A CASE STUDY OF FACULTY AND STUDENT PERCEPTIONS
OF A CAMPUSWIDE COMPUTER NETWORK
AT A SMALL LIBERAL ARTS COLLEGE

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Peter R. Morgan, B.A., TH.M.
Denton, Texas
December, 1996
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This study was an examination of faculty and student perceptions of a campuswide computer network at Cedarville College in Cedarville, Ohio. The survey instrument was composed of statements, demographics, and open-ended questions. The ethnographic study was composed of statements and demographics. The survey instrument was administered to 225 students and 100 faculty members, with a student response rate of 85% and a faculty response rate of 61%.

The following are the major findings of this study:

1. Significant differences were found in the use of the computer network at Cedarville College among faculty by teaching field.

2. Significant differences were found in the use of the computer network at Cedarville College among faculty by degree earned.

3. Significant differences were found in the use of the computer network at Cedarville College between tenured and nontenured faculty.
4. No significant differences were found in the use of the computer network at Cedarville College by gender.

5. Significant differences were found in the use of the computer network at Cedarville College among students by degree majors.

6. Significant differences were found in the use of the computer network at Cedarville College among students by classification.

7. There were no significant differences in the use of the computer network at Cedarville College among students by age.

8. Significant differences were found in the teaching/learning field among faculty and students at Cedarville College because of the use of technology.

9. Respondents identified barriers to full use of the computer network at Cedarville College, including cost, lack of training, lack of administrative support, and unavailability to off-campus students.

The most important conclusion of this study is that the computer network at Cedarville College has significantly impacted interactions between faculty and peers and faculty and students. It is recommended that a longitudinal study be conducted to explore the possibilities of the computer network and its importance to and impact on the teaching/learning process. It is also recommended that an evaluation program be set up to monitor the usefulness of the computer network to the teaching/learning process.
ACKNOWLEDGMENTS

I thank God for the ability to accomplish this milestone. The Bible says that through the strength of Jesus, all things can be accomplished. I could not have done this without His help. I also want to thank my wife, Bibiana, to whom I dedicate this study, and my children, Ethan, Jason, and Miranda. They understood and suffered with me during the course of this study. I also want to express my appreciation to my friends who believed in me and provided the moral support I needed.

Special thanks to Professor Wang of Cedarville College, whose advice and counsel made it possible to prepare the statistical analysis for this study. Thanks also to Professor Kevin Sims of Cedarville College for his help in securing research assistance, and to Brenda Maupin, who was always available to type. To my committee members, I say thank you for your effort. A note of gratitude to Kathleen Smith, who edited this manuscript and to Sandy Jones, who typed it. Both graciously came to my rescue.
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CHAPTER I

INTRODUCTION

The curriculum of the American liberal arts college has been, as Frederick Rudolph observed, "an arena in which the dimensions of American culture have been measured" (Lisensky, Pfister, & Sweet, 1985, p. 176). Among the pressures that American society (and indeed, world society) will face in the first decade of the 21st century is the need to deal intelligently and responsibly with the results of its own rapidly developing technology. Because the need to deal intelligently and responsibly with technology has such far-reaching consequences for American society as a whole, Lisensky et al. contend that it also has special consequences for American educational systems.

Technology, according to Lisensky et al. (1985), is a way of expanding the human powers of perception, reasoning, invention, and production. Technology amplifies and emancipates the power of the brain in the same way that other technology amplifies and emancipates the power of the muscle.

Technology must be viewed by educational planners and educational institutions as an entity with universal implications. In other words, the world has been brought closer by technology. For this reason, it is incumbent upon
institutions of higher education to train men and women who will be able to face
and meet the demands and challenges of world technology.

This phenomenon has been referred to by Heerman (1988) as the "New
Technology." Heerman observed that people in general and educators, in particular,
have always been dubious about technological change. He argued that the arrival of
new technology catches most people and organizations in the second phase of their
development when their "immune system to protect them from anything different is
strong" (p. 210). For this reason, many educators are prone to resist computer
technology, in spite of its potential to impact teaching and learning. Educators are
not the only ones dubious about change. Students are also finding it difficult
(Heerman, 1988).

If America is to maintain its edge in world technology, it is imperative that
both educators and students take full advantage of the powers of the new
technology. In 1966 Carl F. J. Overhage, spoke of the "New Technology":

In the university of the future . . . the library will be the central facility of an
information-transfer network that will extend throughout the academic
community. Students and scholars will use this network to gain access to
the university's total information resources through touch-tone telephone,
teletypewriter keyboards, television-like displays and quickly made copies.
The users of the system will communicate with each other as well as with the
library; data just obtained in the laboratory and comments made by
observers will be easily available as the text of books in the library or
documents in the departmental files. The information traffic will be
controlled by means of the university's time-shared computer utility, much
as today's verbal communications are handled by the campus telephone
exchange. Long-distance service will connect the university's information-
transfer network with sources and users elsewhere. (Caffrey & Mosman,
1967, p. 162)

This is like a prophetic inspiration to educators and educational institutions.
If this was prophecy, it has indeed come to pass. In reference to this reality,
Heerman (1988) defined the effect of technological change:

Future Computers as Teaching Machines:
Students a decade from now will master factual information using a far more
dynamic mode of computer delivery than the computer aided instruction of
the 1980's. Future CAI (Computer Aided Instruction) will be able to be
much more complex both pedagogically and graphically. It will include
realistic scenarios and simulations with which students can interact.

Future Computers as Simulators:
The new CD-1 and CD-ROM technologies will be used to their fullest in
creating complex, realistic, highly interactive simulations that help individual
students or student groups develop problem-solving skills. It will also allow
students to build their own simple simulators. Such construction will give
students unparalleled chances to apply rules and principles that they have learned in a course by setting up realistic situations in which these rules and principles operate.

Future Computers as Resources:
The computer as a resource will be able to "call up" a visually powerful and highly interactive encyclopedia that will present visual, auditory, and verbal information on topics from astronomy to zoology at a keystroke. This system will bring the whole library system to the student's fingertips.

Future Computers as Tools:
Within the next decade, the computer "tools" used today, such as spreadsheets and word processors, will become both more powerful and easier to use. More and more different tools will be combined in integrated packages so that students can apply any or all of them to the same data. As with other software, these tools will have enhanced capability to both incorporate and produce graphics. They will enable students to analyze data in increasingly complex and sophisticated ways. (pp. 98-99)

The above-mentioned phenomena are no longer futuristic. All the predictions have come to pass. Colleges and universities must make computer literacy a priority for both faculty and students for two reasons:

1. Faculty must have knowledge of technology and its impact on the global community if they are to train students.
2. Technology has caused an automation flood so that every facet of students' lives is touched by its effects.

Eddy (1983) saw the need for the holistic approach to the development of college students. He insisted that creative and effective interaction with students will enhance progress toward the improvement of their cognitive and affective development. The "new technology" is the most appropriate medium to accomplish this goal. The Cedarville College computer network has the capacity to provide that development.

The effective use of the computer for training and learning will result in simultaneous achievement of cognitive and affective goals. True learning can scarcely be attained unless this goal is realized.

To some, technology is seen as a great blessing; to others it is considered a threat. In addressing the issue, the Senior Director of Instrumental Technology, Texas Education Agency, commented,

I don't like to think of technology as a means for 'replacing' teaching; I much prefer to think of it more as a tool to strengthen and enhance the delivery of instruction, especially in those areas where teachers may feel less than comfortable teaching. For instance, given the current teacher shortage in the area of math and science, technology can be used to fill that void. But there is always danger that technology will be used to justify the downsizing of the teaching force. ("Speaking Out," 1992, p. 57)
Despite the feeling of teachers, the presence, contribution, and effectiveness of technology can in no way be reversed, curtailed, or avoided. In time, teachers recognized the role of technology in the teaching/learning process.

Educators have come to recognize the fact that the curriculum and methodology of the past are not suitable for today's world. This recognition has prompted a call for curricula renewal and a restructuring of education. It seems that the American educational system has fallen behind demands placed upon it by a changing economy and market. Skills necessary to compete in the job market include information processing and communication. In this new dispensation of technology, both teachers and students must be prepared to make the necessary sacrifices if they and higher education are to be served.

Cedarville College prides itself in playing a part in the vibrant Christian movement that is currently sweeping the Third World. With the college's determination to be on the cutting edge of technology, it could have the ability to further impact the region by means of its technology.

Speaking on Third World technology, Mark Freund (1992) insisted that the Third World countries are progressive with regards to the global market of the 1990s. Most large corporations in Africa and South America, he wrote, are keen to compete with the United States, Japan, and Western Europe. Cedarville College has recognized this and is meeting its obligation to equip the men and women who, upon graduation, would fit into the global technological infrastructure.
Eble (1972) noted that students are locked into departments early and that faculty members' allegiance to subject matter and discipline is about as fierce within highly regarded liberal arts colleges as anywhere. He maintained that colleges are dealing with old attitudes that create distance between students and faculty.

Cedarville College sees technology and the recently installed campuswide computer network as the means to reopen the channel of communication between students and faculty. It was for this purpose that the college commissioned four self-studies.

1. In August 1991, the Cedarville College Information and Resources and Technology Task Team Final Report was presented to the administrative council. The report strongly recommended that the college incorporate technology into its educational experience in order to provide a better, more current, and individualized education for all students.

2. In September 1991, the Report of the IBM Application Transfer Study for Cedarville College confirmed that there was a high level of interest in technology on campus. The team made several recommendations for improving the college's current system. These recommendations will be discussed subsequently.

3. A Review of Cedarville College Information Resource & Technology Proposal Initiative was done by Florida State University, Tallahassee, Florida (Sherron, 1991). According to that report, Cedarville College is among an elite few in higher education technology that can claim such a pervasive technology infusion.
4. The General Education Revision Task Force Report (1992) confirmed the fact that Cedarville College is remaining constant to its mission and objectives, which emphasize an education consistent with biblical truth. It confirmed the college’s commitment to equipping men and women to make a dynamic impact upon the world society.

Since Cedarville College relies upon its graduates to fulfill its mission in the 21st century, it is incumbent upon the college to make every effort to prepare them for this chore. A survey of students’ perception of technology, therefore, is of vital importance if both the college and the students are to be properly served.

Statement of the Problem

The problem of the study concerns the perceptions of faculty and students at Cedarville College toward the utilization of the campuswide computer network.

Purpose of the Study

The primary purposes of the study are the following: (a) to identify and compare perceptions that faculty and students have concerning technology on campus; (b) to determine the perceptions that faculty and students have regarding the utilization of technology to the teaching/learning process; (c) to obtain information from faculty and students of Cedarville College that could be used to improve technology on campus; and (d) to ascertain the perception of faculty and students of Cedarville College regarding the place of the emerging new technology in higher education.
Research Questions

This study has attempted to answer the following research questions:

1. Are there differences in the use of the computer network among faculty by teaching fields?

2. Are there differences in the use of the computer network among faculty by degree earned?

3. Are there differences in the use of the computer network between tenured and nontenured faculty?

4. Are there gender differences in the use of the computer network?

5. Are there differences in the use of the computer network among students by degree majors?

6. Are there differences in the use of the computer network among students by classification?

7. Are there differences in the use of the computer network among students by age?

8. Are there differences in the teaching/learning fields because of the use of technology?

(See Appendix F, where research questions are matched with the survey questions.)
Theory

For centuries educators have concurred that learning takes place through all of the five senses—seeing, hearing, touching, smelling, and tasting. Krathcoook, Bloom, Benjamin, and Masia (1984) agreed that most meaningful learning takes place, however, when the participation and involvement of the learner are allowed.

Decades of research and experimentations have resulted in a multiplicity of teaching implements all designed to maximize students' interest and encourage learning. In the last 2 decades, however, technology has become increasingly important in higher education.

Computers are only one of the many elements in the technological assortment. Unlike any other tool, computers have the potential to fully involve the user in the learning process. Computer technology may not solve all the problems of the classroom, but such a powerful delivery tool is apt to steer teachers and learners in the right direction.

Hypotheses

1. There is a significant difference in the use of the computer network among faculty by teaching field.

2. There is a significant difference in the use of the computer network among faculty by degree earned.

3. There is a significant difference in the use of the computer network between tenured and nontenured faculty.
4. There is a significant difference in the use of the computer network between genders.

5. There is a significant difference in the use of the computer network among students by degree majors.

6. There is a significant difference in the use of the computer network among students by classification.

7. There is a significant difference in the use of the computer network among students by age classification.

8. There is a significant difference in the use of the computer network among students by race.

9. There is a significant difference in the teaching field because of technology.

(See Appendix G, where the above hypotheses are matched with the survey questions.)

Significance of the Study

The evolution of the computer is unprecedented. The advancement of technology is so rapid that the latest computer designs become obsolete soon after being put on the market.

Over time, the world has witnessed a tremendous metamorphosis relative to the computer industry. It began in the 17th century with Napier Bones; then came Gottfried Von Liebnitz's stepped reckoner, Joseph Marie Jacquard's loom, Hollerith's tabulating machine, Charles Baggage's analytical engine, The Mark I, the
ENIAC (electronic numerical integrator and calculator), laptop computers and the
information super highway.

The revolution in technology has changed the face of the academic
community forever. According to Fuller and Wilkinson (1991), many school
officials are quick to identify the significant administrative and educational
advantages of using computers. Tedious and time-consuming tasks are a thing of
the past. The authors observed that nowhere have computers' impact been more
widely felt than in science and medicine. One impact of computers on the
educational environment is in the use of electronic mail. Institutions depend
heavily on this medium to transfer large volumes of information from one site to
another electronically. The emergence of computer technology has, no doubt,
afforded higher education the luxury of providing its clientele with a number of
critical services without the normal face-to-face contact. Internet, information
super highway, E-mail, and other computer-related technologies are now affording
students the ability to (a) register for classes from their dorm; (b) access the library;
(c) check their records; and (d) communicate with their counterparts on- and off-
campus.

The network eliminates any hand delivery or exchange of paper between
students and faculty. Both delivery and responses are done via E-mail. The Internet
continues to be a powerful tool to students, professors, and researchers the world
over. According to Tennant, Ober, and Lipow (1993), the Internet provides a wide
variety of services. One such service is the World-Wide Web (known as "W3"). The system is being developed to provide hypertext access to documents wherever they are located.

Tennant et al. (1993) agreed that, with computer networks, collaboration does not depend on geographic proximity. However, E-mail reaches far beyond the Internet. According to LaQuey and Ryer (1993), the Internet community is expanding not only in numbers but in breadth of application. The authors noted that the Internet has been, and will continue to be, a key part of the research and development community. The network has become the basis for worldwide communication between people in all walks of life. Librarians love the Internet for its advanced document-searching tools and almost instant access to the catalog and archives of major libraries all over the world (LaQuey & Ryer, 1993).

In short, the Internet gives access to more people and more information faster; for example, the LINQ (Learning Institution and Network Quality), an offshoot of the Internet, is designed to provide access to every imaginable subject or topic to schools across the globe. According to R. Wilson (1994), such a large amount of information is available at the simple touch of a key. Teachers and professors have the ability to make their classrooms come alive by bringing into them the Cairo Museum, the Russian Parliament in session, a busy street in New Delhi, storm-ravaged Europe, rain forests in South America, and more than ever thought possible. In addition to research resources, the Internet also provides
commercial information/database, which offers up-to-date weather and travel information, restaurant reviews, recipe archives, commercial, legal, and business information, and more.

Heermann (1988) observed that, about a decade ago, a major item in many college freshmen's luggage was a new typewriter; today's freshman is likely to bring a personal computer instead. Students are becoming aware of the growing need for technological literacy among potential job seekers. Cedarville College is faced with a growing demand by the job market to educate potential employees.

Simpson, Love, and Walker (1987) observed that there is a wave of new technology that affects firms, industries, and governments, as well as trade unions. The main areas of rapid technological progress today include microelectronics, information technology, biotechnology, material technology, and energy technology. Simpson et al. observed that this technology is also being applied in other dramatic areas of progress, such as space technology and underwater exploration.

Simons (1987) pointed to the emergence of a global electronic intelligence referred to as the eco-computer. This product, according to Simons, depends on two key components: computerization and communication. Simons noted that computerization and communication are the two pivots of the eco-computer.

One other aspect that points to the significance of this study is the fact that technology, as noted by Simons (1987), has made the planet "one world."

Communication technology links people and organizations, irrespective of national
boundaries, time zones, or climatic regions. Electronic money, oblivious to the traditional boundaries of nation states, speeds from one financial center to another; unified entertainment (sports, popular music festivals, etc.) is increasingly a global phenomenon; and information gathering (both open and clandestine) is a global enterprise (Simpson et al., 1987).

Judging from the rapidity of technological development, it is incumbent upon Cedarville College to continue to chart a course that would equip its graduates to navigate the technological seas, which is sure to be characteristic of the 21st century.

Networking, said Teebaert (1991), makes it possible for people in organizations to share information freely and frequently. It also will develop tools that allow people to chart their own course of learning and discovery through much information. J. M. Wilson (1993) said that education is going to be washed over by technologies. "You are not going to be a modern university or secondary school," he commented, "unless you are using technology" (p. 19). Wilson observed that computer usage has created an open channel of communication between students and students as well as between students and professors. Advances in technology have caused many colleges and universities either to rewire their current buildings or to build new ones in order to facilitate their participation in the growth of technology.
One significant aspect of this study is that it looks beyond the present. It seeks to present a vision of what the future holds and in the process suggests solutions. To fall short of this attainable goal is to repeat what Abraham (1993) referred to as the faltering, disappointing educational system of the end of the 20th century. Fitzgerald (1993) argued that students must be taught what to expect in the job world. They must be told of the expectations and images of working life, but most of all, they must be given the necessary tools and training to face all that the job market may have to offer. Every college and university must be diligent in the pursuit of that goal.

O'Shea and Self (1983) commented on the importance of computers to the teaching and learning process, noting that even the government, in the face of a recession in the 1980s, thought it was of vital importance that schools be allowed and encouraged to continue their computer programs. These were the three reasons for the government's decision:

1. Children need to be aware of the nature and use of computers in order to be able to cope with future technological society.
2. Computers can help with certain administrative chores, such as the maintenance of student records and the scheduling of classes.
3. Computers can help to improve the learning process. (p. 74)

Peter Stoler (1984) indicated that it does not make any difference whether students are studying to be engineers, stockbrokers, small businessmen, or grocery
clerks; computers are going to be a part of their lives. In pointing out the universality and prominence of the computer, Stoler conceded that the United States is simply one of an impressive list of countries that have already jumped aboard the technological bandwagon.

Computer-aided instruction (CAI) is the wave of the future as far as the classroom is concerned. This will allow teachers and professors more time to assume the roles of mentors and advisors to students. Educators will have the opportunity to train those who will live in the world of the future. It is for this generation that Cedarville College must, even now, begin to make preparations to serve.

The Carnegie Forum of Education addressed a similar issue when it warned that the world economy is in the midst of a profound transformation, one that demands a new understanding of the educational standards necessary to create a high-wage work force that can compete in a global economy (Dudley & Szumski, 1990). Radically new and different educational systems in math and science are extremely essential in creating this high-wage, high-technology economy, an economy in which computer literacy is of paramount importance (Dudley & Szumski, 1990).

Definition of Terms

The following are the terms used in this study:
Technology: any intentional extension of a natural process; that is, of the processing of matter, energy, and information that characterizes all living systems. Technology may, therefore, be considered as roughly equivalent to that which can be done, excluding only those capabilities that occur naturally in living systems (Forester, 1989).

CAI: acronym for computer-assisted instruction, in which a student engages in an interactive dialogue with the machine, answering questions and responding to cues (Stoler, 1984).

Software: programs used to instruct a computer (Merril, Tolman, & Reynolds, 1986)

Spreadsheet: a matrix of cells, each identified with a row and a column of numbers. Spreadsheets are used in business to keep accounts and to make financial predictions (Stoler, 1984).

Word Processing: the editing of a text by computer (O'Shea & Self, 1983).


Limitations of the Study

There are two major limitations in this study. First, the sample for this study was drawn from the student body and faculty of Cedarville College, Cedarville, Ohio. Any inferences or generalizations concerning the students and faculty may not apply to any other institution. Second, this study was limited to
students and faculty. Other departments, such as Admissions, Academic Records, Student Services, and others that are served by this computer network were included in this study.

Delimitation of the Study

1. This study was limited to a random sample of 225 full-time students who were enrolled at Cedarville College during the summer of 1995. These students must have already spent at least one quarter at the college.

2. This study included 100 full-time faculty members who have been employed by Cedarville College for at least 1 full year. A list of all full-time faculty was obtained from the academic vice president.

3. This study was limited to studying the degree to which faculty and students at Cedarville College, using the campuswide computer network, interact with each other.

4. This study was limited to studying faculty and students' perception of the campuswide computer network.

Basic Assumptions of the Study

1. Faculty and students' perception of the effectiveness and impact of the computer network can be measured with the use of a questionnaire developed by the researcher and the academic vice president of Cedarville College, Cedarville, Ohio, with help from the psychology department at Wright State University, Dayton, Ohio.
2. Students attending Cedarville College and faculty employed by the college will be given the opportunity to share their perceptions and opinions relative to the installation and use of the campuswide computer network.

3. The responses of both students and faculty to the survey instrument used for this study will represent perceptions concerning the installation and use of the campuswide computer network at Cedarville College, Cedarville, Ohio.

Organization

Chapter 1 deals with statement of the problem, the purpose of the study, the research questions, theory, hypotheses, significance of the study, definition of terms, limitations of the study, delimitations of the study, and basic assumptions of the study. Chapter 2 is a review of literature. It contains mission statement, purpose of Cedarville College, need for the network, status of information technology on campus, and network benefit to faculty and students. Chapter 3 deals with methodology. This covers four areas: (a) design of study; (b) instruments; (c) population and sample; and (d) analysis and treatment of data. Chapter 4 is a presentation and analysis of data, which covers population demographics, presentation of findings and open-ended questions. Chapter 5 contains summary, discussion, conclusion, and recommendations. Finally, the appendixes contain: (a) background of Cedarville College; (b) ethnographic study instruments; (c) letter granting permission for research; (d) current equipment and
software; (e) cover letter and data collecting instruments; (f) research question, hypotheses, and questionnaire; and (g) human subject form.
The following is a summary of the literature review. This summary includes reasons for the need to develop computer proficiency among faculty and students at Cedarville College and the need for evaluation of the current system and student-faculty participation.

According to The General Education Revision Task Force Report (1992), Cedarville College addresses the comprehensive needs of Cedarville graduates entering the work force of the 21st century. There is no room for stagnation of thoughts and ideas in a world that continues to be made smaller by technology. Boyer (1988) contended that the United States and the world need well-informed, inquisitive, open-minded young people who are both productive and reflective, seeking answers to life's most important questions. According to Boyer, "The world needs men and women who not only pursue their own personal interests, but also are prepared to fulfill their social and civil obligations" (p. 129). Cedarville College's objectives are articulated for this precise outcome. The General Education Revision Task Force Report (1992), with this outcome in focus, improved upon Cedarville College's current curriculum by significantly enhancing the areas of communication
skills, integrative thinking, problem-solving, intercultural and international understanding, historical awareness, and ethical decision-making.

Coburn et al. (1982) observed that computers are changing the face of business both on the assembly line and in the office. Global communication (the Internet) is a reality. The question remains, however, whether computers will ever transform the schools. The answer was a resounding yes. The authors insisted that a growing number of teachers are using the computer as a tool with which children can think and learn in new and exciting ways. Cedarville College has confronted and addressed the skepticism of those who earlier were critical of the idea of the comprehensive use of computers by both faculty and students. According to The General Education Revision Task Force Report (1992), Cedarville College has designed a general education curriculum that promises to position Cedarville College as a recognized leader in Christian higher education because of the exemplary quality that will mark Cedarville graduates.

In 1991 Cedarville College commissioned several studies in order to determine and address the future educational needs of the College. The Report of the IBM Application Transfer Study for Cedarville College (1991), which was done by IBM of Cincinnati, Ohio, confirmed that there was a high level of interest in technology on campus. This study also pointed out the college's weaknesses and needs. These included the following:
1. Access problems are limiting the effectiveness of the educational objectives and the efficiency of the learning environment.

2. There is no coordinated, comprehensive campuswide system in place for information systems and communications.

3. There is a strongly felt need for additional training and support.

4. There is limited access to internal and external data, networks, and databases that would enhance the staff and the ability to provide better service to students and alumni.

5. The lack of automation in a number of areas is reducing efficiency and increasing cost.

6. The lack of adequate security precautions is placing an important college resource (information) at risk.

The report informed the administrative department of the need to adopt technology in order to increase effectiveness and efficiency. With the advent of personal computers, the college felt it was incumbent upon it to keep pace with continuously improving technology. For this reason, according to The Cedarville College Information Resources and Technology Task Team Final Report (1990-91), the college set up a laboratory of personal computers for students. Other laboratories soon followed. The college has already taken a giant step by providing access to computers in dormitories.
Cedarville College has acted upon what Lisensky et al. (1985) observed. Higher educational institutions cannot in good conscience claim to be educating persons today in the liberal arts, preparing them to be strong, critical, and whole human beings who are able to make judgment about things that impinge most critically on their lives unless they include the phenomena of technology. Technology, insisted the authors, is the dominant force in contemporary life. It has a legitimate place in the liberal arts curriculum.

In an effort to address the situation, the college has focused attention in two critical areas. These areas are students and faculty proficiency in technology. In order to achieve these objectives, Cedarville College commissioned a study by IBM. The Report of the IBM Application Transfer Study for Cedarville College (1991) noted that Cedarville College, with the advent of personal computers, quickly set up a laboratory of personal computers so that the students could access this technology. The report further noted that the college encourages administrative staff and faculty to adopt technology in an effort to increase their effectiveness and efficiency.

According to the 1991 IBM study report, 60% of Cedarville College faculty have personal computers for their use. In addition to the laboratory and library, the faculty development center has two available personal computers. These facilities, however, would not be nearly enough to meet the growth and demand of technology on campus.
Lisensky et al. (1985) stated the following:

If such an undertaking is to be successful, individual faculty effort is the key. Faculty must possess these five components:

1. Perspective on current issues
2. Broad preparation
3. A chance to learn from those who have been successful.
4. A start on resource materials
5. Encouragement and support. (p. 178)

Often, faculty view these components as challenging the status quo. Some may resent any change that may result from these components.

The mastery of technology, according to Lomerson (1992), can improve one's capability to deal with the problems and opportunities that regularly occur in life as well as facilitate the more efficient and effective processing of routine activities. Lomerson also maintained that the future success of individuals, as well as the enterprises of society, will grow increasingly dependent upon their ability to master, control, and use the power of technology. Technology provides opportunities to individualize the learning process so that each student can achieve mastery of at least the essential elements required for success in tomorrow's world.

A study done by Canaday (1991) concluded that the use of the computer in multidisciplinary classrooms must be integrated into one area at a time. This would provide teachers with the capability to represent concepts in a variety of ways.
Computers, wrote MacGregor (1990), are available as teaching machines, simulators, resources, and tools for helping teachers to deliver instructional content and develop student skills.

Eisele and Eisele (1990) agreed that technology has found its way into the schools and the educational lives of many people. They have estimated that there are over 1.5 million microcomputers in schools in the U.S. The authors argued that education does, in fact, need technology as an object of instruction as part of the curriculum, as a tool for use by teachers and administrators, and as an aid for learning. By the same token, DeVillar and Faltis (1991) concluded that educators must require and have access to computers and educational software that will provide enrichment-based, discovery-oriented learning opportunities for their students.

Rode (1990) sees the computer as a positive tool for freshmen composition. The computer provides ease of use and the ability to write in new ways. However, many researchers have found no measurable difference between essays by students using computers and those not using computers. Nevertheless, they were able to find one major strength—the ease of revisions. This ease resulted in a change in the students' writing process and a positive attitude toward peer collaboration.

A study was done by Gardner and McGinnis (1986) in which 10 universities were studied concerning the use of computers in composition classes. Of the 10 universities, Colorado State University ranked the highest, with 4,200-5,000
students a year used the writing lab. The Gardner and McGinnis study of all 10 universities reflects, for the most part, positive feelings about the use of the computer in writing for both students and faculty.

Computers have the potential to create better education and schools. However, the work and textbooks that bore students must not simply be put on computer screens. If the full potential of the computer is to be realized, both faculty and students must be computer literate.

Rossman and Kurby (1990) concluded that it is inevitable that computers are going into education to empower human minds and work. Yet there is great danger that they could go in the wrong direction. It appears that students are force-marched across a flattened plain, with materials dumped on them; their responses are calibrated, and their involvement with the material not encouraged or taken into consideration.

According to Cheamnakarin (1992), technology, especially computer technology, is rapidly becoming a necessity rather than a luxury. The National Task Force on Education Technology (1986) described the computer as a "device uniquely suited for education" (p. 45).

Digital technology, said Guglielmo (1994), may be going toward the outer fringes of broadband interactive networks and virtual reality, but it is also continuing its advance into the mainstream. New technologies that have been studied in the laboratories for the past few years are expected to make their way to
the general population before the turn of the century. Kalmbach (1994) appeared to agree with Guglielmo's point of view. He contended that multimedia is fast becoming a part of the American classroom in the 1990s. Two important components of this multimedia are hypertext and hypermedia. According to Kalmbach, hypertext technology provides the researcher with interrelated sources of information, allowing him or her to make logical and creative connections between old and new ideas. Hypermedia technology allows the researcher to make these connections electronically. It offers the full advantage of enormous information storage capacities and flexible retrieval capabilities of current computer technology. Hypermedia is the logical extension of hypertext.

Galbreath (1994) noted that interactive multimedia technology appears to be able to improve the learning process in education, from the standpoint of increased retention rates and decreased learning time. The author insisted that teachers can only be stretched so far. If designed properly, multimedia technology has the potential to aid educators to individualize instruction to meet the needs of individual students (Galbreath, 1994).

The world is in the midst of a dramatic economic transformation, moving from an industrial age to an information age, Galbreath (1994) pointed out. For this reason, American competitiveness has been seriously challenged in rapidly changing global marketplaces. Education and business appear to be responding to these changes. Galbreath warned that, if America is to survive in an increasingly
global market, where the very nature of the work environment is changing, education must revise its mission in order to produce the workers of tomorrow. If this is done, multimedia technology will not only help teachers, but will also aid students' ability to receive, process, and act on great amounts of information. Students will have the opportunity to gain critical technological skills, which they will need to survive in the highly competitive workplace of the future.

Tech Trends reported that US West and the State of Utah are working together to create a statewide electronic network that will build on the existing Utah Education Network to provide alternative video to every school, college, university, and technology center in the state over a 4-year period ("Multi-media Explosion," 1994). The network will also provide students with access to Internet, distance learning, state libraries, electronic mail, and university courses.

Technology is continuing successfully to become a part of education. D. Wilson (1995) pointed out that two professors at Princeton University have developed a way to let students easily incorporate moving images into their electronic papers. Also, students at Dartmouth College can tap into a data base containing about 3,000 images of the paintings they are studying.

According to De Loughry (1995c), Rensselaer University, like many other universities, has added new technology to old methods. Pairs of students work in front of computer screens, engaged in what they are doing, while participating in a class of 50 that enables them to discuss ideas with the whole group or with
instructors around the room. Students gave new "studio" classes higher approval ratings than they gave traditional lectures in the past. These small "studio" classes are much more cost effective than the large lecture halls.

Duke University and others, said D. Wilson (1995), are experimenting with wireless computers. This wireless network lets students work collaboratively to teach each other computing and programming. Computing computers without cables allows flexibility and saves money.

O'Donnell, a visiting professor at University of Washington, has created a page on the Internet to show professors how to use the service (DeLoughry, 1995c). It can be used for everything from sending E-mail to improving communication with students. According to DeLoughry, for those professors who want to go further, Yale University has created the Center for Advanced Instructional Media. The medical school has developed a manual to enable users to integrate text, photographs, drawings, sounds, and video accessible to other net users.

Across higher education, administrators and faculty members are anxious to find ways to improve instruction and use technology more productively without drastically increasing cost. For this reason the American Association of Higher Education has launched a project aimed at getting college professors and administrators more involved in the use of technology (DeLoughry, 1995c). This effort attracted 275 faculty and administrators of 90 institutions. The workshop
dealt with teaching learning and technology. According to the authors, this idea is catching on rapidly.

Many colleges and universities see the development of technology also as a cost-cutting device. Blumenstyk (1995) pointed out that colleges and universities trying to cut costs are electronically transferring transcripts and other data. This, they believe, will improve academic advising by allowing professors and counselors to view a student's transcript on line within hours of its being sent from a high school.

Five hundred colleges and universities are already testing the system known as (E.D.I.) Electronic Data Inter-change, to send transcripts and other data to colleges and universities. The sheer volume of transcripts sent out annually makes electronic transfer inevitable. As a result of the very high demand for the very latest technology on campus, coupled with its equally high costs, many institutions are forced to take further cost-cutting measures. The Chronicle of Higher Education reported several colleges and universities requiring undergraduates to own their own computers. These institutions and dates put into effect:

Bentley College 1985
Clarkson University 1983
Dartmouth College 1991
Drew University 1984
Drexel University 1983
Duquesne University 1996
George Fox College 1991
Grove City College 1994
Hartwick College 1993
Indiana Institute of Technology 1986
New Jersey Institute of Technology 1985
Nicholas College 1987
Rose-Hulman Institute of Technology 1995
Sacred Heart University 1995
Sonoma State University 1995
Stevens Institute of Technology 1982
University of Minnesota at Crookston 1993
U.S. Air Force Academy 1988
U.S. Military Academy 1988
U.S. Navy Academy 1986
Wake Forest University 1996. (Blumenstyk, 1995, p. 65)

These cost-cutting measures may prove to be the salvation of many institutions in the next several decades of technological advancement. Since technology is never dormant, no one is able to predict with any degree of certainty what the future holds. Technology's potential is limitless.

Sherman (1994), commenting on technology's boundless limits, noted that corporate video conferencing used to be limited to boardrooms, with built-in equipment costing hundreds of thousands of dollars. Conferencing had to be scheduled weeks in advance and run by an experienced administrator. By contrast, desktop video-conferencing systems combine interactive video, voice and data in new tools of PCs and similar software. It is possible to share information with remote partners, virtually attend meetings, and even video commute relatively inexpensively at about $2,000 per user.

Sherman (1994) pointed out that in July 1993, Jim Miller of Synectics of Seattle used the system to establish a video link between the Russian Academy of
Science in Moscow and the World Bank offices in Washington D.C., in order to examine the role of communications technology in easing Russia's transition to capitalism.

The information super highway continues to prove to be invaluable in this century. According to Stefance (1994), more and more individuals traversing the Internet are going beyond merely exchanging E-mail. They are actually connecting their computers to the Internet. Stefance (1994) commented that one of the most exciting features of the Internet is the World Wide Web, which was developed by CERN, the Swiss particle physics research center. The Web is made up of documents or connected servers that have been marked up as Hyper Text Transfer Protocol (HTTP) format, which allows individual text elements, graphics, and sounds to be linked. The result is users' freedom to navigate, explore, or even become lost.

Neulbrath (1994) feels that the Internet is poised to play an increasingly important role in business education, government, and social interaction. Locke (1994) observed that, for business, the Internet is the primary harbinger of a truly global economy. Markets, suppliers, and human resources need no longer be geographically located. Locke believed that the Internet enables a powerful kind of collaboration and coordination among widely distributed groups, sales and marketing forces, and customer bases.
Stefance (1994) insisted that technology's potential to create is realized in cybermaxx, a headset that lets users immerse themselves in a virtual reality world. It weighs only 40 ounces and works with PC, MAC, Sega, Nintendo, and Jaguar gaming systems.

Talab (1995) examined technology and education and concluded that institutions are building cybercampuses to meet the demands of new technology. In short, a large number of educators see a glorious future in technology and education. Talab contended that some faculty envision "sensoriums," in which students will study the passage of blood through the body by coursing through a simulated one. Others are building a virtual textbook with built-in lessons, review drills, use reference of materials, display texts, images, and video clips on classroom walls that double as mentors.

There is, however, an irony in this situation. Some educators feel that too much emphasis is placed on technology. There is too much reliance upon technology and not upon the human capacity to think and reason. In responding to this sentiment, Marcus (1995) insisted that good writing must reflect good thinking—that is, thinking that has depth and perspective, that demonstrates knowledge and a grasp of complexities of the subject matter under discussion, that provides a sense of order and structure of whatever is on the students' mind. Some educators believe that this is too much to ask of E-mail.
Marcus (1995) has provided some hints for faculty if they are to guide students into a successful use of 21st century technology:

Suggest or recommend a good, yet easy book which provides step-by-step instructions.

Use the E-mail yourself to understand its strengths and limitations as a writing medium.

Work with your students to come up with standards for well-written, well-titled, and well-formatted E-mail and create an assessment system that allows students to compare their E-mail writing to these standards.

Carry-out classroom-based research that focuses on how students of varying writing skills respond to sending and receiving E-mail.

Start discussion with your own on-line colleagues about these important issues. (p. 129)

Levy (1995) sounded a cautionary note about the future of technology by pointing out that we still have not figured out how computers will affect the way we do business, conduct policies, protect our privacy, or produce jobs. Technology users, insisted Levy, must ask and answer critical questions if technology is to serve them effectively. These and other questions must be raised—How will new technology transform the way we teach, treat the sick, and enjoy high (or low) culture? Are we heading toward a new class division between technological "haves" and "have nots"?
One more rapidly growing trend in higher education is distance education, which has emerged as a powerful and economical tool in the teaching/learning process (Bangpipob, 1994). According to Willis (1993), distance education can be used to motivate students to participate in the teaching/learning process and to enhance their learning enjoyment through the use of telecommunication delivery media.

Bangpipob (1994) concluded that, with the emergence of technology as it is, the boundaries of geography, on-campus residency requirements, inconvenient class times, home and job responsibilities, and commuting problems, students would be better served through distance education. It is agreed, generally, that the far-reaching effects of distance education is unprecedented.

DeWitt (1995) contended that cyberspace is the "new kid on the block" in technology. Cyberspace has become the land of knowledge. Corporations smelling a land rush of another sort are scrambling to stake out their claims in cyberspace. Every computer company, every publisher, most communication firms, banks, insurance companies, and hundreds of mail-order and retail firms are registering their Internet domains and setting up sites on the World Wide Web. They all sense that cyberspace will be one of the forces for economic growth in the 21st century (Dewitt, 1995).

Cyberspace is said to be "that place you are in when you are talking on the telephone" (p. 88). It is, according to DeWitt (1995), bigger than telephone; it is
bigger than wires, cables, and microwave. The U.S. government is proceeding with
the use of cyberspace. Much of the armed forces' training is done with computer
simulation (Waller, 1995). The Air Force uses virtual battlefields for rehearsals for
missions.

Mission of Cedarville College

According to the Cedarville College Catalog, Cedarville College's mission is
to offer an education consistent with biblical truth.

Cedarville College was established to provide quality education for men and
women (McDonald, 1966). The mission of Cedarville College is in keeping with its
proposed general education curricula. It addresses the comprehensive needs of
Cedarville graduates entering the challenges of the 21st century.

The Purpose of Cedarville College

According to The General Education Revision Task Force Report (1992), the
purpose of the general education at Cedarville College is to introduce students to
the academic disciplines, challenging the thinking of those who have already chosen
majors and broadening the alternatives for those who are yet undecided. A goal of
Cedarville College is to provide opportunities for contact with people and ideas
outside the students' previous experience. Its purpose, further, is to educate
students to value diversity among people by appreciating their differences and
contributions. Cedarville College purposes to offer students opportunities to
appreciate and participate in the arts, as well as to develop an awareness of the
historical framework of their society and of their responsibility as stewards in a
global village. Finally, Cedarville College purposes to teach the basics of Christian
faith and doctrine and to integrate those ideas within the core curriculum,
providing a model for use through life.

Need for the Campuswide Computer Network

According to the Cedarville College Catalog (1992-1993), the college
recognizes that students must live and work in a society where computers and
computer networks are an essential part of everyday life. Not only is technology a
part of everyday life, but a growing number of incoming students, insisted The
Report of the IBM Application Transfer Study for Cedarville College (1991), expect
that their college education will be as challenging, stimulating, and technologically
equipped as their high schools. The networks must do much to improve both the
preparation and presentation of classroom lectures and discussions if they are to
capture and maintain the attention of students. The IBM report observed that
newer texts that come with applied software are encouraging professors to integrate
computers into the curriculum. Most students anticipate progress, not stagnation.

Delivering information through computer-assisted instruction is not the only
reason for promoting the use of academic computers. Facilities in word processing
and desktop publishing can lead to (a) professional-looking material for the
classroom, (b) editing, and (c) publishing capability. Effective communication
becomes a dominant cause in the need for the campuswide computer network.
Already, both faculty and students have voiced frustration at the system's inability to meet their needs. According to The Report of the IBM Application Transfer Study for Cedarville College (1991), faculty feel that they cannot effectively advise and register students for classes since they do not have access to advising information. This inability also causes student frustration. It is imperative that administration be challenged to provide the best quality programs for students. They must provide the programs that match institutional mission.

One of the purposes of the campuswide computer network is to bridge the communication gap between faculty and students at Cedarville College. More importantly, the college feels obligated to prepare its graduates to know how to use the large influx of technology in the 21st century.

Modern technology has given the world the ability to do now in 1 year's time all the computation that mankind has done in the last 50 years. Since the 1984-1985 academic year, colleges and universities have more than doubled the number of microcomputers they own. Technology is advancing faster than these institutions can update their systems.

According to The Cedarville College Information Resources and Technology Task Team Final Report (1990-1991), Cedarville College concedes that it can and must become a more viable collegiate choice for the technologically skilled Christian student. More importantly, the college is challenged to consider how it can help students learn and build upon skills they will bring to their collegiate experience so
that they leave Cedarville with the skills and the competence to meet the challenges of any computer-based job.

A major revision of liberal education could be the key to teaching students about our society and the culture with which they shape the future of the planet. Liberal arts education should prepare America's students to cooperate in enhancing the world's chances for justice and security and improving the quality of life.

According to Gaudience (1994), faculty members amenable to such reform will need administration who make the reward system reflect the high value that society and academic institutions place on changes. Faculty also will need the opportunities, encouragement, time, and funds necessary to learn new skills. This also will develop a new consensus about the purposes of education and the role of educational associations in the 21st century.

The Need for Evaluation of Current Computer Network

The pressure to keep up with the continuously growing technology has created a genuine need for Cedarville College to evaluate its current system. Both the teacher and the learner must be duly considered if technology is to accomplish its desired goal on America's campuses. One should not overstate the importance of training in a technology plan. Any plan should be devoted to training issues. Thus, preparing students is a continuous effort. Students must be well-informed or they will not be employable. The 21st century demands that colleges and universities
pay particular attention to their computer programs to ensure that they are keeping up with current technological trends.

The theory behind this study is emphasized by Nickerson and Zodhiates (1988), who discussed the effectiveness of two-way interactive communication between faculty and students. This computer network will enhance student learning by using computers on a regular basis. The authors contended that there is another dimension to the network; learning will also be enhanced through interstudent relationships. The network will foster interactive dialogue among students from any college or university, both in America and internationally.

Status of Information Technology in Campus History

Cedarville College has exercised vision and adopted technology during the early stages of technological development, according to The Cedarville College Information Resources and Technology Task Team Final Report (1990-1991). The first administrative system arrived on campus in early 1980, and the first academic system was installed in 1982. According to the report, both were several years ahead of other colleges and universities, some of whom are continuing to use their first-generation machines and software. The college is into its second generation.

In keeping with the advent of computer technology, the college quickly set up a personal computer laboratory so that students could access this technology. Other laboratories followed, with even dormitory access for some. This was the early stage of the college's technology drive.
Cedarville College has use of technological equipment throughout the campus. The administration computer system is a prime computer supporting 96 users (with recent upgrade). It uses colleague software written by Datatel and is located in Computer Center, College Center.

The academic computer system is a Digital Equipment Corporation VAX 11-750, supporting 18 terminals and providing statistical and programming software. It is located in Computer Center at the College Center.

The personal computer media laboratories are six labs that operate to support academic programming: 22-station general lab in Computer Center College Center; 24-station business lab in Business Administration building; 10-station CAD/Engineering lab in Science Center; 12-station general lab in Media Center, Library; 4-station Music Lab in Alfred Annex; 2-station Communication Arts Lab in Collins Hall; and 9-stations available in residence halls, including Brock, Lawlor, Maddox, and Willetts. The administrative offices all have at least one personal computer and various printers. Most administrative offices have one or more terminals connected to the mainframe.

Network Benefits to Faculty and Students

According to the Network News (1992a), the network is designed to provide maximum benefits to both faculty and students in a variety of areas. Some of these benefits are the following: organize notes properly; write papers more effectively; make papers look better and communicate more effectively; communicate
electronically with professors, friends, and classmates; manage, display, and analyze data by using database, statistical, and spreadsheet software; complete assignments that make specific use of network features; search library holdings for personal and class research projects, papers, or presentations, even when library is closed; enhance personal Bible study; create illustrations for class, personal or ministry presentations; master course content or skills through individual self-paced study; and learn skills that will help students do better and obtain a better job (and be a better employee) after graduation.

The great renaissance of technology is aptly handled by Cedarville College. The college is cognizant of the needs of students and the demands of the job market for technologically trained graduates. The college feels compelled to train students so that they may be able to make the transition from the classroom to the job market.

It is important to point out that many high schools are beginning to have similar visions and are, therefore, preparing their students for college. An article in Technology and Learning pointed out some of these high schools ("Speaking Out," 1992). Canandaigua City School District of New York has an educational vision and therefore has designed a high school for the technology of the future. McEachern High School in Power Springs, Georgia, is in the 3rd year of a 6-year plan to close the technology gap between education and real-world experience. Across these campuses, teaching and learning with the computer approach have
made computers an integral part of learning. These are examples of two of many such schools across the country.
CHAPTER III

METHODOLOGY

Methodology means the philosophy of the research process. This includes the assumptions and the values that serve as a rationale for research and the standards or criteria the researcher uses for interpreting data and reaching conclusions. A researcher's methodology determines such factors as how he or she writes hypotheses and what level of evidence is necessary to make the decision whether or not to reject a hypothesis (Bailey, 1982).

Design of Study

This study of the campuswide computer network at Cedarville College used a social survey strategy to collect data related to the research questions central to the investigation. A random sample method was utilized to select a student sample, and all faculty were selected. Data were collected from the sample respondents using a self-administered questionnaire for both students and faculty. Next, the data was tallied, computed, and analyzed. The hypotheses were interpreted to determine the perceptions of faculty and students of Cedarville College concerning campus technology. A follow-up ethnographic schedule was conducted.
Instruments

The questionnaires were developed by the researcher in cooperation with the department of psychology at Wright State University, Ohio, and Duane Wood, Academic Vice President of Cedarville College, Cedarville, Ohio.

Data were collected on the perceived effectiveness of the computer network at Cedarville College in the teaching/learning process. Other departments served by the system were not studied. Only students and faculty were studied.

The questionnaire was divided into sections, each dealing with a particular aspect of the network's operation. The questionnaire asked both faculty and students to indicate their perception of the importance of the network and the impact of the network on the teaching/learning process at Cedarville College.

Students and faculty rated their perceptions in each of the two categories by a 5-point scale. Respondents were asked to provide further comments with open-ended questions. The questionnaire was administered to 10 students in full-time enrollment at Cedarville College and 5 full-time faculty members, for a pilot test of clarity and assessment of the length of time needed for the completion of the final instrument.

The questionnaire also contains one section designed to discover the demography of the respondents. An ethnographic study was conducted on a one-on-one basis. Fifty students and 25 faculty were randomly selected from a list of respondents of the first questionnaire. Each respondent was asked a series of lead-
off questions. The researcher allowed the line of questioning to follow the leading of
the respondents. Depending on the responses to the questions, respondents were
not asked identical questions.

Data were collected and reported to determine the perceptions of faculty
and students regarding technology on campus. Ethnographic material was collected
and interpreted.

Population and Sample

There were approximately 2,250 full-time students enrolled at Cedarville
College during the 1993-94 summer session. The population for this study was
made up only of those full-time students enrolled at Cedarville College for at least
one quarter. A random sample of 225, representing 10% (Levin, 1977; McMillan
& Schumaker, 1989) of the population of the college, was asked to complete a
questionnaire that provided the data necessary to evaluate the study. At least 125
responses were needed to complete this study. Part-time students were not
included in this study, since they do not have access to the network in its entirety.

At the time of the study, 100 full-time faculty members were employed by
Cedarville College. All full-time members of the faculty were used in the study.
Each faculty member was asked to complete a questionnaire to provide pertinent
data for this study. Sixty (60) responses were needed to complete this phase of the
study.
Cedarville College furnished the researcher with a list of all faculty members and all full-time students registered at Cedarville College for the spring of 1995. Students were randomly selected by using a student roster. Questionnaires were placed on E-mail to these full-time selected students. Follow-up to the questionnaire was via E-mail and telephone calls, as necessary. Both the office of the academic vice-president of Cedarville College and the researcher were involved in the follow-up.

Analysis and Treatment of Data

The questionnaires were examined for completeness when they were received. Incomplete questionnaires were discarded. The questionnaires were then sent to the computing center where the data were entered into the computer for data analysis. A t-test was administered in this study. The preliminary analytical procedure was to examine returned completed questionnaires. After this process, the next step was to compute the coded data according to the particular statistic chosen for each research question for the analysis. The final procedure consists of coding demographic data, composing a summary, and forming conclusions based on the research material. One statistical package that was used to tabulate the data was the Program for Social Sciences (SPSS-X), where it was relevant.

Analytical tables were deployed to report research data from the collected information generated by the questionnaires to the actual computed outcome. Tables contain the research questions, supporting indicators, and respondents'
comments, when given. In the analysis, descriptive statistics to be applied included percentages, frequencies, the mean, median, and the mode. Summary tables indicate the analytical results.

Data were analyzed by key words or phrases common to this study. Major and minor themes were used. These themes were ranked, ordered, and prioritized. Any material not classifiable was listed in a table.

Research Questions

Research Question 1: Are there differences in the use of the computer network among faculty by teaching field? An Anova (F-test) and comparison of means were performed to answer this question.

Research Question 2: Are there differences in the use of the computer network among faculty by degree earned? To answer this question, correlation coefficient, Kendall correlation coefficient, and Spearman correlation coefficients were used.

Research Question 3: Are there differences in the use of the computer network between tenured and nontenured faculty? A comparison of means and a t-test were used to answer this question.

Research Question 4: Are there gender differences in the use of the computer network? A comparison of means was employed to answer this question.
Research Question 5: Are there differences in the use of the computer network among students by degree majors? In dealing with this question, a comparison of means and an analysis of variance (ANOVA) were employed.

Research Question 6: Are there differences in the use of the computer network among students by classification? A comparison of means and a chi-square were used to answer this question.

Research Question 7: Are there differences in the use of the computer network among students by age? A comparison of means, chi-square, and correlation coefficients was employed to answer this question.

Research Question 8: Are there differences in the teaching/learning fields because of the use of technology? To answer this question, correlation coefficients were employed.
CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This chapter, covering the results of the study, includes descriptions of the demographics of the participant population, tables and figures to explain the findings, and the statistical data for each of the hypotheses that were tested. The alpha level of this study was set at 0.05.

This study was conducted to determine the perception of the faculty and students at Cedarville College of the effectiveness of campuswide technology in the teaching/learning process. The statistical analysis involved the use of descriptive statistics, correlation coefficients, t-test, ANOVA, frequently distributions, and chi square.

Data for this study were collected through survey instruments that were devised and evaluated by experts in the fields of sociology and computer technology for use in this study. Due to the nature of this study, it was necessary to develop two different instruments to gather data. One instrument was a questionnaire, and the other was an ethnographic study. The survey instrument was placed in the mailboxes of 100 faculty and 225 students in the spring of 1995. Sixty-one respondents were faculty, and 191 were students. All of the faculty questionnaires were accepted. However, of the 191 student responses, 2 were eliminated, and 189
were accepted. For the ethnographic study, 25 faculty and 50 students were interviewed by the researcher.

Population Demographics

The analysis of the demographics findings began with the item of gender.

Table 1.

Frequency Distribution of Student Responses by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero value</td>
<td>4</td>
<td>2.09</td>
</tr>
<tr>
<td>Male</td>
<td>52</td>
<td>27.23</td>
</tr>
<tr>
<td>Female</td>
<td>135</td>
<td>70.68</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 1 indicates the gender distribution of the research subjects and the percentages of the occurrences. As shown in Table 1, a zero value distribution (2.09%) category is used to represent the incorrectly completed items. Of the respondents, 27.23% were males and 70.68% were females.

Table 2 shows that respondents ranged in age from a low of under 18 years to a high of over 30 years. It also indicates that the vast majority of respondents (95.19%) were in the 18-23-year range. Four cases were given zero (0) value because of incomplete items.
Table 2

Frequency Distribution of Student Responses by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18 years</td>
<td>1</td>
<td>00.53</td>
</tr>
<tr>
<td>18-23 years</td>
<td>178</td>
<td>95.19</td>
</tr>
<tr>
<td>24-29 years</td>
<td>4</td>
<td>02.14</td>
</tr>
<tr>
<td>30 years and over</td>
<td>4</td>
<td>02.14</td>
</tr>
<tr>
<td></td>
<td>187</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 3

Frequency Distribution of Student Respondents by Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>6</td>
<td>3.19</td>
<td>3.19</td>
</tr>
<tr>
<td>Sophomore</td>
<td>34</td>
<td>18.09</td>
<td>18.09</td>
</tr>
<tr>
<td>Junior</td>
<td>74</td>
<td>39.36</td>
<td>39.36</td>
</tr>
<tr>
<td>Senior</td>
<td>70</td>
<td>37.23</td>
<td>37.23</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>2.13</td>
<td>2.13</td>
</tr>
<tr>
<td>Total</td>
<td>188</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 3 reveals that an almost equal number of juniors (39.36%) and seniors (39.23%) responded to the questionnaire. Others referred to 2-year certificate students. The small percentage (3.19%) of freshmen was expected because of their limited use of the computer network at Cedarville College.
Table 4

Frequency Distribution of Student Respondents by Degree Major

<table>
<thead>
<tr>
<th>Major</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bible</td>
<td>7</td>
<td>3.66</td>
<td>3.77</td>
</tr>
<tr>
<td>Science/math</td>
<td>75</td>
<td>39.27</td>
<td>39.27</td>
</tr>
<tr>
<td>Humanities</td>
<td>16</td>
<td>8.38</td>
<td>8.38</td>
</tr>
<tr>
<td>Social science</td>
<td>14</td>
<td>7.33</td>
<td>7.33</td>
</tr>
<tr>
<td>Education</td>
<td>50</td>
<td>26.18</td>
<td>26.18</td>
</tr>
<tr>
<td>Business</td>
<td>12</td>
<td>6.28</td>
<td>6.28</td>
</tr>
<tr>
<td>Zero value</td>
<td>17</td>
<td>8.90</td>
<td>8.90</td>
</tr>
<tr>
<td>Totals</td>
<td>191</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Data in Table 4 show the frequency distribution of student respondents in the area of degree majors. Science/math (39.27%) and education (26.18%) made up more than 50% (65.45%) of the subjects. It must be noted, however, that these two areas covered a wide range of subjects. The zero value section (8.90%) represented the instruments that were rejected due to incompleteness.

Table 5 contains information regarding the computer literacy and illiteracy of respondents. In Table 5, data show that few (2.11%) of the respondents had no prior experience in the use of computer before the network was put into place at Cedarville College. The majority was either semi-literate (35.79%) or literate (35.26%). A total of 6.84% reported high literacy in computer use.
Table 5

**Frequency Distribution of Student Respondents by Computer Literacy**

<table>
<thead>
<tr>
<th>Computer literacy</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never used computer in past</td>
<td>4</td>
<td>2.11</td>
<td>2.11</td>
</tr>
<tr>
<td>Have used; not literate</td>
<td>37</td>
<td>19.47</td>
<td>19.47</td>
</tr>
<tr>
<td>Semi-literate</td>
<td>68</td>
<td>35.79</td>
<td>35.79</td>
</tr>
<tr>
<td>Literate</td>
<td>67</td>
<td>35.26</td>
<td>35.26</td>
</tr>
<tr>
<td>Very literate</td>
<td>13</td>
<td>6.84</td>
<td>6.84</td>
</tr>
<tr>
<td>Other</td>
<td>01</td>
<td>0.53</td>
<td>0.53</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>190</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6

**Frequency Distribution of Faculty Respondents by Age**

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 30 years</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30-34 years</td>
<td>5</td>
<td>8.2</td>
<td>8.2</td>
</tr>
<tr>
<td>35-39 years</td>
<td>9</td>
<td>14.8</td>
<td>14.8</td>
</tr>
<tr>
<td>40-44 years</td>
<td>12</td>
<td>19.7</td>
<td>19.7</td>
</tr>
<tr>
<td>45-49 years</td>
<td>12</td>
<td>19.7</td>
<td>19.7</td>
</tr>
<tr>
<td>50-54 years</td>
<td>9</td>
<td>14.8</td>
<td>14.8</td>
</tr>
<tr>
<td>55-59 years</td>
<td>7</td>
<td>11.5</td>
<td>11.5</td>
</tr>
<tr>
<td>60 years and over</td>
<td>7</td>
<td>11.5</td>
<td>11.5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>61</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Data from Table 6 demonstrate an almost perfect bell-shaped distribution.

The median age of faculty respondents is 40-49 years (38.14%). No respondent was under the age of 30 years.

Table 7

Frequency Distribution of Faculty Respondents by Position

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department chair</td>
<td>5</td>
<td>8.20</td>
<td>8.20</td>
</tr>
<tr>
<td>Professor</td>
<td>16</td>
<td>26.22</td>
<td>26.22</td>
</tr>
<tr>
<td>Associate professor</td>
<td>19</td>
<td>31.15</td>
<td>31.15</td>
</tr>
<tr>
<td>Assistant professor</td>
<td>21</td>
<td>34.43</td>
<td>34.43</td>
</tr>
<tr>
<td>Totals</td>
<td>61</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 8

Frequency Distribution of Faculty Respondents by Degree Earned

<table>
<thead>
<tr>
<th>Degree earned</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A./B.S./Th.B.</td>
<td>1</td>
<td>1.64</td>
<td>1.64</td>
</tr>
<tr>
<td>M.A./M.S.</td>
<td>8</td>
<td>13.11</td>
<td>13.11</td>
</tr>
<tr>
<td>M.B.A./M.Ed.</td>
<td>3</td>
<td>4.92</td>
<td>4.92</td>
</tr>
<tr>
<td>Th.M.</td>
<td>3</td>
<td>4.92</td>
<td>4.92</td>
</tr>
<tr>
<td>MABS/M.A.C.E.</td>
<td>1</td>
<td>1.64</td>
<td>1.64</td>
</tr>
<tr>
<td>Ph.D./Ed.D.</td>
<td>39</td>
<td>63.93</td>
<td>63.93</td>
</tr>
<tr>
<td>Th.D./D.Phil.</td>
<td>1</td>
<td>1.64</td>
<td>1.64</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>8.20</td>
<td>8.20</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The data in Table 8 show that most of the respondents (63.93%) have earned doctorates. Only one of the respondents had not gone beyond an undergraduate degree.

Table 9

Compared Means of Faculty Respondents by Degree Earned

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Means</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters</td>
<td>15.25</td>
<td>1.27</td>
</tr>
<tr>
<td>Doctorates</td>
<td>7.82</td>
<td>0.195</td>
</tr>
<tr>
<td>B.A.</td>
<td>3.00</td>
<td>3.00</td>
</tr>
<tr>
<td>Other</td>
<td>3.60</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Table 10

Frequency Distribution of Faculty Respondents by Years of Experience

<table>
<thead>
<tr>
<th>Experience</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>13</td>
<td>21.31</td>
<td>21.31</td>
</tr>
<tr>
<td>More than 5, less than 10</td>
<td>9</td>
<td>14.75</td>
<td>14.75</td>
</tr>
<tr>
<td>More than 10, less than 15</td>
<td>9</td>
<td>14.75</td>
<td>14.75</td>
</tr>
<tr>
<td>More than 15, less than 20</td>
<td>12</td>
<td>19.67</td>
<td>19.67</td>
</tr>
<tr>
<td>More than 20, less than 25</td>
<td>2</td>
<td>3.29</td>
<td>3.29</td>
</tr>
<tr>
<td>More than 25, and over</td>
<td>15</td>
<td>24.59</td>
<td>24.59</td>
</tr>
<tr>
<td>Zero value</td>
<td>1</td>
<td>1.64</td>
<td>1.64</td>
</tr>
<tr>
<td>Totals</td>
<td>61</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Table 11

Frequency Distribution of Faculty Respondents by Teaching Field

<table>
<thead>
<tr>
<th>Teaching Fields</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bible</td>
<td>7</td>
<td>11.48</td>
<td>11.48</td>
</tr>
<tr>
<td>Science/math</td>
<td>16</td>
<td>26.22</td>
<td>26.22</td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
<td>9.84</td>
<td>9.84</td>
</tr>
<tr>
<td>Social science</td>
<td>6</td>
<td>9.84</td>
<td>9.84</td>
</tr>
<tr>
<td>Education</td>
<td>8</td>
<td>13.11</td>
<td>13.11</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>18.03</td>
<td>18.03</td>
</tr>
<tr>
<td>Zero value</td>
<td>7</td>
<td>11.48</td>
<td>11.48</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>61</strong></td>
<td><strong>100.00</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

The data in Table 11 represent the teaching fields. The variable labeled other refers to fields such as criminal justice, business, economics, and political science. Of the 61 cases, 7 (11.48%) were rejected because of incomplete data.

The data in Table 12 show frequency distribution of faculty respondents in the area of computer experience. Data show that most of the respondents had some computer literacy: 27.86%, semi-literacy; 34.43%, literacy; and 21.31% show high literacy, for a total of 83.6%.

Table 13 represents frequency distribution of faculty responses by tenure. Data indicate that 60.70% of faculty respondents are tenured as opposed to 39.30%, nontenured.
Table 12

Frequency Distribution of Faculty Respondents by Computer Experience

<table>
<thead>
<tr>
<th>Computer experience</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never used in past</td>
<td>6</td>
<td>9.84</td>
<td>9.84</td>
</tr>
<tr>
<td>Have used, but not literate</td>
<td>3</td>
<td>3.92</td>
<td>3.92</td>
</tr>
<tr>
<td>Semi-literate</td>
<td>17</td>
<td>27.86</td>
<td>27.86</td>
</tr>
<tr>
<td>Literate</td>
<td>21</td>
<td>34.43</td>
<td>34.43</td>
</tr>
<tr>
<td>Very literate</td>
<td>13</td>
<td>21.31</td>
<td>21.31</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1.64</td>
<td>1.64</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>61</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 13

Frequency Distribution of Faculty Respondents by Tenure

<table>
<thead>
<tr>
<th>Tenure</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured</td>
<td>37</td>
<td>60.7</td>
<td>60.7</td>
</tr>
<tr>
<td>Nontenured</td>
<td>24</td>
<td>39.3</td>
<td>39.3</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>61</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Data in Table 14 show that students in the 18- to 23-year age category made up 90.11% of the students interviewed. No students under 18 years or over 30 years were interviewed.
Table 14

Frequency Distribution of Student Respondents by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 18 years</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18-23 years</td>
<td>52</td>
<td>98.11</td>
<td>98.11</td>
</tr>
<tr>
<td>24-29 years</td>
<td>1</td>
<td>1.89</td>
<td>1.89</td>
</tr>
<tr>
<td>30 years and over</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>53</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 15

Frequency Distribution of Student Respondents by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>20</td>
<td>37.74</td>
<td>37.74</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
<td>62.26</td>
<td>62.26</td>
</tr>
<tr>
<td>Totals</td>
<td>53</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 15 shows the frequency distribution of students by gender. Data in this table indicate that 62.26% of students interviewed were female and 37.74% were male.

Table 16 shows the frequency distribution of students by classification. Respondents' percentage was as low as 7.55% for freshmen and as high as 35.85% for sophomores. However, both juniors (33.96%) and seniors (22.64%) were well represented.
Table 16

Frequency Distribution of Student Respondents by Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>4</td>
<td>7.55</td>
<td>7.55</td>
</tr>
<tr>
<td>Sophomore</td>
<td>19</td>
<td>35.85</td>
<td>35.85</td>
</tr>
<tr>
<td>Junior</td>
<td>18</td>
<td>33.96</td>
<td>33.96</td>
</tr>
<tr>
<td>Senior</td>
<td>12</td>
<td>22.64</td>
<td>22.64</td>
</tr>
<tr>
<td>Totals</td>
<td>53</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 17

Frequency Distribution of Student Respondents by Degree Major

<table>
<thead>
<tr>
<th>Degree major</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bible</td>
<td>8</td>
<td>15.09</td>
<td>15.09</td>
</tr>
<tr>
<td>Science/math</td>
<td>10</td>
<td>18.87</td>
<td>18.87</td>
</tr>
<tr>
<td>Humanities</td>
<td>7</td>
<td>13.21</td>
<td>13.21</td>
</tr>
<tr>
<td>Social science</td>
<td>1</td>
<td>1.88</td>
<td>1.88</td>
</tr>
<tr>
<td>Education</td>
<td>20</td>
<td>37.74</td>
<td>37.74</td>
</tr>
<tr>
<td>Business</td>
<td>7</td>
<td>13.21</td>
<td>13.21</td>
</tr>
<tr>
<td>Totals</td>
<td>53</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 17 shows the frequency distribution of student respondents by degree major. Data in this table show education with a high of 37.74% of the respondents, whereas social science had a low of 1.88%. Science and math show 18.87%; Bible, 15.09%; humanities 13.21%; and business 13.21%.
Table 18

Frequency Distribution of Faculty Respondents by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 30 years</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30-34 years</td>
<td>4</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>35-39 years</td>
<td>3</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>40-44 years</td>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>45-49 years</td>
<td>6</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>50-54 years</td>
<td>6</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>55-59 years</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>60 years and over</td>
<td>3</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Totals</td>
<td>25</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table 18 shows the frequency distribution of faculty respondents by age. Data show that no faculty under 30 years was interviewed. Forty-eight percent of the respondents are 45 to 59 (24%) and 50 to 54 (24%). Of those interviewed, 3 were 60 and over. Ages 30 to 44 represented 36%.

Table 19

Frequency Distribution of Faculty Respondents by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>19</td>
<td>76</td>
<td>76</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Totals</td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Data for frequency distribution of faculty respondents by gender show that male faculty had a much larger representation (76%) than female (24%).

Table 20

Frequency Distribution of Faculty Respondents by Position Held

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department chair</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Professor</td>
<td>8</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Associate professor</td>
<td>8</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Assistant professor</td>
<td>6</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Data for frequency distribution of faculty respondents by position show that both professors and associate professors represented faculty, with 32% each. Assistant professors represented with 12%. Other referred to part-time faculty.

Table 21

Frequency Distribution of Faculty Respondents by Tenure

<table>
<thead>
<tr>
<th>Tenure</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured</td>
<td>17</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>Nontenured</td>
<td>8</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 21 displays frequency distribution of faculty respondents by tenured or nontenured. Tenured faculty outnumbered nontenured faculty by two to one (68% to 32%).

Table 22

Frequency Distribution of Faculty Respondents by Degree Earned

<table>
<thead>
<tr>
<th>Degree</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A./B.S./Th.B.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.A./M.S.</td>
<td>5</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>M.B.A./M.ED.</td>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>M.A.B.S./M.A.C.E./Th.M.</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ph.D./Ed.D.</td>
<td>14</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>Th.D./D.PHIL.</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Data from frequency distribution Table 22 show that all of the respondents interviewed have graduate level degrees. The majority of the respondents (60%) had earned doctorates. Those holding a master's degree were 32%. Others represented 8%.

Table 23 shows frequency distribution of faculty respondents by teaching fields. Every teaching field is well represented. Bible and education show 20% each; science/math, 24%; social science, 16%; humanities, 12%; and other, 8%. Others represented: criminal justice, political science, and business.
Table 23

Frequency Distribution of Faculty Respondents by Teaching Field

<table>
<thead>
<tr>
<th>Teaching field</th>
<th>Number</th>
<th>Percent</th>
<th>Valid percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bible</td>
<td>5</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Science/math</td>
<td>6</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Social science</td>
<td>4</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Education</td>
<td>5</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>25</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Presentation of Findings

The purpose of this section is to present the results of the data analysis. The researcher has used tables to explain the findings. Each research question is followed by findings.

Research Question 1

Are there significant differences in the use of the computer network at Cedarville College among faculty by teaching field?

The frequency distribution for faculty respondents by teaching field is in Table 11. In spite of the population size disparity, the Bible department showed lower usage than science/math. An interesting correlation is that student respondents in Tables 4 and 17 showed similar lower usage, as opposed to high usage in science/math.
The results of analysis of variance showed that there is a significant difference among use by faculty according to teaching field. Table 24 provides a summary of the results of this analysis.

Table 24

Summary of Analysis of Variance of Faculty Respondents in Use of Computer Network by Teaching Field

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F S/G</th>
<th>OF F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within and residual</td>
<td>49.18</td>
<td>48</td>
<td>1.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>13.58</td>
<td>5</td>
<td>2.72</td>
<td>2.65</td>
<td>.034</td>
</tr>
<tr>
<td>Model</td>
<td>13.58</td>
<td>5</td>
<td>2.72</td>
<td>2.65</td>
<td>.034</td>
</tr>
<tr>
<td>Total</td>
<td>62.76</td>
<td>53</td>
<td>1.18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Research Question 2

Are there differences in the use of the computer network among faculty by degree earned?

The result of a comparison of means (Tables 9 and 22) suggests a difference. However, there was no statistical/significant difference.

Research Question 3

Are there differences in the use of the computer network between tenured and nontenured faculty?

Data in Table 28 show use of the computer network by tenure. The means were subjected to chi-square of tenure to determine level of significance. Data in Table 29 show the mean of faculty use of the computer network. The means were
Table 29 show the mean of faculty use of the computer network. The means were subjected to analysis of variance to determine whether a level of significance exists by faculty tenure status.

Table 25

Correlation Coefficients of Faculty Use of Network by Degree Earned

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Coefficients</th>
<th></th>
<th>Coefficients</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Variable 24</td>
<td>Variable 74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance &amp; interaction</td>
<td>1.0000</td>
<td>Impact &amp; interaction</td>
<td>.1653</td>
<td></td>
</tr>
<tr>
<td>Importance &amp; interaction</td>
<td>(61)</td>
<td>Impact &amp; interaction</td>
<td>(61)</td>
<td></td>
</tr>
<tr>
<td>P=</td>
<td>P= .203</td>
<td>P=</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable 74</td>
<td></td>
<td>Variable 74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact &amp; interaction</td>
<td>.1653</td>
<td>Impact &amp; interaction</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(61)</td>
<td>Impact &amp; interaction</td>
<td>(61)</td>
<td></td>
</tr>
<tr>
<td>P=</td>
<td>P=.203</td>
<td>P=</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient</td>
<td>Cases</td>
<td>2-tailed significance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 26

**Kendall Correlation Coefficient of Faculty Interaction Through Use of Network**

<table>
<thead>
<tr>
<th>Variable 74 (Impact &amp; interaction)</th>
<th>Coefficient</th>
<th>Cases</th>
<th>2-tailed significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>.7257</td>
<td>N(61)</td>
<td></td>
<td>Sig .000</td>
</tr>
<tr>
<td>Variable 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Importance &amp; interaction)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 27

**Spearman Correlation Coefficient of Faculty Interaction Through Use of Network**

<table>
<thead>
<tr>
<th>Variable 74 (Impact &amp; interaction)</th>
<th>Coefficient</th>
<th>Cases</th>
<th>2-tailed significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>.7659</td>
<td>N(61)</td>
<td></td>
<td>Sig .000</td>
</tr>
<tr>
<td>Variable 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Importance &amp; interaction)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cases</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 28

Means of Faculty Use of Computer Network by Tenure

<table>
<thead>
<tr>
<th>Value</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire population</td>
<td>3.6393</td>
<td>1.0806</td>
<td>61</td>
</tr>
<tr>
<td>1.00 tenured</td>
<td>3.4324</td>
<td>1.1676</td>
<td>37</td>
</tr>
<tr>
<td>2.00 nontenured</td>
<td>3.9583</td>
<td>.8587</td>
<td>24</td>
</tr>
<tr>
<td>Total cases</td>
<td></td>
<td></td>
<td>61</td>
</tr>
</tbody>
</table>

Table 29

T-tests of Faculty Use of Computer Network by Tenure

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of cases</th>
<th>Mean</th>
<th>SD</th>
<th>SE of mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured</td>
<td>37</td>
<td>3.4324</td>
<td>1.168</td>
<td>.192</td>
</tr>
<tr>
<td>Nontenured</td>
<td>24</td>
<td>3.9583</td>
<td>.859</td>
<td>.175</td>
</tr>
<tr>
<td>Mean difference = .5259</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 30

T-test for Equality of Means of Faculty Use of Computer Network by Tenure

<table>
<thead>
<tr>
<th>Variance</th>
<th>t value</th>
<th>dt</th>
<th>2-tail sig</th>
<th>SE of dift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal</td>
<td>-1.90</td>
<td>59</td>
<td>.068</td>
<td>.277</td>
</tr>
<tr>
<td>Unequal</td>
<td>0.202</td>
<td>57.98</td>
<td>.048</td>
<td>.260</td>
</tr>
<tr>
<td>PL .05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The difference may stem from the fact that most of the tenured faculty are older and may not be likely to adapt to the use of new technology. Age
demographics and the researcher's experience during his interviews with faculty seem to support this theory.

**Research Question 4**

Are there gender differences in the use of the computer network?

Table 31 shows population demographic of students at Cedarville College.

Table 31

**T-test of Student Use of Computer Network by Gender**

<table>
<thead>
<tr>
<th>Variances</th>
<th>t-value</th>
<th>df</th>
<th>2-tail sig</th>
<th>Se of diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal</td>
<td>-1.09</td>
<td>185</td>
<td>.276</td>
<td>.171</td>
</tr>
<tr>
<td>Unequal</td>
<td>-1.14</td>
<td>102.11</td>
<td>.256</td>
<td>.163</td>
</tr>
</tbody>
</table>

Table 32

**Combined Means of Student Use of Computer Network by Gender**

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of cases</th>
<th>Mean</th>
<th>SD</th>
<th>SE of mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I49 Use of network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52</td>
<td>3.9808</td>
<td>.980</td>
<td>.136</td>
</tr>
<tr>
<td>Female</td>
<td>135</td>
<td>4.1185</td>
<td>1.113</td>
<td>.096</td>
</tr>
</tbody>
</table>

P > .05

Tables 31 and 32 show a slight difference by gender among students. It must be pointed out, however, that the female population represented over 70% of the population. This slight difference may be due to the high percentage of the female population.
Research Question 5

Are there differences in the use of the computer network among students by degree majors?

Table 33 shows the means of the difference in the use of the computer network among students by degree majors. Comparison of means was used to determine whether a level of significance existed.

Table 33

Comparison of Means of Use of Computer Network Among Students by Degree Major

<table>
<thead>
<tr>
<th>Majors</th>
<th>Means</th>
<th>Std. Dev.</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire population</td>
<td>4.0632</td>
<td>1.0973</td>
<td>174</td>
</tr>
<tr>
<td>Bible</td>
<td>3.5714</td>
<td>.7868</td>
<td>7</td>
</tr>
<tr>
<td>Science/math</td>
<td>4.1600</td>
<td>1.1033</td>
<td>75</td>
</tr>
<tr>
<td>Humanities</td>
<td>3.6875</td>
<td>1.3525</td>
<td>16</td>
</tr>
<tr>
<td>Social science</td>
<td>4.0714</td>
<td>.9169</td>
<td>14</td>
</tr>
<tr>
<td>Education</td>
<td>4.1800</td>
<td>1.0437</td>
<td>50</td>
</tr>
<tr>
<td>Business</td>
<td>3.7500</td>
<td>1.2154</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>174</td>
</tr>
</tbody>
</table>

Data in Tables 33 and 34 show that there is a much higher level of significance than expected for science/mathematics and a much lower level of significance than expected for Bible. According to the results of Tables 32 and 33, there are significant differences between computer usage by degree major among
students. Bible majors were consistently the lowest group, whereas science/math were consistently the highest.

Table 34
Summary of Analysis of Variance of Use of Computer Network Among Students by Degree Major

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F Seq. Of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within &amp; residual</td>
<td>221.17</td>
<td>168</td>
<td>1.32</td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>15.20</td>
<td>5</td>
<td>3.04</td>
<td>2.31 .046</td>
</tr>
<tr>
<td>Model</td>
<td>15.20</td>
<td>5</td>
<td>3.04</td>
<td>2.31 .046</td>
</tr>
<tr>
<td>Total</td>
<td>236.37</td>
<td>173</td>
<td>1.37</td>
<td></td>
</tr>
<tr>
<td>R-squared .064</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared .036</td>
<td></td>
<td></td>
<td></td>
<td>P &lt; .05</td>
</tr>
</tbody>
</table>

Research Question 6

Are there differences in the use of the computer network among students by classification?

According to data from Table 35, the general trend in means is beginning high and decreasing with each succeeding year. Data also showed the highest level for sophomores.

There is a certain measure of independence between students' responses to Question 13 (indicating usage) according to their classification. The trend seems to be that freshman usage is highest, with general usage lessening after that. The reason for this trend may lie in the fact that the population size for freshmen is small. Several students confessed to the researcher during the interview session
that they used the network often as freshman because it was a novelty to them.

According to this study, freshmen are encouraged to use the computer network upon entry into the college.

Table 35

Mean of Difference in Use of Computer Network Among Students by Classification

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire population</td>
<td>4.2181</td>
<td>1.2062</td>
<td>188</td>
</tr>
<tr>
<td>Freshman</td>
<td>4.6667</td>
<td>.8165</td>
<td>6</td>
</tr>
<tr>
<td>Sophomore</td>
<td>4.5000</td>
<td>.9924</td>
<td>34</td>
</tr>
<tr>
<td>Junior</td>
<td>4.1757</td>
<td>1.2859</td>
<td>74</td>
</tr>
<tr>
<td>Senior</td>
<td>4.1429</td>
<td>1.1707</td>
<td>70</td>
</tr>
<tr>
<td>Other</td>
<td>3.2500</td>
<td>2.0616</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 36

Chi-square Test of Differences in Use of Computer Network Among Students by Classification

<table>
<thead>
<tr>
<th>Student class</th>
<th>Cat.</th>
<th>Cases observed</th>
<th>Expected</th>
<th>Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>1</td>
<td>6</td>
<td>37.60</td>
<td>-31.60</td>
</tr>
<tr>
<td>Sophomore</td>
<td>2</td>
<td>34</td>
<td>37.60</td>
<td>-3.60</td>
</tr>
<tr>
<td>Junior</td>
<td>3</td>
<td>74</td>
<td>37.60</td>
<td>36.40</td>
</tr>
<tr>
<td>Senior</td>
<td>4</td>
<td>70</td>
<td>37.60</td>
<td>32.40</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>4</td>
<td>37.60</td>
<td>-33.60</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>188</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi-square</td>
<td>120.0851</td>
<td>D.F. 4</td>
<td>Significance .0000</td>
<td></td>
</tr>
</tbody>
</table>
Table 37

Correlation Coefficients of Quality of Students' Work and Performance

<table>
<thead>
<tr>
<th></th>
<th>I1 (Quality)</th>
<th>I2 (Quantity)</th>
<th>I5 (Quality)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.000</td>
<td>.5290</td>
<td>.4535</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.</td>
<td>P=.</td>
<td>P=.000</td>
</tr>
<tr>
<td>I1 (Quality)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.5290</td>
<td>1.000</td>
<td>.2394</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=.</td>
<td>P=.001</td>
</tr>
<tr>
<td>I2 (Quantity)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.4535</td>
<td>.2394</td>
<td>1.0000</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=.001</td>
<td>P=.</td>
</tr>
<tr>
<td>I5 (Quality)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Research Question 7

Are there differences in the use of the computer network among students by age?

Data in Table 2 show that comparing the means suggests that usage of the computer network at Cedarville College decreased with age. However, there is nothing statistically significant, probably because 95.19% of the case population fall into the 18-23 classification.
Research Question 8

Are there differences in the teaching field because of the use of technology?

Data in subsequent tables show highly significant correlation for both faculty and students in three pertinent areas related to the teaching/learning process. These three areas are (a) quality, (b) research, and (c) interaction.

Tables 36 and 37 show correlation among Variables I 1, I 2, I 5 in the area of quality in the work and performance of students.

Table 38

**Correlation Coefficient Among Variables I4 and I5 in the Area of Quality in Students’ Work and Performance**

<table>
<thead>
<tr>
<th></th>
<th>I5 (Quality)</th>
<th>I4 (Research)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I5 (Quality)</td>
<td>1.0000</td>
<td>.3029</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td>P=</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>I4 (Research)</td>
<td>.3029</td>
<td>1.0000</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td>P=</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 39 show significant correlation among variables I 4, I 8, and I 9 in the area of research by students.
Table 39

**Correlation Coefficients of Students' Research**

<table>
<thead>
<tr>
<th></th>
<th>I4</th>
<th>I8</th>
<th>I9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Research)</td>
<td>(Convenience)</td>
<td>(Access)</td>
</tr>
<tr>
<td>I4</td>
<td>1.000</td>
<td>.2948</td>
<td>.4546</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=.000</td>
<td>P=.000</td>
</tr>
<tr>
<td>I8</td>
<td>.2943</td>
<td>1.0000</td>
<td>.3508</td>
</tr>
<tr>
<td></td>
<td>(Convenience)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=.000</td>
<td>P=.000</td>
</tr>
<tr>
<td>I9</td>
<td>.4546</td>
<td>.3508</td>
<td>1.0000</td>
</tr>
<tr>
<td></td>
<td>(Access)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=.000</td>
<td>P=</td>
</tr>
</tbody>
</table>

Table 40

**Correlation Coefficients of Student/Faculty Interaction**

<table>
<thead>
<tr>
<th></th>
<th>I6</th>
<th>I15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Study enhanced)</td>
<td>(F/S interaction)</td>
</tr>
<tr>
<td>I6</td>
<td>1.0000</td>
<td>.1508</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=</td>
<td>P=.038</td>
</tr>
<tr>
<td>I15</td>
<td>.1508</td>
<td>1.0000</td>
</tr>
<tr>
<td></td>
<td>(F/S interaction)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.038</td>
<td>P=</td>
</tr>
</tbody>
</table>
Table 40 shows correlation among variables I 6 and I 15 in the area of student to faculty interaction.

Table 41

Correlation Coefficients of Students' Interact, Research, and Quality

<table>
<thead>
<tr>
<th></th>
<th>Interact</th>
<th>Research</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interact</td>
<td>1.0000</td>
<td>.3474</td>
<td>.4081</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=</td>
<td>P=.000</td>
<td>P=.000</td>
</tr>
<tr>
<td>Research</td>
<td>.3474</td>
<td>1.0000</td>
<td>.5574</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=</td>
<td>P=.000</td>
</tr>
<tr>
<td>Quality</td>
<td>.4081</td>
<td>.5574</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>(189)</td>
<td>(189)</td>
<td>(189)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=.000</td>
<td>P=</td>
</tr>
</tbody>
</table>

Tables 37 to 41 show significant correlation in the area of quality of students' work and production. Variables I 1, I 2, and I 5 (quality of product) showed high correlation. In students' research, variables I 4, I 8, I 9, and I 11 showed high correlation. In student/faculty interaction, variables I 6 and I 15 showed lower correlation, but still significant at d = .05. Quality, research, and interact are all significantly correlated, with the greatest correlation being between quality and research.
Table 42

Correlation Coefficients of the Quality of Faculty Teaching

<table>
<thead>
<tr>
<th></th>
<th>Variable 5 (Quality)</th>
<th>Variable 1 (Improvement)</th>
<th>Variable 2 (Improvement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable 5</td>
<td>1.000</td>
<td>.3793</td>
<td>.4667</td>
</tr>
<tr>
<td>(Quality) (61)</td>
<td>(61)</td>
<td>(61)</td>
<td></td>
</tr>
<tr>
<td>P=</td>
<td>P=.003</td>
<td>P=.000</td>
<td></td>
</tr>
<tr>
<td>Variable 1</td>
<td>.3793</td>
<td>1.0000</td>
<td>.8688</td>
</tr>
<tr>
<td>(Improvement) (61)</td>
<td>(61)</td>
<td>(61)</td>
<td></td>
</tr>
<tr>
<td>P=.003</td>
<td>P=</td>
<td>P=.000</td>
<td></td>
</tr>
<tr>
<td>Variable 2</td>
<td>.4667</td>
<td>.8688</td>
<td>1.0000</td>
</tr>
<tr>
<td>(Improvement) (61)</td>
<td>(61)</td>
<td>(61)</td>
<td></td>
</tr>
<tr>
<td>P=.000</td>
<td>P=.000</td>
<td>P=</td>
<td></td>
</tr>
</tbody>
</table>

Tables 42, 43, and 44 show significant correlations in the areas of faculty teaching quality, research, and faculty/student interaction.

Table 45 shows the correlation coefficients of (1) quality of faculty teaching, (5) faculty research, and (3) faculty/student interaction. Quality, research, and interaction have significant correlation, with the highest correlation between research and interaction.
Table 43

Correlation Coefficients of Faculty Research

<table>
<thead>
<tr>
<th></th>
<th>Variable 6</th>
<th>Variable 4</th>
<th>Variable 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Access)</td>
<td>(Research)</td>
<td>(Tools)</td>
</tr>
<tr>
<td>Variable 6</td>
<td>1.0000</td>
<td>.1968</td>
<td>.1097</td>
</tr>
<tr>
<td>(Access)</td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td>P=</td>
<td>.</td>
<td>P=.128</td>
<td>P=.400</td>
</tr>
<tr>
<td>Variable 4</td>
<td>.1968</td>
<td>1.0000</td>
<td>.3380</td>
</tr>
<tr>
<td>(Research)</td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td>P=</td>
<td>.128</td>
<td>P=.</td>
<td>P=.008</td>
</tr>
<tr>
<td>Variable 7</td>
<td>.1097</td>
<td>.3380</td>
<td>1.0000</td>
</tr>
<tr>
<td>(Tools)</td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td>P=</td>
<td>.400</td>
<td>P=.008</td>
<td>P=.</td>
</tr>
</tbody>
</table>

Table 44

Correlation Coefficient of Faculty/Student Interaction in Use of Network by Teaching/Learning Fields

<table>
<thead>
<tr>
<th></th>
<th>Variable 11</th>
<th>Variable 12</th>
<th>Variable 18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Interaction)</td>
<td>(Contact)</td>
<td>(Contact)</td>
</tr>
<tr>
<td>Variable 11</td>
<td>1.0000</td>
<td>.6840</td>
<td>.4325</td>
</tr>
<tr>
<td>(Interaction)</td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td>P=</td>
<td></td>
<td>P=.000</td>
<td>P=.000</td>
</tr>
<tr>
<td>Variable 12</td>
<td>.6840</td>
<td>.5123</td>
<td>1.0000</td>
</tr>
<tr>
<td>(Contact)</td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td>P=</td>
<td>.000</td>
<td>P=.000</td>
<td>P=</td>
</tr>
</tbody>
</table>
Table 45

Correlation Coefficients of Faculty/Student Interaction in Use of Network by Teaching/Learning Fields

<table>
<thead>
<tr>
<th></th>
<th>Interaction</th>
<th>Quality</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interact</td>
<td>1.0000</td>
<td>.4087</td>
<td>.5058</td>
</tr>
<tr>
<td></td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td></td>
<td>P=</td>
<td>P=.001</td>
<td>P=.000</td>
</tr>
<tr>
<td>Quality</td>
<td>.4087</td>
<td>1.0000</td>
<td>.4470</td>
</tr>
<tr>
<td></td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td></td>
<td>P=.001</td>
<td>P=</td>
<td>P=.000</td>
</tr>
<tr>
<td>Research</td>
<td>.5058</td>
<td>.4470</td>
<td>1.0000</td>
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<td></td>
<td>(61)</td>
<td>(61)</td>
<td>(61)</td>
</tr>
<tr>
<td></td>
<td>P=.000</td>
<td>P=.000</td>
<td>P=</td>
</tr>
</tbody>
</table>

Open-Ended Questions

In the open-ended questions and responses by both faculty and students, questions posed to faculty and students were similar.

1. What problems have you encountered with the network system?

Approximately 65% of the respondents said that there were too many breakdowns in the system, and that, as a result, many of the components did not work effectively. About 20% felt that they were ill-prepared for the network; therefore, they could not make appropriate use of it. Fifteen percent of the respondents said that they experienced great difficulties in logging into the system.
A few respondents admitted that they did not have any problems using the network. Other comments made by some respondents were as follows:

1. I would rather be at home than playing with this machine.
2. This system is a massive headache.
3. I feel very frustrated.

2. How would you like the system improved?

About 12% of the respondents reported that they did not wish to see any improvement in the system. Many respondents insisted that the system must be more reliable. Thirty percent of the respondents expressed a desire to see more and better printers, more computer labs, and more computers in the library. Approximately 10% of faculty respondents agreed that computer instructors assumed too much. They contended that instructors need to start with the basics because faculty and students' levels of experience vary.

About 25% agreed on several issues: (a) all computers must be at least 486; (b) computers must have graphics and RAM; and (c) all computers must have CD Rom. Most of the faculty respondents insisted that more time and money is needed in order to develop applications. Both faculty and students want more training. Respondents responses to improvements were:

1. This would be a step in the right direction.
2. This is for the college to decide, but we need a more reliable system.
3. I think money is an issue. Given more money, the college would have done better.

3. What benefits do you see in the system for yourself?

For about 62% of faculty, the system provided tremendous opportunity for writing, editing, grading, and keeping notes. Almost 95% of faculty and student respondents thought that E-mail provided unprecedented access to one another. Faculty and students agreed that the system provided unlimited access to software, interlibrary loan, and other reference resources. Twenty-eight percent of faculty and student respondents believed that the system is an excellent tool for speed in communication as well as security in communication.

The computer network is seen by both faculty and students as the perfect medium for information. Faculty see it as providing them with the ability to develop alternative learning aids and methods for a number of students. The network has made literature searches much easier. Students and faculty agree that they cannot be less than thorough because of the access to tools made possible by the network.

Approximately 17% of student and faculty respondents said that the computer network made them better equipped and more knowledgeable in dealing with a technical society that is invading every segment of life. According to many of the respondents, the world has become a much smaller and friendlier place because of the computer network. Some responses to this question were:
1. I do not see any at all. I use it because I have to.

2. It prepares one for new technology.

3. It makes me more world-conscious.

4. How has the network improved the teaching/learning process for you?

A little over 12% of faculty and students are of the opinion that the network has brought minimal improvement to the teaching/learning process for them. For both students and faculty, improved communication in and out of the classroom has undoubtedly improved the teaching/learning process.

Approximately 75% of students and 68% of faculty respondents agree that there has been a marked improvement in research papers (both the research and presentation), which can be directly attributed to the use of the network on campus. The following are responses to this question:

1. I have not observed any change in my teaching. (faculty)

2. I do not know what I would do without the system. (faculty)

3. Classes are more interesting when professors use the network. (student)

4. I present much better research papers. (student)

5. I have greater access to pertinent information. (student and faculty)

6. Communication is so much easier. (student and faculty)
CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This chapter includes a summary of the purposes, methodology, and procedures of the study. The following is also a discussion of the major findings. Conclusions of this study, as well as recommendations for continued research, are also presented, based on the knowledge gained from examination of the findings of this investigation.

Summary

This study was conducted to determine the perceptions of faculty and students of Cedarville College of Cederville, Ohio, regarding the effectiveness of the campuswide computer network in the teaching/learning process. The purposes were (a) to determine the importance (value, significance, and great work) of the network and (b) the impact (forceful and dramatic effect) of the network.

To meet these purposes, eight research questions were developed. Data for this study were compiled through the use of two survey instruments. These instruments were designed to measure the attitudes of faculty and students toward the campuswide computer network at Cedarville College and its effectiveness in
the teaching/learning process. The instruments were also designed to measure the computer network's importance to and impact on the teaching/learning process.

The instruments were developed with assistance from the Department of Sociology at Wright State University in Ohio and the Office of the Academic Vice President of Cedarville College. The instrument was developed through a 1994 pilot study in Cedarville, Ohio.

One of the two instruments, the questionnaire, had three components: (a) statements, (b) demographics, and (c) open-ended questions. Respondents were asked to rate (a) the importance of the campuswide computer network at Cedarville College to the teaching/learning process, and (b) the impact of the campuswide computer network at Cedarville College on the teaching/learning process. A 5-point Likert-type scale was used. Respondents rated the importance, from 1 (do not know enough to form opinion) to 5 (extremely important). They rated impact from 1 (do not know enough to form an opinion) to 5 (pervasive impact). The survey instruments were placed in 225 student and 100 faculty mailboxes in the spring of 1995 at Cedarville College. Faculty returned 61 usable questionnaires (61%), and students returned 191 usable questionnaires (85%). The second instrument and ethnographic interview study contained two components: statements and demographics. This information was used to determine the perceptions of faculty and students toward the teaching/learning process.
Students' and faculty members' background and demographic data, such as age, gender, current position, degree earned, years of experience at Cedarville College, teaching field, computer experience, tenured status, classification, and degree majors were collected for the study. Different parts of the statistical package for social science (SPSS) computer program were used to analyze the data collected for this study. Statistical techniques used to analyze the data included frequency distribution, t-tests, correlation coefficients, Kendall correlation coefficients, Spearman correlation coefficients, chi-square, and one-way analysis of variance.

Following are the results of the analysis presented in chapter 4.

The major findings of this study are as follows:

1. Significant differences were found in the use of the computer network at Cedarville College among faculty by teaching field.

2. Significant differences were found in the use of the computer network at Cedarville College among faculty by degree earned.

3. Significant differences were found in the use of the computer network at Cedarville College between tenured and non-tenured faculty.

4. No significant differences were found in the use of the computer network at Cedarville College by gender.

5. Significant differences were found in the use of the computer network at Cedarville College among student by degree majors.
6. Significant differences were found in the use of the computer network at Cedarville College among students by classification.

7. There were no significant differences in the use of the computer network at Cedarville College among students by age.

8. Significant differences were found in the teaching/learning field among faculty and students at Cedarville College because of the use of technology.

9. Respondents in this study identified several barriers to proper and full use of the computer network at Cedarville College. These barriers include cost of using the network, lack of proper training, lack of administrative support, and unavailability of network to off-campus students.

Discussion

Based on the major findings of this study, the following topics were selected for the focus of this discussion:

1. Significant differences were found in the use of the computer network at Cedarville College among faculty by teaching field. The difference in the use of the network was not in any way, related to an improper balance of software availability by teaching fields. The study pointed out with consistency, on the one hand, that one department made much less use of the network at Cedarville College. This was statistically true for both faculty and students. It was apparent to the researcher that both faculty and students in the Bible department were apprehensive about the use of new technology. Some of the older faculty members openly showed their
disdain for the intrusion of the computer network. This supports Parrish and Necessary (1996), whose research study indicates that those who use a computer show less computer anxiety, more computer appreciation, and more confidence. On the other hand, the department of science/math statistically showed the highest use of the computer network. Compared to faculty and students from the Bible department, who were negative about the computer network, the respondents from Science/Math department were, for the most part, enthusiastic about the possibilities the network affords. Perhaps the older faculty in the Bible department correspond to the study of Applebaum (1990) that computer-anxious people tended to be over 30 years of age.

2. There were significant differences found in the use of the computer network at Cedarville College among faculty by degree earned. Data in this study showed that faculty members who have undergraduate and graduate degrees were more apt to use the computer network consistently. The reason for this trend seemed to be the fact that faculty members with undergraduate and graduate degrees are using the network more as they endeavor to fulfill Cedarville College's requirements, which urge faculty members to have an earned doctorate.

Another reason for the significant difference in the use of the computer network by degree earned is that over 39% of faculty respondents were nontenured. Gaining tenure, therefore, seemed to be a reason for the surge in use among faculty
with undergraduate and graduate degrees, especially those who were on tenure track.

3. No significant differences were found in the use of the computer network at Cedarville College by gender. Data in this study showed that females were just as likely to use the computer network as men. Females seemed to have as much ability as men with respect to the network. However, other studies, such as that by Parrish and Necessary (1996), indicate that females have been found to demonstrate more attraction to computers than males. The researcher's experience has shown that female respondents have been eager to share their new-found tool for academic success. In a study by Walters and Necessary (1996), no significant difference was found between gender and attitudes toward computers.

4. Significant differences were found in the use of the computer network at Cedarville College among students by classification. Data for this study show that usage of the network decreased with each succeeding year. Data also indicate usage peaking dramatically for sophomores. This trend seems to imply that the novelty of the network begins to wear off by the junior and senior years. In addition, incoming students are encouraged to use the network. Perhaps this supports the findings of Parrish and Necessary (1996), which indicate that incoming students who bring a computer demonstrate their liking for computers more than those who do not own a computer. Similar encouragements do not go out to upper classmen, from either administration or most faculty.
5. There were no significant differences found in the use of the computer network at Cedarville College among students by age. Although statistics show a decrease with age, there was nothing statistically significant. However, Parrish and Necessary (1996) indicated that younger students were found to be more inclined to favor computers than those students who were older. The data showed that 95.19% of the respondents were between the ages of 18 and 23. Cedarville College's policy does not allow for students above the 18 to 23 year age bracket to live on campus (except under special circumstance). Because the network serves only on-campus residents, it has become almost impossible for any other age group to be adequately represented. The college's policy does not encourage or make allowance for usage of the network by population of age groups other than 18 to 23 years. Walters and Necessary (1996) indicated that college seniors had significantly more positive attitudes toward computers than underclassmen.

6. Significant differences were found in the teaching/learning fields among faculty and students at Cedarville College because of the use of technology. Data showed highly significant correlation for both faculty and students in three pertinent areas related to the teaching/learning process. These areas are (a) quality, (b) research, and (c) interaction. Data in this study indicate that the computer network at Cedarville College is important to the teaching/learning process. This finding supports the view of Cossmann (1996), who provides evidence of the contributions of computers in his historical analysis of computer
software. Both faculty and student respondents admitted that the quality of classroom lectures, material presented, and classroom participation has dramatically improved with the use of the computer network. Research by both faculty and students is exceptionally better, both in content and appearance. According to one student, "Doing research on the network is like having the world of information at your fingertips." One professor wrote, "Using the network to interact has drawn the college into a small family." The computer network, according to data from this study, has greatly improved the interaction between faculty and peers and faculty and students. Faculty members now have the ability to advise students via the network, thus saving an enormous amount of time.

Conclusion

The relationship of the demographic variables and the installation and implementation of the campuswide computer network at Cedarville College and its effects on the teaching/learning process were investigated. This investigation was to determine the importance of the network to and its impact on the teaching/learning process. The following are the major findings:

1. Some faculty members do not think that they have enough time, or perhaps do not want to take the time, to devote to computer training sessions.

2. Faculty are in agreement that the administration needs to consult them before introducing new software packages to their departments. Some faculty members contend that they are given responsibilities for which they are ill-prepared.
3. The network at Cedarville College is regarded by both faculty and students as a powerful instrument for teaching/learning at Cedarville College; however, it must be improved in order to avoid frustration on the part of users and the eventual collapse of the system.

4. Use of the computer network at Cedarville College has had significant impact on the quality, style, final product, and presentation of writing and research.

5. Use of the computer network at Cedarville College has significantly impacted interactions between faculty and peers and between faculty and students. One variable that has remained constant is the fear by both faculty and students that the system could reduce students to a mere number.

6. Both faculty and students have become aware of the importance of the computer network to the teaching/learning process. In spite of the difficulties they may face from time to time in using the system, neither would want to lose it.

7. Dormitory computers have proven to be time savers for students.

Recommendations

The following recommendations are made, based on the findings of this study:

1. A longitudinal study should be conducted in order to fully explore the possibilities of the network and its importance to and impact on the teaching/learning process.
2. Appropriate computer training seminars must be made available to faculty and students with some regularity.

3. Some form of incentive must be made available to faculty to participate in the computer training seminars.

4. Faculty members at Cedarville College should encourage students to make full use of the computer network.

5. Cedarville College should make full use of tutors to help instruct faculty and students who are not computer literate or who may need extra help.

6. Cedarville College should make the network available, in some form, to off-campus students. Such access should be easy and affordable.

7. Computer courses should be a requirement for all majors at Cedarville College. The need to train both faculty and students in the use of new technology is reflected in the needs of the job market.

8. An effective evaluation program must be set up in order to monitor the usefulness and contribution of the network to the teaching/learning process.

9. Faster computers should be installed. Some users of the network spoke of frustration due to the slow speed of the network.

10. Cedarville College must not assume that all users are at the same level of computer literacy. Some users who require step-by-step instructions must have such access.
11. One of the greatest dissatisfactions with the network is its unreliability. Cedarville College needs to make every effort to improve the reliability of the network.

12. Adequate and up-to-date software must be made available to all departments. Faculty, however, must be encouraged to use the software.

13. A pool of resource persons should be provided from which faculty and students can draw for immediate help.

14. Because the network has become such a powerful interactive instrument, it is incumbent upon Cedarville College to guard against not having regular face-to-face contact between faculty and students.
APPENDIX A

BACKGROUND OF CEDARVILLE COLLEGE
Appendix A

Cedarville College was founded in 1887 by people of Scottish Irish descent who had settled in the Ohio Valley (Murdoch, 1987). Cedarville College remained a Reformed Presbyterian school until 1928. On March 16, 1953, the Dayton Daily News reported that Cedarville College would merge with the Baptist Bible Institute of Cleveland. During his inaugural address, Wilbert McChesney, president of Cedarville College, made this comment:

Cedarville College was founded in prayer, has been maintained in faith, and supported by sacrifice; and long after this generation shall have run its race, Cedarville College will live to enrich the nation, gladden the church, and bless the world; and with the years it will grow in material equipment until it becomes the joy of this community and is numbered high among the favored colleges of our country. (Murdoch, 1987)

No truer words have been spoken! Cedarville College is a Baptist college of arts, sciences, and professional programs. Its student population is almost 2500 (Cedarville College Catalog, 1993-1994). According to the catalog, all classes are taught by dedicated Christian professors who do not simply incorporate Biblical principles into the subject matter that they teach; they integrate Biblical perspectives in their field (Cedarville College Catalog, 1992-1993).

From its first simple curriculum, which offered Bible courses on Tuesday and Friday nights, Cedarville College now offers B.A./B.S. in almost 80 programs,
including biblical education, communications, humanities, physical education, science and mathematics, engineering, nursing, and social science (1992-1993 catalog). Cedarville College, from its inception, has endeavored to maintain and sustain a campus environment conducive for nurturing morals and values. This goal will be realized as the College's objectives are attained.

The College Mission Statement, college catalogs, and General Education Revision Task Force Report (1992) list these objectives:

1. To undergird the student in the fundamentals of the Christian faith and to stimulate him to evaluate knowledge in the light of Scriptural truth.

2. To encourage growth in Christian character in each student and to help the student accept his responsibility in faithful Christian service.

3. To increase the student's awareness of the world of ideas and events that are influencing our contemporary culture, and to prepare the student to participate in our society.

4. To enable students to develop sound critical and analytical reasoning.

5. To provide sufficient opportunities for students to practice the skill of communication.

6. To offer opportunities for academic specialization and preparation for graduate study, and to assist the student in selecting and preparing for a vocation.
7. To foster the student's appreciation of and participation in wholesome avocation and cultural activities.

Although Cedarville College is a Baptist institution, many of the students accepted into the college come from a variety of religious backgrounds. The criteria for accepting those individuals, however, is based on evidence of a personal relationship with Jesus Christ and a consistent Christian life (Catalog, 1992-1993). All students are encouraged to participate in some form of Christian ministry, and 80% of the student body do volunteer each year. The purpose for this program, according to the Christian Ministries Department, is to strive to shatter the mindset of isolating Christianity to a Sunday-church experience. Students are taught that biblical Christianity is demonstrating a servant's heart in all areas of life. The Christian Ministries Department coordinates all ministries and provides a wide variety of ministries, including the following:

1. Campus ministries - Campus ministries are campus interaction teams designed to foster one-on-one interaction and personal growth.

2. Community ministries, including the following:
   - Adult literacy
   - Crisis pregnancy centers
   - Gospel mission
   - Hospitals
   - Jail and detention centers
3. Cross-cultural ministries

This provides a ministry to missionaries on the mission field, while, at the same time, it gives students a first-hand experience of the work done in the field. Annually, the college provides approximately 100 student-ministries to over 50 countries around the world. This program, which started in 1970, continues to grow annually. These ministries include:

- individual ministries and internships
- student teaching
- teams involving labor, medical assistant, technical assistant, singing, drama, and puppetry evangelistic ministries
- spring break teams

4. Local church ministries

- Awana
- Extension Teams
- Individual Ministries

5. Music Ministries

- Abundant Life singers
- Kingsmen quartet
- Swordbearers
- Soloists and small groups
APPENDIX B

ETHNOGRAPHIC STUDY
Appendix B

Ethnographic research is associated with the phrase *qualitative research* (Bogdan & Biklen, 1982). Bogdan and Biklen wrote:

Ethnographic is used by some in a formal sense to refer to a particular type of qualitative research, one in which most anthropologists engage and which is directed at describing culture. It is also more generally—sometimes synonymously—with qualitative research as we know it. (p 3)

They also said, "In this effort is an attempt to get at the human meaning of our institutions' processes" (p. 15). Ethnographic approaches use in-depth interviews to examine the experiences of participants in various projects. The author interviewed both faculty and students with a structured set of interview questions.
The purpose of the questionnaire is to obtain faculty perception regarding the use and effectiveness of campus-wide technology at Cedarville College, College, Ohio. According to Kalmbach (1994), multimedia is fast becoming a part of the American classroom in the 90's. If this is true, then Cedarville College, and all other educational institutions, must prepare for its eventual coming. This study provides the college with valuable insights into the thinking process of respondents. Such information will provide Cedarville College with information it needs.

Demographic information:

1. What is your age?
   - Under 30 years
   - 30 - 34 years
   - 35 - 39 years
   - 40 - 44 years
   - 45 - 49 years
   - 50 - 54 years
   - 55 - 59 years
   - 60 years and over

2. What is your current position?
   - Department chair
   - Professor
   - Associate professor
   - Assistant professor
   - Other (specify)__________________
3. Tenured?
   __ Yes
   __ No

4. What is your gender?
   __ Male
   __ Female

5. What is the highest degree you earned?
   __ B.A.
   __ M.A.
   __ M.B.A.
   __ M.A.B.S.
   __ PH.D.
   __ TH.D.
   __ Other (specify)

6. What is your teaching field or discipline?
   __ Bible
   __ Music
   __ Science
   __ Engineering
   __ Humanities
   __ History
   __ Christian education
   __ Language
   __ Social science
   __ Education
   __ Other (specify)

7. What department do you head? _____________

Study Questions:

1. Do you use the network?

2. Why don't you use the network?
3. How often do you use the network?

4. Did you use computer technology before Cedarville College?

5. Describe the way you use the computer network at Cedarville College.

6. How necessary is computer technology among faculty in the 21st. century?

7. What was your response to using computer technology?

7a. Do other faculty feel the same way?

7b. What do you need to use computer technology effectively?

7c. What plan does Cedarville College have to train faculty in the use of the network?

7d. If you had technical support, how much more would you use the network?

7e. How much of that training would you use?

7f. What interactions can you have with persons on the network?

7g. Compare your participation in the network to a regular classroom.

7h. What are the advantages of being on the network?

7i. What are the disadvantages of being on the network?

7j. Discuss the environment of your computer network.

7k. What do you like most about using the network in your classroom?

7l. What do you like least about using the network in your classroom?

8. What reservations do you have about using the network?

9. What concerns do you have about the network?

10. What is your dissatisfaction with the network?
11. How does your dissatisfaction affect your use and performance on the network?

12. What new needs has the network created for you?

13. How much time do you save on lesson preparation by using the network?

14. What tangible change have you observed in your classroom since using the network?

15. How does interactive computer affect your perception of classroom teaching?

16. How is your classroom different now from one, two, and three years ago?

17. How would you design a 21st century classroom if you were asked to do so?

18. How is the network adapting to new technology?

19. How is new technology affecting the classroom?

20. Do you do distance teaching on the network?

21. How much conferencing do you do on the network?

22. How satisfied are business and industry with the training received at Cedarville College?

23. What is the role of interactive computer to the teaching/learning process?

24. What multimedia capability is available to your classroom?

25. Do you have access to the Internet on the network?

26. How satisfied with the software provided by the college?

27. How up-to-date are the software packages provided by Cedarville College?

28. What is the future of the Internet in the classroom?

29. What benefits does the Internet provide for education?

30. What place does cyberspace have as a teaching tool?
For this study the researcher will interview 25 faculty. The respondents will be chosen from a list of full-time faculty at Cedarville College. This list will be supplied by the office of the academic vice president. The respondents will be chosen from a cross-section of the population to represent the views of the entire faculty body.
The purpose of the questionnaire is to obtain students' perception regarding the use and effectiveness of campus-wide technology at Cedarville College, Cedarville, Ohio. According to Kalmbach (1994), multimedia is fast becoming a part of the American classroom in the 90's.

This study will provide the college with valuable insights into the thinking process of respondents. Such information will provide Cedarville College with information it needs.

Demographic information:

1. What is your age?
   
   _ Under 18 years
   _ 18 - 23 years
   _ 24 - 29 years
   _ 30 years and over

2. What is your classification?
   
   _ Freshman
   _ Sophomore
   _ Junior
   _ Senior

3. What is your degree major? _______________________

4. What is your gender?
   
   _ Male
   _ Female

5. What is your race?
   
   _ Black
   _ White

6. What is your country of origin (specify) ____________
Study question:

1. Do you use the network?

2. Why don't you use the network?

3. How often do you use the network?

4. Describe the way you use the computer network.

5. How do you feel using the network?

6. What do you need to use the network effectively?

7. If you had enough technical help, would you use the network?

7a. What plan is in place at Cedarville College to train students in the use of the network?

7b. How much of the training would you use?

7c. What are the advantages of being on the network?

7d. What are the disadvantages of being on the network?

7e. How does your dissatisfaction affect your use and performance on the network?

7f. What do you like most about using the network?

7g. What do you like least about the network?

7h. What reservations do you have about the network?

7i. What concerns do you have about the network?

7j. How do other students feel about computer technology?

8. What interactions do you have with other persons on the network?

9. Compare your participation in the network to a regular classroom.
10. In what ways is today's classroom different from one, two, or three years ago?

11. How would you design a 21st century classroom if given the opportunity to do so?

12. Do you see new technology playing a role in the classroom of the future?

13. How do you see interactive computer impacting higher education?

14. How effective is conferencing capability in your classes?

15. Describe the environment of the computer network?

16. What new needs has the network created for you?

17. What changes have you observed in your academic performance since you began using the network?

18. How much time do you save on homework and study by using computer technology?

19. How is the network adapting to new technology?

20. How is the network preparing you for the job world?

21. How extensively do your professors use multimedia in the classroom?

22. Do you have access to the Internet on the network?

23. Would you like to have Internet access on the network?

24. What benefits does the Internet provide for learning?

25. What type of future does the Internet have in education?

26. How satisfied are you with the software provided by the college?

27. How up-to-date are the software packages provided by Cedarville College?

28. Do you have a good grasp of information processing technology because of the network?
29. How do you perceive cyberspace as a viable tool for learning?

30. How has your writing improved since using computer technology?

31. How has problem-solving abilities improved since using computer technology?

For this study, the researcher will interview 50 students. These respondents will be chosen from a list of full-time students at Cedarville College. A list of names will be provided by the office of the academic vice president. The respondents will be chosen from a cross-section of the population to represent the views of the entire student body.
APPENDIX C

LETTER GRANTING PERMISSION FOR THE RESEARCH
February 11, 1993

Dr. John P. Eddy
Professor of Higher Education Administration

Dr. John L. Baier, Department Chair
Department of Higher Education Administration

RE: Peter R. Morgan, Doctoral Student and Advisee of Dr. Eddy

Dear Sirs:

This letter is to confirm that Mr. Peter Morgan, a doctoral student in your department, has our permission to pursue a study of Cedarville College entitled "Campus-wide Computer Network at Cedarville College and its Effect on the Teaching/Learning Process."

We are looking forward to this effort and believe the results of this doctoral research project will be beneficial to us.

Sincerely,

Duane R. Wood, D.B.A.
Academic Vice President

DRW/sf
APPENDIX D

CURRENT EQUIPMENT & SOFTWARE
CURRENT EQUIPMENT AND SOFTWARE

According to the *Network News* (1992a), Cedarville College has strong emphasis on strategic planning. Its emphasis is on preparing students to participate in our society, to develop sound reasoning, to enhance communications skills, and to prepare for a vocation. According to the Network News, sophisticated technology is needed if these objectives are to be attained in today's world. In keeping with its goals and objectives, Cedarville College has taken steps to upgrade its computer system. This update is in keeping with the growth of technology. Further updates are expected as technology continues to grow.


3 Laboratories with 60 computers

27 - 8088's with monochrome or color monitors, 3.5" or 5.25" floppy disk

5 - 80286's with color monitors

28 - 80386 DX's or SX's super VGA color monitors, most with hard drives

15 - 9-pin dot matrix printers
Planned Network Equipment:

4 Laboratories with 90 computers

- 90 - 386 SX’s (or better) with 4 MB RAM, a 3.5" floppy drive, super VGA color monitor, and MIDI compatible sound board.

- 12 - laser printers

- 1 - scanner

Lawlor and Printy Halls:

- 296 - 386SX’s (or better) with 4MB RAM, a 3.5" floppy drive, 40 MB hard drive, super VGA color monitor, and MIDI compatible sound board.

- 296 - 24-pin near letter quality dot matrix printers

Current Software (Network News, 1992a)

WordPerfect 5.1 Wordprocessing and Quattro (Student Edition) spreadsheets are available in all laboratories. Some laboratories have access to Windows, Harvard Graphics, DBase III+, FoxPro, and DrawPerfect. None of the Software is Windows-Based.

Brock, Willetts, and Maddux Halls 486'2
Planned Network Software:

Since software will be loaded on the network, all computers on the network will be able to access all of the software. Actual software on the network will include:

* on-line library catalog access
* WordPerfect for Windows (wordprocessing)
* Quattro Pro for Windows (Spreadsheet)
* FoxPro, dBase IV, Paradox (database)
* Harvard Graphics, DrawPerfect, Harvard Draw (graphics)
* Pagemaker (desktop publishing)
* Toolbook, ObjectVision 2.0 (visual programming and hypertext C++ for windows, Pascal FORTRAN, COBOL (Programming) plus capabilities in: Bible research, Electronic Mail, Statistics, and Tutorials.

The network, according to Network News (1992a), will be designed not only to provide computing capabilities for routine tasks like word processing, but it will make access possible to the library card catalog, electronic communications with faculty members, and delivery of instructional software. Faculty members will be incorporating network software (tutorials, presentations, textbook applications) into coursework.
APPENDIX E

COVER LETTERS AND DATA-COLLECTING INSTRUMENTS
Dear Students,

The office of the Academic Vice president at Cedarville College has consented to cooperate in a doctoral research study focusing on the importance of and impact which the installation of the campus-wide computer network is having to the teaching/learning process. We invite your cooperation by completing the brief attached questionnaire.

Approximately 10% of the entire student body has been randomly selected to participate. In addition, the entire faculty body is encouraged to participate. Perceptions regarding the use of the network installation will be statistically correlated to show effectiveness or lack of it.

Please return the completed questionnaire within 10 days via campus mail to Dr. Duane Wood, office of the academic vice president. Your assistance is greatly appreciated.

Sincerely,

Peter R. Morgan
Researcher

Advisory Committee:

Dr. John P Eddy
Dr. Jerry Don Vann
Dr. Vijayan K. Pillai
Dr. Howard Smith
Campuswide Computer Network Questionnaire
Cedarville College-Students

Instructions:

The purpose of this questionnaire is to obtain your perception of the effectiveness of the campus-wide computer network at Cedarville College to the teaching/learning process. The questionnaire is composed of 55 statements and questions dealing with the use and effectiveness of the system. A second part of the questionnaire is designed for personal data.

Teaching/learning, according to Chadwick (1982), is not a mere dumping of facts or information on the subject, but to stimulate the student to be able to imitate or apply in his life actions that he has come to know.

The identity of all participants will be kept confidential. The completion time for this questionnaire is approximately 20 minutes.

Your cooperation is valued and will help improve this service at Cedarville College.

Rate each of the 55 statements in the following two categories:

(a) Importance of Network

Importance defined: value, significance, great worth.

Examples of importance:
- Any body can see the value of good health.
- The discovery of insulin was an event of great consequence to diabetics (Barnhart & Barnhart, 1989).

(b) Impact of Network

Impact defined: To have forceful or dramatic effect.

Examples of impact:
- We cannot afford to ignore the impact of the deteriorating prison system on human dignity.
- The mayor noted that if the deep cuts have to be made, they would impact heavily on the poor (Barnhart & Barnhart, 1989)
Part I

A. Rate the importance of the campus-wide computer network at Cedarville College to the teaching/learning process. Using a scale of 1 - 5 (1 = lowest, 5 = highest), rate each statement or question (circle only one).

1 - Do not know enough to form an opinion  
2 - Not important  
3 - Fairly important  
4 - Very important  
5 - Extremely important

B. Rate the impact of the campus-wide computer network at Cedarville College to the teaching/learning process. Using a scale of 1 - 5 (1 = lowest, 5 = highest), rate each statement or question.

1 - Do not know enough to form opinion  
2 - No observable impact  
3 - Limited impact  
4 - Significant impact  
5 - Pervasive impact

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<th>Importance of Network</th>
<th>Impact of Network</th>
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<td>Low  High</td>
<td>Low  High</td>
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1. Use of dorm computer has dramatically improved my quality and style of writing.  

   1 2 3 4 5

51. 1 2 3 4 5

2. I write more as a result of the network.  

   1 2 3 4 5

52. 1 2 3 4 5

3. The computer network provides vital editing capabilities.  

   1 2 3 4 5

53. 1 2 3 4 5
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<th>Importance of Network</th>
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<td>Low  High</td>
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<tr>
<td>1 2 3 4 5</td>
<td>54. 1 2 3 4 5</td>
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<tr>
<td>4. The network has encouraged more as well as helped in doing thorough research.</td>
<td>55. 1 2 3 4 5</td>
</tr>
<tr>
<td>5. The quality of the final product is greatly enhanced with the use of the dorm computers.</td>
<td>56. 1 2 3 4 5</td>
</tr>
<tr>
<td>6. Group study has been enhanced as a result of the campus network.</td>
<td>57. 1 2 3 4 5</td>
</tr>
<tr>
<td>7. Use of dorm computer is a time saver.</td>
<td>58. 1 2 3 4 5</td>
</tr>
<tr>
<td>8. The campus-wide network allows me to do the majority of my studies in the dorm.</td>
<td>59. 1 2 3 4 5</td>
</tr>
<tr>
<td>9. I have easier access to materials for assignments and class projects as a result of the campus network.</td>
<td>60. 1 2 3 4 5</td>
</tr>
<tr>
<td>10. I am encouraged to try harder because of the helps which the system provides.</td>
<td>61. 1 2 3 4 5</td>
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<tr>
<td>11. The network facilitates library research.</td>
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<td>Importance of Network</td>
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<tr>
<td>12. The network has</td>
<td>1 2 3 4 5</td>
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<tr>
<td>increased my usage oflibrary materials.</td>
<td></td>
</tr>
<tr>
<td>13. The network provides opportunities for computer search.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>14. The network provides dorm users the opportunity for inter-library access.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>15. One-on-one interaction between students and faculty has improved since the implementation of the campus-wide computer network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>16. One to one contact among students has improved as a result of the network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>17. Academic interaction between students has improved since the implementation of the campus-wide network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>18. The campus E-mail connects students with faculty.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>Importance of Network</td>
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19. The network enables some advising to be done via the dorm computer.

20. The campus network at Cedarville connects me with other students at other local institutions.

21. Students have more access to academic counselors because of the campus network.

22. Scheduling of face-to-face meetings between students and faculty is more convenient as a result of the campus network.

23. Fewer face-to-face meetings are necessary as a result of the campus network.

24. The network facilitates grading of papers via E-mail and dorm computers.

25. The network facilitates the relaying of messages between students, as well as between students and faculty.
26. The network facilitates the registration process from my dorm.

27. I have access to registration material as a result of the network.

28. Cedarville College provides me with the opportunity to check my records via the campus network.

29. The network provides me with access to information on financial aid.

30. The network provides access to problem-solving helps for a variety of subjects including: mathematics, biology, chemistry, physics, and history.

31. The system's user friendliness makes it easy for me to use and operate.

32. The availability of computers in the dorms is a positive step in the right direction for Cedarville College.
127

Importance of Network

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<tr>
<th>Importance of Network</th>
<th>Impact of Network</th>
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<tbody>
<tr>
<td>Low</td>
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<tr>
<td>33. Availability of dorm computers was a major factor in my choosing to attend Cedarville College.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>34. It is expedient that Cedarville College install more than one computer per room.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>35. I am willing to pay the extra fee in order to have more than one computer per dorm.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>36. The dorm computers are a necessary convenience.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>37. Cedarville College computer network is well maintained.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>38. Cedarville College provides classes which are designed to help users become more proficient in computer software package and usage.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>39. It is vital that Cedarville College network have modern and up-to-date computers and software.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>40. The network provides protection from unauthorized access to the system.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Importance of Network</td>
<td>Impact of Network</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>41. The network provides protection from unauthorized access to my files.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>42. Cedarville College provides up-to-date tutorial and assistance on network use as is needed.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>43. The network provides well maintained equipment.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>44. Cedarville College provides developmental programs to meet the needs of users.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>45. I am encouraged to enhance proficiency in computer literacy.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>46. Use of the network will prove to be an asset when seeking employment.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>47. Cedarville College provides opportunities for students wanting more formal training.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>48. Cedarville College provides a coordinator to monitor the use of the network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>49. Faculty at Cedarville encourage me to use the network.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
Importance of Network | Impact of Network
---|---
Low | High
Low | High

50. I have not had problems accessing the network.

1. What problems have you encountered with the network system?

2. How would you like the system improved?

3. What benefits do you see in the network for yourself?

4. How has the network improved the learning process for you?
Dear Faculty,

The office of the Academic Vice president at Cedarville College has consented to cooperate in a doctoral research study focusing on the importance of and impact which the installation of the campus-wide computer network is having to the teaching/learning process. We invite your cooperation by completing the brief attached questionnaire.

Approximately 10% of the entire student body has been randomly selected to participate. In addition, the entire faculty body is encouraged to participate. Perceptions regarding the use of the network installation will be statistically correlated to show effectiveness or lack of it.

Please return the completed questionnaire within 10 days via campus mail to Dr. Duane Wood, office of the academic vice president. Your assistance is greatly appreciated.

Sincerely,

Peter R. Morgan
Researcher

Advisory Committee:

Dr. John P Eddy
Dr. Jerry Don Vann
Dr. Vijayan K. Pillai
Dr. Howard Smith
Campus-wide Computer Network Questionnaire
Cedarville College-Faculty

Instructions:

The purpose of this questionnaire is to obtain your perception of the effectiveness of the campus-wide computer network at Cedarville College to the teaching/learning process. The questionnaire is composed of 54 statements and questions dealing with the use and effectiveness of the system. A second part of the questionnaire is designed for personal data.

The identity of all participants will be kept confidential. The completion time for this questionnaire is approximately 20 minutes.

Your cooperation is valued and will help improve this service at Cedarville College.

Rate each of the 54 statements in the following two categories:

(a) Importance of Network
(b) Impact of Network

Part I

A. Rate the importance of the campus-wide computer network at Cedarville College to the teaching/learning process. Using a scale of 1 - 5 (1 = lowest, 5 = highest), rate each statement or question (circle only one).

1 - Do not know enough to form an opinion
2 - Not important
3 - Fairly important
4 - Very important
5 - Extremely important

B. Rate the impact of the campus-wide computer network at Cedarville College to the teaching/learning process. Using a scale of 1 - 5 (1 = lowest, 5 = highest), rate each statement or question.

1 - Do not know enough to form opinion
2 - No observable impact
3 - Limited impact
4 - Significant impact
5 - Pervasive impact
<table>
<thead>
<tr>
<th>Importance of Network</th>
<th>Impact of Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>1. Use of dorm computers has dramatically improved students' ability to write comprehensively.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2. Use of dorm computer has dramatically improved students' quality and style of writing.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. The computer network provides vital editing capabilities.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. The network has encouraged more as well as helped in doing thorough research.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. The quality of student's final product is greatly enhanced with the use of the dorm computer.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6. There is more access to material for assigned projects as a result of the campus network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Importance of Network</td>
<td>Impact of Network</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Low  High</td>
<td>Low  High</td>
</tr>
<tr>
<td>7. The network provides helpful tools for homework assignments and research.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8. The network provides dorm users access to the library files.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>9. The network provides opportunities for computer search.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>10. The network provides dorm users the opportunity for inter-library access.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>11. One on one interaction between students and faculty has improved since the implementation of the campus-wide computer network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>12. One on one contact among students has improved since the implementation of the campus-wide network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Importance of Network</td>
<td>Impact of Network</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>13. Academic interaction between students has improved since the implementation of the campus-wide network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>14. The network provides a centralized information center for E-mail and computer news.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>15. The network facilitates some advising via the dorm computer.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>16. The campus network connects Cedarville College's and faculty with their counterparts at other local institutions.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>17. Students have more access to academic counselors because of the campus network.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
18. One on one contact between students and faculty is more convenient as a result of the campus network.

19. Fewer one on one meetings are necessary as a result of the campus network.

20. The network facilitates grading of papers via E-mail and dorm computers.

21. The network facilitates the relaying of messages between students as well as between students and faculty.

22. Registration material is readily available to students as a result of the network.

23. Class scheduling is possible via the campus network.

24. I use the system for effective interaction with my advisees.
<table>
<thead>
<tr>
<th>Importance of Network</th>
<th>Impact of Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

25. Cedarville College provides students with the opportunity to check their records via the campus network.

26. The network provides students with access to information on financial aid.

27. Financial aid results can be relayed to students via the campus network.

28. The network provides access to problem-solving helps for a variety of subjects including: mathematics, biology, chemistry, physics, and history.

29. The system's user friendliness makes it easy to use and operate.

30. The availability of computers in the dorms is a positive step in the right direction for Cedarville College.
31. It is expedient that Cedarville College install more than one computer per room.

32. Cedarville College computer network is well maintained.

33. Cedarville College provides classes which are designed to help users become more proficient in computer software packages and usage.

34. It is vital that Cedarville College network have modern and up-to-date computers and software.

35. The network provides protection from unauthorized access to the system.

36. The network provides protection from unauthorized access to my files.
<table>
<thead>
<tr>
<th>Importance of Network</th>
<th>Impact of Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

37. Cedarville College provides network users needs assessments as is necessary.  

38. Cedarville College provides up-to-date tutorial and assistance on network use as is needed.  

39. The network has become a vital component in my teaching experience.  

40. Cedarville College provides developmental programs to meet the needs of users.  

41. Students and faculty are encouraged to enhance proficiency in computer literacy.  

42. Use of the network will prove to be an asset when seeking employment.
<table>
<thead>
<tr>
<th>Importance of Network</th>
<th>Impact of Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low  High</td>
<td>Low  High</td>
</tr>
<tr>
<td>43. Cedarville College provides opportunities for students wanting more formal training.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>44. Faculty at Cedarville encourage students to use the network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>45. I assign students which requires them to use helps from the network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>46. Faculty aggressively pursue the use of the computer network.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>47. The network provides faculty an opportunity to publish.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>48. The network has made advising easier.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>49. This system is vital to the technological growth of Cedarville College.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>50. I have not had problems accessing the system.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
1. What problems have you encountered with the system?

2. How would you like the system improved?

3. What benefits do you see in the system for yourself?

4. How has the network improved the teaching process for you?
Part II

Faculty Personal Data

Instructions:

This exercise will assist the college in identifying the various needs of faculty members as well as providing an opportunity for responding to them. It will also provide the college with such pertinent information regarding the extent of the use of the network. Please use an (X) to indicate your answer.

1. By age
   ___ Under 30 years
   ___ 30 - 34 years
   ___ 35 - 39 years
   ___ 40 - 44 years
   ___ 45 - 49 years
   ___ 50 - 54 years
   ___ 55 - 59 years
   ___ 60 years and over

2. By current position
   ___ Department Chairman
   ___ Professor
   ___ Associate Professor
   ___ Assistant Professor
   ___ Other (specify) ________________________________

3. By degree earned (highest)
   ___ B.A./B.S./Th.B.
   ___ M.A./M.S.
   ___ M.B.A./M.Ed.
   ___ Th.M.
   ___ M.A.B.S./M.A.C.E.
   ___ Ph.D./Ed.D.
   ___ Th.D./D.Phil.
   ___ Other (specify) ________________________________

4. By marriage status
   ___ Single
   ___ Married
   ___ Divorced
___Widowed
___Other (specify) _____________________________

5. By years of experience
   ___Less than 5 years
   ___More than 5 years - less than 10 years
   ___More than 10 years - less than 15 years
   ___More than 15 years - less than 20 years
   ___More than 20 years - less than 25 years
   ___More than 25 years and over

6. By teaching field
   ___Bible
   ___Music
   ___Science
   ___Engineering
   ___Humanities
   ___Nursing
   ___History
   ___Christian Education
   ___Language
   ___Social Science
   ___Education
   ___Other (specify)

7. By computer experience
   ___Never used computer in the past
   ___Have used computer, but not literate
   ___Semi-illiterate
   ___Literate
   ___Very literate
   ___Other (specify)

8. By status
   ___Tenured
   ___Non-tenured
APPENDIX F

RESEARCH QUESTIONS AND QUESTIONNAIRE
Appendix F

Research Questions and Questionnaire

This study will attempt to answer the following research questions:

1. What is the extent of faculty and students' use of technology on campus?
   A. Questions 1-7e
   B. Questions 7i, 7k, 7l
   C. Questions 8-10
   D. Questions 24-25 (S)

2. What type of online services does the college make available to users via the network?
   A. Questions 7f, 15, 23, 10 (S), 24 (S)
   B. Questions 25-30

3. What type of computer software is available to you and how extensively do you use them?
   A. Question 26
   B. Question 27

4. How has the quality of students' writing in your discipline improved since using technology?
   A. Question 19
   B. Question 23
   C. Questions 30-31 (S)

5. How has problem-solving improved with the use of technology?
   A. Questions 24-25 (S)

6. In what ways will technology contribute to the task of teaching?
   A. Question 15
   B. Question 19
   C. Question 23
   D. Questions 28-29

7. In what ways will technology contribute to the task of learning other than writing?
   A. Questions 13-15
   B. Question 19
   C. Questions 29-30
8. How could interactive computer encourage in-class participation?
   A. Question 7f
   B. Question 15
   C. Question 23

9. How user friendly is the computer technology at Cedarville College?
   A. Question 7
   B. Questions 7h, 7i, 7k, 7l
   C. Questions 9-10

10. How much experience did you have before you began using the network?
    A. Question 4

11. How extensively do you use E-mail to communicate between peers?
    A. Questions 7f, 7k

12. How extensively do you use the E-mail to communicate with students?
    A. Question 7f
    B. Question 21
APPENDIX G

HYPOTHESES AND QUESTIONNAIRE
Appendix G

Hypotheses and Questionnaire

1. There is a significant difference in the use of the computer network among faculty by teaching field.
   A. Dem. page 56 - (F) #6

2. There is a significant difference in the use of the computer network among faculty by degree earned.
   A. Dem. page 56 - (F) #5

3. There is a significant difference in the use of the computer network between tenured and non-tenured professors.
   A. Dem. page 55 - (F) #3

4. There is a significant difference in the use of the network between genders.
   A. Dem. page 55 (F) #4
   B. Dem. page 59 (S) #4

5. There is a significant difference in the use of the network among degree majors.
   A. Dem. page 59 (S) #3

6. There is a significant difference in the use of the network among students by classification.
   A. Dem. page 59 (S) #2

7. There is a significant difference in the use of the network among students by age classification.
   A. Dem. page 59 (S) #1

8. There is a significant difference in the use of the computer network among students by race.
   A. Dem. page 59 (S) #5

9. There is a significant difference in the teaching field because of the use of technology.
   A. Questions 14-16
   B. Question 19
REFERENCES


