are faced with old bureaucratic, top down management structures and pathways of communication. As college leadership attempts to redesign the college vision, mission and goals to meet the many challenges that have been set forth, the college departments, infrastructure and general way of functioning are not aligned in a manner to appropriately respond. Many community college change agents agree with the leadership literature of the current times, which advocate shared leadership, relationship building and team work. In Howdyshell et. al (1995, p. 6) work on leadership strategies for the new century, they identify the following paradigm shift (figure 2.1):
<table>
<thead>
<tr>
<th>The Old Leadership Paradigm</th>
<th>Leadership for the New Century</th>
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<tbody>
<tr>
<td>Focus on plans</td>
<td>Focus on vision</td>
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<tr>
<td>Monitoring</td>
<td>Building accountability</td>
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<tr>
<td>Directing</td>
<td>Empowering</td>
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<td>Congeniality</td>
<td>Collegiality</td>
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<td>Individual performance</td>
<td>Team performance</td>
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<td><strong>External Leadership</strong></td>
<td><strong>Self-leadership</strong></td>
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<td>Setting an example</td>
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<td></td>
<td>Emphasis on moral and ethical conduct</td>
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<td>Passion and emotion about mission</td>
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<td>Challenging the process</td>
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<td>Risk taking</td>
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<td></td>
<td>Celebration</td>
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<td></td>
<td>Coaching behavior</td>
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<td>Bureaucracy</td>
<td>Team-building, collaboration</td>
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<td></td>
<td>Community problem solving</td>
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<td></td>
<td>Emphasis on values</td>
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<tr>
<td>Centralized</td>
<td>Decentralized</td>
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<tr>
<td>Focus on individual learning</td>
<td>Focus on organizational learning</td>
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<td></td>
<td>Institutional effectiveness and emphasis on Continuous quality improvement</td>
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<tr>
<td>Present orientation</td>
<td>Future orientation</td>
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</table>

Figure 2.1: Leadership Paradigm Shift (Howdyshell, Zeiss and Myran, 1995, p.6)
Roueche, Baker and Rose (1989) presented similar thinking to that of Howdyshell's (et al, 1995) in their study of transformational leadership in American community colleges. Identified in the study were specific behaviors employed by community college leaders in order to manage change. The most important behaviors identified were those that related to collaboration around organizational vision. The most effective activity that promoted organizational change was the development of a cohesive leadership team that in-turn developed cohesive teams in a cascading manner such that the process caused almost an inversion of hierarchy. In this model the adult learners and their professional faculty appear on the top of the model and the layers of support appear as the foundation. Both models advocate decentralization, team work and organizational learning.

Baker (1998) identifies that cultural leadership concepts are based on the assumption that the leader's ability to influence change depends on the expectations of faculty, staff and administration that change is necessary and that their positions are secure. This thinking allows some degree of comfort for some of the "out of the box" thinking and structure advocated by both Howdyshell et. al (1995) and Roueche, Baker and Rose (1989). This section is concluded with some thoughts from Norris and Poulton (1997) who state that, "community college leadership must be capable of stimulating institution-wide dialogues on transformation and change. When confronted with uncertainty, many members of the campus community will hunger for a strong leader who can predict the future and chart their course" (12).
Organizational Leadership

What leaders are called upon to do in a chaotic world is to shape their organizations through concepts, not through elaborate rules and structure. (Wheatley, 1992) The importance of insightful leadership in organizations during a time of turbulent environment and significant change is an imperative. Wallin and Ryan (1994) identify that leadership is about change. They discuss change as being widespread, fast and unsettling, not incremental; but chaotic. And, that in times of chaos, an effective leader must not only be able to cope with the environment but also be able to shape it. Wallin and Ryan (1994) further identify the importance of a leader’s ability to identify a vision or future direction for the organization as well as to develop that vision with the collective thinking of other members of the organization. Backoff and Nutt (1992) expand on the concept of vision to say that the leader must manage a vision by putting their ideas into practice. This is needed so that the leadership team can put details to the vision for the purpose of creating a plan.

Kotter (1996) believes that the environment for change is created by a leader in the organization who recognizes significant opportunities or threats in the environment. He believes that it is necessary to create a grouping of people in the organization whose personalities are such that they would work well together in a team effort to lead change in an organization. There may be strategic reasons for inviting certain member to the team, as they relate to other members of the organization. Many have argued that change should not just be a reactionary stance within an organization, but a proactive action. Also, that the reorganization and change efforts within organizations today should be done such that change is part of an expected cycle.
Many are returning to the practice of strategic planning. However, strategic planning is also changing, what used to work as a five year plan may now only fit the organization for nine months or a year. Norris and Poulton (1997), use the terminology “strategic thinking” to illustrate the quickness in which some changes are effecting organizations. They state that a leader should challenge organizational members to be thinkers, to “jump the curve” to a new vision plane and capture the possibilities. The alternative forms that the future may take should be discussed by identifying alternative forms the future is likely to take and then constructing possible alternatives. Collins and Porras (1997) would remind these future thinker to be creative but caution them not to stray from the organizations core purpose. In their estimation, it would be the leaders job to assure that new and creative initiative are aligned with the core values and purpose of the organization.

Daft and Lengel (1998) discuss the concept of “fusion leadership” within organizations. They state that a leader’s role in fusion change is different from the conventional role. Leaders in this role don’t create anything new. They simply unlock the subtle yearnings and abilities that people already have. Further, this fusion leader helps people discover their own leader potentials through guided conversation. Much like Daft and Lengel (1998), the nurturing aspect of leadership is spoken to by Wheatley (1992) when she uses a musical metaphor to summarize her thinking on organizational leadership. She states,

“As leaders, we play a crucial role in selecting the melody, setting the tempo, establishing the key, and inviting the players. But, that is all we can do. The music comes from something we cannot direct, from a unified whole created among the players- a relational holism that
transcends separateness. In the end, when it works, we sit back, amazed and grateful” (pg. 44).

The tone throughout the literature that has been presented on leadership is one of humanistic value. The leadership role is simply that, it is one of a thinker, a supporter and a guide. In today's hurry up society that is changing daily, leadership can no longer take place in a distant office involving two or three individuals that are privy to the organizational scoop and who will direct the masses. The organizational members of today are knowledgeable individuals that require communication and information to function well. They are a wealth of ideas and need to be prideful of their work. Wheatley (1992) reminds us that, it is incumbent upon new leaders to note that the work gets done by humans like themselves, each with strong desires for recognition and connectedness. The more they feel part of the organization, the more work gets done.

<table>
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<tr>
<th>Leadership</th>
<th>Technology</th>
<th>Community Colleges</th>
<th>Organizational change</th>
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<tbody>
<tr>
<td>Administrative Role</td>
<td>- Vision</td>
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<td>- Financial stewardship</td>
<td>- Support</td>
<td>- Insight</td>
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<td>- Support</td>
<td>- Trust</td>
<td>- Transformational change</td>
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<td>- Incorporate technology into the mission and goals of the institution</td>
<td>- Risk taking</td>
<td>- Empowering</td>
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<td>- Setting example</td>
<td>- Communication</td>
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<td>- Communicating</td>
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<td>- Future orientation</td>
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<tr>
<td>Involving others in leadership</td>
<td>- Shared vision</td>
<td>- Decentralization</td>
<td>- Shared Vision</td>
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<tr>
<td></td>
<td>- Develop a technology planning team</td>
<td>- Empowerment at multiple levels of the organization</td>
<td>- Communication</td>
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<td>- Education of faculty, staff and students</td>
<td>- Support collegiality</td>
<td>- Empowerment</td>
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<td>- Implementation</td>
<td>- Encourage team development</td>
<td>- Cycle of assessment and realignment</td>
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<td>- Continual assessment and alignment</td>
<td>- Foster a learning organization</td>
<td>- Involvement in strategic assessment and planning</td>
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<td>- Develop a technology support team</td>
<td>- Promote future orientation</td>
<td>- Listen and encourage</td>
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<td>- Support new ideas</td>
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Table 4: Leadership: Synthesis of Concepts
Introduction and Statement of the Research Question

The purpose of this research is to identify leadership strategies and change dynamics related to use of technology in a large urban community college. These phenomena are studied to understand how leadership strategies affected the incorporation of technology into the teaching, learning and day to day campus activities of faculty and students.

While there is much literature in the form of opinion papers, articles, consortium think tank critical issues papers and futurist predictions regarding the impact that technology will have on the business of higher education, very little empirical research exists regarding the outcomes or conduct of this major change initiative. The research questions that this study will seek to explore are:

1) What leadership strategies have been used in promoting community college change toward the increased use of technology in the teaching/learning paradigm; which are successful, which are less so?

2) What change dynamics exist and are emerging at Mid-Western Community College in relation to increased use of technology?
Research methodologies were chosen by the researcher to gather the data that is significant for the situation and context being studied as well as for the type of information the researcher is to examine in the course of the study. Guba and Lincoln (1994) discuss the differences between quantitative and qualitative methodology from the framework of positivism and postpositivism. Postpositivism is further delineated with the categories of critical theory and constructionism, each moving further away from the experimental model of positivism in their ontology, epistemology and methodology. For the purpose of discussion in this study, the comments regarding qualitative research will be most aligned with the constructivism interpretation of qualitative research. According to Guba and Lincoln (1994), positivism, or quantitative research is based on the thinking that there is a reality that exists and is driven by natural laws and mechanisms. The researcher is attempting to identify the truth. The investigator and investigated object/subject are assumed to be independent entities, and the investigator is able to study the object/subject without having an influence. Hypotheses of the experimental outcome are identified prior to the research and the study is focused on procedures or tests that confirm the identified hypotheses. On the other hand, the ontology of constructivism in qualitative research is identified as multiple realities. According to Guba and Lincoln (1994), the epistemology of the constructivist in qualitative research is that knowledge is created in the interaction among investigator and respondents. The investigator and the subject(s) of investigation are assumed to be interactively linked so that findings are created as the investigation proceeds. The methodology is an emergent design through the use of such tools as observation and interview, where the participants help structure the inquiry.
Patton (1990) identified qualitative research as a naturalistic inquiry strategy that is selected when an evaluator wants to minimize research manipulation by studying naturally unfolding phenomena. Conversely, he states that the experimental design of quantitative research imposes conditions and designs when the evaluator introduces a considerable amount of control, reduces variation in extraneous variables, and focuses on a limited set of predetermined measures.

This study investigates the interplay between four major concepts, technology in higher education, community college change, the broader concept of organizational change and the leadership strategies that have and are effecting these changes. The historical background, complexity of issues and the change processes of the subject add to the multiple layers of intricacy. To unpack the detail, identify processes, understand the issues and formulate emerging themes based on this information, the investigative methodology that makes sense for this study is qualitative. The complex interplay between the four concepts being investigated is best served by hearing individual perceptions and stories in order to actually follow the change process that has been and is occurring at this institution. Cultural change is not a phenomenon that can be adequately documented through the use of a pre and post testing or randomly distributed questionnaires. Cultural change is best and most fully understood through asking questions about change of those who are experiencing the phenomena, observing related events and analyzing institutional documents for emerging thinking, value statements and indications of institutional direction. Also of significance are the changes in day to day campus communications involving the use of technology, specifically in contrast to previous practice prior to the initiation of the different modes of technology on campus.
Glesne and Peshkin (1992) state that qualitative researchers regard their task as coming to understand and interpret how the various participants in a social setting construct the world around them. To accomplish this task, the study design generally focuses on an in-depth interaction with relevant people in one or several sites. Even the identification of the relevant group of people changes as information is gathered through the use of interview, observation and document review. Patton (1990) talks about the process of identifying information-rich key informants as an emergent way of getting to the people with the information being sought by the researcher. This can be an informal process that occurs during the collection of data or an intentional sampling methodology that Patton (1990) labels snowball or chain sampling. This is when the researcher intentionally ask each interviewee, “who knows a lot about _____, or who should I talk with about _____” (pg 176).

In this study, the particular the phenomena of technology change was studied over a five-month period of time. To accomplish this data collection with the different individuals interviewed, a timeline of technology introduction and events at the college was developed after reviewing the college documents (Table 4, p. 91). As part of the interview process, the interviewees were asked to react to the timeline, add, subtract and discuss their experiences relative to the timeline. This process was done for the purpose of gaining aggregate information and to increase the understanding of the history of technology emergence at the college. This technique was proposed in, "The Cambridge Manual of Research Techniques: Mapping Change in Schools".

Extremely important in qualitative research, as it is for this specific study, is the depth of information that is gathered. Patton (1990) relates that qualitative research
methods permit the researcher to collect data that is not constrained by predetermined categories of analysis. The depth of information is only constrained by the ability of the researcher and the willingness of the participant. Glesne and Peskin (1992) discuss the openness of qualitative research. They state that, “qualitative research allows the researcher to approach the inherent complexity of social interactions and to do justice to that complexity” (pg. 7). It is not the intent of qualitative research to simplify social phenomena, but to explore it and identify interactions, behaviors and emergent themes for the purpose of knowing and to be able to communicate that information to others.

Jansick (1994) further clarifies this relation by adding that qualitative study looks at relationships within a system or culture. The focus of such a study is to understand a given social setting, not to make predictions about that setting. This type of study is to seek an understanding of a social setting and the dynamics effecting the individuals and processes in that setting.

Patton (1990) adds to this thinking by identifying qualitative designs as naturalistic, in that the researcher does not attempt to manipulate the research setting. The research setting is a naturally occurring event, program, relationship, community or interaction that the researcher is attempting to study as a whole phenomena. Instead of controlling variables within the situation that effect the phenomena being studied, it is important for the qualitative researcher to understand the interaction of these variables to event being examined. There is strong attention paid to process or changes occurring in relation to the phenomenon being studied, as these interactions may hold important key information and patterns. Because the focus is to examine naturally occurring phenomena and because individuals and systems are dynamic, qualitative research
methodology is of particular use due to design flexibility. Anchored only in a design question and perhaps a framework that lends a strategic guide for data gathering, emergent data that takes the investigation in a different direction to get the study question answered is expected as the research process proceeds.

Role of the Researcher

The role of the researcher in qualitative study is one of interaction. Patton (1990) explains the role as one where, "the researcher has direct contact with and gets close to people, the situation, and phenomenon under study. The Researcher’s personal experiences and insights are important parts of inquiry and critical to understanding the phenomenon" (pg 40). The process of keeping field notes that are fleshed out with the researcher’s analysis of events, interactions and observations is important when making sense of the data and in providing insight to emerging patterns. Jansick (1994) adds that qualitative research demands that the researcher spend time in the setting. For the researcher to understand that which is being studied, interaction time with those holding the key to the phenomena under investigation imperative. It is the ability to comprehend the phenomenon from the perspective of these individuals that will give the researcher the insight necessary to begin to put the pieces together and identify emergent themes that capture the organizational experience.

Jansick (1994) further discusses the role of the researcher as the "research instrument" (pg. 212). This means that the researcher must have the ability to observe behavior and must have the skills necessary for observation and face-to-face interview. The researcher must also understand that their presence in the setting or during a face-to-
face interaction affects the data being collected. This factor must be taken into account as data is analyzed and conclusions drawn. Jansick (1994) also points out that the researcher must take into account their own biases and ideological preferences as factors in the process of both the collection and interpretation of data. It is important for the researcher to be overtly aware that personal bias may impact the process. To guard against undue influence the researcher should acknowledge such feelings and concerns as part of the investigative process. This illustrates further the importance of reflexive and analytical field notes that capture the nuances of the researcher as a factor in the data collection as well as the interpretation of the data.

In this particular study the researcher has some degree of insider access. The site of investigation for this study is Mid-Western Community College. This community college is nationally known for its leadership and innovations. While the researcher is not employed at this institution, she is a community college administrator at a neighboring college within the state and has a professional relationship with several of the college administrators at Mid-Western. It is of paramount importance that the role of the researcher is clearly established during any period of time data collection is occurring that involves individuals or groups. The researcher worked very diligently on self so as not to confuse the role of researcher versus college administrator. Punch (1994) identifies the impact the researcher has on the setting as being related to their known status and visibility. Also to be considered is the impact that the status of the researcher may have on the data being collected.

The status and intent of the researcher should be identified up front prior to any data collection process. Guba and Lincoln (1989) state, "If the evaluator cannot be clear,
direct and undeceptive regarding their wish to know how stakeholders make sense of their contexts, then stakeholders will be unclear, indirect, and probably misleading regarding how they do engage in sense-making and what their basic values are. Thus deception is not only counter to the posture of a constructivist evaluator, in that it destroys dignity, respect, and agency, but it is also counterproductive to the major goals of evaluation. Deception is worse than useless to an evaluator; it is destructive of the effort's ultimate intent” (pg. 122). One hazard that needs recognition at this point is that there may be times during the months when data is being collected, that by virtue of the researcher's role as a college administrator, information related to the phenomenon being studied may be discovered. The use of data gathered in such a context would need to be acknowledged with the individual or group from which it came prior to inclusion as part of the study. Patton (1990) observes that mutual trust, respect and cooperation are dependent on the emergence of an exchange relationship. His thinking was in relation to the concept of reciprocity, where the study participants gain something in exchange for their information. These traits would also be essential as any type of trust relation builds between the researcher and the study participants. An important part of that relationship would stem from those activities such as honesty and disclosure that should ultimately lead to a degree of trust.

Research Design

The research design chosen for this investigation is an instrumental case study. Stake (1995) broadly identifies case study as, “the study of the particularity and complexity of a single case, coming to understand its activity within important
circumstances” (p. xi). He further delineates the instrumental type of case as one that, "serves to help the researcher understand phenomena or relationships within it”. In the study at Mid-Western, the researcher is interested in understanding the phenomena and relationship dynamics related to increasing the use of technology on a community college in relation to the teaching and learning paradigm. Patton (1990) states that case study is particularly useful where one needs to understand some special people, a particular problem or unique situation in great depth, and where one can identify case rich information. He defines rich information as information that a great deal can be learned from a few exemplars of the phenomenon in question. Mid-Western Community College is such an exemplar. This well known urban college in the downtown of a mid-western city has been the subject of and example cited in many publications concerning innovations, use of technology and a student centered approach to learning.

A chapter in Terri O’Banion’s book, “A Learning College for the 21st Century”, is dedicated to the transformation of Mid-Western Community College to meet this emerging challenge. A referendum toward this college’s strong commitment to the use of technology in the pursuit of learner centered education, was the construction of a multi-million dollar technology center on campus. It is believed that within this community college there is rich data about technology in higher education, transformational organizational change and the leadership support and initiatives needed to move a college in this very challenging direction.
Site and Sample

The site for investigation is a college in the mid-western United States, identified throughout this study as, Mid-western Community College. The name has been changed for the purpose of writing this study for public review to protect the privacy of the college and the study participants. The college has a student population of approximately 20,000. The college has experienced significant growth over the last ten years and has undergone and is currently experiencing some degree of organizational change in relation to the use of technology as a part of the campus operations as well as for student learning. The institution has obtained financial support specifically for technology. This campus also has the additional support of a yearly local tax levy that is specifically earmarked for the promotion of education at Mid-Western Community College.

While the case is the total college, the individuals interviewed were those who are knowledgeable about the change process that has and is occurring at their college in relation to technology use on campus. Of primary interest are those individuals that can articulate specific change strategies used as well as those who can identify how the change process worked and the outcomes of that change in relation to use of technology on campus. Of secondary interest would be those individuals that can shed some insight as to change in organizational philosophy and culture as a result of these initiatives.

Nine individuals were interviewed: The Provost, The Vice President of Business Operations, The Vice President of Administration, The Vice President of Student Services, The Vice President of Information and Technology, The Vice President of Instruction, The Director of Information Technology Services, The Dean of Distance
Learning and the Director of Student Counseling Services. The focus groups interviewed were, The Pathfinders, a group of distance learning faculty, a group of Department Chairpersons, a group of faculty teaching with technology enhancement, a group of faculty teaching with a variety of distance learning methodologies and a group of students who are taking either technology enhanced or online courses. The total amount of individuals within the focus groups were thirty-four. Morse (1994) asserts that a good participant is one who has the knowledge and experience that the researcher requires. Patton (1990) identifies this type of sampling in qualitative research as "purposeful sampling". He states that, "the logic and power of purposeful sampling lies in the information-rich individuals that are selected based on the probability that a great deal can be learned from them related to central purpose of the study" (p.169). All of the college administrators that were interviewed were in position to have key information about technology use on campus as well as the strategies and planning developed to promote change toward the use of technology. The focus groups ranged in size from three to ten individuals. These groups represented a variety of individuals involved with increased technology use and innovation change on campus. Patton (1990) states that, "focus groups are a relatively homogeneous group of people who are asked to reflect on the questions asked by the interviewer. The object of this type of interview is to get high-quality data in a social context where people can consider their own views in the context of the views of others" (p. 335).
Data Collection Methods

For the qualitative researcher, data is gathered in many different ways, most of which are interactive. Some degree of data categorization and analysis took place concurrently as data was gathered. Insight into the data as it was being collected constantly increased the researcher's knowledge of the phenomenon being studied such that decisions as to the pathway the research impacted. Further, questions posed were revised based on the emergence of grounded information.

For the purposes of this study, interviews were one of the key components of data gathering. Patton (1990) describes the interview guide approach to interviewing as one where the researcher outlines a set of issues that are to be explored with each respondent. During the interview, the issues do not need to be addressed in any specific order or by a set of pre-determined questions. The interview guide acts as a checklist so that all of the areas of inquiry are covered. This type of interview assists the interviewer in staying on track during the process but does not preclude the exploration of a response that may lead to rich data concerning the study focus. Given the fact that the interviews in this study included members from a variety of areas within the community college, three different sets of questions were developed as guides to assist the interviewer in covering all of the topics of interest. There is an administrative set of questions (appendix A), a focus group set of questions (appendix B) and a student group set of questions (appendix C).

Observation was also a method of data collection used in this study. The categories of observation significant to the study were: general observation in the Center for Interactive Learning, Teleports and three different student classes using significant technology enhancement. The observer role taken was that of a peripheral member.
Adler and Adler (1994) describe this role as one that establishes an insider identity without participating in the activities that are occurring. The description and examples given by Adler and Adler (1994) read as though the observational activity is covert. They describe being at an elementary school as parents but collecting observational data at the same time. They also describe being peripheral member of drug groups.

The intentions of the researcher were made known to each of the class groups with the assistance of the instructor. Acknowledgment of purpose of presence was not done in the Teleport or the general public area of the Center for Interactive Learning.

By virtue of the fact that this study took on a college campuses and it is well known that academic institutions have documents on everything, document review and analysis was part of the study methodology. The key institutional documents that provided significant insight were the Mid-Western 1997 Self Study Report, The 1999/2000 College Strategic Plan, The 2000 Mid-Western Plan for Transformation, the Mid-Western Community College Instructional Technology Institutional Assessment Report, the Mid-Western Community College Distance Learning Strategic Business Plan, The Center for Interactive Learning Business Plan and the Fiscal Year 2000-2001 Budget Recommendation Executive Summary. Patton (1990) states that program data is a particularly rich source of information. He identifies that in this contemporary society that all programs leave a paper trail that the evaluator can follow and use to increase knowledge and understanding about the institution. Further, documents can also provide a stimulus for generating questions that can be pursued through interview and observation.
Conceptual Framework

Patton (1990) suggests that a strategic framework in qualitative research provides a basic direction. The framework permits seemingly isolated tasks and activities to fit together and to move toward a common integrated purpose. It assists in the process of categorizing data and developing the knowledge of what further information should be gathered. The framework further provides a method for making sense out of and analyzing the data as the researcher moves to understand the individuals, processes and phenomenon under study. Alfred and Carter (1998) in their critical issues paper, *Making Change Happen*, present a change model that was developed by the Consortium for Community Colleges. This model allows for the integration of leadership strategies, participatory involvement, environmental scanning and communication. The model could easily fit any major change initiative in a community college system and thus will be used to frame the collection and analysis of data related to organizational change and leadership strategies related to the use of technology. Although the model does not prescribe a suggested process for change, the broad categories will be useful as a way to frame the change process that occurred and is occurring at the two community colleges investigated in the study. Use of the model as a framework does not in anyway assert that a predetermination has been made by the researcher as to change process, but simply provides a way to collect and analyze the data. The model as designed by the consortium group does not provide a feedback loop for the purpose of evaluation and setting of future direction for change based on what has occurred and what has been learned. For the purposes of this study a feedback loop will be added to the model (figure 3.1).

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Figure 3.1: Change Model (adapted from Carter and Alfred, 1998, p. 27)
In the core of *Understanding Fundamentals*, Carter and Alfred (1998) identify the foundation of organizational change to be through the appreciation of and respect for the college culture and its mission and values. It is the understanding of these fundamental beliefs that assists the leader in structuring the change initiatives so as to support the core values of the college but reframe the process and goals. Engagement of the college community in the establishment of a vision for future direction provides the foundation for the change initiative.

Carter and Alfred (1998) describe *Forging the Strategy* as the design for successful change. This involves developing a clear statement of the problem underlying the need for change, shared vision of the outcome being sought and a plan of action. It is important that all internal stakeholders have information about why change is needed and a sense of urgency in relation to the change. Individuals from various levels within the campus community should be involved in building a plan of action.

*Identifying Champions* can play a critical role in legitimizing the need for change and in framing strategy in ways that increase the receptivity of stakeholder groups (Carter and Alfred, 1998). Leadership can emerge from multiple areas of the college community when involvement in the change process is encouraged.

Leadership initiatives and innovations toward the identified change needs to be supported. In the level of *Supporting Innovations*, Carter and Alfred (1998) state that much of the success of change appears to depend on the extent to which the institution remains open to a variety of approaches and processes. It is counterproductive to limit approaches to past and present practice or tradition. Engaging the faculty in a learning
process of their own to expand their thinking and creativity in an atmosphere of support is an important strategy toward change.

*Communication* at all levels of the college is critical. Carter and Alfreed (1998) offer three areas of insight related to communication throughout the change process;

- A communication plan that allows for open and ongoing interaction.
- A new language that is associated with the new paradigm.
- The necessity for celebration of success including, acknowledgment of the work done as well as the gains accomplished for the college and its students.

To complete the model, a feedback loop that returns to the *Fundamentals*, is needed. In the present and most likely continued turbulent environment, some degree of change in higher education will remain as a constant. Environment scanning and the realignment of goals and direction should occur on a continued basis.

**Data Management**

Huberman and Miles (1994) identify data management as, "the pragmatic operation needed for systematic, coherent data collection, storage and retrieval" (p. 428). By virtue of the methods being used in this study to collect data, there will be significant amounts of it to manage. Raw field notes, taped interviews and observational notes all need some degree of transcription before any categorization can take place. Once all of the data is transcribed, line by line coding was done. This process assisted in the verification those themes identified during data collection and the identification of additional themes. Once all of the themes were identified, all documents were color-
coded based on theme. At this point it was easy to see how the data was sorting into
categories. Patterns and theme relations began to emerge.

Data Analysis

Patton (1990) proposes that the focus in analyzing qualitative data comes from the
evaluation of the research question generated at the very beginning of the inquiry process.
In this study, the research question fits well with the conceptual framework chosen to
guide the study. Analysis grids were then developed. The first grid was used to analyze
the first research question using the components of the question, leadership strategies,
technology use and technology in teaching and learning and the Alfred and Carter
conceptual framework for community college change components. The second analysis
grid was created using the emerging change themes identified from the data and the
dynamic themes identified from the data. Each grid was then filled in using the specific
data statements from the data sets that matched the intersection of the theme and
dynamic. The next step was to identify the overall key themes based on the data
allocated to each cell. The data in each cell was analyzed to identify the key themes.
This lead to the final development of the grids with the key themes displayed in each cell
(Tables 5, p.131 and 6, p.178 respectively).

Trustworthiness

"The inquiry aims of the constructivism paradigm are oriented to the production
of reconstructed understandings, wherein the traditional positivist criteria of internal and
external validity are replaced by the terms trustworthiness and authenticity" (Guba and
Lincoln, 1994, p. 111). This thinking is further broken down by Guba and Lincoln (1994), in that within trustworthiness are the criteria of credibility, dependability, confirmability and transferability. The criteria that delineates authenticity is fairness. Whatever the terminology, the researcher must gather and analyze data in such a way that the findings represent much more than the scholarly opinion of the investigator. Rigorous techniques and methods must be demonstrated by the researcher if the study is to be considered of quality.

In this study, trustworthiness is demonstrated through the use of triangulation of data collection methods and triangulation of analysis. Patton (1990) explains triangulation of methods as comparing and cross-checking the consistency of information derived at different times and by different means. This research was done using three different kinds of data collection that include, interview, observation and document review. There was also multiple interviews at varying levels of the organizations. Each data set was be compared with the others to identify congruent and incongruent information. Written documents can corroborate information gathered in an interview. Observations of technology classes and technology settings can reinforce or contradict information gathered during a face-to-face interview. These activities lend credibility and dependability to data being collected and the findings related to the data.

Triangulation analysis will be used in this study once all of the data has been collected. Even though the researcher categorized the data, the raw data remains intact. Therefore, others analyzing the same data, could call up new and different categories, review interviews transcripts, field notes and other documents, as well as to review those data sets identified by the researcher.
Another important aspect of the trustworthiness of a research study is related to the researcher. Because the researcher is the instrument of data collection in qualitative inquiry, acknowledgment of information regarding the researcher is needed. Patton (1990) states that the qualitative report must include information about the researchers experience, personal connections to the people, program, or topic being studied and any other extraneous information about the researcher that may have a bearing on the gathering or analysis of data.

**Researcher Bias**

To provide a method in which the researcher can acknowledge and analyze feelings and thoughts that occur during the process of data collection, field notes in the form of a journal was be kept. While the observer should approach field work with a disciplined intention not to impose preconceptions and early judgments on the phenomena being experienced and observed, the observer does not become simply a recording machine entering data. Insights, ideas, inspirations and judgments will occur in the process (Patton 1990). It is essential that all of these thoughts along with the data being gathered, be analyzed. The researcher that is interacting within a setting to collect data, becomes part of the data simply by being present. The interpretation of the data is also influenced by the perceptions of the observer, thus feelings and thoughts surrounding the data must be acknowledged and become part of the data being analyzed.

**Ethical Considerations**

Participants interviewed in this study were informed as to the nature of the study by a letter (appendix D) and again verbally at the initiation of each interview. In each
classroom observed, the researcher was introduced to the class prior to the class beginning. No student comments were recorded during these observations.

Christians (2000) states that, “the code of ethics insists on safeguards to protect people’s identities and those of the research location. Confidentiality must be assured as the primary safeguard against unwanted exposure” (p. 133). All data collected was coded such that individuals would not be exposed. All audio-tapes were also coded and will be destroyed at the conclusion of this study. Comments by individuals in chapter four of this study are represented only by the titles of administrator, Chairperson, faculty or student. The college as the case being studied is referred to in all writings only as Mid-Western Community College.

Limitations of the Study

A limitation of this study is the lack of generalizability of the study findings. The sample-size consist of a community college campus in central Ohio. Although the interviews encompassed nine administrators, six focus groups, general campus observations, three classroom observations and significant document review, the story that is revealed by the data collected will be specific to that campus. This is not to say that other individuals from similar community college campuses are unable to gain some insight to their own situation based on what is learned on this campus. Patton (1990) suggests that there could be extrapolation of the insights gained in qualitative research, in that one could go beyond the narrow confines of the data to think about other application of the data. For the purposes of discussion of this study, many community colleges across the country are of similar structure and function and are facing many of the same
challenges the colleges in the study does. Some of these colleges may recognize
themselves in this study and be able to use some of the findings to ask their own
questions.

This degree of transferability, while a positive in some instances, remains a study
limitation because it cannot be stated that if this is the experience at the college studied,
this will be the experience at other community colleges. The value of the study is the
understanding of what occurred and what is occurring at this college at such a level that it
can be explained to others. The stories, experiences and benchmarks discovered provide
valuable information to other community colleges experiencing the same change
phenomenon.
Chapter 4
Data and Analysis: Leadership Strategies

Introduction

It is the mission of community colleges to respond to the educational needs of their communities. Across the nation the growing societal embrace of expanding technology use and the promise of rapid access to information of numerous dimensions, has impacted the educational needs of all communities to such a degree that the community colleges must change or be unable to continue to meet their mission. The organizational change needed to facilitate colleges in meeting their mission into the 21st century is a transformational change that affects not only how the college functions and who is served, but the very core of the teaching and learning pedagogy. A transitional change of this magnitude requires leadership strategies such that the culture of the college is ultimately altered to understand new ways of functioning within the institution and new ways of promoting learning both within the institution and in the college community.

To understand how a community college could move in such a direction, this researcher was fortunate in studying an institution (Mid-Western) that has been identified as an exemplar in the use of technology to promote learning as well as becoming a learning organization. Therefore, this investigation endeavors to describe the process, trials and tribulations experienced by the faculty, students, administrators and staff of this community college as they have grown and continue to grow through a time of change.
and realignment to become a creative learning organization that is working to meet the
needs of the community they serve.

A Technology Classroom

It is spring-time, close to the end of another busy quarter at Mid-Western. The
students file into the classroom and take their seats behind one of the various computer
workstations throughout the room. There is the normal student chatter around the room
about weekend events and homework assignments. As class begins, they all push their
space-bars on the computer keyboard to awaken their resting computers and on the
screen in front of them is displayed the new software package being presented by the
instructor today. Prior to class the instructor loaded all of the computers with the
software package purchased for the purpose of simulated practice by the students. The
instructor is in the front of the room behind a large tabletop area that has a computer
screen and keyboard, LCD projection panel, control panel, an object-overhead projector
and off to the side there is a stand-up console with a VCR and computer. Behind the
instructor is a large screen that is also displaying the program that is to be used in class
today. The class is part of the Legal Assisting program at Mid-Western and the instructor
is bringing a virtual law office to the classroom.

This technology classroom is located in a building called the CIL (Center for
Interactive Learning). All of the classrooms in this building are equipped with
technology enhancements to assist the students with active learning. The instructor for
this class discusses her approach to teaching this subject matter: "The main goal is to
have students walk into a law office after they graduate and be able to function without a
lot of additional training and to be comfortable in that environment."

This day, the students were using a combination of a software package called
*Probate* and one called *Law Office Procedures*. This allows the students to take a case
study and actually go through the process of developing the appropriate background
paper work for the case. It is designed to be just as it is in many law offices. The faculty
member identifies this classroom activity as authentic learning tasks. The virtual law
office has all of the same equipment a new graduate of this program would encounter in a
modern law office. Along with the software packages described above, each computer is
connected to a laser printer, fax machine, photocopier and scanner so the student can
actually produce their work.

In a more advanced class in this same program observed later the same day, the
students had brought their homework answers to certain legal questions. In small
discussion groups the students would insert their disc into the computer and review their
answers and rationale with the group. When the large group came back together to take
turns doing group presentations regarding the questions, the faculty member would often
say, "Ok, what does the case law say"? The students around the room would minimize
what ever they had on the screen and zip off to *Lexus* to bring up the case law for an
addition to the discussion.

Far from chalk and talk and the sage on the stage lecture formats, these innovative
teaching methodologies using technology engage the students in active learning with the
facilitation of their faculty and the interaction with their classmates. Also notable was the
willingness of the students to help each other as software packages were navigated and
case law searched. The students were engaged in active learning, immediately applying what they were learning, and in helping each other to learn.

There was a small buzz around the room as the students worked on activities assigned. Occasionally there was a single person presenting or providing examples to the class, not always the faculty member. For the most part interactive learning was the methodology of the day.

History of Technology Emergence at Mid-Western

**Historical Timeline**

To provide a frame of reference from which to begin the interview discussions about technology integration at Mid-Western, a timeline was developed from the review of college documents (Figure 4.1). Each individual interviewed was asked to review the timeline, react to its’ accuracy, as well as to add significant events not represented. While some could not recall specific dates, all agreed that the representation that existed on the timeline was accurate. However, many more stories emerged as the timeline was reviewed with each participant. The historical information that follows represents the data collected both from the individual interviews and from the college documents. The discovery of some documents occurred as a result of the interview process. On several occasions the interview participants identified rich sources of data that existed in documents that had not yet been reviewed by the researcher.
1974
New President
Appointed

1987
Revision of the Mission
Statement (Dreams to achievable
goals....., meet the needs of rapidly
changing technologically advanced
global economy)

1987
New Distance
Learning
Division

1990
Joined The League of
Innovation in Community
Colleges

1994
College accepted into the
Center for Integrated
Manufacturing in Higher
Education Consortium

1994
Vision Statement: Mid-Western
will be the bridge into the
future giving open access to
opportunity, intellectual
challenge, and self discovery
for students with diverse
needs.

1994
Learning Challenge
Grant Program

1994
Award for TRG- In touch
Innovation of the Year
Award for the creative
design of the on-line
Counselor Expert System

1994
Beginning of the CIL concept.
A computer lab with 15 multi-
media workstations and
specialized high end
equipment for the
development of instructional
materials.

1996
The Business Higher
Education Forum Selected
The College to participate
In a Study of Higher
Education Effectiveness.

1996
College wide
Technology Plan

1996
College was
Featured in a Book
Chapter as an Exemplar
Learning College

1997
President
Retired
New President
Promoted from
Provost Position

1998
The CIL Opened

Figure 4.1: Technology Timeline
The College History

Mid-Western is an urban community college that serves approximately 20,000 students. The institution began as a small private junior college in 1948. As the needs of the surrounding community changed, so did the college, and in 1965 the Board of Trustees recognized the need for a community college in the area. Thus, the County Commissioners created the community college district the college was to serve, and the following year the state Board of Regents approved the plan and officially changed the charter of the college to a community college.

Before the middle 1980’s there had not been a real reason to be too concerned about technology at Mid-Western. There were a few innovative faculty members that may have had an early computer system at home, but on campus, little could be found on a computer system except for some student records, class schedules and a few other administrative functions. During the years 1985-1988 several significant events took place that started Mid-Western down a path of technology use that changed their direction forever.

The college president at the time was known for his interest in innovation. To that end, he began one Fall Inservice Day with a surprise for the faculty. One of the College Administrators recalls:

“The President’s strategy was, he had Timex Sinclair computers, 4K. Today you will find them in the PC museum of the world. We had a little tabletop robot on the stage of Blair Hall, our theater building, picking out ping pong balls that had names on them, and he gave ten of those away as part of his fall conference speech for faculty to try and begin to experiment with. I trace this history only to illustrate that we basically started with nothing.”
This was the beginning of the personal computer era for Mid-Western. Following this event, a few personal computers (PC’s) began to show up in office spaces around campus. The administrative offices followed closely by the faculty departments, were given shared computers in common department space.

Almost concurrently, a crisis occurred involving the college administrative computer system. This system was where the student records, class schedules, registration activities and some business transactions of the college were electronically stored and day to day operational data was entered. The system was described as a, “home-grown information ERP system” that was significantly antiquated. One of the administrators describes what happened,

“The institution had made an attempt to grow our own information system and it crashed, badly. There was no stability in the system and this was back in the day of the fieldhouse circus registration, where you move 20 terminals to the fieldhouse for a mass registration for classes. But the system crashed and it was absolute chaos. There was actually an electrical explosion, an electrical vault blew up on campus down on one of the lower levels and we had a melt down of all our computer wiring across the campus.”

The explosion on campus actually met with some relief in terms of getting rid of the antiquated system. Fifteen thousand students were hand registered for classes that quarter and Mid-Western began to search for a stable administrative system, choosing not to attempt to recreate their own. An administrator discussed the fact that it took a crisis of this magnitude for the college to begin to realize the significance and the role that computers were beginning to play in our academic lives and those of our students.

In 1989, following the system crash, Mid-Western was one of the first community colleges in the country to purchase a campus wide operating system. While these
computer companies had been providing these systems and services for business and industry for a while, the higher education market was new to them and some significant customization was required to the system to provide some of the services needed by a higher education organization. This customization, although useful at the time, has proved to be a major problem in current times as Mid-Western is up-dating their system again. At the same time the new system was being installed the mainframe backbone to the college was initiated so that the computer systems could be networked.

By the early 1990’s things really began to expand and personal computers (PC’s) were being purchased by the hundreds. It was reported that in 1990 there were only 300 PC’s on campus, most of which were used for business, scheduling and record keeping type functions with some for personal use. In comparison, today there are well over 3,000 computers on campus. In 1991, anybody that didn’t already have a computer or was sharing, was given one for their desk top. It was during this time frame that an early faculty innovator from the Developmental Education Department, had talked the President of the College into sending her on sabbatical for a semester to an IBM sponsored center for instructional technology in Chapel Hill North Carolina (the specific name of the institution was not identified). She was the first community college faculty in the country to go on sabbatical there. She came back with all kinds of creative ideas about teaching and learning with technology. She began running workshops for the faculty to show them some of the innovative and creative things she learned. From this point on, many started experimenting on their own. However, there was no coordination of types of computers, software or formats, people were just out there doing their own thing. One administrator reported,
"At that time, nobody gave a thought in terms of what infrastructure would be necessary to support all of this. We had some really innovative faculty and some real gems of projects, some disasters too. We have a long history of individualism, but as time went on, we had to make some decisions on how best to serve the students and use the resources. People began to realize they couldn’t be loners anymore. This became a real cultural challenge”

Mid-Western was quickly reaching the point where it was no longer thousand dollar decisions, but they we’re looking at million dollar investments and some decisions needed to be made as to hardware and software that would be supported by the college.

In 1994 the Mission and Vision Statements of the College were revised to reflect the philosophical change to a learning college as well as to set a new vision for the future. Technology and innovation became part of these statements and thus officially recognized the importance of these enhancements to learning. From the new Mission Statement, a campus committee identified six core indicators of institutional effectiveness:

1) Access to Success
2) Lifelong Learning
3) Student Development
4) Community Focus
5) Quality Workplace
6) Stewardship

From these six core indicators, key performance indicators were then developed to “measure, represent actions/or outcomes to ascertain how well the college is doing with respect to the goals embedded in each of the core indicators”. One of the key performance indicators that crosses over four of the core indicators, is technology. Thus in 1995, the Academic Technology Committee was formed for the purpose of developing
a plan for academic computing. This committee, in collaboration with several other divisional planning committees, developed the Academic Technology Master Plan. The Master Plan was based on five underlying assumptions:

1) The college must organize itself appropriately to provide first-rate technical support and facilities, funding for replacement equipment, and processes to incorporate technologies into the curriculum on an ongoing basis.

2) Reliability of technology is critical.

3) Faculty members should not be expected to be computer programmers or video producers.

4) Management of instructional technology should evolve toward some ideal mix of distributed and centralized management.

5) Decision-making processes for instructional technologies should be open to all those who want to participate.

From this Master Plan and list of assumptions, the Academic Technology Committee created five task force teams for the purpose of planning the strategies that would lead to the implementation and ongoing growth and development of academic technology on the Mid-Western campus. Each team was composed of representative members from across campus including administrators, faculty and staff. These members while small in number compared to the individuals they represented, were to report the group processes, thinking and decisions back to their peers, as well as represent their peers on the task force team. While this process may have worked fairly well for the administrative and staff group members, communication must have been a significant challenge for the faculty representatives due to the size of the full-time and part-time faculty groups campus wide. While final recommendations were available to all in a written report, it
would be interesting to know how much actual input was solicited from the faculty group as a whole regarding these significant decisions.

The Academic Technology Team was responsible for the “development of an annual technology plan and related budget recommendations”. The Distance Learning Team was responsible for, “creating processes and procedures related to course delivery, course development, and student support services related to distance learning”. The CIL (Center for Interactive Learning) team was responsible for “the development of an operational business plan for the CIL that includes programming, partnerships and student support services”. The telecommunication Infrastructure Project Team was responsible for “providing a telecommunication infrastructure for delivery of voice, data, and video throughout the campus and to students in a distance learning environment”. The last task force team was the Teleport Planning team, it was responsible for “providing planning and design assistance related to the construction of new technology supported learning environments”.

The concept of the Teleport was developed from the aggravation that arose when the college was attempting to meet the ever-growing demands for technical support and staffing for the multiple department based computer labs across campus. The labs had various levels of computers, a multitude of software and different hours that students needed to have access to the labs to complete assignments and work on projects. The idea was to centralize this effort into large computer labs called Teleports. These labs would have high-end computers and a variety of the commonly used software packages installed for student use. All of these computers would have Internet connection for student use.
These labs were also to be staffed by knowledgeable technicians that would be able to assist the student as needed with the computers and use of the different software. Some of the extremely specialized software such as CAD in engineering would remain in the individual department labs. The hours that the students could use these Teleports was to be fairly generous with the potential goal of 24/7 service depending upon student usage and needs. The maintenance and service of these computers would also be centralized as well as replacement plans to update the computers, software and administration of software licenses.

Both Teleports are currently open and operating. The Teleport that was observed was quite busy at 8:00 am on several mornings. This lab had a glass front to the main corridor of the building that housed a lobby area with a small coffee shop and tables. The Teleport had windows extending across the back of the room that provided for a feeling of openness. In the body of the room there were rows of computer workstations. Each contained a computer, screen and keyboard set upon a fairly large desk space that provided enough room so as not to be intrusive to the individual in the next station. Each station had what looked like a comfortable office chair, well padded and on a swivel tripod. Laser printers and scanners were located next to the central desk area of the room where an individual sat that was assumed to be the laboratory technician.

Distance Learning at Mid-Western had been around since the 1980's. In the early years they began with TV broadcast of courses and print-based correspondence courses. This has evolved to include distance courses using videotapes and CD-ROMS, interactive formats of synchronous/asynchronous two-way satellite remote classrooms, as well as online Web based course delivery. Distance Learning is currently a separate
department at Mid-Western where faculty members from all of the different academic departments on campus may choose to offer their courses in a different modality. Therefore, the distance education planning, coordination and support services are centralized to this department. Mid-Western offers over 150 courses in distance format. This is approximately 25% of the distance courses being offered in their state. However, they offer only 18% of the Web-based courses in the state.

The Telecommunication Infrastructure team found that they had some interesting barriers to overcome if they were to complete their assigned task. The core of buildings that were built on the Mid-Western campus were constructed with cement. This was inclusive of the ceilings and inside walls. This provided quite a challenge for the group in terms of getting the total campus wired and connected for the purpose of communication and administrative systems as well as classroom computer systems and Internet access. After extensive study, and the commitment of the college to being student centered, two important decisions were made that would require a significant expenditure by the college. The computer system that supported all of the administrative functions of the college such as student records, course scheduling, business office transactions and other capacities, was a mainframe-based system that was bought and then customized over a decade ago. It was clear that this part of the infrastructure of the college needed to move to the next level; thus resources were allocated and planning began to work with the company that designed the system in order to bring a new database system to the college. This has required considerable time and effort to identify the myriad of different business processes throughout the college. These processes needed to undergo some level of restructuring to accommodate the new system.
As part of this effort, an external consultant group worked with a sub-task team out of Student Services to integrate all of the services for the students with the anticipation that the new administrative system could facilitate a restructuring of student services. This new system would allow the student to enroll in the college, see course scheduling information, access their transcript records and interact with a counselor for planning purposes as well as pay their fees all on-line. The student would also be able to update their profiles and provide counseling services with information about their goals and needs via the same system. The college is currently in the process of implementing the new administrative system, along with investigating the use of such creative business models as outlined above.

The second major challenge of the Telecommunication and Infrastructure Team, and the one that most directly involved the work of this team, was that of connecting and networking the entire campus inclusive of all classrooms. This effort has become an $11 million dollar re-wiring project for the purpose of having computer and Internet capability in all classrooms and offices on campus. Completion of this project has required not only finances but creativity due to the structure of the core of building on campus. They have been able to plan and are working on implementing a wiring system that connects building to building across the roof-tops. The proximity of the buildings, as all are connected via a walk way system, has facilitated this creative infrastructure of wiring. In the buildings with cement walls, cage like structures have been built to house the wiring. With the wiring cables being multi-colored and the cages being built like wire baskets, the rooms almost have a modernistic, art deco type flavor.
This wiring project has also facilitated the redesign of 50 classrooms on campus converting them to multi-media classrooms complete with computer stations for every student and a central teaching station at the front of the room. The teaching stations are equipped with high-end computers, and a control panel that accesses the overhead projection system to show videos, CD-ROM programs, software packages, or whatever the instructor has created on the computer such as a power point presentation. These classrooms are scheduled to be completed for Autumn 2001 classes.

The CIL (Center for Interactive Learning) task-force team was to plan the operation processes of the new technology building. This center is a $27 million dollar building that was created in response to the college’s commitment to be a learning college. In the Business Plan for the CIL, the team explains the commitment and development of this facility as follows:

“The opening of the Center of Interactive Learning is a trigger event for Mid-Western, in which the College has a unique opportunity to expand a transformation process that is enabling us to assume a leadership role in responding to the changing needs of the learner of the twenty-first century. The strategy depends on restructuring Mid-Western remarkable talent and resources, and leveraging internal strengths to recognize and respond to the changing needs of individuals, organizations, and the community’s learning requirements. The plan embraces the notions of O’Banions learning college, a place were learning is the first priority, by providing educational experiences for diverse learners anyway, anyplace and anytime.”

The CIL opened in 1998 with state of the art facilities and equipment. This four-story building has interactive classrooms for distance learning and teleconferencing, interactive learning center classrooms, breakout rooms for student and faculty teams complete with a networked computer and smart boards, an Alpha lab which is a state of the art simulation lab, a Delta Lab for professional development of faculty and students and the Forum.
The Forum is a 90 person multi-media theater. It has three 9X12 inch screens, three gun projectors, surround sound and theater lighting. There are laptop computer connections at each of the seats in the Forum. The podium in the front of the room has a central control panel for all of the media possibilities as well as the different lighting possibilities. There is also dedicated space on the lower level called the partnership area. This is an area with 12 semi-private workspaces equipped with computers and phones for the use of CIL partners from the community.

All of these task force groups provided input to the college administration related to their specific group charge. Budget considerations and project recommendations were assessed and currently, one Teleport is functioning with a second under construction, the Center for Interactive Learning opened its doors in 1998 and a major infrastructure project is underway to facilitate the rewiring of the campus. Technology planning is once again under consideration as there is new leadership to coordinate this effort.

Concurrently, with all of the activities described above, beginning in 1995 a group of faculty and middle managers began a group called the Pathfinders. The original impetus for the group was a two-year grant from the National Science Foundation (NSF). Mid-Western was awarded $200,000 for the purpose of initiating a process to implement and integrate innovation into the learning process at the college. The Pathfinders group developed Learning Challenge Grants. These were grants that the faculty and staff could apply for with the theme always being innovation. The awards ranged from fairly small to $20,000 plus dollars. The money was used to purchase equipment, software, pay for faculty release time and data collection and research efforts. The program was highly successful and actually served as the catalyst for many of the initiatives currently being
run in the CIL. The focus of the Learning Challenge Award was for the individual or team receiving the grant to develop the innovative learning project and implement it in a pilot. They were also to collect data regarding student learning. If the project was successful and data supported the project as being a promising program for student learning, the plan of the Pathfinders group was to work with the individual department chairpersons and within the budget planning process to scale up the project into the appropriate department.

The Learning Challenge Grants proved to be so successful that when the NSF grant time frame was completed, the college continued to support the Pathfinders group through the regular budget process of the college. Also identified was an important link between the Pathfinders project planning and utilization of the CIL.

In review of all of the processes that have occurred at Mid-Western relative to technology in the last decade, it is significant to note that organizationally there was not a top level administrative position dedicated to the oversight of technology development and implementation at the college. A Vice President of Information Technology was hired Autumn Quarter 2000. Prior to this time, all of these initiatives fell as just one of the areas of responsibility under another Vice President within the organization. He sums up the massive change in environment related to technology over the last ten to fifteen years by saying,

"To talk about technology today, it’s an entirely different world. The challenges that we have in our institutions today related to technology, no single individual can handle because they cut across the fabric of the institution. It was a time, we needed a full-time VPIT to concentrate on these issues and bring a team together."
With the new Vice President of Information Technology in place, already some structural changes are taking place and some new positions are being filled to build the team. Mid-Western is moving on to the next phase involving technology.

Leadership Strategies to Promote the Use of Technology in the Teaching and Learning Paradigm

To be able to understand the data in relation to leadership strategies and organizational change that took place in the use of technology because of these strategies, the data was analyzed using the framework of the Alfred and Carter (1998) Organizational Change for Community Colleges Model. The discussion following represents leadership strategies, increased use of technology and technology use in teaching and learning in relation to the framework categories of: understanding the fundamentals of the need for change, forging strategy, identifying champions, supporting innovation, communication and celebrating success.

Understanding the Fundamentals of the Need for Change

The need for organizational change in the use of technology, for both the day to day operations and communications of the college and most certainly in the teaching and learning mission of the college, was evident to the administration of the institution by the middle 1980’s. As previously explained, a failing home-grown mainframe system was the impetus needed to propel the institution into purchasing one of the first academic administrative systems available at the time. The data indicates that the leadership of the
college recognized the need to have a more efficient way to handle student records, course schedules and business office transactions.

Concurrently, faculty started to experiment with technology to discover what potential benefits might be possible for the students in their classes. Stated in the stories from faculty and administrators, these innovative activities were encouraged and supported by the college administration as a strategy to further understand what direction the college needed to go in relation to technology. The college joined an emerging national group that was interested in the use of technology in higher education called the League for Innovation in Community Colleges. Connection with this group provided networking activities for both faculty and administration as to the technology trends in higher education across the nation. All faculty were provided with desk top computers fairly early on as a tool both for campus communication and data and for the purpose of using the technology to explore new teaching strategies. As the general public also began an increased use of home computers for everything from word processing to playing games and eventually access to the information of the Internet, so grew their expectation of how the community college should function. One administrator remarked, “Our students represent the general public, they are becoming much more computer savvy and they expect us to be doing the same.”

In the Mid-Western Spring 2000 Student Opinion Survey of Students, the college faculty and administrators were surprised to learn that many more students had access to computers outside of the college environment than they would have predicted. There is also a greater influx of professional students at the college that are seeking a certificate in a specific area on top of their degree or even a second or third degree to either change
from or compliment a previous degree. One of the faculty members in the Business Management program stated:

"The professional students that have been using technology for quite some time in their job roles have the expectation that we will be teaching with technology and software applications that are current in the industry. If we aren't using these tools, it looks like we don't know what we are doing and we lose credibility."

An administrator, very interested in the cost that the technology use at Mid-Western is incurring, yet also committed to being a learning centered college concurs with the faculty statement above when he points out, "We would have to have our head pretty far in the sand not to conclude that no matter what your discipline, people better be teaching with technology."

It is quite evident throughout the data that the external pressure of society and the consumers of higher education, have had a significant impact on Mid-Western’s commitment to the use of technology in teaching and learning. It was also important to note in the comments from the students that participated in the Spring 2000 Student Opinion Survey, that they expect not only to have technology used as part of their education, but that it was their opinion that the campus should provide online services. It was very important to them that the following services be offered online: “finding courses and open sessions, registering for classes, getting grades, planning a schedule, applying for or checking on financial aid and connecting to the library.” They did not want to stand in line and they did not want the run around from one office to the next to get information or solve a conflict. They identify time, or lack of it, as being a major issue for them. However, they also indicated the need for some assistance with this process as sixty-four percent of the students surveyed said that they would like to have an
individual to help guide them through the process of conducting business using computer technology.

An analogy that might illustrate the student's thinking is that of setting up a vacation. If you can set-up a whole trip including airline tickets, hotel reservations, information on the best places to eat complete with menu, purchase ticket to a play in the city you are visiting and chat with a travel agent for any further plans all from the home computer, why can't you plan, browse information about programs and courses, select classes, apply for certain programs and financial aid, chat with a counselor and pay fees from the home computer?

As previously stated, Mid-Western has been engaged in different types of distance learning for years. Document and interview data agree that each new type was added as the technology became available and the learner evaluation of the new methodology was positive. Videos moved to CD-ROM, broadcast TV branched off to include satellite, live interactive TV and print-based branched to simple computer programs then to full blown courses with active learning strategies and interactive capabilities. Understanding the fundamental need for change came from not only the knowledge that the possibility exists but more importantly, that it was of value to the learner.

Forging Strategies

What set the stage for cultural change and the integration of technology into the very fabric of how Mid-Western interacts as a college community and how they create a learning environment for their students were the Vision and Mission Statements set forth in 1994. The emphasis of these statements and the college set of Core Indicators for
Institutional Effectiveness are all based on student learning and being a learner centered environment. The Mission Statement for the college is, "We help individuals turn dreams into achievable goals through accessible, high quality, affordable learning opportunities."

Embedded within all of these documents are the common themes of high quality education, innovation, meeting the needs of a rapidly changing, technologically advanced, global economy, life long learning and access for and development of a diverse student body. It is the expectation that all new projects and budget allocations other than standard operating costs, have rationale related to the core indicators, which encompass the themes indicated above. With this understood, innovations related to quality education and student learning are clearly a priority for the college and are encouraged.

One of the early and continued strategies used at Mid-Western has been mentioned several times in this document, that is the strategy of providing the technology. In the case of the administrative applications, the new system was purchased and installed after the home-system crashed. The faculty, staff and administrators simply had to learn to deal with it. There was no other alternative or old system left to go back to. So, some new processes were developed using the new system and some old processes revamped and adapted to the new system. This was evidenced by the degree of customization that was added to the new system. Some of the customization was related to the fact that these systems were fairly new to higher education and were originally developed for business, and as a result the functions did not quite match the needs of higher education at the time. Because change is difficult, if the system could be adapted
to fit an old process, it may have been more comfortable than developing a new business
process. In their favor at the time, was also a fairly far reaching frustration with the old
mainframe and system by faculty, staff and administrators of the College. One
administrator reiterated the demise of the old system with a similar conclusion to that
previously reported:

"There was an electrical explosion, an electrical vault blew up on campus
down on one of the lower levels and we had a melt down of all our
computer wiring across the campus. But in any event, people were
cheering in a way because at this point some were suggesting that we
scrap the whole system anyway, this just made the decision easy."

At this point not only were people left with very little choice but to change the total
system, there was at least a faction that were advocating in that direction anyway. This
situation provided a high degree of buy in to change from the onset of the project and
while there are always some issues to bringing up a new system that affects many parts of
the campus operation, it was reported that this change went fairly well.

Currently, the administrative computer system identified above that was
implemented in 1989 has not been appreciably updated since then. Substantial changes
have taken place to the current version of the system and implementation of the upgrade
will once again provide for some significant change effecting the total campus
community. The customization to the 1989 system over the years has provided some
challenges, for example the integration of the new upgraded version is such that the
system wide change that will occur in the near future will most likely be more substantial
than the initiation of the 1989 system. The campus administration has assembled several
committees representing various factions of the campus community to plan and trouble
shoot the implementation of the upgraded system. The development of some new

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business processes will be required with this system, therefore development, training and implementation are being considered.

The details of the progression of the administrative system are provided here because this particular use of technology affected how faculty and students were mandated by necessity to use the computer system to obtain certain important pieces of data. This process might have encouraged some faculty and students that may have otherwise never touched a keyboard to become involved with the computer because they needed the information. The second reason this data is important will be discussed in the chapter on dynamics when some conflicts in technology support are discussed.

Another change initiative identified in the data was the provision of computers and software as early as 1985 to faculty for the purpose of experimentation. There were no expectations put forth with the exception of, "see what you come up with that would benefit students." This challenge captured the pioneers, the group that could see some potential and were not afraid of the technology. This is the group that would probably have found the technology even if it were not given to them. But the fact that they were encouraged to experiment is significant. This could be akin to giving permission for creativity with an underlying message that their ideas and discoveries were valued. One administrator noted that:

"Faculty are key, they are absolutely key to this successful integration of technology, and to the degree that they can see the relevance to student learning, we will be successful."

On the other end of the spectrum, there were those that were not interested in using technology in the classroom or even to access information from the administrative system; there are still some. But an interesting strategy in this respect was
the lack of pressure on these individuals from administration to do any type of immediate change toward technology use. A faculty member states, 

"We still have some people in our department who really don't have any use for computers at all. We have others that do a lot, even develop their own Web courses. We haven't been forced as a department to change in mass."

This is a way to let these individuals know that their knowledge, teaching expertise and ways of doing things are still valued. However, at the same time things are changing around them at a fairly rapid pace. The projects that are getting funded, the innovations that are getting recognition, the publications related to accomplishments of the college, and virtually much of discussion around them is related to technology. As a result the pressure to change is becoming apparent in the college environment and through comments by peers and students, not as an administrative mandate.

At this point the environment is safe enough for small steps. With the integration of the new administrative system, there may eventually no longer be a way to access campus information other than through technology. Slowly but surely, perhaps the last holdouts will change feeling that they had some control over their choices and timing. Once technology is used for an information base, perhaps the next step is to entice them into technology use with students in the classroom.

Probably the ultimate example of technology being provided for faculty in the hope, based on previous commitment and creativity that they will take the challenge and move to the next level of the technology integration, was the construction of the Center for Interactive Learning (CIL). This exemplified the "build it and they will come" strategy. The data indicates that the building was built to stimulate innovation. The
building and the equipment inside for learning technology research and design, is the
supreme statement by the college leadership that technology enhancement in many forms
is important and will continue to be important into the future for student learning and in
meeting learning needs of the community. Building this $27 million dollar state-of-the-
art technology based facility held a risk, but at the same time solidified Mid-Western’s
standing as national leader in community colleges in its commitment to student learning
anywhere, anytime and in a variety of modalities.

The development and integration of the use of this facility has not been without
some controversy and multiple issues, which will be discussed in the section on dynamics
of change, but that is to be expected given the magnitude of this project. The facility is
the first of its kind among community colleges in the United States and thus the planning,
projecting and implementation of the facility could not be based on any known model.
Simply by virtue of its presence, the total structure and operation of the College has been
impacted. Therefore the building alone is a significant element of change and that
statement does not address the effects the functions within the building have on the
remainder of the campus community. In discussing the function of the CIL, an academic
administrator stated:

"We built the CIL, a state-of-the-art technology center, with the goal that
we would try out new things there and then try to scale them up and
implement them across campus."

The CIL concept could be likened to that of a “learning laboratory” where creativity
would be a necessary tool as well as some basic knowledge about technology.

Along with all of this technology, software and hardware, came an immediate
need to provide educational opportunities for the faculty, staff and administrators. Mid-
Western does not run a full summer quarter. Therefore, this time frame provided a perfect opportunity for development and training. Mid-Western developed Spring and Summer Training Institutes where any employee could attend workshops on specific software, technology tools, Web course and many other such topics. The data indicates that sometimes the presenters were from the software companies or other colleges. Most commonly, these institutes became a showcase and forum for peer to peer mentoring, as colleagues who have developed certain types of applications or used certain technologies pass these techniques and methodologies on to others. A faculty member remarked, “I think successful strategy has been having the technology workshops, plus paying the faculty $100 per day to attend.”

Because the institutes are held during a time when the faculty are not committed to the college, they are paid to attend these training institutes. There are some sessions that all are suppose to attend, specifically those that are related to the new operation systems of the college. However, for those there are time options other than breaks. Mid-Western is committed to providing an opportunity for all who are interested in using the different technologies in the classroom to become involved and to obtain the educational information and skills they need.

The Pathfinders group was previously described in the history section of chapter four. However, the group is worth mentioning again as an important part of the strategy for change. The leader of the group describes more fully the original charge of the group:

“The original inception of the team was that we were going to be sort of a catalyzing agent to integrate the change drivers of the institution as we worked to move innovation in a more strategic direction for the college.”
The understanding of the group as to how the faculty would respond to any type of overt push for change was extremely insightful. This group of several department chairpersons, some faculty and an administrator created a program where innovative and creative teaching strategies were rewarded and received a high degree of campus recognition. While some of the reward was monetary, in that it supported the identified project and any release time that might be required, the rest was intrinsic as it promoted and supported individual and small group creative dreams about teaching and learning.

The faculty was encouraged to come out of the traditional classroom and play, "what if?" They could try their hypothesis that the students would learn better or quicker or retain the knowledge better if only they could do X.

Models of collecting assessment data about the project outcomes were put in place, and little by little a value for innovation began to emerge. Some of the projects were highlighted as pilot projects in the CIL, both internally and externally to the college. These were some of the technology based learning challenge grants. One of the members gives a historical outlook as to how the link between Pathfinders and the CIL came to be:

"The relationship of the Pathfinders to technology has evolved over time because of our emphasis on innovation in teaching and learning and the assessment tools we used to measure outcomes. In some of the early studies the Pathfinders conducted, we realized that the CIL, which was technology bound innovative/learning experiences, could use some of the same assessment tools as we did. It was also significant that some of the project that was overseen by the Pathfinders were taking place in the CIL. There is kind of a dotted line between Campus Technology Committee and Pathfinders. You know we are not interested in technology for technology sake, but the application of technology to improve and expand student learning."

A common theme in the interview data collected from faculty, administrators and in several key college documents, was the importance of the Pathfinders. They were
identified as a pivotal strategy related to the use of technology for teaching and learning at the college. The Pathfinders report that their challenge now is how to keep the momentum of the innovative teaching projects once the grant money has run out. This dilemma is a budgeting issue for the department from which the innovative faculty member originated and for the college as the many demands for funding support are juggled.

Financial support by the college administration for technology certainly plays a role in forging a strategy for success. The data indicates that early on, when there was not a lot of reliable information about the best computers or the best software for certain functions, experimentation of the different modalities was supported. Once it was understood that computers and some of the software and networked packages were tools that would involve the whole campus, some of the choice of software and systems disappeared. It was clear financially and in regard to support and integration that a standardized system needed to be decided upon. One administrator lamented this loss of choice,

"The whole technology thing has been very difficult for a college that has stressed individual innovation and personal initiative, and we used to be able to support that. But now there is a tremendous need for strategic and coordinated thinking and planning of technology. The darn stuff is changing so often, it's like trying to catch the proverbial greased pig at the county fair, you never can seem to get your hands around it, hold on to it, and figure it out. The cost, even with standardization of most of the systems, is never ending."

One of the newest initiatives on campus is the upgrade of fifty of the regular campus classrooms to multimedia classrooms for use beginning Autumn 2001. The Division Deans worked with the faculty to decide which classrooms in which buildings would get this upgrade. They also made recommendations regarding the equipment that
would be selected. While all of the rooms will have the same equipment, many had input into what that equipment would be.

Also well supported are attendance and presentations at external conferences. Faculty and administrators travel around the country to see what is going on with regard to technology as well as to showcase the innovations that have occurred at Mid-Western. This is yet another strategy identified in the data that positively involves the faculty in the use of technology in teaching and learning, and rewards them not only financially by supporting their travel, but professionally by assisting them to showcase their work to a local or national audience.

**Identifying Champions**

Some volunteered, some evolved over time, some refused the green eggs and ham until they had a bite and then were converted forever, and yet some deny still any contribution. No one has acknowledged whether or not the leadership activities that have been engaged in by many of these individuals were encouraged as a change strategy or if the faculty just evolved in that direction. Nevertheless, the fact is that many leaders emerged over the last decade at Mid-Western as the college community struggled with the integration of technology into their environment and into the way they help students learn.

The largest pocket of champions for this change has been within the faculty. While it would be impossible to highlight all of the initiatives that have taken place several examples will be presented. Interestingly enough there seemed to be a fairly diverse representation of disciplines from which these innovative faculty are based. If
you were to guess which areas of expertise you might find some of the earliest adopters of technology use for student learning, it might be logical to choose computer science or engineering. While some of those faculty are certainly using technology to enhance learning with their students, interestingly enough, one of the first and remaining champions is from the Developmental Education Department on campus.

The challenge of the Developmental Education Department faculty as reported by the chairperson, is to work with those students on campus whose academic skills in the areas of reading, English and mathematics are below that of beginning college work and help them advance them to a level to where they can be successful in college courses. Unfortunately, not all of these students are starting at the same point, and some have a significant language problem due to English being their second language. It was this quandary of how to work with students that were at different stages of development that captured the interest of a reading expert faculty member named SL. She took a sabbatical to learn what technology might have to offer that would provide an answer to her dilemma. To her delight, she found some answers and when she returned to Mid-Western she began to create. A colleague had this to say about this SL:

"I teach developmental reading. In our area we have probably one of the faculty members that is sort of the ultimate leader of technology at Mid-Western. She did a sabbatical back in 90–91, early on and learned multimedia, so she is quite a pioneer. So when I came in 1993 and they took me into the reading computer lab, I was really impressed. SL wrote all of these programs for the students using a program called “Toolbox”. So as far as I am concerned, our department has always been technologically advanced because it is all I have ever known here. Now because these are developmental students and self-motivation is probably an issue, we don’t do the classes on-line. All the students are in the class at a computer terminal, with the instructor there. There is some presentation by the instructor, but then it is turned over to the students and they can move and progress through the modules at their own pace and
test at the end of the module when they are ready. They can also repeat the modules. SL is pretty innovative. She updates the programs as needed. I don’t know what we are going to do when she retires”.

This individual changed the total direction and the teaching philosophy of this small department. Her methodology has had an effect on the learning and progress of close to a decade worth of developmental reading students at Mid-Western. The fear of the faculty is related to the fact that SL is to retire in a year. While they all use the methodology in the classroom with the students, it doesn’t seem as though anyone has been mentored in term of writing and updating the program. This will be a leadership concern as faculty such as SL retire. What is being built into the infrastructure of the new system under the new VPIT that provides the answer to such dilemmas?

An early faculty pioneer on the campus who develops on-line course offerings is CH from the Health Information Management Department (HIMT). She teaches totally on-line from home. CH was no stranger to on-line learning, she graduated with her masters degree online from George Washington University and thought that some day she would like to teach online courses. When one of CH’s students had to leave the program just prior to finishing because her husband, who was in the Air Force was transferred to England, CH was able to help the student set up a clinical rotation in England and communicate with the student and preceptor by e-mail. This was the impetus that CH needed to begin the development of the online version of several of the HIMT courses. Now she only teaches on-line from home. However, CH has discovered that teaching online is much more challenging and time consuming than she had originally thought it would be:
“I HTML all of my own stuff with no reassigned time. It is not a simple matter of going in and changing a syllabus on a word processing document. You’ve got to go in, you’ve got to change it and make sure all of the links work and the directions that take the student through the program are right. I teach 79 students in Allied Health 104 and two more coding class sections of 14 students each. Most days I am online from eight in the morning until eight at night giving feedback via e-mail and chat, grading assignments, helping student’s to troubleshoot the system and just general interaction. There are a lot of days that I wonder why I did this”.

The amount of work and time that many faculty have put forth to bring technology and online learning methodologies into their courses is echoed by other faculty as they contribute to the examples of technology champions at the college. One faculty member speaks of his efforts:

“I think from a faculty standpoint, there are faculty like EK and myself that have had an interest in technology already, and may be were early adopters in it. We sort of saw intrinsically that we could use technology in certain ways to improve, or at least experiment to improve student learning. So, I think there is sort of a level of faculty that have taken that approach and have moved ahead relatively rapidly”.

Listening to the stories from the various faculty in the focus groups, there seems to be a fairly large group that embraced the computer based technology for teaching and learning in such a way that they were functioning fairly autonomously in just a short period of time. The College administration supported these faculty by providing the equipment and classroom flexibility needed to create these new modalities for student learning.

Pedagogically, faculty across campus are at many different places regarding the adoption and use of technology as an enhancement, as part of a class assignment, or in a distance delivery mode. Some of the early adopters feel that they perhaps were pioneers at the college because of their work background.
"Many of us came from training or another profession where we used technology. It's just a tool and so it is easily integrated into your pedagogical approach in your classroom. But in terms of a mindset, we had that mindset first, but then there's other people that we would call the dinosaurs or the traditionalists, where there may be nothing wrong with their teaching, but they don’t think in terms of using technology. They may be feeling some pressure to get on the bandwagon, and of course there is some controversy with academic freedom and all."

Other faculty came from the more traditional academic departments of the college but also have found ways to introduce and use technology in the classroom to enhance student engagement with the material. Some technology methodologies were chosen such that no one in the class is an observer.

"I am the chairperson of the communication department. In our public speaking class, we've totally revamped how we teach the class. Each student now has a laptop computer at their desk to develop speeches using a template software that is already installed on all of the computers. Which makes a lot more sense, because that is how people will typically do it in the real world. Now they are also required to develop some Power Point slides to accompany the speeches they create. They can work on this there in class with the facilitation of the faculty."

These examples of faculty champions represent the academic departments of the college where in class or on-line initiatives were developed totally in relation to the vision of a faculty member or group of faculty. The actual Distance Learning Department of the college, as previously described, is an independent unit that supports many different formats of distance learning, not just Web-based courses. Thus faculty that develop courses that are delivered external to the college classroom are facilitated through the Distance Learning Department. PF, an administrator in this department, has championed the growth of this arm of the college for sometime. She talks about the early days of distance learning at Mid-Western:
“I started out in the days, the early 1980’s when distance learning was almost a dirty word. You know people didn’t want to hear about it, they didn’t believe in it, it wouldn’t work. So, you had to kind of beg, bribe and cajole just to get people interested and started. We started out back then not counting distance learning development and distance learning delivery into the regular workload. It was a separate thing, and we did that for a reason, it was an incentive. It was like dangle the carrot, give them the extra to get them interested. Now we are at the point were we don’t need the incentive anymore. I think the incentive is there just because they see everybody else doing it. Now you have the opposite, you have faculty who really are wanting to do something. The compensation now is part of the regular workload”.

These early incentives may have captured the attention of some faculty that would not have attempted a distance learning venture had a program not been established to support their efforts above the regular compensation model. Essentially they were being paid not only for their creativity and expertise, but also for their willingness to be risk-takers.

These represent just some of the highlight examples of change champions within the college organization who were and are the pioneers. For the most part, not only did these individuals show the way with their development of programs, classroom enhancements and distance initiatives, they share what they learned with interested colleagues, thus stimulating more growth in these technology efforts. Many times the presenters at the Spring and Summer Institutes were these pioneers sharing what they had developed with their colleagues and provided beginning instruction on the how to of technology development. These individuals often times also served as resource for other faculty that were interested and developing technology applications to use with their students. The role of these individuals was significant as a grass roots mechanism for change for this college in the realm of technology use for teaching and learning.
As for the leadership behind the leadership, it is significant to note that these efforts were supported by the administration of the college. Equipment and software were supplied and the freedom to create an implement was encouraged. A major leadership theme found in both discussions of Transformational and Servant leadership theory is that of promoting the use of knowledge and expertise of those you lead by support and encouragement. The above are indeed examples of such strategies.

Supporting Innovation

In this study, there is a link between forging a strategy for change and supporting innovation. In the forging strategies section, providing the initial technology to faculty staff and administrators for the purpose of experimentation, early use and development, quickly moved to a level of continued cost. An important point identified in the data analysis was the concern about the ever-expanding cost of technology. Whoever bargained for the fact that a computer would essentially out grow its usefulness and the ability to integrate with emerging systems approximately every three to five years? The challenge of the leadership of the College was to procure funding for this on going and ever expanding black hole of better and faster computers, the need to replace these machines in a relatively short time-frame, growing possibilities of software, networking systems and data-base systems and on and on.

On the road to forging success, once a computer replacement cycle was established, an administrative system was in place, the Center for Interactive Learning had some successful programs up and running and faculty were adding innovative technology approaches to their class rooms, two very important lessons were learned.
The next steps of integration of technology on campus and the capability of access to the knowledge base for all students couldn't happen without spending more money.

Part of the vision for the Center for Interactive Learning (CIL) was that innovative projects would be brought up and piloted in the CIL and then devolved out to the main campus to continue. This process was how technology classroom enhancements were to integrate to the traditional classrooms of the campus and eventually become common place. The first issue identified was that there was not enough of the correct equipment in the classrooms, even with some portable computers and LCD projectors, to support the new technology courses in any of the classrooms on campus. As previously described, not only were these students in the CIL classrooms using computers, but they were linking to the Internet and using software that could not be supported in the standard classroom. However, as one of the Information Systems administrators explains, none of the traditional classrooms were wired/cabled for the Internet and in some courses each student would need a computer station, not to mention a master station for the instructor.

Supporting the innovation came when the campus administration decided that all rooms on campus would be wired and cabled for access and that 50 regular classrooms would be converted to multi-media classrooms. For both of these projects, the challenges and the cost have been previously described. This represents a significant commitment on the part of college administration to support the innovations.

Also described under forging strategies was the Learning Challenge Grant program. Supporting the innovation comes after the pilot year when the Pathfinders group works with the faculty member(s) to integrate their innovative project into the normal teaching and business of their departments. Often times this commitment on the
part of the department administrator is the willingness to integrate the project into the department budget and tie it to the strategic plan of the department. Admittedly, the Pathfinders have found this step to be the most challenging.

“We've been successful during the pilot year of the projects. Now in order to take the next step, (you know this is no longer grant money) you have to work through the departments, the divisions and the regular budget process so that something can become operationalized. So that's where we've had things fall through the cracks in the past. We've used the "flash in the pan" kinds of ideas, or perhaps they weren't pilot tested well enough, or more than once, and so we really didn't have the data to support scaling them up. We are trying to get to that level, and think that Pathfinders have the best opportunity of anyone to see that some of that happens”.

Interestingly enough, the Pathfinders Team is not citing lack of funding or lack of support by departments as reasons that the scale up projects have not worked out as well as anticipated. They are looking at the process in terms of some of the projects not being ready to be mainstreamed or perhaps not at the level of accomplishment that should be considered for implementation. This evaluation of process is significant in that the determination of the group to figure out the problems and to make the mainstream integration work, is directly related to supporting innovation.

On going faculty development is needed to provide faculty with the knowledge to utilize the technology for student learning. Previously mentioned were the Spring and Summer Institutes as well as workshops taking place in individual departments. A more recent facilitation/support strategy is the hiring of several more developers in the Distance Learning Department. PF explains how these individuals support the faculty innovations.

"We now have six people that assist faculty. We still have some faculty who venture out on their own and develop their course and then bring it
back for tweaking and polishing. But if a faculty person comes in and says, I want to put my course on-line, but I don’t really want to learn the technology and I really don’t want to do that stuff myself. They become the content provider and this team of people will work with them to get their courses up and going on the Web”.

This support aspect is just evolving and will be discussed further in the dynamics section of the chapter. Many of the pioneering faculty developed their projects without software designers, using a basic understanding of computers and just their willingness to learn and apply what they were learning into online course development and technology classroom enhancements. It was amazing to learn that several of the faculty members learned three or four software packages, taking as long as six months of intensive study in order to design their courses. Most likely these were the faculty with an interest in learning the software, perhaps “techies” at heart.

At this phase, most of the faculty that are now moving toward the increased use of technology in the classroom and on-line are the middle group of faculty. These are the individuals that are among the core group of faculty willing to make some of these technology changes if they can be convinced the technology will help student learn. They are willing to try the new teaching methodologies and develop themselves in that direction, but they are not willing to put the time and effort into this venture that the pioneers/early adopters did. Therefore, the addition of these support individuals that were hired with the sole purpose of assisting the faculty with development of the technical portion of the courses is essential for the continued change process to take place.
Communication With Respect to the Change Effort

Communication at Mid-Western seemed to be fairly open. Campus wide e-mail and voice mail systems are alive and most productive, to the point that several faculty members were complaining that too much communication was coming their way. One faculty member remarked that,

“As far as the use of technology goes, you are connected anywhere anyplace and anytime. If you chose to check the e-mail and the voice-mail, that students, colleagues and administration can always find you”.

Communication in relation to the different technology ventures around campus is fairly well publicized. An Annual Learning Challenge Awards Report is published and presents a summary of impacts and outcomes related to the project for the year. It also profiles each of the completed projects for the year and announces the project award winners for the following year. The Center for Interactive Learning has its own newsletter called the CIL-Labus. The following describes the intention of the newsletter as written in one of the first additions by the then director of the CIL:

“CIL-Labus is a newsletter about the Center for Interactive Learning (CIL). Laboratory and the wealth of instructional resources available to the Mid-Western community. Even more, it’s a newsletter about all of us at Mid-Western. We used technology to produce the CIL-Labus, and it will soon be converted into an electronic newsletter on the World Wide Web. However, the primary focus of our newsletter is not the technology but the innovative Mid-Western family who make it all work”.

Not only is there information about what is going on in the CIL, but there are listings of different faculty members, their teaching area of expertise and what software packages they know well and would be willing to assist other faculty to learn. Other resources and lab technician availability times are also listed.
In the 1999-2000 Mid-Western Strategic Plan titled, “Pathways to a Learning College”, there was very little doubt about the role that technology is intended to play and the vision of where the college is headed. One of the major change agents identified is the use of technology to promote the learning college concept. Several portions of the plan are very specific to technology and the following are examples. The first is a quote, with an unidentified author, inserted into one of the Strategic Plan pages:

“In times of change, the learners will inherit the earth while the learned will find themselves beautifully equipped to deal with a world that no longer exists”.

Because this quote is inserted into the College Strategic Plan, it is very likely also a message to those at the college who have not embraced the learning centered concept adopted by the college. The interpretation could vary, but most literally could mean that those who don’t embrace the concept will be antiquated within the college system and no longer be useful in their role. This is a rather straight forward statement about the value of continued learning and change. The next quote is from the body of the Strategic Plan and is in relation to the role of technology at the college:

“Information technology will be a transforming agent that will affect everything. Distance learning will serve as a catalyst for the adoption of learner-centered approaches to instruction. Faculty and counselors working as facilitators and often as part of a team will empower students to manage their own learning through a wide variety of alternatives to traditional teaching. Instruction will focus less on content and more on process—the process of acquiring and managing knowledge”.

Also outlined in the Strategic Plan were Critical Performance Indicators linked to the already established College Core Indicators for the two major divisions (Student Centered Learning Development and Workforce Development) of the college. The direction for the college is clearly delineated. Each department within the college then
develops their department level plan linking to the Critical Performance Indicators of the College Strategic Plan.

As a result, communication of where the college is headed in relation to technology is not a hidden agenda and has clearly moved from the experimental stage to a recognized learning methodology. The use of technology as a major method for communication, record keeping in the form of databases and for executing the business of the college has become established. New ways to integrate information and services for students in terms of academic planning, counseling, scheduling, viewing their records and adding information to their personal profiles using computers is all on the horizon as the new administrative system is being implemented. Immediate connectivity with relatively short response time is becoming the expected norm at the college and those not using this technology, while not officially being mandated to do so, will become more and more out of the college communication loop.

Celebrating Success

It was difficult to determine all of the ways that successes were celebrated, as many of these activities that are occurring daily are not necessarily public or documented. With the use of technology often there is a mini celebration every time you use it, especially in front of a group of individuals and it works. Teaching with technology is not like taking the old trusty overheads out of the file and the biggest fear is that the light bulb in the overhead projector will be burnt out.

Celebrations take place every time a faculty member or group of faculty working to develop an online course experience success as the program is brought up and all of
the links work. The student sitting at the computer at home experiences a small
celebration the first time a course assignment is completed, turned in online and the
faculty member actually receives it. These are not major successes, but they are all
pieces to the celebration of the integration of technology use into the fabric of the college.

Certainly there have been very public celebrations in relation to the major
technology related events such as the completion and opening of the Center for
Interactive Learning (CIL). This facility has been and continues to be showcased to the
Mid-Western community as well as other colleges across the country as an exemplar of a
technology research and design center for the purpose of creating innovative ways to
improve student learning. Also noted as a very public form of celebration are the
numerous college publications that highlight various accomplishments of groups and
individuals in the college in relation to the use of technology. Mid-Western’s learning
college approach and their use of technology as a learning tool have been the topic of
several articles and the chapter in a book, “The Learning College” by Terry O’Banion.
The listing of accomplishments is even evident within the Strategic Plan document.

Mid-Western faculty and administrators present their accomplishments related to
the learning college concept and the use of innovative methodologies at National
Community College Conferences and at the League for Innovation Conferences. They
were one of 12 community colleges across the country to be invited to join a Vanguard
Team by the League for Innovation. A Pathfinders member, who is also on the
Vanguard team for the college describes the purpose of the team:

“All of these colleges have been identified as being on the cutting edge of
being learner centered and espousing to the principles of the learning
college in that learning is at the center of everything that we do and plan”.

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Therefore, the college and a team of faculty and administrators are highlighted on a national, high profile team in the realm of community colleges. This is a form of recognition celebration for excellent work in the area of innovative learning. Very deliberate was the decision to integrate faculty and administrators as members on this team. It is also noted that in many of the presentations that Mid-Western has done across the country at national conferences, faculty and administrators are presenting together as a team.
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Table 5: Major Leadership Strategy Themes
Conclusion

Throughout these stories we see that there have been many little pockets of leadership along the way. As you can see from Table 5 which summarizes the technology change process in relation to the leadership strategies implemented to encourage and support change at Mid-Western, there has been much activity to move the college in a new direction. The structure changes and the technology plan may not have captured all that needed to be planned for the first time around, however, what seems to have been consistent is the promotion of individuals within the organization to take charge of their technology projects. Also, the faculty members working on these projects, seemed to feel enough freedom in the system to use creative thought and come up with the resources and support pieces needed to complete those projects. Therefore, to some degree, the administrative leadership sanctioned empowerment of individual champions and the provision of a significant level of financial support served the college well as a mechanism to begin a change effort toward the increased use of technology for teaching and learning.

Of further significance, is the fact that the administrative leadership in the organization is constantly willing to learn about itself and to listen to both internal and external feedback from their constituents. To this end, they are a learning institution and will continue to be successful in the never-ending challenge of change.
Chapter 5

Data and Analysis: Change Dynamics

Throughout the process of data collection, coding and analysis it was very evident that the integration of technology use at Mid-Western Community College, specifically over the last six years has brought the College to a very different place and manner of operating than it had been previously. Six major themes related to change were identified as the data were coded and analyzed: these themes were turbulence, tension, planning, implementation, barriers, and cultural affect. The dynamics, which constitute Mid-Western’s story related to change could all be categorized under the areas of faculty, funding, students and support. To present the change themes in relation to dynamics, each theme will be presented using the framework of faculty, funding, students and support.

Turbulence

Turbulence is often present when the status quo of operation is interrupted to the point that it can not be ignored by those in the environment. The rapidity and amount of change are also associated with turbulence.
Turbulence was present for the faculty at Mid-Western as the use of technology, that started off fairly slowly in the middle 1980's, became a driving force in the middle 1990's. One faculty member states,

"We're all over the place in my department with technology. We have some faculty that are high-end users, that even develop a lot of their own stuff, all the way to a few that you can't get to open their e-mail, they have no desire to learn to use the technology and get very upset when communications come out on e-mail. They think they are being penalized and kept out of the loop. Thing is you can't keep up with all of the communication and still feel like you are out of the loop because things are happening to fast".

Keeping up with everything that is going on was a frustration generally agreed upon by most of the faculty interviewed in the different focus groups. They reported the feeling that nothing gets settled before something else gets started and that they are always working on or planning something. The lament was related to the fact that they felt as if there used to be more time for everything and now that does not seem to the case. A faculty member shared her perspective:

"Technology was suppose to make things easier, less labor intensive and it's just not true. Technology has significantly increased the workload, we are significantly busier than ever before. First thing in the morning, even before I my coat off, I have the computer on scanning e-mail. Some days it takes significant time just to get those messages and voice-mail returned. I also type a lot of my own stuff now that I would previously have a secretary do but it is as easy to do it on the computer than to hand write it and have her type it. I think that because we have the technology that the expectation is that we do more and more with it".

The issue of less time or time getting eaten up by the complexities of technology development or the commitment to online students was brought up several times throughout the interview sessions. Initially, the early adopters spent a significant amount
of time learning software, designing and bringing up student programs and technology enhancements to the classroom. However, even with the recent hiring of some technicians and development personnel, there is a significant amount of maintenance of online courses that has to been done by the content expert. Similarly the teaching of an online course turns out to be more time consuming than originally anticipated. One faculty member who teaches a distance course remarked that, “when I sign on to work with and teach a distance course, I didn’t realize that the college distance learning slogan of anywhere, anyplace, anytime, meant me”.

Therefore, along with the quickness with which technology has arrived and blossomed on campus, time commitment is the other significant issue that has caused turbulence on campus in the lives of the faculty. Some faculty lamented about the time in previous years when development and experimentation with learning methodology was a fun activity because they had time to do it and not be so stressed by deadlines and other continual commitments.

**Funding**

Society as a whole is becoming more computer literate and more connected globally to mass amounts of information. Because of this phenomena there exists external pressure from the consumers of higher education, both from individuals and from business and industry groups that hire the college graduate, that higher education needs to change with the times. Throughout the data are references to the students being very different than even five years ago in their expectations of college and their educational experience. There are expectations that college processes and information
systems will be on the same technology level as any other service industry and that the learning opportunities will reflect current knowledge and methodologies.

In trying to update college systems, student services and instructional technology, Mid-Western has experienced significant expenditure for systems, facilities and technology equipment over the last five years. One administrative officer of the college describes some of the external pressure being felt in relation to the combination of expectations and funding support:

"I went to the Board of Regents annual conference yesterday. The Governor spoke as did the former Science Advisor to the President of the United States. They were talking about not being far away from the point where one in every six jobs in the state will be an information technology job. These types of changes are really picking up. However when it comes to financial support, they don't have much to give us. They say that they absolutely love us and want us to continue to increase the use of technology in teaching and learning at the college. The Governor had encouraged us to put forth an aggressive budget proposal for technology and then the state economy fell apart in relation to financial support for higher education, so it looks like this funding cycle is going to be real tough".

The expectation remains clear in relation to the direction that institutions of higher education should be heading regarding the integration of technology, but the funding support is not forth coming.

Mid-Western does have a financial edge over many colleges in the state in that they are supported by a 10 year 2.5 mill tax levy on the surrounding county property owners. While these finances certainly assist with expenditures such as technology, they also allow Mid-Western to have the lowest tuition in the state. The community is involved in giving input to the college about priority needs. When the community was asked in a 1994 survey how the college should speed their tax dollars, respondents said:
Keep tuition low for all students...............................89%
Offer courses to prepare for new high tech jobs..............88%
Develop technology for taking courses at home or work......72%

Once again here is a very strong and influential group whose expectation is that the technology use at the college for student services and for student learning will be at the level needed upon graduation.

Of further issue is the enormous expense of technology. Some of these expenses have been discussed previously. However, one administrator of the college identifies a significant shift in the institutional budget in the last five years toward technology related expenditures such as the purchase, maintenance, and support of technology as well as faculty development initiatives. He also identifies an interesting comparison between an industry that has adopted technology and a higher education institution making similar expenditures. He states that:

"The problem that higher education has with technology overall, is the fact that practically every other industry out there takes technology and uses it productively. Through that productivity, they are able to get technology to pay for itself. So, society in general has been used to technology investments that pay for themselves. However, there is really no price effect to doing that in higher education".

What this administrator is describing is that there is really no economy of scale in higher education. Technology has not decreased faculty cost, it has not made teaching and learning less costly and it has not decreased the occupation of on campus seats in classrooms. The distance learning initiatives seem to have their own audience separate from the on campus students. So, the thinking that technology might at some point in time begin to pay for itself in higher education is fairly non-existent.
The demands on the financial resources of the college over the last five years have increased significantly. With the rapid need to purchase computer systems, replace infrastructure, pay a new and emerging workforce coupled with decreasing assistance from the state and the increased demand of consumers, has caused turbulence in the financial planning and funding allocations of the college. Of further cause of turbulence is the unknown related to being able to project the future cost of technology. Technology is rapidly changing along with the price tag of the equipment needed to make it function.

Students

The cultural diversity, while always significant at community colleges, is increasing due to the changing demographics of the Mid-Western community. The expectation of community college students' about their college experience, reflects the diverse demographics of the student population. The ages range from high school students that are on campus taking a post-secondary options classes to individuals in their 60's and occasionally older. While the actual number varies from college to college, the general mean age is 28 years. Many of the students are married or divorced, parents and attempting to hold down a part-time or full-time job while going to school. Another group that is having an increasing presence at Mid-Western according to the study data is the professional returning to school for specialized certificates or another degree. Given this variety the one consistent expectation expressed by the students interviewed is that of quality. As part of quality, the expectation is that the faculty are very knowledgeable and current in their fields inclusive of technology use. However, teaching with technology is still new enough that expectations vary based on the student.
For example, within the student focus group there were two gentlemen who were taking the developmental reading course together. One was approximately 19 to 20 years of age and thus not long out of high school. The other was in his middle 50’s and attending college for the very first time. The developmental reading course, as previously described in this study, is an in class computer-based course. The older gentleman did not even expect he would be allowed to take a college course as thought he was not very bright, but he came at the urging of a friend. When he took the college placement exams, he placed into developmental reading and math, which was OK with him. What he didn’t expect was to walk into class and find a computer at his desk. He stated,

“I almost turned and walked away. I never touched no computer before and I didn’t know how and I didn’t want to look stupid. But for some reason I stayed and I met Jim. Jim helps me with the computer, I don’t know what I would have done without my little buddy”.

Jim is the younger gentleman. He stated,

“I don’t mind helping at all. I’m on the computer all of the time. I’m pretty good at math and working with computers, I guess I don’t read all that well because almost everything I read is just short things on the computer. But I showed him some basic things and he is getting along real well now. I knew I would use computers at college, but I guess that Joe didn’t know to expect it and hadn’t used one before”.

So the turbulence resulting from student expectations is the fact that the students are at many different levels, needing and expecting different things. Student skills range everywhere from writing HTML, disassembling computers and participating in e-commerce to never having turned on a computer.
Support

As identified in the data, most of the support issues at Mid-Western are related to technology. The areas that have been identified as support are all of the background pieces involved in the development, production, implementation and maintenance of the technology and most importantly the hardware to run all of the applications. Inherent with the production pieces are the people who make the decisions about how all of this is to go together and who is going to do what to provide the services necessary to make the use of technology a successful venture.

Like any other organization where massive change initiatives have taken place in a relatively short period of time, there has been turbulence surrounding the key areas responsible for supporting the running of all technology venues sponsored by Mid-Western. The turbulence stems basically from everyone trying to do the best job they could without really having a strong focal point for where all of the different technology initiatives were headed, how they fit together and how the infrastructure should best organize to coordinate all of these efforts.

As previously discussed, much of the early development, maintenance of classroom technology and online courses was orchestrated by very clever and creative faculty. When the CIL began, there were two very distinctive groups housed there that were to provide the support in two different directions. According to the data, the Distance Education group worked with faculty and their own staff to develop and deliver all off campus learning modalities. The second group was the Technology Enhanced Learning (TEL) group. This group was to provide support to all on campus instructional technology initiatives. In a report titled, Instructional Technology Institutional
Assessment (ITIA), generated by a consulting group hired by Mid-Western to investigate issues related to instructional technology, the apparent cause for some of the campus turbulence was identified:

"Critical support positions had been vacated in the CIL. Some of these positions had supported the Web server, Web Internet and Web-CT for the distance learning courses. To keep these applications running, the college temporarily contracted with private individuals to provide technical assistance on a part-time basis. These arrangements were not sufficient to insure the reliability and performance needed".

Concurrently the TEL group also lost significant personnel, including the director of the program. Having very few other avenues of support, the campus-based faculty who used these modes of instructional technology turned to some of the distance learning technicians for assistance. While these individuals were glad to help, the data reveals that soon there was some degree of role confusion and some tension between the TEL and Distance Learning groups as well as faculty confusion.

Because availability of individuals to fill these positions was not immediately forthcoming and the recognition by the college administration that many dynamics were at play in a very complicated situation, the support was out-sourced. They hired an outside firm grounded in educational technology to come in and assess the situation as well as the total structure of the technology area of the college. Based on those recommendations, several temporary systems were created to provide support to the different technology initiatives as well as to faculty and students while a more comprehensive plan of action was developed.

In summary, it is very evident that multiple dynamics were occurring that caused turbulence at the college. Some of these sources were short-term and most likely will be
replaced by other sources of turbulence once resolved. Long-term areas of turbulence have their own dynamic path that promises to change over time, but remain as a source of turbulence. Some of these long-term dynamics are external expectations and pressures, student diversity and expectations and the process of continual change.

**Tension**

Tension is identified when there are simultaneous opposing forces related to specific issues.

**Faculty**

A fairly early tension surfaced as the Mid-Western campus moved from a more entrepreneurial approach of working with computer systems and software to a more standardized practice of purchasing computers and a standard set of software to be loaded on all computers. The decision was made because the college could no longer support multiple systems financially and because the systems needed to be networked and a replacement schedule established. One administrator remarked:

"We have some tensions with regard to making some choices about which technology platforms we will support. The challenge is to make some good decisions as an institution and still accommodate creativity needs of the faculty, to some degree, do their own thing. But, from an economical point of view, you have to establish a standard and insist that people abide by the standard".

This thinking represents a "for the good of the whole" type of stance. In order for the college to economically and technically support the computers and software for all college employees, the individual choice of the technologically advanced few that may desire different equipment will for the most part not be supported and all users will need to adapt. There are still certain pots of funding such as the Learning Challenge grants to
support some of these different needs, but even with these the emphasis is toward eventual integration into the college system.

Another tension that was evident in the data analysis, is one that could fall either under the funding or the faculty section. This tension is twofold and is in relation to the college decision, in conjunction with the strategic plan, to spend an extreme amount of money on technology for teaching and learning and very little on traditional teaching needs. Also of issue is the budget for new college personnel as it is heavily weighted toward technology support positions versus faculty positions. These are two interesting dilemmas in that perceptions of these actions by faculty vary greatly. On one hand technology support has been a major change dynamic and is the concern of many. The general consensus of opinion is that the campus need for these individuals is substantial. However, from the same focus group that cited the need for technology support personnel, comes a strong argument that there is a need for more full-time faculty positions. One department chairperson sums up the dilemma as she tells of the experience of one of her faculty team members,

"The faculty member was so frustrated after learning several software packages to create this project. He said that if I have a wonderful idea I either have to do it myself all on my own, which means my classes may suffer because I'm spending a lot of extra time trying to create, or the frustration level is so high that I will just never do it again. On the other hand (the chairperson continues) we have such a desperate need for faculty that when we see support people being hired, then it's like well, come on. We need people to do the teaching as well as do the support".

A key college administrator troubles the wisdom of spending so heavily in the direction of technology,

"However when you ask the question, for example, is it truly better installing and supporting a multi-million dollar developmental education
computer-mediated instruction math system or writing system? Or, would we be better off spending a couple million dollars on extra tutors, teachers and smaller classes? The answer is often of course, we are better off with technology, that's the way things are going, how could you even ask those questions? But really, this is the responsible thing to ask.”

It is interesting that the tension is identified not just from the faculty. As a matter of fact almost all of the administrative leadership of the college acknowledged some trepidation with the amount the college is spending on technology.

A controversy identified in the data analysis that has become an area of tension between the faculty and the college administration is the question of intellectual property. There is no doubt that faculty members have put countless hours into the development of online courses and programs that are used in technology-enhanced classes and that the thought of just giving it to someone else to use to facilitate student learning is difficult. The faculty members argue that the thinking, organization, presentation and development is theirs and why should some one else who has not gone through that rigor use it. The dilemma from the other side of the argument is described by a college administrator,

“What we are facing now, in fact we have a committee that is working on this, is the question of ownership. In the past, because it was difficult getting faculty involved, once they developed an online course, it was pretty much theirs. They're the ones that kind of “owned it”, taught it, changed it and revised it. Now we are at the point that other faculty want to get involved, they might be interested in teaching a section of an online course that is already developed and there is resistance by the faculty member that developed the course. Well we are really not willing to pay again for the development of the same course by a different faculty member. Once the course is developed, it should be able to be taught in multiple sections by multiple individuals. We have faculty that feel that they should not have to let others teach the course even though they realize it is not technically theirs as we paid them to develop it. The other issue on top of that is that if it is a popular course, if just one person teaches it, student access to the course is limited by how many sections the one individual can do”.

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In discussions with several administrators, they identified that some colleges are making the ownership distinction based on whether or not the faculty member was paid by the college to develop the course and/or if they used college resources in the development process. Philosophically the question might be asked, how is this different than when a faculty person who writes a textbook to use in the teaching of a specific course and other faculty members adopt the same text for use in teaching their section of the course? Probably the bigger issue at Mid-Western is that the matter has not been resolved. This uncertainty may lead to the reluctance on the part of some faculty to proceed with the development of online courses, not knowing what rules govern intellectual property.

Funding

As presented above there is only a finite amount of money to be spent at the college. The issue of how it should be spent is always of concern as different factions of the college compete for the same dollars. Thus, it is wise for institutions to have a rationale for the spending decisions that are made. Such is true at Mid-Western for technology, as there are clear technology indicators in the strategic plan. The piece that is not identified ahead of time is, when is it too much and what criteria will be used to establish the limits to the funding of technology? One administrator noted that,

"In an article from The Chronicle recently there was a report that colleges this year are spending on average 13% more on information technology than they spent last year. There is a psychological and cultural disturbance related to spending of this level. This uneasiness is exacerbated by the fact that it is not really clear that it is worth it. Is life at the college any better, are our operations truly better and if they are in what ways, what are we really getting? The problem is that there is this uneasiness and it's not plateauing and the spending is not plateauing. There are relatively few instances of people who can honestly say that it is
just so self-evident. We need to measure the benefits and understand the differences so that intelligent decisions can be made about the spending”.

Two concepts come from this administrator’s comments. One is related to data based decision making about technology spending. The other is an evaluative concept once data has been gathered concerning cost versus benefit. It is a question of, does the benefit gained by the technology purchased justify the cost? Wrestling with these concepts in terms of technology purchases for the future is important.

Students

One of the tensions, specifically related to distance courses is the issue of trust of the student when it comes to testing and assignments. The question from the faculty members perspective is, how do you know the student is doing his/her own work? One faculty member commented:

“T’m still uncomfortable, how can I be sure the student is the one who has done the work. When I am signing off on their degree, I am assuming they have those competencies and I am not sure I can assume that. I mean we do have in our student population a cheating society”.

Another faculty member adds to the conversation:

“It is easy enough to get around the system when you are doing a course on the web. I mean it’s easy enough to just show up for class 32 times and not really be who you say you are, but boy it’s a lot easier on the Web to do those kinds of things”.

Many of the faculty members get around the testing dilemma by having the students take their exams in the student-testing center on campus. Students that live a distance from the college need to let the faculty member know and a local proctor will be obtained. High schools and sometimes a business in the industry the student is studying are willing
to proctor exams. However, the homework assignments and written papers can be turned in online and there is no more guarantee that these were completed by the student than there is with assignments associated with traditional classes.

A math faculty member has a different perspective about online courses and testing. He states,

"For the online version of one of my math courses, the students can take quizzes through Web CT and the program actually grades their quizzes because they are multiple choice. They turn in a lot of written homework so that is where I see their written work and they take the midterm and final on campus in the testing center, so I am not really worried. The quizzes are a learning tool and if someone else is getting A's on the quizzes for them, that is not going to help them pass the midterm and final".

Security issues are something that the college is seriously investigating and the on campus-testing center is certainly a way to handle the issue until security is improved. The campus-testing center is secure and has employees whose job is to monitor exams. Computers are available in the center for online testing, also all other formats of written exams can be administered. The student must show a picture college or drivers license ID to be able to take his/her exam and the center is open for extended hours.

One of the administrators in the distance learning area of the college explained that some new security devices should be available soon to assist with this issue. She said that,

"There is going to be a lot of changes in the technology out there. I think it will be very positive when we get to voice recognition on the Internet. Then you will simply be able to do testing and all of those kinds of things. You will be able to recognize who's on the other end. Fingerprint technology is soon to be available also".
More information about this would be interesting. Potential for cheating still seems possible and without knowing the system nuances it is hard to speculate.

Support

One of the tensions that was identified in the data as a result of the turbulence described above was related to the perceptions of the faculty members highly involved in the use of technology. In the ITIA report, the consultant describes the reaction of some of the faculty members,

“As a result of perceptions of declining and uncertain support for their use of technology, many faculty had begun to question the College's commitment to support their effort. The College was in danger of losing the faith and commitment not only of faculty considering adopting instructional technology, but also that of the faculty that had already been successful”.

A college administrator also relates similar sentiment regarding the tension surrounding faculty support for technology development and implementation:

“For many years the academic side of the College always felt sort of shortchanged. We encouraged faculty to get involved in distance learning. Many of them went to conferences, talked to colleagues, were finding out about hardware and software and different things going on, new things, new ways to teach their classes, and were venturing out on their own. What happened is we had people beginning to use various kinds of technology, various types of software, and then we go to the issue of no support. We had the innovators, and we were encouraging innovation to a great extent, but then we were getting ourselves into a bind because we couldn’t support what was there”.

Thus it became very clear that something needed to be done to provide the support necessary for these initiatives.

This discussion mirrors the concept of diffusion theory in that a major technology change is brought into an organization but there are so many unknowns regarding
application that the initial planning strategies do not encompass what is needed to make use of the technology appropriately. Successful organizations go back to the drawing board and figure it out once they begin to have an understanding of what they didn't know to begin with. Planning starts anew taking into consideration what has been learned in the initial encounter with the technology.

In summary, while the topics of tension surrounding technology vary, the emotions involved in these controversies are strong. These dynamics probably represent the greatest potential for any types of volatile reaction to the changes throughout the college involving technology. It is important that the college leadership recognize this potential and specifically plan strategies that involve the faculty in the decision making process to work on these tensions.

Planning

Indicated throughout the data is the premise that planning has been a valued process at Mid-Western. Organizationally, it is fairly easy to follow the Strategic Planning process and how Core Indicators guide institutional planning, then level down to departmental planning. This planning process was also true of technology integration at Mid-Western, with one of the major initiatives for integration of the teaching and learning aspect being the activities and processes that were planned to take place in the Center for Interactive Learning (CIL). Unfortunately, there was no way to predict all of the nuances and the complexities related to bringing this level of technology on campus. There were no models across the country to investigate in order to avoid pitfalls. Mid-Western was just pretty much out there with a vision of an end product and no guide to
fill in all of the steps to make the venture an easy integration into the existing college infrastructure and into the teaching and learning culture of the college.

Faculty

As a result, the process generated as many unanticipated consequences as desired outcomes. One Department Chairperson that also has teaching responsibilities shares her perspective,

"We've put the cart before the horse with respect to technology and everyone knows it. The original plan for the CIL was that it would be the starting point where faculty develop innovative learning projects and then if the project was successful, it was to be brought "over the wall" to the main campus. Well they can't move my project to main campus because there is no place on the "other side of the wall" that can support it. What's frustrating perhaps is a myopic focus on the importance of piece A without recognizing the interconnectedness with pieces B, C and D".

Another Department Chairperson adds her comments:

"When you think about that building over there, you know, we all wonder what the heck they were thinking. But yet, I think the building has set the tone for the institution and it kept us out there on the front edge. So there is the good and the bad".

The planning process is being re-vamped in relation to meeting the infrastructure problem on the main campus. With the new Vice President of Information Technologies, new planning processes are taking place with the involvement of faculty and support people. Identified here is that there is definitely a learning curve for all when a project the size of the CIL impacts the operation of teaching and learning on campus. All there is to know can not be anticipated up front, but as experience grows, so should the ability to increase the level of detail in future planning. When asked, if you had it to do all over
again, knowing what you know now, what would you have done differently, one
administrator replied:

“I think I probably would have tried to get a handle on how what we
planned to do with technology would affect the vast majority of the rest of
the campus. I don’t think we had a good handle on that. We have a state-
of-the-art wonderful building, the CIL, and lots of wonderful things going
on there, but I don’t think we thought about what happens next and how
we accommodate that innovation, and how we support the faculty to do
wonderful things. So, if I had it to do over again, I probably would try to
anticipate how we could implement the technology while at the same time
enhance learning across campus. I don’t think a whole lot of folks have
answers to those questions.
You leap out there on faith and hope that you’re doing the right things”.

Funding

Planning in relation to technology spending is not an easy task. A theme evident
in the data analysis is lack of predictability of technology changes and thus cost. If
college leaders could wipe the slate clean, knowing what they know now and go back
five to eight years to plan technology purchases, perhaps they could make some different
decisions that would curtail the cost and the snowball effect being experienced today.

If we know right now what the technology future holds in a mere two or three
years from now, we could plan better. Trying to forecast where technology will be in
even a short time-frame is like hitting a moving target. Strategically, after bringing up
the Center for Interactive Learning and dealing with the many surprises that the spending
for the technology portion of that venture held, Mid-Western leadership understood the
need to put in place a high level administrator with background to at least have a better
shot at forecasting and planning for technology changes. To this end, Mid-Western
began the search for a Vice President of Information Technology (VPIT). In identifying who they were searching for, one of the IT team members remarked, “I guess there was some concern that some people thought we had to have somebody from higher education, but it was kind of surprising that many people came at it from the angle that they thought that the issues that we are dealing with in Information Technology were no different than what the for-profit companies are dealing with and that somebody from business would understand those issues and be able to deal with them better”.

This thinking shaped the search for the new VPIT. In October 2000 this individual began his new position and is currently working within that department to promote some major changes. A total restructuring of personnel is taking place with the addition of twelve new positions and the request for more.

There are a few known absolutes in technology budgeting. Several of the predictable costs identified in the data are the replacement cost of every PC purchased, maintenance costs for all technology equipment and the purchase of software licenses. An administrator adds his perspective to this to this quandary, “We made a tremendous investment, 11.5 million dollar telecommunication infrastructure project. I mean, what we have is a pathway going across the rooftops where we had big conduits to take the fiber-optic down into each building. We actually punched holes into the classrooms and offices and began to provide the direct connect through that. So we went from a lot of piecemeal addressing of infrastructure to okay, we’re just going to do it. So now it will be interesting to see how long it takes this new wireless technology to undo all of that”.

This administrator is expressing the concern that the expenditures of this level may become unnecessary five years from now. However, if they don’t make the expenditure now to provide the campus connectivity, they will be without this expanded capability until a wireless system is available.
There are indeed reports that wireless technology will become fairly common place in the near future. The banking industry is currently experimenting with such technology involving electronic transfer of funds through your cell phone. So the quandary expressed above is a real issue in terms of fiscally planning for an organization in a responsible way.

Students

When planning for students to participate in an online course or course assignments that require use of a computer, access is always an issue to be considered. Such was true for Mid-Western. One administrator described the planning initiatives at the college:

"Several years ago, really pretty early on when we first started doing online courses and different courses were beginning to require the use of a computer, we took several computers and put them in various public libraries in the community. Those computers were designated for Mid-Western students to come in and use. Now all of the libraries have computers and Internet access and they let the students use those systems. Then just recently we finished the construction of the teleports here on campus. These are pretty much just computer centers here on campus for students. They’re not open 24/7 yet but that is the game plan. So students can go there if they don’t have access at home".

As previously identified the plan for the teleports is to have increased availability of these high end computer systems for student use with a technician always present for assistance. Since initiation of the Teleports, some adjustments needed to be made in the system in terms of making the software packages available that the students need to complete their assignments. Also discovered quickly, all of the lab technicians did not know all of the
software packages that the students were using and therefore could not assist if there was a problem. These problems are being assessed and worked on.

Another planning issue is related to the match between what is being produced in the online programs and the standard capability of most home computer systems. A distance learning administrator explains the dilemma this way,

"The production of Web courses is progressing now, and the interesting thing is that we want to do a lot more, we have the capability of doing a lot more, we have the technology. What is holding us up right now is from the other end, the student end. Until we can get all of the students on either cable modems or DSL, or something that’s of a larger bandwidth where it is not going to take them an hour to download a higher level production, we hate to put a whole lot out there that requires the higher level of technology".

Therefore planning is essential before upgrading online productions to include video streaming, audio and some of the more sophisticated technology as it will only cause student frustration if they cannot access it. The Distance Learning group is closely watching the progress of Time Warner in the area as they are gradually installing cable modems in the area and are targeting December 2002 as a completion date.

**Support**

The planning piece that was important for the College at this point as evidenced by the ITIA consultant report and reinforced by administrators, faculty and staff, was to hire an individual with strong information technology background and experience to lead all of the different facets of information technology at Mid-Western. An administrator in the IT are remarked:

"We finally have hired now a Vice President for Technology; he just came on board in October. There was a group of us, four or five that
as far back as five years ago, had gone to our president and kept saying we need to get a handle on this technology. We need somebody to, you know, oversee it all. So now, with the massive reorganization that the new VP is implementing, I think we will begin to see the academic and the administrative sides of the College kind of get some equal footing and get the needed support.”

The plan set forth by the new Vice President of Information Technology is fairly aggressive in terms of personnel and planning for support. One of the individuals working directly with this new administrator stated;

“The new VPIT has about twenty-five new positions he is requesting. He has already been granted twelve of them and they were advertised this weekend. That includes two new director positions, one will be the director of E-College. That position will be responsible for all of the application stuff. The other position will be the Director of Instructional Technology Support. That position will be over media services, course development and research and development. Some of the other positions that are being hired are course developers. These people will help with the technical part of the course development and maintenance. One of the new VPIT’s main goals is to create a new technology strategy. I think that is because the one that was already developed didn’t have everything in it. To tell the truth, I can’t even remember what that technology strategy looked like”.

While it seems as though the faculty, staff and administrators at Mid-Western were going through some trying and confusing times, someone must have been doing something well because the accomplishments over the last five to ten years are outstanding.

In summary, most of the planning dynamics are related to some type of support issues. It is easy to identify the importance of continual planning for financial support of technology, even though those actual numbers are somewhat elusive. Most certainly of great importance is the planning to support the faculty in developing and using technology for student learning. This piece is essential if faculty are going to be willing
to invest the time needed to use the technology as a learning tool. Also essential is the success of technology for learning is a support structure that is readily available to faculty when access and implementation issues arise. Nothing is more frustrating than when technology doesn’t work.

The student issues of access to the technology needed for course assignments and online course links has improved significantly over the last few years at Mid-Western with the opening of the two campus Teleports. Continued support in this area is needed so that the students have this access, if needed, in extended timeframes.

Implementation

Implementation of technology in teaching and learning is at many different phases across campus. There were some online courses and limited classroom technology prior to the building of the CIL and, as previously discussed, other modes of distance learning have been around for sometime.

Faculty

Some of the major development and implementation issues currently are related to faculty support for these efforts, most often technical support. These issues are covered in the section dealing specifically with support. Another central issue for faculty is the matter of compensation. This issue is related to the amount of time that technology learning is consuming, both in development and in the amount of time faculty are spending working with the students and updating programs. Although there has been
previous discussion related to the time faculty are spending on these activities, the issue of compensation for this time has not yet been addressed.

While there is compensation available for technology and online course development, none of the time that it takes to maintain and update these programs by faculty is paid for or offset by release time from other academic activities. Also of issue is how compensation is figured for a faculty member teaching an online course. One distance learning faculty member explains the compensation model,

"I think that because of Mid-Western's inability to understand how much work is involved, we are required to teach more students than if we were on campus. The pay for the first two years was incredibly lower. It's a little better now, but still not comparable. We are expected to have at least 25 students in a distance learning section. If, for example, a three credit hour course only fills to between 1-14 students, we get 0.2 contact hours per student, 15 and above you get full workload for the three credit hour lecture course. If it were an on campus course and I had 12 students in the class, I would get full workload for the three hours class. I'm telling you it takes a lot more of a time commitment on the faculty's part to do the online course. So where is the incentive"?

Faculty compensation is just one piece in the puzzle as campus administrators try to get a handle on the implications that implementation of high technology programs bring. An interesting paradox has developed as the issues surrounding the implementation of on campus technology classes have evolved. The classrooms in the CIL were developed so that each student was at a computer work-station. This same model was followed for the 50 new multi-media classrooms across campus. Each of these rooms can only accommodate 20 computer stations, which limits the class size to 20 students in a section. Therefore, if there are 35 students that need the class, two sections need to be run. If there are 100 students needing the class five sections have to be run and five instructors will teach a different section or several will teach multiple sections.
The unintended consequence that emerges from the building of the multi-media classrooms is related to the efficiency of the rooms. First there was a significant costs involved for building, wiring of the classrooms and for the initial purchase of the computer/technology equipment. To mirror the CIL rooms, computer stations were added to the multi-media rooms thus decreasing the room capacity for students. If the course need is for more than 20 students, multiple sections of the course will need to be taught thus more faculty will be paid, or the same instructor will be paid for more sections. In addition, there will be maintenance costs for all of the technology equipment, computer hardware and software and the computer equipment will need to be replace three to four years down the road. Certainly the students course and laboratory fees will not come close to off-setting the increased cost as the number of students per course section did not increase, rather the numbers decreased. Per student costs therefore increased rather than decreasing with economies of scale. The structural choice resulted in significant cost issues with implementation.

Funding

Several issues related to the cost of implementation have been previously discussed. There are very few initiatives that involve technology without a related cost of some sort at the implementation phase. Thus far the cost of development, infrastructure, and maintenance of the infrastructure and personnel/faculty costs have been presented. The integrated issue here, as identified in the data, is in relation to implementing the new learning projects. Whether they are online or technology enhanced, the question is whose budget does this come out of now? Old budget configurations remain in place with each
department having budgets and line items from which to draw funds that have been planned. The academic departments have their budgets, IT has theirs, and the different factions of the CIL have their budgets. New teaching and learning projects whether they were brought up using a Learning Challenge Grant or just researched and developed in the CIL, do not have a home at completion that has budgeted for their implementation unless they would be cost neutral to the department. A larger issue involves those teaching and learning projects that may cut across departments and/or divisions. One of the members of the Pathfinders group discusses just such an issue:

"Let's say a project proved to be something that should be scaled up, and it cuts across divisions. We ask the Dean to put it in the budget, but what Dean would want to put it in the budget when it has return not just for his division or her division, but across divisions. What if there are impacts for academic policy"?

It was indicated in several interviews that these are issues that need to be worked on since with the implementation of some of these projects there is an attempt to fit new processes into old models that are not set up to integrate them easily.

Of further issue for implementation of new projects is the question of faculty course assignments. Staffing examples were discussed in the Chairperson's focus group. One such scenario was in relation to a faculty member who developed a new online course for the department where he/she teaches. The course is an elective in the curriculum, thus the students are not required to take the course. The course has some new and creative dimensions that students in the department and maybe students outside of the department might be interested in. This new offering fills to a respectable number of fifteen and thus will run with the faculty member receiving full contact hour load for the course. This faculty member typically teaches two sections of basic course 101 and
two sections of advanced course 250. These sections already give this faculty member a full workload plus several overload hours. These courses are required by the curriculum plan for the students to complete their degree and therefore must be offered and this faculty member does not want to do anymore overload. In fact, he/she wants to teach the new online elective in place of one of his existing sections. Now it will cost extra department budget money to either hire an adjunct instructor to take one of the regular sections or perhaps pay another full-time faculty member to do an overload.

Several dynamics are at work here: first is the encouragement from the leadership of the organization for the faculty to develop innovative courses and methodologies for student learning. This encouragement is certainly supportive of a second dynamic, academic freedom of the faculty member. Balancing this is the commitment of the faculty member to the department and to the students to fulfill the teaching responsibilities within the program for which she/he was hired, for the provision of courses needed by the students to complete their degree requirements. Of further concern is the extra expenditure from the department budget needed to cover the altered teaching arrangement.

There is the potential for this scenario to create costs that double, triple or quadruple as different members of the faculty in a department go through the same process. However, if the next faculty member's creative course replaces a mainstream course, then perhaps the scenario evens out financially. However, the class might be an on-campus technology enhanced course that used to accommodate 35 students but now has to be taught in two sections because 20 is the greatest number of students that can fit in the multi-media enhanced rooms where the course must be taught because of
equipment. During the several different focus group interviews, similar examples of the complexities that changes toward the increased use of technology were bringing were discussed. One astute faculty member summed up the discussions by stating, "We’ve created a monster. I know technology is here to stay, but we’ve created a monster."

**Students**

Implementing online courses for the students has been a significant learning process for the faculty as well as for the students. A reoccurring issue is related to a student’s making the appropriate choice to take an online course versus a traditional or technology enhanced course. An initial problem is students choosing this mode of learning for all of the wrong reasons with a lot of misconceptions. A faculty member shares her experiences:

“I started out this quarter with 99 students enrolled in the online course and now I am down to 78. What happens is that they will log on and they will look around the course and then they will realize, oh my God, I’ve got to do some work. I have even had students call me and they will say, “well this is a Web course right? Well I though that Web courses are supposed to be really easy, like a zip through class, like I can do them in two weeks.” Once that I explain that Web is just they type of delivery and that the course is no less rigorous than the regular course, they start dropping the course. Some students that I have asked why they chose the Web version of the course, they tell me that it was because they were too busy to take the regular course”.

In the focus group interview of the distance learning faculty, they agreed that a good description of the requirements and learning expectations for Web based courses needs to be communicated to students so they can make informed decisions about their course selections.
Of similar concern are the attrition rates in the online courses. The faculty attribute some of this to the fact that some students are just not ready or self-motivated enough for distance learning. They report noticing that there seems to be certain characteristics and levels of commitment that are indicative of a successful student in a distance learning class. One distance learning faculty member explains:

"I was involved in a year long research study. The goal of the study was to determine critical success factors for distance learning students. The study results confirmed what the faculty already knew. The student needs to be self-motivated, understand time management, be disciplined, task oriented and deadline oriented. It is fairly easy to identify the students who do not have these characteristics. I mean they may have had the cognitive skills to deal with the course, but their problems were related to the fact that they were just physically not in a classroom two or three times a week and they had all of these other things going on in their lives, so they kept putting off the activities of the course because it wasn't right in their face demanding attention. The students that seemed to have difficulty really needed the structure of the traditional classroom".

The faculty also reported that researchers who have been working in distance learning, specifically online courses, have also arrived at similar conclusions and are beginning to publish on the matter. One faculty member shared that she had just returned from a conference where the speaker was talking about the same subject.

"I just got back from a conference in Virginia. One of the speakers that presented on distance learning had developed an assessment sheet that she gives to the students that have indicated an interest in taking her online courses. The assessment tool was designed to indicate whether or not the students learning behaviors are compatible to distance learning. The speaker said that if they are not compatible based on the assessment results that they can not be signed into her class because they will not be successful".

The group discussed the assessment tool strategy and thought it might be useful as the Mid-Western attrition rate in the online courses is significantly higher (as reported by the faculty) than the students taking on campus courses. The faculty member describing
the conference presentation and the assessment tool was not sure if validity and reliability of the tool had been established or if there was information about the actual correlation to successful completion of an online course. There was no discussion related to the feasibility of applying such a measure to the students as a mechanism to ban them from taking a certain type of course. It may be more successful as an advisement tool to use with the student for course selection or perhaps, if the student remains interested in the online course even after scoring low on the assessment tool, a course contract could be established between the student and the faculty member. However, there was a general consensus that some interventions needed to take place for the purpose of improving the attrition rates in the distance, specifically online courses.

One of the most significant issues related to implementation of both online and technology enhanced courses is student outcomes. Faculty and administrators struggling with these questions,

"Are the students learning the content better and is there a difference between the outcome of the students in the technology courses versus the traditional courses? Also, and most importantly, is all of this time and effort and financial expenditure worth the result"?

Admittedly, Mid-Western is just beginning to get assessment measures in place that may provide the answers to these questions. A Department Chairperson had this to say during a focus group discussion about student outcomes in online and technology enhanced courses:

"I don’t think in higher education we’ve done a good enough job assessing whether it really does make a big difference. I don’t think there is enough research out there to indicate that adding all of this technology in a classroom really, in fact, provides an outcome that justifies the expense".
Another member of the same focus group whose department has had more experience with technology learning than most added,

"I think anecdotally we feel the students are learning as well and enjoying it more. We can not really give data that says that our students are doing better now than they were ten years ago when we didn’t have all of this technology. We can say that X amount of students are successfully moving to the next level, but whether or not it’s a result of the computers or whether it is our teaching, or that they are just better students, we really don’t have a handle on that”.

Within the faculty focus group the question was asked, “what is your assessment in relation to student learning outcomes in the online course that you teach”? One faculty member replied:

“The students are doing excellent for the most part. They are getting A’s and B’s for the most part. I think that the students I have in class that are ready for a distance learning class and can handle everything and are doing really well”.

Another faculty member cautions that before assessments regarding different online courses takes place, there has to be some way to gauge the course set-up for quality because there are many different levels of quality in online courses at this point. He states that,

“I think that it is really important that you have a quality online course laid out to begin with. I’ve worked on my course over several years to hone it to the point that I think it is high quality. If the students are willing to do the work as I have laid it out in the course and if they can pace themselves to finish in a timely manner, they will do excellent. It’s a learning curve to design these courses to be of quality, it’s not like classroom teaching”.

The indications are that the assessment of technology use as a learning methodology and an adjunct tool is just beginning. Many projects are in their infancy and the levels of development of the online courses as well as the technology enhancements are at many
different places making assessment difficult. The collection of student outcome data is
certainly possible and is happening at a beginning degree at Mid-Western.

Support

Many of the early technology projects were discussed in the interviews because they were championed by individual faculty who were able to obtain the immediate financial and equipment support that they needed. There is now a need to move from this entrepreneurial environment to a more accessible and stable support framework. An administrator describes this evolving environment:

"Part of the discontent is that the people that were pioneers with all of this innovation, what motivated them and the kinds of support they needed to bring up their projects is very different from what is needed by the groups behind them. To some extent, they didn't need or want the organized structure. They networked with this person and that for the different things they needed. Or, if they needed something fixed or a new type of graphic they reverted to the old, "I'll call so and so". They kind of created their own little infrastructure and were willing to put the time and effort into doing that. These folks are just on an entirely different wave-length than the rest of us that need the support".

As more individuals became interested in being involved in the development and implementation of technology innovative projects, the need for technical support was very clear. One of the faculty members discusses the type of support for implementation that is needed from her perspective:

"When working to bring up a technology project, what you need is somebody as sort of a consultant on a regular basis to work with, maybe assigned to you. For me to get interested, I need somebody I can go to two or three times a week and say, okay, this is not working, this has happened, help me enhance this, or just what to I do next".

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Technical support staff are currently being hired and there are a few technical staff available in the Distance Learning Department already that can assist with development and implementation as a new support structure is being developed.

When asked what might have been done differently if given the opportunity, one administrator of distance learning remarked:

"You know, in some respects some things I would have moved a little slower on if I had them to do over again. You get into a situation where maybe you have been to a conference or you talk with a colleague and you come back excited with new ideas and you want to implement them. You would implement them and many times, even get support for the hardware and from the College in your budget. But, what was always lacking was that needed technical support".

This story once again brings the discussion back to the leadership strategy of realignment of goals and strategic planning to meet the mission of the organization. With the use of technology linked in the strategic plan to the enhancement of learning, Mid-Western is realigning to provide the identified support for the technology initiatives already in existence and to work with faculty in the development and implementation of new technology based initiatives.

In summary, the implementation of an initiative the size of increased technology use for teaching and learning, both in the classroom and in online modality, calls to question the appropriateness of current college processes and procedures. Trying to fit all of the new and different nuances of this venture into existing college workload models, pay structures, budget practices and student success assessments, is much like trying to fit a square peg in a round hole. This initiative is so far-reaching that it will become necessary for new college processes and procedures to be developed to incorporate these changes.
Barriers

One of the most difficult barriers to any change is the unwillingness of those affected to participate in the change. This is especially true if those individuals are key to the operation of the organization.

Faculty

In a learning institution such as Mid-Western, the most key individuals are the faculty. Overcoming this barrier is quite a challenge and may take some time. One academic administrator observed,

"The traditional role of the faculty as viewed by the faculty, can be a barrier because faculty are going to have to be challenged to change and serve our students better. I think they are willing if they can see the relevance to learning".

Because many of these larger technology initiatives are just really getting started it may be a little while before some of the more traditional faculty can be convinced to make some changes in that direction. Two premises are identified in the data, first, technology in teaching and learning while it has been present in various formats for awhile, is now reaching the point were all departments are involved and the initiatives will indeed be coming "over the wall". Beginning Autumn Quarter 2001 the 50 new multi-media classrooms will come on line and classes will be running. This integration brings these initiatives closer to the mainstream of the campus and harder to ignore than ever before. There will no longer be the physical distance between the technology enhanced classes and the traditional classes. Thus colleague conversation and convenience of proximity may entice a few of the traditionalists to take a look.

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Second, while technology use in teaching and learning is a direction identified in the strategic plan, not all faculty are going to be expected to have computers for all of the students in their classrooms. In fact, as identified in the last section, that is not a very cost effective proposition for the college. The plan is to have all of the classrooms wired for a master computer station linked to an overhead projection system so that videos, CD-ROM programs and Internet use can be part of the class, but traditional methodology still exists with the technology as learning enhancements.

The challenge will come if given all of these different levels of technology to choose from to enhance learning, there are still faculty that will not alter any of their methodologies. One Chairperson reported that, “several of my faculty are really opposed to having any computer equipment in the classroom. They find it to be a distraction as the students should be paying attention to the instructor”. There definitely could be philosophical opposition to technology enhancements stemming from the belief that the sage on the stage departing the knowledge is the only way learning can take place. In fact, active learning can take place in a variety of ways along a continuum beginning with low or no technology activities all of the way to high-end computer and simulation use. The goal is for the student to be actively engaged in the learning process.

**Funding**

The biggest barrier with regard to the funding of technology, as identified in the data, is the high cost. Getting back to some of the questions previously presented, one administrator remarked,
“How much is too much” and how much more of the total operating budget of the organization can be allocated to technology and technology related issues without a like reduction in another area of the budget and still keep the spending of the college fiscally responsible?"?

The concern related to cost is very evident. If the answer is that no greater percentage of the budget can be allocated to technology without a reduction in other areas of the budget, then criteria for decisions and responsibility for deciding what does not get funded in lieu of technology become critical. The institution could seek some type of national or federal technology grant money to fund technology. But, as has happened to the Learning Challenge Grant projects and some of the CIL projects, sooner or later the money runs out and there is a costly program to integrate into the mainstream of academic programs. An administrator describes the frustration of trying to get a handle on some of these issues with national benchmarking:

“I’ve been involved in some benchmarking efforts, national benchmarking efforts on college costs in general. But, we attempted to bring it down into segments. We were trying to take a look at how much is one institution versus another spending on this or that. Information technology is one that is so elusive because everyone organizes it differently and there are so many different types of resource commitments. Whether it is a technician and where that person is located and added into the budget, department central process, or distributed process, the equipment itself, is it centralized or distributed etc. Information is really lacking in this area. Questions like what does it cost and what outcomes are we looking for, are largely unanswered”.

So major barriers exist regarding technology cost and the lack of any kind of national norming from which to evaluate cost and expenditures. As well, internal benchmarks related to decisions about technology spending are in need of development.
Students

A point of frustration identified by students taking online courses was getting assistance when the online course, or the computer, or something wasn't working right. The students are referred to a support service outside of the college. One of the distance learning faculty explained the support process provided by the college to the students as follows:

"The student help desk, as the faculty help desk, has been contracted out to a company called Eduprise, which is located in North Carolina and it's server is in California. So when you have a problem you call that help desk. Well, the people who work after five at night usually refer the problem to someone who works the next day. That is frustrating for me as a faculty person so it must be frustrating to the students. Especially because a lot of them are not home at their computers from 8-5 during the day. They need the answers and we need the answers when we have the problem. I usually try to talk the student through the problem if I can but I can't always help".

A student lamented her experience when she first tried to get connected to Web-CT to do her first online course.

"I called school trying to get someone to help me get into the system. That person referred me to the Distance Learning Department and they said I had to call the Eduprise help desk and be in front of my computer so they can walk me through it. Well I was so frustrated, how am I supposed to call Eduprise and be on my computer at the same time. We only have one phone line and I don't have a cell phone. I got through to my instructor on the e-mail and she gave me some instructions to at least get me going".

Student frustration level may indeed be another reason that the attrition rate is higher in the online courses than the traditional. It could be that some degree of nurturing should accompany the very first online course that a student attempts. The merits and learning potential of taking a course online shouldn't be marred by technical difficulties.
In the discussion above, it was pointed out that one of the reasons that students may be choosing online courses as an alternative to coming to campus for a traditional course is that of convenience. Students today are typically busier than their counterpart of 10 to 20 years ago. One of the distance learning faculty discusses her experience with today's student.

"Based upon some of the experiences that I have had with students over the last three years of doing online courses, I know that they are juggling a lot. Our students are very, very different than they were when I started here twenty years ago. They work full-time, they go to school full-time, they take care of children, they take care of ill and aging parents, I mean some of the situations that these students are in, thank God I’m not. I don’t think I could have done it".

Given these types of situations, the students will probably not tolerate much when it comes to online program problems and multiple hurdles in relation to fixing their problems. Their window of time to actually spend on their class work is most likely limited and if they have committed this time only to be frustrated and not make any progress in their work, they are going to be angry and may not try an online course again. They might not try any course again. It is imperative that the online courses run smoothly and if there is a problem, the student can get assistance quickly and the problem can be solved quickly.

Support

When it comes to providing support for technology, one administrator identifies budget as a major barrier.

"You never have enough money to do all of the things that need to be done and all that you want to do. I mean, you never have enough positions to provide the needed resources and support, or enough money to
buy all of the technical stuff. So we can do all of this planning, but if we don't have the budget to hire the staff that we need, then it is back to the drawing board with the plan again in terms of what can we do”.

In review of the College budget, resources for the support plan have been very generous. Several areas of the budget proposed funding directly related to technology. Several key technology positions were budgeted, including the new Vice President of Information Technology. New hardware and replacement hardware are also budgeted. However, as with any organization, there are limits to the ability of the organization to continually increase the budget to support all of these initiatives. Of further concern with financing technology, most of the items purchased do not represent a one time expense, but on going expenses, such as personnel that require an annual salary and computer equipment that requires maintenance and a replacement.

The restructure and coordination of the Information Technology area of the College to include all facets of technology and technology support under one leadership umbrella will go a long way to knocking down some current barriers. Several administrators noted that the new VPIT will be responsible for securing and allocating the funds for this area based on function of the department and priorities. This coordination should decrease the competition for funds as occurred when these were all separate. The existing barriers were previously constructed because the lines of who was responsible for what in relation to technology support were not clearly understood; they just kind of evolved as Distance Learning grew, the CIL was built and the infrastructure grew. An example of a barrier that grew out of this rapid growth and is now being attended to with the new restructure, is once again the major support issue, but this time the focus is the infrastructure of the College system. One administrator explains:
"The support keeping all of the different types of computers and software running and who was responsible for this service, has been a major issue. You had departments with specialty labs, computer labs, and labs with other kinds of technology and the faculty pretty much kept them running on their own. The department might hire a technician or a student worker to help them keep the lab functioning. It was very hit or miss because we had a very frustrating situation here because we had an IS&S department here that did not really see themselves as being responsible for the academic side of the house. The director in that area at the time did not see the academic area as high priority".

The coordination that is occurring now is working to overcome these barriers and support issues. The important message is that the College leadership listened to what was being identified as major issues and is working to realign for continued progress.

In summary, the dynamics of the barriers regarding increased use of technology in teaching and learning, represent a variety that is specific to the area being discussed. However, there is a common thread among cost barriers, academic technical support and student technical support. The common thread is the cost for the individuals and equipment needed to supply the support. The other issues of pedagogical controversy, changing faculty role and the busy lives of the students, are ongoing challenges that will always be present to some degree.

Cultural Effect

Cultural change represents the emergence of new norms, new practices and new ways of thinking. At Mid-Western, as it is at other colleges going through similar transition, the current culture is a mixed bag of old, new and in between.
Faculty

Many of the issues discussed thus far in the faculty sections are related to the culture of the college and most specifically the culture of the faculty group. An overall culture shift of an organization during and following a major transitional type change is often slow and so it is for Mid-Western College. One administrator’s perspective on organizational culture is,

“One of the ways I think we are roundabout ing some of the scale-up issues is we are just getting smarter about our culture, and we know you don’t mandate but you sort of connect and hold hands, you know, you make a big enough net”.

His perspective is interesting in that he and some of the other college leaders have spent some time analyzing and trying to understand their culture. This process provides a basis from which to forge the strategies that will bring about successful change. If there are options on how to proceed through the change process then knowing how to structure the path of least resistance is invaluable.

Another thoughtful remark regarding the effect this change is having on the culture of the institution and specifically on the teaching and learning mission came from a faculty member who has positioned herself in what would be the middle of the road group. This group represents the individual that are not the early adopters, out there in front yelling me first, but in that large middle group that is just watching to see what happens before they attempt to jump in. This faculty member had obviously spent some time thinking about what had been going on over the last several years, she stated that,

“Another change for me is probably just a general change in philosophy to some degree about how we deliver education. We want to make it accessible to as many people in as many places as we can, but I still have a lot of concerns about the lack of face to face contact and the presence in
the classroom with the distance learning. My heart is in the classroom so this is a difficult concept for me to get a hold of and be all right with”.

Probably half the battle in the move to technology enhancement of education is helping people to understand where they are and assisting them in playing to their strengths. For example, perhaps this individual may never be an online faculty member, but with some encouragement and resources may do a wonderful job enhancing her classroom and course assignments with technology.

Funding

The cultural effect of funding allocation is almost always who gets it and who does not. The reaction by the general college community may in fact be magnified due to the general knowledge throughout campus about the sheer volume of monetary expenditure for technology. Several faculty members voiced concerns about the amount of money being spent on technology learning enhancements and very little being spent on traditional methodologies or projects that are within the decision locus of the individual departments. One faculty member reports that:

“Big money has been spent on a whole technology building here. I mean what could each department do with their share of the $30 million it took to build that building? Each department could have really used that money for technology in their own area or discipline. I know there is a whole political movement that drives this sort of thing, you know, and it keeps Mid-Western name out there in front. But there are still a lot of questions. Internally I would ask if the money is being spent in the right place”.

What may be identified as an incentive and an opportunity by some may be construed by others as a process that does not include them. Funding put forth to assist anyone interested in the development of innovative learning through Learning Challenge
Grants and/or though the CIL labs was accepted by a group of early adopters. However, in the 2000 Instructional Technology Institutional Assessment Report generated by a consultant group hired by the college, the following was identified.

"Mid-Western focused most of its instructional support for faculty on the technology early adopters. While the college is blessed with an unusually large number of early adopters, the college still has the majority who do not fall into this category and who will require more and different support than the technology pioneers. There is some evidence to suggest some mainstream faculty were intimidated by the focus on research and design. They felt that the services provided were only available to technology pioneers and that the CIL was not interested in supporting their beneficial, but less innovative projects".

It really makes no difference whether or not the perception had merit or not. If the perception was at all widespread among the majority of faculty that were not in the early adopter group, some damage in relation to culture and the have and have not scenario may have been done. Because Mid-Western seeks and uses internal and external feedback, inadvertent problems such as described above can be adjusted in relatively short timeframes. It is very interesting and appears very positive for the organization that they value such self-evaluation. This action is an example of a college that is walking the talk of a learning organization.

Students

When students were asked what they did not like about distance or online learning, a frequent response was related to the lack of actual face to face people contact. One student had done her first degree online to the United States from another country. She is American but was overseas with her husband because of his job. She said,

"I did everything online with my first degree. There was the ability to chat with other students online and lengthy e-mail back and forth with my instructors, but it is not the same. In my second degree, which I am
working on now at Mid-Western, I really enjoy being on campus and seeing and talking with the other students. I still enjoy the computer and working in the classroom with the computer as part of the class. I'm in legal assisting and we do a lot with the computer for our assignments. But, I like being with people”.

There is a very real social difference when a student is only taking classes online. While that may not be a problem for some, to others it is a significant issue. Even for as many online chat ventures that are currently going on in society, there is an argument that this type of communication is a different type of social interaction. There is a degree of anonymity, whether that is intended or not, it sometimes changes how individuals interact with others. What may be discovered is that the ability to see another individual, touch them, see the expression on their face as well as the other telltale body language communication signals, can not be recreated by technology. This human need alone may be one of the key sustaining factors for traditional classroom learning in higher education.

**Support**

The cultural effect of all of this turmoil regarding support is a culture reacting to massive and rapid change. Nothing more deeply effects an organization that is attempting to implement technology advancement at multiple layers of the organization as the age old controversy over who gets the resources, the help of the experts and the finances. When asked about change in culture, an administrator remarked:

“It’s a challenge because you are trying to figure it all out, how to make it all work. Because it’s all part of cultural change and it’s not easy and there are no instructions. I mean those are the hard pieces within an institution to get it to move. To release some of the old baggage and bring on some of the new things without the guarantee that that’s going to be the best way to do it”.

And so is the challenge of change. The best planners can not know all there is to know in the future, especially when the change catalyst is as elusive as technology.
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Table 6: Change Dynamics Related to Use of Technology
Conclusion

In summary, transformational changes such as represented through the stories and change dynamics represented in this chapter, have a significant effect on the institution's culture. It is evident in the discussions of each of the major themes that this is so for Mid-Western Community College. A paradigm shift has been identified at the college. This is a shift to becoming a learning college no longer focused on teaching but on identifying what is needed to promote student learning. As part of this paradigm shift is the sanction that technology as a tool to enhance and promote student learning will be integrated, in varying levels, into the curriculum. Cultural change has and is taking place at Mid-Western Community College on a continual basis as the members of the college community create new pathways to the future as they identify which old practices to keep, which to modify and which to change.
Chapter 6
Discussion

Institutional change to the level of transformational change is taking place at Mid-Western Community College. Backoff and Nutt (1997) state that, “change must be revolutionary, a new paradigm that alters the rules of the game and change core processes, cultural commitments, products/services, markets and strategic alliances, must be sought” (p. 241). The way the members of the college community interact with each other, their students and their community has changed drastically. The variety of learning venues at the college for their students, community and themselves has grown significantly as the campus technology ability has developed from a few personal computers to technology research and development facilities, multimedia classroom and Web based courses. Millions of dollars of infrastructure changes have taken place in the last five years and innovations in teaching and learning are highly recognized within the college culture.

Leadership Strategies Used in Promoting Change Toward Increased Use of Technology in the Teaching and Learning Paradigm

Leadership that promotes change to the level of transformation must set the vision for those in the institution. Covey (2001) states that, “the essence and power of pathfinding is found in a compelling vision and mission. It deals with the larger sense of
the future. It is getting the culture imbued and excited about a tremendous, transcendent purpose to meet the needs of the customer and other stakeholders. Pathfinding is the tying together of the value system and vision with the needs of the consumer” (p. 56). Covey is suggesting that the leader role is to bring together what his/her organization does best with what is needed by the consumer, thus making the consumer’s needs the driving force of the organization. Bates (2000) concurs with this thinking. He, however, advocates that it is the senior leadership team who developed a shared vision for teaching and learning and that the role of technology is defined within the vision. In the vision statement at Mid-western being learner centered is the major focus. This represents a paradigm shift at the college in that the student has become the center of everything that they do.

At Mid-Western Community College, the President set forth a vision statement that provides college direction and includes a significant degree of emotion. The statement is written in such a way as to almost put forth a challenge to all at the college, “Before us lie uncharted worlds of opportunity. Mid-Western will be the bridge into the future, giving open access to opportunity, intellectual challenge, and self-discovery for students with diverse needs.” The statement is about learning and is student focused. The supporting documents identify learning as the clear focus of the college from which all decisions are made. The actual paradigm shift is declared by these documents as student learning moves to the top position of consideration. Prior to this change in the vision and mission of the College, Mid-Western like may other colleges, spent a great deal of time focusing on faculty teaching instead of student learning outcomes. Really, the focus had been on faculty outcomes.
The "bridge to the future" statement carries through to the Mission Statement of the college where the use of technology and the interaction with a global community are specifically identified as a significant part of that bridge. From the College Mission, a set of Core Indicators that assist in the monitoring of institutional effectiveness were developed with the expectation that departments in the college would align their planning efforts accordingly. Within the Core Indicators, there are several that deal specifically with the use of technology both in the operation of the College and as a significant learning methodology. The process and direction that Mid-Western has chosen is consistent with Wheatley's (1996) approach. She states that, "a company organized around core competencies provides a good example of how an organization can obtain internal stability that leads both to well defined boundaries and to openness over time" (p. 93). One may take issue with that fact that competencies and indicators are not the same terminology, however the manner in which Mid-Western states the Core Indicators, is in the format of a goal, most of the Core Indicator statements begin with, "Mid-Western will". A competency is also a statement of accomplishment in that it identifies an outcome based on the statement set forth.

Thus, the top leadership has clearly set the vision and identified the path for change. They have directly identified a paradigm change from teacher/college focused to learner focused and have made financial and structural changes based on this focus. Once the vision and mission and major goals of the college were identified each college department developed a department level plan related to these core indicators. As previously stated several of the core indicators are directly related to the use of technology in the process of facilitating learning. Bates (2000) discusses the importance
of a plan linked to the vision at the department level that outlines how technology fits into
the process of teaching and learning, defines priority target groups for the use of
technology as well as identifies those area of teaching and learning that, at least initially,
should be less technology based and more face-to-face.

Much of the financial support allocated toward being a learner centered College
has gone toward the use of technology as a teaching tool and a learning resource.
Financial decisions at the College are made in relation to the Mission and Core
Indicators. The main example of that support is the funding allocated for the Center for
Interactive Learning (CIL) and the infrastructure needed to support the high technology
courses initiated in the CIL and crossing over to the main campus. Alfred and Carter
(1998) identify the process of supporting innovation as key in a successful change
process. Van Dusen (1997) adds that, “higher education leaders will need to make
difficult decisions as they determine what portion of already shrinking budgets should be
allocated to the domain of technology. Because budget choices are always grounds for
controversy, if technology is tied to institutional missions and goals, the road to securing
the needed financial support is less rocky” (p.110). While there are types of support
other than financial, and these will be discussed further in the next section, the financial
commitment of Mid-Western has been significant and very likely one of the strategies
that has been a catalyst for significant change.

In the process of aligning the College for the future and also linked to the
expenditure of the college on technology, was the early strategy that perhaps started off
some fifteen years ago as nothing more than experimentation in the realm of teaching and
learning with the use of technology. It was the encouragement of the leadership along
with the willingness to purchase various forms of technology that assisted in the identification of the champions for change as described by Alfred and Carter (1998). This was a key discovery as these were and are the individuals that made the use of technology as a learning tool, a reality at Mid-Western.

A major initiative that reinforced the faculty use of technology for teaching and learning at the College were the Learning Challenge Grants as developed and administered by the Pathfinders group. The leadership strategy behind these awards was that they provided incentives for the faculty to try new and innovative ways of teaching that would promote and improve student learning. An initial incentive was of course that the faculty member or group received funding for their innovative project proposal. They could also receive release time from their traditional teaching load to develop their projects. These two incentives alone would have been significant as the faculty were not only supported financially, they were encouraged to do something creative. However, a further incentive is the acknowledgement and recognition the faculty are given for their work. Descriptions of all projects are published in an annual Learning Challenge Report, where each of the faculty involved are highlighted and their project showcased. Some of the higher technology based projects have also been written about in the CIL-Labus. This is a publication from the Center for Interactive Learning (CIL) where some of the projects have been researched in the delta lab and brought up in one of the CIL classrooms. Several faculty and administrators have traveled to conferences to present their learning innovations and have published their projects in journals.

All of these activities as well as the financial support have promoted the alignment of the College Mission with the way that faculty are working with students.
both in the classroom with technology enhancements and in distance formats. Covey (2001) states that “the second activity of a leader is aligning. It assures that the organizational structure, systems and operational processes all contribute toward achieving the mission and vision. Far and away the greatest leverage of this principle of alignment comes when the people in the institution are in alignment with the mission, vision and strategy” (p. 56). Mid-Western Community College is moving in this direction through the change strategies discussed above. Encouraging all of the individuals in institution toward a totally new way of thinking about their work and also using many new and often complicated tools is not an easy or quick task; it takes time and continued effort by the leaders throughout the organization.

A key change strategy needed was to entice faculty other than the early adopter/champions to engage in the paradigm shift and specifically in the increased use of technology for teaching and learning with their students. Van Dusan (1997) states that, “institutions must plan for technological innovations by developing organizational strategies such as cultivating technology leadership and encouraging innovative behavior” (p. 103). Mid-Western administration cultivated such leadership within the early adopter group. These faculty members were given the technology tools that they need to develop online courses and classroom technology enhancements. Informally, many of these pioneering faculty, because of their knowledge of technology use in teaching and learning and their willingness to share that information with other faculty, became leaders in the arena of technology use to promote student learning. Formally, these faculty members were invited to share what they had learned with other faculty during the Spring and Summer institutes along side some national experts and software
company educators. This group of early adopter, became the mentors for other faculty that were interested in developing some innovative learning enhancements for their students. Once the faculty member being mentored was able to have some success with his/her technology application with their students, they often times in turn assisted another faculty member. Moore (1991) explains that the most important time gap, called the “chasm”, in technology adoption is between the early adopters and the next group that he identifies as the early majority. The early majority is typically the large group who do not like to take the risk of pioneering but are ready to see the advantages of tested technology and are willing to experiment with these technologies with some guidance. The challenge is to shorten this time gap in the “chasm” such that the early majority is enticed into using the technology sooner.

The administrative commitment to faculty development is an important strategy at Mid-Western community college that may indeed shorten the “chasm” identified above. As the college community moves to be a learner centered institution and as part of that agenda the use of technology in teaching and learning becomes an expectation, the only way to get the majority of faculty prepared to engage in this transformation is through development. Pontiz (1997) writes that, “The considerable investment that is necessary to transform an institution includes a substantial commitment to the professional development of people” (p. 120). He specifically identifies the importance of the development of faculty in a college that is making the substantial change to become a learning focused institution. He further states, “it is important that faculty be involved and assume leadership from the beginning, because they are the key for promoting the change in focus from teaching to learning”. Pontiz (1997) concludes with a statement
that reflects his overall assessment of this transformational change process for community colleges, "Change, especially the kind of significant change that is involved in moving from a teaching to a learning college, is evolutionary. It is important to remember that transforming a culture and managing the people, processes and technology associated with change is time-intensive and a long-range effort" (p. 121).

This thinking has played out at Mid-Western Community College as the change process began with a change in the College Vision and Mission to the development of Core Indicators through the support, encouragement and development of the College Faculty. Change of this magnitude is indeed a "long-range effort" and at Mid-Western this effort has occurred over the last decade, but most intensively over the last five or six years. One of the College Administrators remarked during the interview that a colleague had asked him, "when is this all going to end so we can settle down to some degree of normalcy"? The administrator answered, "there isn't any end, there's just no end". This message is becoming clear at Mid-Western as many of the processes that initiated specifically for the learning college concept transformation and the increased use of technology have become part of normal operations. New processes are emerging on a consistent basis as new ideas and innovations take place.

Change Dynamics Related to Use of Technology

The discussions with Mid-Western Community College administrators, faculty, staff and students regarding the change dynamics that have occurred and are occurring at the college in relation to the increased use of technology have been most insightful. While the themes of turbulence, tension, planning, implementation, barriers and cultural
effect are fairly common in organizations that experience transformational change, the
dynamics within these themes comprise the Mid-Western Community College’s story
and are specific to this college’s experiences. If we analyze the data with an eye toward
synthesizing the consequences that come out, a number of important findings emerge.

agree that organizational turbulence externally and internally is a significant impetus for
radical change. In a relatively short period of time, approximately five years, significant
change initiatives have taken place at Mid-Western Community College. As previously
described, a paradigm shift for the college was articulated in the Vision Statement and is
in the process of being implemented campus wide to focus all of the colleges efforts on
student learning. As one of the primary methods of achieving that goal, the college’s
senior leadership embraced the use of technology as a major learning tool. To this end, a
building dedicated to research and development of innovations in teaching and learning,
the Center for Interactive Learning (CIL) was built and is in its third year of operation.
Also, a multi-million dollar infrastructure project is under way to facilitate the integration
of the innovations developed in the CIL to the main campus. All of these changes have
been fairly rapid, are substantial and continuous, thus fitting Backoff’s (1997) discussion
of turbulence.

External expectations that cause turbulence within the college are related to
technology use at the college both for administrative processes and to enhance student
learning. The College administration is very clear when they articulate that one of the
major driving forces for significant institutional change is the expectations of their
consumers, both the individual student and the business and industry groups seeking
education for their employees. They also acknowledged the external influence of
government and specifically for Mid-Western, the community taxpayer, as the College
gains significant financial support from a community tax levy. The significance of these
expectations are exemplified in quotes identifying the pressures from external sources.
Zemsky, Massy and Odel (1998) discuss student expectations of their college experience
by emphasizing that, “the college student of today expects the same of colleges and
universities that they demand elsewhere: lower cost, better service, higher quality and a
mix of products that satisfies their own sense of a good education” (p. 56). From the
business and industry aspect, O’Banion (1997) adds that, “overall business and industry,
large and small insist on and will only support a system of higher education that produces
students with the types of skills their companies need to remain competitive in a global
market” (p. 60)

The Mid-Western administration has definitely taken these types of concern under
advisement as they developed their mission, and core indicators. They continue to
monitor their consumers regarding expectations and needs.

An internal source of turbulence at Mid-Western is directly related to the amount
of change that has taken place over the last several years to increase the technology use
on campus for teaching and learning. The competing needs for technology support on
campus rose significantly as the CIL came on line. More and more faculty were
developing technology applications both online and in the classroom and concurrently the
administrative uses of the technology also grew in the student services sector of the
college. Some support positions were lost due to individuals leaving their jobs and a
general confusion arose as to who was supposed to support what. Bates (2000) explains
that this is a fairly normal scenario as technology use grows in the teaching and learning areas of the college,

"Historically information technology has tended to be introduced in higher education first to support administrative data processing requirements such as student registration, financial management, office word processing, and internal communications. It is only recently that academic requirements for technology support have become a central planning issue. Consequently there has been a tendency in many higher education institutions for educational requirements to be treated as a secondary importance to administrative requirements. The academic side has been slow or has found it difficult to define its technology needs and strategies clearly, or to agree on priorities, or to strongly urge that academic technology needs be met." (pg.83)

With the new Vice President of Information Technology, this source of turbulence is decreasing as planning and implementation of all technology support is being coordinated in one department and a significant number of technical support staff are being added to the department.

Some areas of tension were identified in relation to the increased use of technology for teaching and learning at Mid-Western. One significant source of tension that was not at all surprising is related to finance. Funding and cost of technology was identified as a major dynamic throughout the analysis of data. Further was the question, given all of the money being spent on technology for teaching and learning, what is the cost versus benefit or valued added of this change? It is almost a catch 22, in that you cannot analyze the benefit to the intervention of increasing the use of technology in teaching and learning without expending the money for the technology, the training and implementation. Even when initial projects showed great promise, the process of scaling up the initiative of enhancing learning with technology has taken some time. Therefore, data regarding outcome measures that would indicate any degree of benefit in relation to
the expense put forth is just being collected. At this point the institution is dealing with a scenario of millions of dollars later and the accumulation of continued expenses due to technology maintenance and infrastructure issues.

Well aware that the state subsidy for institutions of higher education is no where near what will be needed as systems increase the use of technology in teaching and learning, the federal government has allocated grant money earmarked for technology in higher education. Carnvale (2000) reported that an appropriations bill that finances the Labor, Health and Human Services and Education Department, signed by President Clinton, more than doubles the funds for technology grants under the program up from $10 million to $23.94 million. In colleges across the nation, technology spending has increase dramatically. Therefore Mid-Western Community College is not alone in their spending concerns. Bates (2000) concurs that new technologies will inevitably result in an increase in spending by higher education, at least in the short term because of the initial high cost of the technology investment as well as the recurrent cost of replacement equipment, software and the continual cost of technology staff. He further advocates the process of seeking external grants for technology funding as the sources of these grants are increasing. He suggests the evaluation of student fee structures and the addition of a technology fee for those courses that use significant technology resources. Eventually Bates (2000) sees the need to restructure the college budgetary system to centralize the cost for the college infrastructure, but decentralized the technology costs specific to departments.

Cost versus benefit is a pressing issue that has caused tension among the faculty and has caused the administration to pause as they look for some data to assure
themselves that the large expenditure they have put forth is of benefit to the students served by the college. Bates (2000) acknowledges that this is a difficult measure at this juncture because many of the technology initiatives at colleges across the country are just getting to the point that data can be collected. He identifies three areas that should be assessed as the college seeks to identify benefit,

- "Technology should enable the college to reach out to more and different students."
- "Technology should change the way faculty are doing the work of teaching. Eventually, technology should free faculty time for creativity and development."
- "Technology should improve the quality of learning by enabling new skills and learning outcomes. Students should achieve their learning goals more easily and more quickly." (pg. 19)

The data suggests that the faculty using technology enhancements in campus classrooms were confident that the students were benefiting by the use of technology to either simulate a real life practice scenario or as a repeated individualized guide through a subject that was difficult for the student to master. However, little documentation of these assumptions existed. In most cases, there is not a like course being taught in a traditional manner from which to gather data for comparative analysis.

Quality of learning presents a complex challenge as this is a difficult phenomena to measure and might only be captured in a qualitative manner. Ease and quickness could be measured if there were a common comparison base from which the student would base their decision.

Data was not gathered in this study that would answer Bates’(2000) demographic indicator of a distance learning population identified as “different” students than would
typically be expected to be on campus. A beginning to this data set might be gathered by identifying first time students who are only taking distance learning courses.

The faculty in the distance learning courses report a high degree of success if the students work well independently and are self-motivated. Students who do not fit those qualifications, generally need the more structured environment with a faculty member close by to facilitate. Mersotis and Phillips (1999) agree that students do well in distance education/online courses. They reviewed 40 studies of distance education initiatives and reported that a significant number of the students concluded that, regardless of the technology used, distance courses compared favorably with classroom based instruction. Nothing was reported in this research review about qualifications or screening of the students taking the courses in relation to self-motivation or learning style preference.

Overall this is a daunting research project that will require the efforts of an individual or team to develop appropriate methodologies for the different questions being studied, to implement the study process and analyze the data. However, due to the significant technology and personnel cost to the institution, these are important studies to undertake.

Another related issue that has created tension among the faculty at Mid-Western, and is most likely not unique to Mid-Western, is the question of how the funds are allocated. While the Learning Challenge Grant is very clear as to how a faculty member can apply for funding, other decisions regarding technology spending are not as clear. There is a push-pull effect regarding allocation of money toward more traditional classroom needs versus technology for teaching and learning. At this point technology is receiving the funding and traditional methodologies are not receiving much financial
support in comparison. This could however be a strategy to enhance change toward technology use. It could also mean that the institution has not wrestled with the question of balance between the more traditional face-to-face classroom, the high-tech enhanced classrooms, and the distance education courses.

Because of the significant work it takes for a faculty member to develop an online course or a technology based classroom program, there has also been some degree of tension between the faculty and administration regarding the question of intellectual property. The faculty group feels that the technology programs that they spent so much time developing are theirs and many do not want other faculty using their courses/programs to teach like sections of the course. The administration is wrestling with this issue and are reluctant to pay multiple faculty for the online or technology enhanced version of the same course. They are also interested in multiple sections of the courses to meet the students needs and often this requires more that one faculty member. Bates (2000) offers insight as he discusses this issue including the law regarding intellectual property.

"The law states that the creator of original material automatically owns the rights to the material. However, it must be something concrete such as a book, written or performed music, or a Web site. An idea or a thought does not have copyright protection because of the difficulty in law in proving where the idea originated. Ideas only have protection if there is a physical or tangible embodiment of them" (pg 108).

When these intellectual thoughts are developed into a product such as a technology program that can be marketed, Bates (2000) suggests a model of compromise. Because the faculty member is under contractual relations to the college, is paid to teach, and the materials created are used a part of that faculty members job, he suggests that the college
retain the rights to the materials, but the faculty member be free to use these ideas and
materials in other formats such as books and articles. This compromise may remain
unsatisfactory to some faculty, but it is also unreasonable for the college not to be able to
run the needed number of course sections because the developer is not available to teach
them.

The tension of trust versus mistrust from the standpoint of the comfort of the
faculty that students are doing their own work when the course is in distance format is
essentially unfounded. When the data regarding this issue was analyzed, it was identified
that the faculty teaching in this mode had appropriately dealt with this concern by using
the campus testing center or a remote proctor for exams. The course assignments that the
students are turning in online have no further potential for fraud than the on campus
students handing in an assignment that was completed at home. The trust issue, most
likely, has more to do with the unfamiliar and lack of a tangible face-to-face contact with
a student. The discomfort that remains over this issue reinforces the fact that face-to-face
contact is still very important to many faculty.

It is very interesting that there is a parallel between Erickson’s (1968)
developmental stages of the human and the developmental stages of technology as a
viable tool for learning in higher education. Trust versus Mistrust is the developmental
stage that Erickson (1968) associates with the infant. The experiences of the infant
during the first year of life have a great impact on how he/she trusts the people and the
environment in his/her life. Infancy is also the approximate developmental stage of
technology as a major learning adjunct in higher education. Those beginning users and
those watching with curiosity are developing trust or mistrust depending on their experiences.

The planning of the college infrastructure needed to support the technology innovations coming forth as a result of the Center for Interactive Learning (CIL) and from the Learning Challenge Grant Programs was found to be inadequate. The College Administration began to realize that as technology enhancements were developed in the CIL and then, an anticipated return to a traditional classroom setting, that the infrastructure support of classroom wiring and hardware was lacking. The administration quickly set about planning and securing funding to begin two significant projects for the purpose of providing the infrastructure needed on the main campus to facilitate the original intent of the Technology Plan. The plan outlined a process where innovative classroom programs were researched and developed in the CIL, many were also piloted in that facility. But, ultimately, the technology enhancements and teaching/learning innovations were to move to the main campus to make room for new innovation projects. The two infrastructure projects, as previously explained, were the wiring of the main campus for networking and Internet access and the development of on campus multimedia classrooms to accommodate many of the new technology enhancements for the courses coming from the CIL. This has been a costly venture for the college but is another example of the difficulty inherent in technology planning.

In acknowledging the planning challenge when technology is involved, Bates (2000) has several suggestions. He advises that, “to make good decisions regarding investments, there needs to be a clear academic strategy for the use of technology” (p. 45). This strategy should involve all aspects of the plan including technology.
requirements. As new technologies emerge, it is difficult to predict all that will be needed. However, technology designers and systems technologists are often better informed than most as to changes on the horizon.

Also, Bates (2000) warns that the cost of investments should be assessed in relation to the potential for revenue. While the cost can be predicted much easier than the revenue where technology is concerned, the planning initiative is important. Currently, to solve the infrastructure issue at Mid-Western, fifty existing classrooms at the college have been converted to multimedia classrooms. These rooms are complete with computer pods with several computers in each pod and an instructor control area with a computer and master controls for the overhead projection system, video, audio, and DVD. The utilization plan is that each student will have a computer station. During the interview process it was identified by faculty that this new room structure would only allow 20 students in each multimedia class unless the students were to share computers. It is the assumption of this researcher that these classrooms prior to conversion, held at least ten more students. This building process, while fixing the immediate problem of multimedia capability, goes against what Bates (2000) is suggesting regarding cost investments being set against potential revenue. The student space could perhaps be recovered when the computers are due for replacement if they are replaced by lap top models on rows of computer tables instead of pods. This could reduce the space needed per student while allowing the room to continue to serve the purpose of multimedia capability. The pods could be cascaded to one of the Teleports, the Testing Center or perhaps the library.
The implementation logistics of a faculty member developing and teaching online courses is another whole set of issues that have not yet been resolved well universally. At Mid-Western, faculty are paid when they develop an online course. This however is a one-time development fee and does not account for the hours of course maintenance, checking old and establishing new links and trouble shooting problems in the program. Faculty are also concerned about how online courses are calculated as part of their workload and the different pay structure for a smaller class size that does not exist when teaching an on campus course.

These are difficult issues to resolve because developing courses and teaching online is unlike and cannot really be equated to teaching in the classroom. Many colleges recognize that the development is very different from the traditional course and is very labor intensive and thus are willing to pay a faculty member to do this development. Mid-Western is discovering that teaching these kind of courses is much more labor intensive than ever anticipated in order to achieve the level of student interaction appropriate to facilitate learning. O’Banion (2000) suggests that there needs to be a redefining of faculty role at community colleges in order to meet the challenge of learning paradigms that expand the way students are learning, faculty are teaching and the learning tools are being used to facilitate this process. He states, “old formulas that dictate one faculty per four or five classes, 30 –35 students per class, three class hours per week for a lecture course of three credits, should all be tossed out and the roles redesigned to meet the needs of the learning culture that is emerging” (p. 21). O’Banion (2000) advocates that the old ways of calculating workload, compensating faculty and structuring the overall faculty role needs to be redefined by the faculty and administrators
working together to identify what the new model will be. It makes sense, that if significant transformation is occurring at a college in relation to the teaching and learning paradigm as well as expansion and diversity of methodology, the role of those facilitating the learning must change and a new understanding developed. Part of the frustration of the faculty at Mid-Western is that all of these new initiatives they are working on do not fit any of the structure that has been established for years. What their role is, how they are compensated and what guidelines they follow for development and practice have not caught up with their new emerging roles; their practice does not fit into the old models.

A significant barrier that was identified throughout the interviews with faculty is the area of technology support specifically for faculty. While this subject was touched on briefly in the sections regarding the competing needs for technology support, a more detailed discussion is warranted about faculty support, as there was a significant emotional response by the faculty to this subject.

As discussed earlier, the financial support for technology at Mid-Western was strong from the beginning and the early adopter faculty were also the early developers. Along with developing the technology enhanced experiences and the online courses, they also developed much of their own technology support with assistance from the Distance Education Department. As the technology venues grew and more faculty wanted to become involved with Learning Challenge Grants and, the Center for Interactive Learning was finished thus inviting more innovations, it became clear that technology support was an issue. Moskus (1997) President of another community college identified similar issues regarding the importance of technology support as his institution engaged in increasing the use of technology on campus and as his college moved to a learner
centered institution. He describes the process of bringing in a consultant to assist in the identification of the best way to organize the technology systems and support on campus. The recommendation was to align computer resources across campus and identify a process redesign such that all were served and support was not scattered and uncoordinated. At Mid-western, specific support for the faculty is being assessed and the faculty are looking forward to some solutions from the reorganization and new hiring in the Information Technology Department.

The dynamics surrounding pedagogical change in relation to teaching and learning fits in both the theme discussion about barriers and the theme discussion regarding cultural change. The College administration is far from mandating or planning that all teaching and learning take place online or through high-end multimedia use. The focus of the mandate is the pedagogical change to a learning college where it is expected that student learning is central and thus the faculty member’s primary role becomes not one of telling, but one of facilitating discovery. The facilitation of learning involves the student getting information from multiple sources and thus the role of technology in many instances. O’Banion (1997) describes this change in pedagogy as the instructor in the learning college being free to become a learning facilitator, assisting learners in accessing and organizing information, and more importantly, assisting them in analyzing and using that information. Bates (2000) advocates that the change to increase technology use in teachers and learners should affect the nature of the work of faculty and that this change will be reflected in the relationship between teachers and learners. He is careful not to negate the role of face-to-face teaching and classroom use of technology enhancements, but suggests that these methodologies are on a continuum and
that courses should be evaluated by faculty as to the best mode of delivery. He further suggests that the higher education pedagogy should be further altered to accommodate the full range of methodologies thus requiring an increase need for faculty teamwork, planning and training and a decrease in faculty autonomy and independence.

The culture of the students is shifting as they are increasingly at a variety of places on the continuum of traditional teacher centered learning to online independent learners with faculty facilitating their learning. Most had the expectation that there would be technology use on the campus for administrative processes and for some technology use in the classroom. The general agreement of the students interviewed was that they like the choice of being on campus in a fairly traditional class with a little bit of technology use, to those with significant technology enhancements and the total distance Web based format. Most enjoyed the use of technology, specifically the computer as a learning tool. They liked doing Web searches and some of the software simulations used in their classes. Not all of them agreed that they would like doing the whole course online from home. The security of a near by faculty member to help as they used the technology was important to those who were not enthralled with total online learning.

Several students that had extended experience with distance learning stated that they really missed face-to-face human contact both with the faculty member and with fellow students. The social aspect was a significant issue for one particular student who did not have a choice about having to take her classes in a distance mode.

Implications of the Dynamics for Future Leadership Strategies

Being a leading college in the process of becoming a learner centered institution and providing the vision to include technology as a major learning tool in this radical
change in pedagogy has not been an easy road for Mid-Western Community College. The College Senior Leadership has asked for input, included technology in the Institutional Strategic Plan, developed planning teams, hired consultants, engaged in a physical restructure of the infrastructure, developed a Center for Interactive Learning and is currently in the process of a major personnel/job role restructure of the new Information Technology department. According to Green’s (1998) Survey of Information Technology/Planning, Mid-Western is headed in the right direction. He identifies that faculty centered change is strongly influenced by the institutions overall approach to technology use, as well as support from a wide range of strategies. The strategies he outlined included,

- A strong strategic plan with technology use as a prominent feature.
- Support from senior leadership for the use of technology for teaching.
- Support for faculty wishing to use technology.
- Support for students through computer access, Internet accounts and financial support.

While all of these aspects have been included in Mid-Western’s process of change, and the change process has occurred fairly quickly, the campus culture change has progressed at a slower rate. The alignment of the faculty and teaching practices will require some intense work by an integrated team approach between the faculty, the senior leadership and the emerging Information Technology Department. As a beginning premise for the process, Green (1998) reminds us that best practice organizations in higher education focus on teaching and learning, not on the technology itself. Technology needs to remain a tool for learning not a driving force for change. Thus, as
the faculty evaluate the potential for their courses for technology integration, this premise should be paramount.

Also of importance is the concept of a design team approach when technology is either introduced as a higher level technology enhancement to a course or the course is converted or a new course developed online. Bates (2000) reminds us that often times the technology designer can envision possibilities for student learning within content that has been outlined by the faculty member that had not been thought about by the faculty member. With a team in place, the different roles of design and development as well as maintenance and change once the course has been developed can be allocated. The faculty time should be spent as the content expert and with the students to facilitate learning. The team approach also has implications for the budgetary process. Much like the Learning Challenge Grant, a budget can be proposed for each project and funds from different sources allocated into the project budget.

Previously mentioned was the fact that through all of the changes that have and are occurring at Mid-Western, the faculty role has also changed such that the traditional faculty workload is affected. Also, if design teams are developed to work on technology enhancement and online courses, traditional budget forecasting and allocation of funding may change. The change process also has implications for decisions about decentralized budgets and mechanisms for interdisciplinary course development and implementation. All of this is listed to illustrate the fact that current college policies and procedures in these areas need to be reviewed and new models developed with the flexibility needed to facilitate the creativity expected as technology use increases.
Planning for the increased use of technology, specifically as a teaching and learning methodology, is not an easy task. Technology hardware and software are changing so quickly that they are virtually out-dated a year or two after purchase. Technology companies are running pilots on the next new wave of innovation as this paper is being written. On the other hand faculty members are not convinced that technology is the panacea to learning that it is touted to be. Given just these two categories, there are many potential barriers to the institutional change needed to implement technology as a significant tool for teaching and learning within a community college.

The Mid-Western story provides rich insights. Primarily, it is important to note that a change of this magnitude that effects the very core of what faculty do at community colleges, can not take place successfully without the faculty representing a strong component of the planning and implementation team. They need to be involved in the discovery of possibilities, the design of process, the decisions about the actual technology equipment, identification of the support needed and the path that is being charted in relation to the college vision and mission. Through this involvement, leadership will evolve.

The role of the administrative leadership is to provide the vision, the parameters of the project in terms of support available, infrastructures and physical limitations, as well as to assist the group in staying grounded in the vision and mission of the college. Mid-Western was very clear about where the creativity, the excitement and the engagement of other faculty was coming from. While not necessarily an organized effort, the administration provided the equipment, the financial support and the time.
needed for the faculty to try new methodologies and they praised the faculty for their expertise and creations.

Teaching and learning methodologies cannot be changed because some one declared or mandated that they will be. Faculty must be the catalyst that makes the change happen.

The college administration needs to have an understanding that this venture is going to be very expensive. This expense is not just for the initial outlay of capital for the infrastructure changes and equipment, but for the on going maintenance and replacement cycles of the equipment and software. Because the federal government is beginning to allocate substantial grant money for such initiatives, the college may involve grant writers as well as seeking funding from other sources such as community business and industry partners.

Also of significant importance in the planning, implementation and on going maintenance of any technology integration project, is technology support. While many faculty are very creative as they begin to adapt and expand their teaching methodologies to include technology, most have neither the background knowledge nor the time to invest learning the technical part of making it all work. As far as the administration is concerned having a faculty member learn to design programs and network trouble-shooting is not a prudent use of faculty resources. Again a team approach is most effective. The faculty member is the content expert and the design technician understands the possibilities. Together they have the potential for a wonderful end product. Maintenance of the links and the technical up-keep of the programs should not
be left to the faculty member, although the faculty needs to update the program periodically.

Technical support staff are also invaluable for the students using the technology and programs. The students must be able to obtain assistance when working on a program at home if they are to be successful in their courses. Busy students are not willing to be endlessly frustrated with no resources or inefficient resources to assist them with the systems.

Implications for Further Study

The most glaring concept that emerged as data was gathered and analyzed is the issue of cost versus benefit. Is there really a benefit to the students, the faculty and the college such that it is worth the millions being spent to move the learning experience to a different level with the use of technology? What data exists to address the fear that any community college or institution of higher education that does not incorporate technology into the teaching/learning paradigm of the college will be left behind, not valued as a modern institution of learning and eventually cease to exist?

A source that may give some insight is the work of Christensen (1997) as he describes his study of a phenomena he has termed disruptive technology. He describes these innovations as technologies that initially result in a worse product performance but eventually catch on and are preferred by the consumer. The initial group of consumers that chooses the disruptive technology is generally a small consumer group that is often ignored by the large company supplying the traditional product. Therefore, the large company ignores the disruptive technology until it starts to significantly affect their
consumer base and by then smaller companies and new companies are already grounded in providing this disruptive technology and it is too late for the large company to make an impact using the disruptive technology. The large company loses its edge in the market and their consumers are going elsewhere to buy the disruptive technology product/services.

These are difficult issues without a lot of data to supply direction to the colleges that are struggling to do future planning. The faculty in technology enhanced and online courses that have been operating for several years at Mid-Western and other institutions are just beginning to gather some data about student outcomes. The initial anecdotal reports at Mid-Western seem positive but there is not necessarily a sense that results are better than the traditional methodologies. The benefit might not just be in relation to increased knowledge or gaining the knowledge quicker or more efficiently. It might be that the methodology of discovery and active information searching creates a different kind of learner and we may only be able to begin studying these individuals as they experience these methodologies for learning and their outcomes can be assessed. Not only should the content knowledge be assessed, but the process should be evaluated for learner satisfaction, ease of learning, did the learning take place at a quicker pace than it would in a traditional format and if the learner perceived that there were any other benefits or negative aspects of the process. If the goal of this process is not only for the learner to master certain content or skills, but to improve their ability to expand their current knowledge of how to learn through technology, then this phenomena should also be studied.
A related issue that bears continued study as more and more faculty are teaching technology enhanced and online courses is the traditional understanding of the faculty role at the community college. These new initiatives are adding dimensions to the faculty role that were never considered before. Faculty teaching with these methodologies are becoming frustrated with the amount of time allocation needed to appropriately develop courses and work needed with students in these courses. They are clearly describing that this is a different work process and should be considered differently both in workload allocation and in pay structure.

Lastly, a point that was made clear throughout the data collection and analysis from both faculty members and students is the assertion that online courses are not for everyone and that a certain type of learner is more successful than others with this type of course. Specific success characteristics such as maturity and self-motivation were identified by several faculty that had been working with students in online courses for a while. This type of learning is much more independent than the traditional and even the technology enhanced classroom.

Conclusion
Change of the magnitude that Mid-Western has and is experiencing is not easy. Even the most brilliant leaders at the administrative level or within the organization can not predict all that is to unfold as this type of change takes place. Also, a major factor is that this change initiative is heavily based on technology which is changing faster than anyone can predict. Wheatley (1992) personifies the process that Mid-Western is experiencing when she equates an environment of chaos to eventual order. She further states,
"In organizations, we are at the edge of this new world of relationships, hoping the new charts are true, still fearing if we follow them, that we will fall off into nothing. A mariner perched high in the crow's nest sometimes cries "land ho" on faith. Knowing what to look for, knowing how land appears on the horizon, knowing how to tell cloud from land still, sometimes, the call is an act of faith" pg 33.

Mid-Western is moving forward with the combined knowledge of the leaders throughout the organization and an act of faith that the path they have chosen is the correct one. The occasional emotional reaction to the process by an individual or two throughout the interview and observational process was a reaction to the continual changes occurring around them. Sometimes the emotion was an excited one in relation to what was happening in the organization. At other times it was related to the trepidation that accompanies a change of this magnitude. However, every individual spoken with believed in Mid-Western Community College and identified it as being an exemplar educational facility that, for their students and community, has bridged to the future.
APPENDIX A

Interview Questions, Administrators
Interview Questions:
(Administration)

Permission for participation in the study

Opening explanation of the study:
I am here to understand your story about how the use of technology has evolved on your campus and what worked well, what you would have done differently and how this phenomena has effected the learning focus of your college.

1. The timeline

2. How has technology effected the day to day operation of the college?

3. What has been the impact on student learning?

4. Conversely, what has been the effect on teacher satisfaction with technology use?

5. What has been the impact of technology on the culture of the college?

6. What strategies have been used to encourage the use of technology, what have been some of the barriers?

7. What have been some of the major infrastructure issues?

8. If you could have done anything differently, what would it be?
APPENDIX B

Interview Questions: Focus Groups, Faculty
Focus Group Questions:
(Faculty)

Permission for interview

I am here to understand your story of the integration of technology into teaching and learning on this campus. It is a phenomena that all community colleges have been struggling with over the last decade or so. There is the good the bad and the ugly of technology, how has this journey been for SCC?

1. What impact has the use of technology in teaching and learning had on the college culture as a whole?

2. How would you characterize the effect technology has had on learning at SCC?

3. What internal roles were important to the evolvement of technology use?

4. Given what you know now what would you have done differently?

5. In 10 years from now, what will teaching, learning and technology look like at SCC?
APPENDIX C

Interview Questions: Focus Group, Students
Focus Group Questions:
(Students)

Permission for interview

I am here to understand your story of the integration of technology into teaching and learning on this campus. It is a phenomena that all community colleges have been struggling with over the last decade or so. There is the good the bad and the ugly of technology, how has this journey been for SCC?

1. What technology do you or have you used at the college as part of a class and/or personally to enhance your learning?

2. What impact has the use of technology in teaching and learning had on your ability to learn?

3. How would you characterize the effect technology has had on the college?

4. Have you taken any courses totally online, how was that experience?

5. How would you compare the learning experience of an online course with that of a traditional course at the college?

6. What would you identify as the pro’s and con’s to learning with technology?

7. Give and example of your best learning experience with technology and your worst learning experience using technology.

8. What do you think the future of higher education looks like in relation to the use of Technology?
APPENDIX D

Participant Letters
February 10, 2001

Name
address
address

Letter to students to be interviewed

Dear [Name]:

We are writing to ask your participation in a research project for Polly Owen, a doctoral student at Ohio State University under the supervision of Dr. Ada Demb, Associate Professor in Educational Policy & Leadership. Ms. Owen is working on her dissertation in Higher Education Administration. She is studying the use of technology in higher education.

Specifically, she is interested in the experience of community college students as they incorporate technology into their educational programs. She also works at a community college in the state of Ohio that is very similar to your college. She has been a faculty member for 13 years and chairperson of a department for 5 years. She finds the rapid growth and use of technology in higher education both fascinating and challenging. She is interested in the good, the bad, the wonderful and the ugly as only a user of the technology can relate.

We would like to ask you to agree to be interviewed as part of this research project. The interview will last about an hour and will likely be held on campus, at your convenience.

All interviews will be confidential. No individual's name or other personal information will be used in any display or written discussion in the dissertation. We are asking your permission to tape-record the interview. The recording is preferable to taking notes during the discussion so that Ms. Owen can spend the time really listening to your story, while the tape provides an accurate record. The tapes will be destroyed or erased following the conclusion of the dissertation project.
Your support and participation are most appreciated. Ms. Owen will be contacting you shortly to set up a time for an interview. If you have any questions you may reach Dr. Demb at (614)292-1865 or demb.1@osu.edu, or Ms. Owen at (614) 287-2507, or at psowen@cscc.edu.

Thank you.

Sincerely,

Dr. Ada Demb
Associate Professor

Polly Owen
Doctoral Candidate
February 10, 2001

Name: Letter to faculty and administrators to be interviewed
address
address
address

Dear [Name]:

We are writing to ask your participation in a research project for Polly Owen, a doctoral student at Ohio State University under the supervision of Dr. Ada Demb, Associate Professor of Educational Policy & Leadership. Ms. Owen is working on her dissertation in Higher Education administration. She is studying the use of technology in higher education and the leadership strategies that have been successful in promoting college change that supports technology use.

Specifically, she is interested in this phenomenon at community colleges. She is also a department chairperson at an urban community college who has found the rapid growth in the use of technology in higher education both fascinating and challenging. Sinclair Community College is known for innovation and for its' learner centered focus. To this end, she is very interested in your story of progression and would appreciate an opportunity to interview you on this subject.

The study is qualitative because it is important to hear the perspectives, planning, and stories related to use of technology on your campus from those individuals most closely linked to the process. Your identity as well as Sinclair's will be kept confidential throughout the process. The college will be referred to in the dissertation as a large urban community college in the mid-west. All interviews will be confidential and no individual's name or specific title will be used in any display or written discussion of the findings.

We would appreciate your permission to tape record the discussion. Taping of the interviews is preferable to note taking as accuracy and details are important. The tapes will be coded, not labeled with names, and will be stored in a secure cabinet in my home. All tapes will be destroyed or erased following completion of the dissertation.
Your support and participation are most appreciated. Ms. Owen will be contacting you shortly to set up a time for an interview. If you have any questions you may reach Dr. Demb at (614)292-1865 or demb.1@osu.edu, or Ms. Owen at (614) 287-2507, or at psowen@csc.edu.

Sincerely,

Dr. Ada Demb
Associate Professor

Polly Owen
Doctoral Candidate
LIST OF REFERENCES


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