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A study of attitudes about computers among faculty of three community colleges.

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A STUDY OF ATTITUDES ABOUT COMPUTERS AMONG FACULTY OF THREE COMMUNITY COLLEGES

A Dissertation Presented

by

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ABSTRACT

A STUDY OF ATTITUDES ABOUT COMPUTERS AMONG FACULTY OF THREE COMMUNITY COLLEGES

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This study focused on the attitudes of community college faculty toward computers and their willingness to use computers in their teaching. The objectives were to identify significant differences in attitudes among groups of faculty and to see if demographic variables as well as quality and amount of experience with computers correlated with attitudes. The study also sought to describe anecdotally the attitudes of community college teachers toward computers and factors which seemed to have influenced attitude change.

Two instruments were used to accomplish the above objectives. One was a survey questionnaire administered to 159 faculty members of three small community colleges in Western Massachusetts in December, 1984. The other was a follow-up open-ended interview of a small subset of the original population.

Results of the survey questionnaire showed that the respondents generally had positive attitudes toward computers and were generally eager to use computers in their teaching. Examination of some variables as possible predictors of attitudes revealed the following:

1. There appeared to be some correlation between general attitude toward computers and such factors as number of years teaching, main academic area, and exposure to computers.

2. There appeared to be some correlation between eagerness to use computers in teaching and such factors as number of years teaching, age, main academic area, and exposure to computers.

The follow-up interviews seemed to show that for some faculty members of the Humanities Divisions of the three community colleges, purchase of a computer in the last few years was a catalyst for their change in attitude. Other catalysts referred to were the influence of an in-house trainer and the seeming "inevitability" of the computer.

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CHAPTER I

INTRODUCTION

The year 1982 appears to have been a benchmark of sorts in the awakening of America toward the reality of the computer. It was in that year that John Naisbitt wrote his bestseller Megatrends which, among other things, pointed to the computer as the linchpin of the new information society. By that time, "computer literacy" had become a very common topic often discussed in the media. Naisbitt had his own view of the impact of computer literacy on the population. He compared computer illiteracy to that of "wandering around a collection the size of the Library of Congress with all the books arranged at random with no Decimal System." (Naisbitt 33). Time Magazine found the computer so compelling that when it came time to choose the Man of the Year for 1982, it broke tradition and named an inanimate object, the computer.

In a way, the attention focused on the computer by the media helped fuel the microcomputer revolution of the 1980's. As Naisbitt's book became a national bestseller, his catchphrase, "the information society," became part of everyone's language. The volume of sales of personal computers rose dramatically as people from all walks of life sought to keep abreast of the new technology. There was, however, something disconcerting about Naisbitt's

predictions about the coming pervasiveness of computers in people's lives. David Linowes described the rapidity of change in microcomputer technology by drawing analogies in technological development in other areas in industry.

> If the international combustion engine had developed as rapidly as the central processing unit of the modern computer since 1945, a Rolls Royce would now have 45,000-horsepower, cost $4, and do 3 million miles to the gallon.
>
> In aviation, if jet technology had developed at the same rate as the computer has in the past 25 years, we would be traveling to Europe in seven minutes at a cost of 2 cents and the airplane would be the size of a shoe box. (Linowes 439)

The computer became a favorite topic in gatherings. The atmosphere in conversations over the computer was not always pleasant since there were typically two types - those who were computer-literate and those who were not. Jean-Louis Gassee described what he thought was happening in the minds of those who talked about computers in parties he attended.

> At these dinner parties, they tell me it's a fad, a temporary fascination with a new type of gadget. Maybe. But some fads last. The pioneers of aviation heard plenty of this talk too, but they started a "fashion" that isn't over yet. With computers, it is thought that takes wing. True, computer illiterates feel that a sort of vast blue sky above separates them from computer literates.... The excluded, the laymen, feel left behind, on the ground, frustrated, missing the action going on above them. Moreover, they have a sneaking suspicion that these half-magic, half-devilish machines are much more than a mere fad, that they are indeed a form of power. Their frustration comes from feeling deprived of this

> singular power, which fascinates and frightens at the same time. ..... Computers, especially microcomputers - leave no one indifferent. They are worshiped or hated, adored or disparaged - with equal vigor. They play a leading role, both symbolic and real, in our universe; and even those who prefer to bury their heads in the sand feel worried, attacked, disconcerted, questioned. (Linowes 6-7)

Controversy over the impact of the computer on people's lives was not brought about by the microcomputer alone. What the microcomputer has done is to make the controversy assume a personal dimension where in the past, it was a subject dealt with by academics. In his book, aptly titled "Monster or Messiah", Mathews describes the nature of the debate over the impact of the computer on society, a concern which, he says, has been growing since the coining of the phrase "post-industrial society" in 1962 by Harvard sociologist Daniel Bell (Monster ix).

At one end of the debate are those who look at the computer as the central means to bring about and accelerate human progress. Numbered among them are what Laurenzo calls the "new philosophes," a group of social scientists who not only eagerly look to the future but seek to plan it. He claims that these "futurists," as they are called, have a basic optimism about the future and human beings' ability to control the destiny of the planet and society. Although the futurists have a healthy appreciation of the dangers of technology gone wild and the possibility of an impending catastrophe, futurists are inclined to believe in the

Millenium (Laurenzo 10-11). Alvin Toffler, among others, is cited by Laurenzo as one of the chief spokespersons of this contemporary social philosophy. He, like other futurists, believes in man's ability to subject the process of evolution to human guidance and relies on the computer to facilitate that process. As progress accelerates and new knowledge multiples exponentially, the world will experience future shock. Ironically, Toffler regards the computer as a key instrument to help mitigate the effects of future shock. He advocates the convening of "social future assemblies" which rely on computer technology (Laurenzo 10).

Although the computer has become an ubiquitous presence in many offices and homes, it has not taken over people's lives as much as futurists have anticipated. For example, Kahn mistakenly predicted that by 1980, computers would be acting as master regulators of humidity, temperature, various cooking devices, home accounting and mass media and libraries in some homes; acting as mother or baby-sitter surrogate and playmate as well as tutor and/or teacher (Landon 32).

One of the more difficult things to measure is the extent by which the general population accepts computers. Market surveyors seek to solve this problem by counting the number of computers sold in a given period. If this is an indicator of acceptance of the computer, then we can readily conclude that computers enjoy unqualified acceptance judging

by the explosion in computer sales in the last few years. A more important statistic is the extent that computers are used in various homes and offices.

Not all of the resistance to the computer comes from the typical fear of the unknown. It can also come from a long-standing suspicion that all technological advance can have a negative impact on human values. Shepard states the case for the anti-technologists, citing five claims which, we can assume, apply to computers. According to him, antitechnologists say that:

> (1) Contemporary technological trends dehumanize people; they are made to be anonymous and lose significance and individuality.
>
> (2) Work loses dignity, creativity and meaning.
>
> (3) Cybernation encourages nonreflective conformity.
>
> (4) Materialism and technolatry replace traditional religious values.
>
> (5) Technique becomes autonomous and human beings its slaves. (Shepard 149)

Others warn against the misuse of technology. Dolin divides the misuse of technology into two broad categories: the criminal and the non-criminal, both of which, he claims are dangerous to the health of the body politic. One of the noncriminal misuses that he cites is the encouragement of an aura of omnipotence and omniscience upon the computer, whereby it is believed that any information generated by computer is perforce true and valuable (Dolin 39).

1982 was also the year when the love affair between schools and the computer hit headlines. Several well-known colleges announced that they would require all their students to own their own computers. One of these was Carnegie Mellon University of Pittsburgh. Its president, Dr. Cryert, was convinced that many schools would follow suit and was quoted as saying that "in five years every school would be requiring its students to own computers" (Certron and O'Toole 1983). Since then, microcomputers have poured into campuses in increasing numbers, thanks partly to the initiative of manufacturers who have offered deep discounts or given computer equipment outright to schools. Margie Ploch noted in 1984 that although no one knew how many micros were used in colleges, the number was increasing so rapidly that doubling or even tripling over a few years was not an uncommon expectation. As examples of the trend, she cited Brown University which planned to have 10,000 work stations by 1989 and that of Caltech which planned to increase its computer-to-student ratio from 1:10 to 1:3 within three years (Ploch 49).

By the fall of 1985, U.S. News and World Report (October 7, 1985) indicated that the computer revolution in the campus was on its way. By the end of that year, the report estimated, 2.2. million college students - nearly one fifth of the 12.2 million enrolled - would own their own computers. As predicted, schools encouraged entering freshmen to buy their own computers and earnest attempts

were being made to integrate the computer into the curriculum. However, some problems began to emerge. For one thing, there was the problem of incompatibility as different types of personal computers proliferated on campus. Others cited lack of quality software as a problem. Some school administrators began to doubt whether the huge initial expense entailed in computerizing their campuses was justified, especially in light of the rapid turnover of new technology. One of the most pressing problems was resistance from faculty who felt insecure about their personal competency using them (60).

Another issue of U.S. News and World Report (November 10, 1986) cites a report released in early 1986 by the governors' association and the Department of Education which laid some of the blame for computers not living up to their potential to poor teacher training, among other things. The report claimed that only 10 to 27 percent of all teachers were rated by Johns Hopkins researchers as "minimally" expert at computer use.

Gerald Bracey observes in 1988 that ten years since the appearance of the Apple II+ and the widespread diffusion of computer programming and computer applications, there was still a fair amount of anxiety about using computers among educators. He suggests that to reduce computerphobia, teachers need time to learn appropriate uses of the machine

as well as know how computers affect them personally. (Bracey 20).

In the midst of all this talk about computers flooding the campuses and the trend toward requiring students to own computers, some critical questions need to be asked: Are the teachers going to be involved in the move to integrate computers into the educational process at all? If so, what is their role expected to be? How well prepared are they to step into their new role? What steps are being made to upgrade teachers' computer skills? Have we asked the teachers how they feel about using computers in their classrooms?

One very important variable is the attitude of teachers toward the new technology. School administrators can ill afford to overlook the ability and the willingness of their teachers to adapt to the new technology. Attitudes of teachers to the new technology may be critical. Alderman and Mahler claim that studies indicate that the introduction of automated devices into schools poses a threat to teachers and thereby engenders resistance. (Alderman and Mahler 77) Peter Wagschal expresses his fears that the mistakes of the past regarding instructional television may be in the process of being repeated. He cites three reasons why television never captured the interest and imagination of public school educators, namely, the failure by schools that purchased television sets to set money aside for equipment repairs and maintenance, the lack of an effective way to

train teachers to integrate television into their ongoing instructional programs, and the fact that a majority of teachers had (and still have) a snobbish attitude regarding the quality of commercial television and its usefulness in the classroom (Magschal 252). He then warns that if trends continue, computers will be dominant in society just as television is now, but will be largely ignored in the schools (Wagschal 253).

Perhaps a measure of the intensity of the move to computerize the educational system is the extent by which this move has trickled down to the community college level. Ploch says that with few exceptions, state-supported schools are adopting microcomputers more slowly than private schools (Ploch 42). Since community colleges are state-supported and since they are usually smaller and have lesser funds for capital development than their four-year counterparts, it stands to reason then that community colleges would have been the slowest to adopt the new technology. Even then, a 1982 survey of computer use among U.S. community colleges showed dramatic increases in computer use in the beginning of the decade (Angel and McKusker 24).

Some concern has been publicly expressed over the need for faculty training among community college teachers. In developing a proposed campus-wide plan for academic computing, Peel and Callas urge that a commitment be made to faculty development which should take a variety of forms,

such as workshops, travel to computer-related conferences, or other professional activities (Peel and Callas 46).

Few objects seem to evoke more intense emotional reaction than that of the computer. Mention the word "computer" to any group and at once a mixture of feelings surface. Like other professionals, teachers feel that they are drawn toward the computer, willingly or unwillingly. They are told in a variety of ways that the computer is increasingly becoming a necessary adjunct of their professional practice.

It would be well for those who are charged with helping teachers upgrade their computers skills to take into account whatever actual or potential psychological barriers there may be to successful learning. Pre-formed negative attitudes toward computers can be significant barriers. Therefore, before proceeding with any computer literacy program for teachers, it would be wise to try to identify such negative attitudes. Such an identification can be a prelude to a program of planned attitude change. Similarly, it might be useful to identify positive attitudes and the factors that correlate with them.

This study seeks to identify some of those aforementioned attitudes toward computers as held by faculty members of three small Western Massachusetts community colleges chosen for the study.

The study of the attitudes of faculty members of these three Western Massachusetts community colleges attempts to answer the following questions:

1. Are there signficant differences in computer attitudes among different groups of teachers?

2. Do demographic factors such as sex, age, and faculty rank correlate with certain attitudes toward computers?

3. Do amount and quality of past experience with computers correlate with certain attitudes toward computers?

In order to achieve the above purposes, a survey was taken of the entire faculty population of the Berkshire Community College, Greenfield Community college and Mt. Wachusett Community College. A follow-up personal or telephone interview was conducted with a subset of the survey population. The three colleges were chosen because they are all small, situated in a rural setting and all located within a hundred miles of each other.

The survey instrument was a 22-item questionnaire developed by the author specifically for this study. It was administered to faculty members of the three colleges in December, 1984. The follow-up interview was done in the spring of 1988.

CHAPTER II

REVIEW OF THE LITERATURE

A search of current literature, including the ERIC file and the Dissertation Abstracts International has yielded some literature germane to the topic.

This review of the literature will focus on two areas. First, we will look at the body of literature on community college responses to influx of computers into educational systems. Second, we will look at the body of literature dealing with measurement of educators' attitudes toward computers.

Computers and Community Colleges

Most of the studies that use community colleges and their constituents as subjects of studies are directed at quantifying computer use or measuring effects of some computer applications, notably computer-assisted instruction. There are quite a few descriptions of innovative computer applications being tried out at some community colleges, oftentimes in the form of publications released by the community colleges themselves.

In 1982, a nationwide survey of community colleges in America was conducted for the purpose of assessing how community colleges are responding to the "information revolution." The results of the survey, consisting of

revolution." The results of the survey, consisting of responses from 244 colleges (20% of those sampled) showed that community colleges generally increased in computer use. There seemed to be positive attitudes toward computer use and a desire to expand facilities (Angel and McKusker 24).

Instructional computing was the subject of a project at Bakersfield College, California in 1982. Jointly sponsored by Bakersfield College and the League for Innovation in the Community College (after, League) and supported by a grant from the National Science Foundation, the project was designed to provide science and social science faculty with opportunities to learn how to develop instructional computing materials and to assess and adapt others' materials to their own use. The highlight of the project was a four-week workshop which brought together science and social science faculty from 22 League colleges. The project's purpose, as articulated by three of the workshop faculty, Allison, Smith and Kirkland, was to give the participants "time to learn how to develop instructional computing materials, the background needed to obtain such materials from others, and the training required to allow them to adapt the materials to their own and their colleagues' teaching situations and computer systems" (Allison 1). In evaluating the workshop, project director Allison called it a success. Many of the 30 participants returned to their institutions with developed courseware, others made substantial beginnings and all understood how

the computer can effectively be used in their instructional fields and felt that they were competent enough to create courseware for such use (Allison 4).

Charles Self sees the need to develop competencies at the community college level in what he calls "distance education technologies." Among the factors that have created a need for development of distance technologies is the increase in the numbers of older students interested in lifelong learning and education outside the traditional school setting. To Self, distance education is valuable because it is responsive to problems of access, fear of returning to class, cost, student recruitment and limited resources. The term distance technologies, by Self's definition, includes public broadcasting television, instructional television filmed services, cable television, video cassettes, video discs, teleconferencing, computer-assisted instruction, and data-based instruction.

Focusing on computer-assisted instruction, Self cites Masat in explaining why the computer has made little inroads into the instructional process at the university level. Several reasons were given.

1. Faculty believe that the emphasis on teaching might threaten their research.

2. They would need to learn a new discipline in more than a perfunctory way.

3. Today's union members are reluctant to be as innovative as their nonunionized colleagues of the past.

4. Faculty are not readily open to innovation and risks associated with computers.

5. Faculty members believe that they have enough to do without having to spend additional time and effort learning new techniques and learning processes. (Self 20)

Self further offers the suggestion that the above factors, with the exception of number one, are also operating at the community college level. Furthermore, Self asserts, even if the above conditions could be overcome, there still exists the problem of acceptance of the target group (Self 21).

The need to retrain faculty in the use of computers, as Self sees it, is made more pressing because of the trend toward greater emphasis on science education in the future. This trend will mean a greater need for science and technology teachers and a corresponding reduced need for liberal arts faculty. Which means that some liberal arts teachers will be retrenched. And even those liberal arts faculty that would be retained would have a different role than at present (Self 23).

By the mid-1980's interest in the use of microcomputers in the community college began to peak. Dellow and Poole's work in 1984 is a compilation of the opinions of community college educators all over the country for the purpose of identifying the challenges faced by community college educators as they attempt to implement the new microcomputer technology. Editors found "a strong sense of the

pioneering spirit in this field, where there are no long-term experts." (Dellow and Poole 1).

Dellow and Poole identify six areas of challenge which are most pressing at the community college level, namely computer literacy, telecommunications, videodisc technology, control of information, contract negotiations and curriculum changes. To them, the computer literacy problem includes the need to provide enough training to ensure that all faculty, or at least a significant proportion of faculty, are computer-literate (Dellow and Poole 8).

One interesting point brought up by the authors is the possibility of the issue of microcomputer access becoming an item in contract negotiations where one group of faculty may decide that computers represent a threat and seek to keep them off the educational scene as long as possible while other groups may want to negotiate for a microcomputer for every office or for personal computers that can be taken home. Moreover, they point out that the issue of how the computer will affect faculty work load is sure to appear on the bargaining table soon (Dellow and Poole 9-10).

One of the contributors is Lawrence Spraggs who gives credit to the microcomputer for bringing computer power into the community colleges. According to him, community colleges have traditionally not had the funds necessary to purchase a large mainframe computer, as the large research-oriented universities have. The development of the microcomputer has made computing power available to the community college. In

fact, individual departments can purchase computing equipment specific to their needs. Spraggs also ties the rapid acceptance of the new technology to the mission of the community college. According to him, the open-door policy that typifies community colleges results in a very heterogeneous population. This heterogeneity necessitates at least some attempt to individualize instruction, and the microcomputer is very valuable for this purpose (Spraggs 13,14).

Applications that he cites where instruction can be individualized are simulations and modeling, tutorials, drill and practice, computation and data analysis, data management and word processing (Spraggs 14-19).

Other community college educators see the value of computers to their respective disciplines. Clifford Dillman sees the microcomputer as a solution to the problem of reduced active participation in behavioral science courses. The microcomputer, in his view, can be used in a variety of roles to reintroduce participation and exploration to undergraduate behavioral sciences (Dillman 23).

As interest in computers spreads beyond the traditional areas such as mathematics, science and business and through the entire academic community, David McKay foresees political problems when various disciplines compete for control over computer centers, especially if circumstances dictate a centralized center (McKay 35).

Robert Levin typifies the reaction to computers among forward-looking faculty in the writing disciplines, citing the positive results of computer assisted writing observed by college faculties. To him, the computers change the instructional context. Writing becomes a new kind of activity encouraging the writer to notice how format can influence the effectiveness of communications. Revision becomes a dynamic part of the process (Levin 43).

Larry Compeau addresses the opportunities opened up by the microcomputer for the development of computer sciences courses at the community college level. Citing his experience at North Country Community College, he shows that with the advent of the microcomputer, it is now possible for junior colleges to offer a cost-effective computer science program, using microcomputers instead of expensive mainframes and time-sharing arrangements (Compeau 47).

Barry Heerman speaks to the impact of computers on adult education. He says that increasingly, adult learning becomes centered more around the home and the workplace. Microcomputers are extending learning opportunities and if the community college is to meet the needs of adult learners in the 1980's and 1990's, they must learn to use the computers. One of the ways to respond positively, he says, is to enhance faculty competence. "Faculty should be encouraged to incorporate professionally produced courseware into their instructional process, to reconceptualize the learning process so they can accommodate adults who prefer

home-or-work-based learning, and to guide local developers of courseware" (Heerman 83).

Campbell and Ballenger suggest that "the challenge for community college leaders will be to interpret the community college mission and continue to serve their constituencies in the context of rapid social and technological change, which rapid advances in microprocessor technology are in large part creating.." They also point out that existing patterns of finance and governance need to be reexamined. These would include policies and procedures regarding faculty loads, class size, funding, and support services which would need to be reevaluated from an information systems perspective (Campbell and Ballenger 123).

Of the few studies that focus on the attitude of community college teachers, two can be considered particularly significant. One study is a survey of 67 faculty members at Coast Community College made by Brightman to see how they would respond to 23 assertions about the value of CAI. The 67 that were chosen for the study were those in the college's faculty who had direct experience in making use of CAI. The results of the study showed that there was widespread agreement with all 23 assertions about the value of CAI among the respondents. The few differences of opinion appeared between faculty members teaching technical and those teaching non-technical subjects. Comments were solicited from the respondents and the

responses suggested a need for data file access for CAI purposes, and proposed that alternative systems may be more effective than CAI in terms of realizing some of the assertions. The other study, made in 1977 by Alderman and Mahler, surveyed 300 faculty members of six community colleges on their opinions about educational practices and their attitudes toward CAI. The six colleges chosen for the study were all campuses which had been demonstration sites for either the PLATO or TICCIT projects. The study showed positive feelings about CAI. Nearly 80% of the respondents felt that CAI could enhance remedial instruction. A majority of the instructors surveyed believed that courses requiring extensive memorization might benefit from CAI but opinions about use in introductory courses demanding creativity seemed evenly divided. It seemed that the teachers surveyed supported the use of CAI for teaching factual material or specific skills but not for developing appropriate attitudes, appreciations or critical thinking abilities.

Measuring Educators' Attitudes Toward Computers

There is a growing body of empirical studies on the attitudes of educators in general toward computers. These empirical studies have emerged from a growing awareness that oftentimes, teacher resistance is a primary reason behind schools' reluctance to adopt any form of instructional technology. Scanland and Slattery say that the threats that teachers see in computers are real, the most serious being the threat to job security, and they suggest ways by which teacher resistance may be overcome.

The first step in the development of a methodology for measuring the attitudes of community college teachers toward computers in general would be an examination of the literature on methods of measuring attitudes toward computers. Reece and Gable argue for the development of good instruments for measuring attitudes toward computers, saying that "awareness of these attitudes will assist in evaluating the role of microcomputers in computer-assisted learning and in the future local development of a curriculum which wisely incorporates the use of computers" (Reece and Gable 914). Their contribution to this search for a viable instrument on attitudes toward computers is a 30-item attitude questionnaire which they administered to 172 eight grade students. The questions were made following the guidelines set by Triandis who stated that attitudes have three components: cognitive, behavioral and affective.

Although this measure was tested on students, it can be extended to teachers as well.

Ellsworth and Bowman used a series of questions developed by David Ahl in 1976 to construct a 17-item scale to measure student beliefs about computers. To test the internal consistency and reliability of the scale, they administered a questionnaire using the scale to computer science majors at Wichita State University. The results of the tests showed that the 17 item test could be an adequate instrument for preliminary research use.

Janice Woodrow replicated a study made by Stevens in 1981 of Nebraska teachers and student teachers, by using teachers and student teachers from British Columbia to see if there are measurable differences in attitudes toward computers between teachers and student teachers who are predisposed toward the educational use of computers and teachers and student teachers in general. Her study showed that several measurable differences in attitudes exist between teachers who are predisposed toward the classroom use of computers and teachers in general. Student teachers in 1985 were more positive in their attitude toward computers than their 1981 counterparts. They showed less reluctance than their 1981 counterparts in adopting technology for instruction. However, just like their 1981 counterparts, they expressed their need for computer training to qualify them to use computers in classrooms.

John Wedman and Marvin Heller used a Stages of Concern questionnaire (SoCQ) to assess teachers' concerns about the use of computers in education. This questionnaire was developed as a means of measuring attitudes of individuals toward a particular innovation. It hypothesized that individuals move through different stages of concern as they gain more experience with an innovation. The stages of concern are: 0) awareness (unconcerned about the innovation), 1) information (concerned about the general characteristics of the innovation; 2) personal (concerns about the relationship between one's role and the demands of the innovation; 3) management (concerns about the time, organization, and management of the innovation; 4) consequences (concerns about the impact of the innovation on student outcomes); 5) collaboration (concerns about working with others using the innovation) and 6) refocusing (concerns about something better than the innovation.)

The results of the study showed a high concentration of stage 0, 1 and 2 concerns among those who were unfamiliar with computers. The authors suggest that inservice programs should be tailored toward teachers' concerns, otherwise the teachers would reject the programs.

It is interesting to note what researchers outside the United States have uncovered on the subject of attitudes toward computers. Morrison reported from Australia that there seemed to be a shift toward negative attitudes to computers in the last ten years. Using a 20-point

questionnaire developed by Lee, Morrison tested Australian subjects and found concern over the computer's possible disemploying and dehumanizing effects. He wondered if those attitudes were typical beyond Australian shores and whether they would create barriers for the worldwide acceptance of computers.

B. Offir's study on attitudes of university instructors and students toward computers was based in London, and his findings were very revealing, providing some hints at how to approach the measurement of attitudes toward computers. He found a discrepancy between the research subjects' opinions toward the computer and willingness to use it. To analyze teachers' attitudes toward the use of the computer, the teachers in the Physiology department of the University of London were interviewed, and the results showed highly positive attitudes toward the instructional use of computers. To measure their willingness to use computers in the classroom, Offir had computer programs written specifically to meet the instructional needs of the teachers interviewed. The computer programs and the computers were then offered to the teachers, but they were not required to use them; rather, use was entirely discretionary. As a result, none of the teachers used the programs.(!) Offir's research suggests that subjects' responses to questions on computer attitudes are on at least two levels: the lip service level and the action level.

A significant contribution to the development of an instrument for the accurate measurement of teacher attitudes toward the accurate measurement of teacher attitudes toward computers is the work of Norris and Lumsden of North Texas University. Their instrument is based on the notion that attitudes toward the computer are a function of "distance." This notion suggests that people's attitudes toward computers tend to change depending on how close or how far they are from actually being affected by computers. Norris and Lumsden were influenced by two bodies of research. One of these influences consisted of the studies in social distance which had been pioneered by sociologist Bogardus in which subjects' degree of acceptance of various nationality groups was measured through a scale of varying social distances. Bogardus' research had shown that when the variable of distance is introduced, attitudes of people toward things and other people tend to change. The other influence on Norris and Lumsden consisted of the studies of scholars which, to them, hinted at the validity of the functional distance idea, specifically those of Lichtman and Zoltan. The latter two noted that in measuring the attitudes of educators toward computers, Lichtman in 1979 had the subjects respond to statements that were constructed by different levels of abstraction. Norris and Lumsden suggested that the more abstract a statement is, the greater is the functional distance between the statement and the individual's life experiences. An analysis of Lichtman's

results showed that with reduction in the degree of abstraction of each statement, there occured a decrease in the percentage of eductors who either agreed or strongly agreed with each statement. A similar analysis was made of the results of study made by Zoltan of the attitudes of certified public accountants, lawyers and pharmacists toward computers. As with the Lichtman study, the degree of agreement or agreement to statements varied with changes in functional distance. To test their hypothesis about the importance of functional distance as a mediator of teacher attitudes toward computers, Norris and Lumsden then surveyed 450 public school teachers using only three questions that represented three distinct aspects of functional distance. The results of the survey showed that there was a significant shift in attitude toward computers as the functional distance changed. When asked about their attitude toward educational computing in general, the respondents appeared to be highly positive. They also agreed that teachers should know how to use computers in the classroom. However, when the teachers were asked to indicate whether they would like to have computers in their classrooms, the proportion that expressed agreement dropped.

Mathews and Wolf developed a two-factor attitude scale to measure attitudes toward computers. Their instrument consisted of 40 statements on a Likert-type scale which assigned scores to their subjects on their "appreciative"

and "critical" attitudes toward computers. Half of the 40 questions measure the level of respondents' "appreciative" attitude. Those agreeing with the statements measure high on the "appreciator" scale. The other half of the 40 questions measure the respondents' "critical" attitude. Those agreeing with the statements score high on the "critical" scale. Interestingly, a survey conducted by Mathews and Wolf of 410 undergraduate students at four universities showed that females scored higher than males on the "appreciative" scale although there was no difference between females and males in the "critical" scale.

Kenneth Kerber departed from the usual approach in measuring attitudes toward computers; instead of surveying people's general attitudes, he sought to measure attitudes toward specific computer applications. The applications were classified into three, namely, quantitative applications, decision-making applications and record-keeping applications. Over-all results showed favorable attitudes regarding quantitative applications, somewhat favorable attitudes regarding the creation of information files on people but moderately unfavorable attitudes regarding the use of computers to make decisions about people.

Recent studies on general attitudes toward computers have sought to measure the link between attitudes and some personality characteristics. For example, Coovert and Goldsten suggested that locus of control can be a predictor

of attitudes toward computers. Locus of control reflects a general belief that the events in a person's life are under his personal control. Two experiments that they conducted with undergraduate students as their subjects sought to test their theory. In both experiments, the students' attitude toward computers was measured, using Lee's scale of attitudes toward computers. The students in the first experimental group were divided into different classes of perceived locus of control, using Rotter's 29-question measure of internal locus of control. The students in the second experimental group were similarly divided, using Levenson's measure of internal locus of control. The results in both experiments showed that those with high internal locus of control have more positive attitudes toward computers than those with low internal locus of control.

Several doctoral dissertations have appeared in the recent past seeking to measure teachers' attitudes toward computers and to discover correlations between demographic variables and general attitudes toward computers.

John Beauregard found that male teachers held significantly more positive attitudes toward computers than female teachers; that no correlation exists between personal factors such as age, number of years of teaching, academic degrees and school level and that other personal factors such as having read a book about computers and having taken computer courses were indicative of favorable attitudes

toward computers. Interestingly, his study showed that teachers who had not seen a computer or who had not had trouble with computers had significantly more positive attitudes toward computers.

Elizabeth Lorimer sought to identify the characteristics of teachers who were willing to implement computer-assisted instruction in their classrooms and found out that they tended to: travel extensively, read four or more professional journals regularly, have advanced degrees and were in the 21 to 30 age group. She also found out that the most likely vertical school level to begin computer-based instruction using microcomputers is the elementary school level and that the most likely subject throughout all levels is the area of Math/Science.

Jean Placke found no statistically significant relationship between attitude and leadership style among teachers but she found that teachers who had positive experiences with computers had a more positive attitude toward them.

Other recent studies focus on the effect of age and experience with computers upon attitudes toward computers. One such study was made by Gressard and Lloyd who surveyed the attitudes of 41 elementary, junior high and high school teachers from three school systems in Virginia who were enrolled in a staff development program. They used a Computer Attitude Scale which they developed and which measures attitudes toward learning about and using

computers. The instrument provides scores on three subscales, namely, computer anxiety, computer confidence, and computer liking. Three scores were computed for each of the participants. The results of the tests showed that computer experience has a significant main effect on computer anxiety, computer confidence and computer liking. Age did not seem to have any significant effect on any of the three subscales.

The preceding survey of the literature has shown that there are a few studies focusing on community college teachers' attitudes toward computers. However, there are a number of related studies that can contribute substantively and methodologically to such a study. Most studies dealing with community colleges and computers consist of inventories of needs and educational practices. There are quite a few descriptions of innovative computer-based education projects in some community college campuses. However, there is a growing body of empirical studies on attitudes toward the computers, with some emphasis on the development of reliable instruments for the measurement of attitudes toward computers. Some studies seek to establish correlations between attitudes toward computers and personal characteristics as well as experiences with the computer.

This study hopes to focus on the attitudes toward computers among a specific group of community college teachers. The survey seeks to describe the general

attitudes of those faculty members toward computers as well as their attitudes on specific issues relating to computers. The study will also explore the relationship between general attitudes toward computers and certain demographic variables. Finally, the follow-up interviews will provide some updated information on the attitudes of a subset of the group of community college teachers surveyed and some anecdotal data.

CHAPTER III

METHODOLOGY

Two methods were used to measure attitudes in this study. The first one was a survey questionnaire administered to the faculty of three community colleges in Massachusetts. The second method consisted of open-ended interviews of subsets of the same faculty. The survey and the open-ended interviews were conducted three and a half years apart.

Design of the Survey

The review of the literature yielded some very valuable ideas that helped shape the design of the survey. After careful consideration, it was decided to adhere to the following principles in order to ensure the integrity of the study:

1. A forced-answer questionnaire should be the instrument. While open-ended questions often yield interesting and novel answers, forced answers lend themselves to easier analysis and reduce the possibility of ambiguous responses.

2. A Likert-type scale was chosen for measuring attitudes.

3. Following the suggestion of Norris and Lumsden, every statement should be asked in three different ways, each representing a different social distance increment.

4. The questionnaire should be of sufficient brevity to encourage a high response rate.

5. The design of the questionnaire should be such as to minimize bias.

With the above principles in mind, a questionnaire was devised by the researcher. It consists of 22 statements to be evaluated by the respondent using a Likert-type scale, plus 11 demographic questions. Questions 1 to 21 were questions directed at specific issues that define attitudes toward computers. Question 22 asks the respondent's feelings about using computers for teaching.

One early decision regarded the placement of demographic questions. It was decided to put them at the end, the reason being that placing them at the very beginning might create bias in the mind of the respondent, or even reluctance to respond.

In order to develop the set of statements to be evaluated by respondents, various instruments from the literature search were carefully scrutinized. Through informal content analysis, seven categories or topics were extracted. These categories corresponded to some commonly raised issues regarding the impact of computers on the individual and society. For each of these categories, three statements were framed, each representing a different

increment of social distance. The procedure for integrating increments of social distance was as follows:

1. The first statement is stated in a general and impersonal way with no personal pronouns. This statement represents the farthest increment of social distance.

2. The second statement uses a stem derived from a personal pronoun in the first person plural, such as our, we, and us. This statement represents the middle increment of social distance.

3. The third statement uses a stem derived from a personal pronoun in the first person singular, such as my, I, and me. This statement represents the closest increment of social distance.

There was a practical reason for limiting the number of statements to 21. It was decided that given the sensitivity of the subject, a short questionnaire, such as one that can be administered within ten minutes would yield a better response rate than a longer questionnaire. Several pretests conducted among adult friends at Greenfield Community College showed that it takes an average of five minutes to evaluate 21 statements of the type used in the questionnaire and another three minutes to do a set of questions on demographic variables, for a total average time of eight minutes.

The first 21 statements in the questionnaire were prepared in stages. Statements were extracted from the pool

of instruments gathered during the literature search according to the following criteria:

1. Whenever possible, the statements were copied in the form they were stated in the pool of instruments.

2. Statements were chosen by how they fit the seven categories.

3. Statements were phrased according to the principle of incremented social distance.

4. The polarity of statements had to be mixed; some stated in a positive direction and others in a negative direction.

As it turned out, all the above criteria were adhered to with very little difficulty. There were enough statements from the pool to fit the criteria and very few had to be rephrased. The breakdown in polarity was 10 positives to 11 negatives, close to 50-50. Appendix B shows the statements arranged by category and social distance.

Appendices C through G consist of the various instruments from which the statements were extracted.

Finally, the statements were arranged in random order. This was done in order to minimize the generation of response sets. This meant that care was taken to avoid grouping together in a particular order questions on the same issue. Such grouping might unwittingly encourage respondents to answer in certain patterns.

An interesting question came up regarding the meaning of a response of neutral on the attitude continuum. How

does one differentiate between one who is undecided and one who does not know the answer to the question? To help resolve the question, two columns were set up for the purpose of qualifying an answer of Neutral - U for Undecided and DK for Don't Know.

The final form of the questionnaire is shown in Appendix A.

To measure the respondent's attitude, every statement is followed by a five point Likert-type scale with a two-point scale appended to qualify an answer of Neutral. The instructions at the top of page 1 of the questionnaire provide for the respondent an operational definition for each of the increments in the attitudinal continuum.

The section of the questionnaire on demographic variables is preceded by a statement justifying gathering personal data on respondents, and a note of reassurance on anonymity of responses. The demographic variables collected are: name of institution, age, sex, highest academic degree, academic rank, tenure status, respondent's academic area, number of years teaching, amount of computer literacy training, access to a computer and past personal experience with computers. The respondent is not asked to indicate the name of his/her institution. However, this information is obtained by color-coding the questionnaire sheets, with each of the three institutions assigned its own color.

Sampling and Administration of the Survey

Preliminary tests were conducted with ten adults for the purpose of refining the format and language of the questionnaire and to check on response time. Five of the respondents were non-faculty staff members of Greenfield Community College and the five others were from the Greenfield community. There were a few improvements in the phrasing of questions coming out of the pretests. Average response time was under ten minutes.

From the outset, a mailed questionnaire approach was ruled out. Mailed questionnaires generate a very low response rate. With a combined faculty population in the three colleges of about 180, even an optimistic 20% return would yield a mere 36.

The original plan for administration was for the researcher himself to present the questionnaire to faculty members gathered during their academic division meetings. Accordingly, the researcher started contacting academic deans and academic division heads of the three community colleges chosen for the study in the fall of semester of 1984 for a possible administration of the questionnaire before the end of classes in December. Unfortunately, there were political developments that dictated a change in the method of administration.

In academic year 1984-85, there was tension in all community college campuses in Massachusetts between the faculty and administration arising from protracted contract negotiations. On some campuses, a variety of job actions were being conducted by the faculty and staff, and one of these job actions included a vote either to boycott or disrupt meetings. Given this negative climate, the school administrators advised against relying on academic division meetings as a venue for the administration of the questionnaire.

Fortunately, a contingency plan had been provided in the event that the first plan of administering the questionnaire at division meetings would not materialize. This called for the employment of student interviewers at every campus who would administer the questionnaire individually under the supervision of the researcher. In view of the circumstances, this contingency plan was resorted to.

In November, 1984, the researcher took several trips to the campus of Berkshire Community College and Mt. Wachusett Community College for the purpose of recruiting student interviewers. The job of recruiting was made easier with the help of faculty friends in both campuses. At Greenfield Community College, student interviewers were recruited among the researcher's former students. As incentive, the interviewers were told that they would be paid $3.00 for each interview. The money to support this project came from

a grant from Greenfield Community College through the Faculty and Staff Development Committee. Interviewers in each campus underwent two training sessions to prepare them for their work.

Each interviewer was assigned a number of faculty members to interview. Assignment was done by dividing the list of faculty members at random. The students were trained in a uniform manner of administering the questionnaire. They were to bring two copies of the questionnaire into every interview. One copy of the questionnaire was to be handed to the interviewee, and the other copy was to be held by the interviewer. The interviewer was to read the questionnaire and record on that some questionnaire the interviewee's responses. The interviewer was instructed to spend no more than 15 minutes with the interviewee and to minimize any extraneous conversation in the course of the interview.

The change in the method of testing from self-administration to interviewing added a possible variable: the interviewer. To enrich the data, the gender of the interviewer was coded by the researcher by attaching a label corresponding to the interviewer's gender as each set of questionnaires came in.

The administration of the questionnaire took place during the last week of classes in December, 1984. 161 responses were obtained out of around 180 faculty members.

A system of checking to make sure the interviewers did their job was devised. Each interviewer was asked to submit to the researcher a list of the faculty members that they had interviewed. Shortly after all interviews had been conducted, the researcher picked several names from each list and contacted them by telephone. All who were contacted confirmed that they were interviewed, as indicated by the student interviewers.

Methodology and Administration of the Open-Ended Interviews

In the spring of 1988, open-ended interviews were conducted among some faculty members of the three community colleges which had been sampled in the survey of 1984. There were several purposes of the interview. One was to see if there had been any changes in attitudes of faculty members in those campuses in the three and a half years that had transpired since the survey. Another purpose was to gather data of a non-quantitative variety.

A small subset of the original survey population, consisting of teachers in the Humanities divisions of the three colleges, was chosen to be interviewed. There were several reasons for this decision. For one thing, the size of the group to be interviewed had to be small, given the time and resources available. And then, having chosen a smaller group, it was thought better to have a subset that

had some common denominator. In this case, the common denominator was membership in the Humanities divisions of their respective colleges. Humanities faculty were chosen over faculty from other divisions because in all campuses they had the largest academic division. Moreover, since one of the purposes of the follow-up interviews was to study changes in attitude in the years after the survey, it was logical to choose to interview those who, as a group, traditionally show the greatest reluctance to use computers.

Accordingly, 10 people were chosen from each of the three community colleges, using each college's faculty roster. Each of these were to be approached by letter or in person for permission to be part of the study. The objective was to have at least eight interviewees from each college for a total of 24 interviewees. Each was to be interviewed by this researcher. The faculty from Greenfield Community College were to be interviewed in person at their offices while those from the other two campuses were to be interviewed by telephone.

The plan was for the interviewer to engage the interviewee in a conversation but with the purpose of getting some information on the following areas:

1. the interviewee's attitude toward computers in general and desktop computers, in particular.
2. how the interviewee feels about the use of computers in teaching.

3. how the interviewee's attitudes toward computers developed in the last few years.
4. what, if any, changes in attitude the interviewee expects in the near future.
5. how the interviewee uses computers, if at all.

In early April, 1988, letters were sent to the thirty chosen prospective interviewees asking for their permission to be interviewed in person or by telephone. The letter described the purpose of the study, the approximate length of the interview and stated that the interview would be audiotaped. Respondents were asked to signify their assent by signing a consent form. The letter and consent form is Appendix H.

Twenty two positive responses were received: eight from Greenfield Community College, six from Mt. Wachusett Community College and eight from Berkshire Community College.

The interviews were conducted between May 1 and June 30, with each interview lasting an average of 15 minutes. Transcripts of the interviews were made and edited to remove references to names and places so as to protect the anonymity of the respondents. Representative samples of edited transcripts are found in Appendix I.

Methods of Analysis

A. The Survey

The student interviewers were instructed to try to get responses for all the questions, particularly for Questions No 1 to 21. One analysis called for the consolidation of Questions 1 to 21 into one variable and as such, missing values had to be avoided, otherwise problems would come up. This strategy apparently paid off. Of the 161 responses that were returned, only two revealed missing values for Questions 1 to 21 after visual examination, and those two were eliminated from the pile.

The 159 valid returns were then coded. Excluding respondent number, 40 variables were coded. Of these, 38 came directly from the questionnaire. Two were added by the researcher, namely, the school of the respondent and the sex of the interviewer. To keep track of the former, the questionnaires were color-coded by school - blue for Berkshire, green for Greenfield and white for Wachusett. As for the interviewer's gender, the method of keeping track was to attach to each completed questionnaire a corresponding label as a set of completed questionnaires came in. It was not clear at the time that the survey was taken how this variable was going to be used but it was decided to keep track of it anyway.

The 159 questionnaires were entered into the main academic computer of the University of Massachusetts and were analyzed using the Statistical Package for the Social Sciences (SPSS) program. Frequency tables were first obtained for each of the 40 variables. Then, the frequency tables for the first 21 variables were divided into seven groups of three each, each group corresponding to an issue. Using the program Lotus 1-2-3, three composite frequency tables were created for each of the seven groups to show a comparison of attitudes by issue. The 21 tables were then divided into three groups according to question stem. Again, with the use of Lotus 1-2-3, three composite frequency tables were created to show a comparison of attitudes by question stem. Finally, a grand composite frequency table was obtained for all the 21 variables.

To measure correlations in attitude, two dependent variables were used. One dependent variable, called average attitude, was computed by taking the average of the responses for each interviewee to Questions 1 to 21. The other dependent variable was Question 22, which measured respondents' relative eagerness to use computers in their teaching. Cross tabulations were then obtained on each of the two dependent variables against the demographic variables taken from Questions 23 to 40 and chi squares computed for each table.

B. The Follow-up Interviews

An informal content analysis was made of the interviews to see how the interviewees responded to questions on such topics as general attitudes toward computers, who owns computers, what kind of computers they own, what factors provoked them to acquire their own computers, how they were introduced to computers, who changed attitudes toward computers, what caused them to change their attitudes, how they use computers, what issues they raise against computers and what they hope to see in computers in the future.

Limitations of the Study

This study is primarily a description of the attitudes toward computers held by a representative sample of the faculty members of three small community colleges in Western Massashusetts that are within a radius of a hundred miles. Being descriptive, the data is naturally limited in practical value within a certain time. Some inferences can be obtained from the cross-tabulations of demographic variables with the two dependent variables used in the analysis of the survey data. However, such inferences are useful primarily as suggestions and directions for more investigation of other groups that share circumstances similar to those of the population that was surveyed. They might be of value to researchers who wish to study attitudes

toward computers and attitude changes held by teachers of rurally situated community colleges. The conclusions derived from the study may also be helpful to those in the three community colleges who are charged with making decisions affecting such matters as the acquisition and distribution of academic computing facilities and the design of programs to enhance computer literacy of the faculty.

CHAPTER IV

ANALYSIS

This chapter will analyze the responses to the survey questionnaire and the interviews.

Analysis of the Survey

The first discussion will focus on the frequency tables. Seven groups of questions will be dealt with, each group corresponding to one of the seven issues raised in Questions 1 to 21. For every question, two types of frequency tables will be presented. The first type will be a contingency table showing the responses broken down into the five categories of the Likert scale with the order of presentation of the categories set up so that positive attitudes come first. The other type of frequency table will be in the form of a bar graph wherein the five categories are collapsed into three which are as follows: positive, neutral, negative. After all three questions in a group are presented this way, a composite table for the responses to all three questions will be presented and discussed, followed by a corresponding graph. This pattern will be repeated for all seven groups of questions.

After all seven groups of questions have been covered, the 21 questions will be divided into three groups of seven

each, each group corresponding to a question stem. The three question stems are as follows: first person singular, first person plural and third person. A composite table will then be presented and described for each of the three groups of questions together with a graphic on the collapsed version of the table.

The second discussion will center on the crosstabulations of demogragraphic variables against the two variables mentioned above, namely, general attitude and attitudes towards using computers teaching (Variable 22). The crosstabulations will be presented in groups of two, each group corresponding to the use of the same independent variable crosstabulated against general attitude on one hand and attitudes towards using computers in teaching on the other.

Group I - Impact on the quality of life

Three questions to measure the attitudes of respondents towards computers vis-a-vis computers' impact on the quality of our life were asked as follows:

17. My life has been complicated by computers.

1. Computers are making our lives better.

7. Computers improve the quality of life.

Table 1 shows the breakdown of responses to the first question and the same data, in collapsed form, is

graphically depicted in Figure 1. More than half of the respondents give neutral answers. Among those who have pronounced attitudes, there are slightly more who have negative attitudes than those who have positive attitudes (20% to 11.9%) The high number of neutral answers is not surprising for a survey like this because of several reasons. For one thing, the subject of computers was and still is a highly controversial subject and a lot of people may have trouble sorting out their feelings. For another, computers are perhaps really conceived as a mixed blessing. More respondents commit themselves on the second question on the issue of impact on quality of life, as shown in Table 2. Neutral answers represent a mere 10.7%. Compared to the first question, the attitudes are now reversed, with those who give either strong positive or positive answers outnumbering those who give either strong negative or negative answers by a ratio of 4 to 1.

Table 1

V17 MY LIFE HAS BEEN COMPLICATED BY COMPUTERS.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	9	5.7	5.7	5.7
DISAGREE	2.	19	11.9	11.9	17.6
NEUTRAL	3.	95	59.7	59.7	77.4
AGREE	4.	32	20.1	20.1	97.5
STRONGLY AGREE	5.	4	2.5	2.5	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 2

V1 COMPUTERS ARE MAKING OUR LIVES BETTER

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	45	28.3	28.3	28.3
AGREE	2.	69	43.4	43.4	71.7
NEUTRAL	3.	17	10.7	10.7	82.4
DISAGREE	4.	2	1.3	1.3	83.6
STRONGLY DISAGREE	5.	26	16.4	16.4	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

An intriguing development, as shown in Table 2 is the emergence of a group that has highly pronounced negative feelings on the impact of computers on the quality of life. In this case, those who give strong negative answers outnumber those who gave negative answers, 16.4% to 1.3%.

The pattern established in the second question is repeated in the third question as shown in Table 3. Again, there is a good polarization of attitudes, with neutral answers accounting for 22.6% and a strong leaning toward strongly positive and positive answers, which show a cumulative frequency of 53.5%. But there is again a significant minority that register strong negative attitudes.

The composite table for the three questions on the impact of the quality of life, Table 4, computed by consolidating all the scores, shows a generally positive attitude on the part of the respondents, with nearly half of the population having a cumulative score for strong positive and positive responses. The small but noticeable segment that has strong negative attitudes on the issue of quality of life (13.6%) is almost twice those who show negative attitudes.

Table 3

V7 COMPUTERS IMPROVE THE QUALITY OF LIFE

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	19	11.9	11.9	11.9
AGREE	2.	66	41.5	41.5	53.5
NEUTRAL	3.	36	22.6	22.6	76.1
DISAGREE	4.	3	1.9	1.9	78.0
STRONGLY DISAGREE	5.	35	22.0	22.0	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 4

COMPOSITE FREQUENCY FOR IMPACT ON QUALITY OF LIFE

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	73	15.3	15.3	15.3
POSITIVE	2.	154	32.3	32.3	47.6
NEUTRAL	3.	148	31.0	31.0	78.6
NEGATIVE	4.	37	7.8	7.8	86.4
STRONG NEGATIVE	5.	65	13.6	13.6	100.0
	TOTAL	477	100.0	100.0	

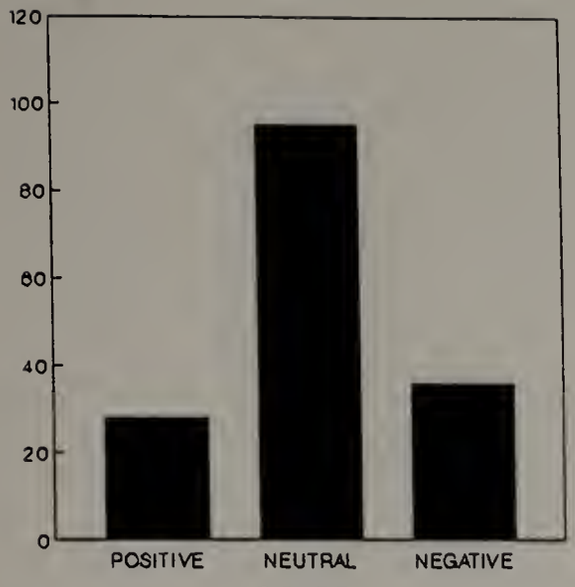

FIGURE 1

FREQUENCY GRAPH: VARIABLE # 17
My life has been complicated by computers.

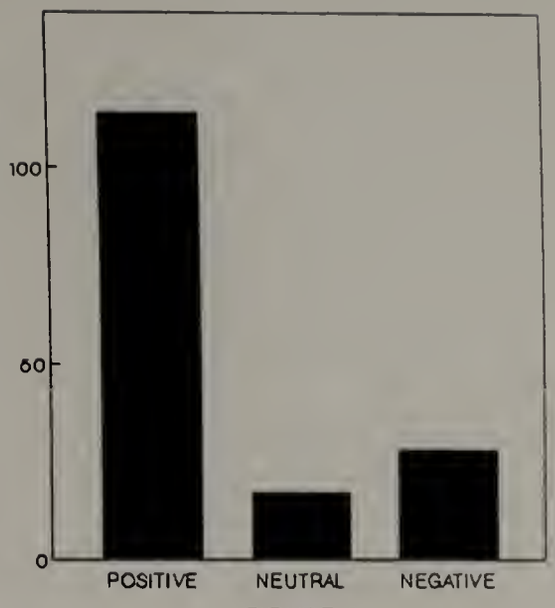

FIGURE 2

FREQUENCY GRAPH: VARIABLE #1
Computers are making our lives better.

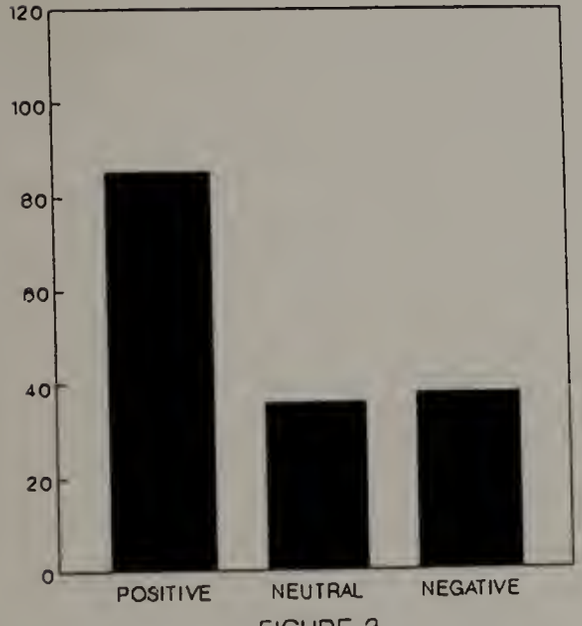

FIGURE 3

FREQUENCY GRAPH: VARIABLE #7
Computers improve the quality of life.

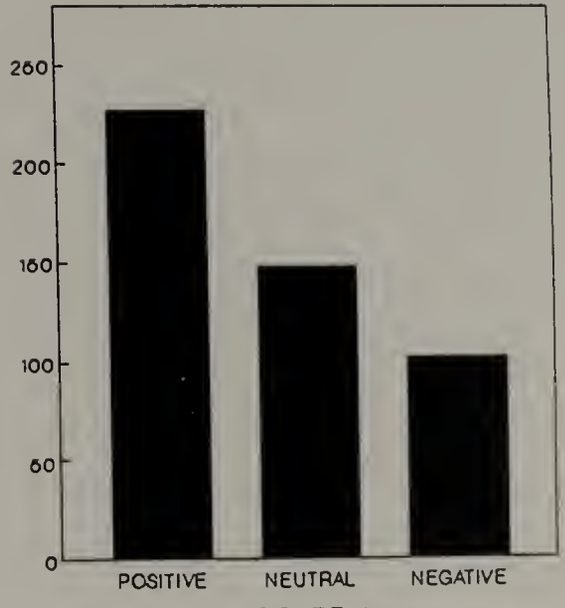

FIGURE 4

COMPOSITE FREQUENCY GRAPH
Impact on quality of life

Group II - Impact on Employment

The three questions to measure the respondents' attitude on the computer's impact on employment are as follows:

19. Someday a computer may take over my job.

8. Computers will eventually put most of us out of work.

2. Computers create more job than they eliminate.

Table 5 shows the breakdown of responses for Question 19 with the collapsed version graphically shown in Figure 5. This is one issue where respondents show a lot of ambivalence, as shown by the high number of neutral responses (55.3%). Of those who commit themselves, though, there are more who have positive attitudes than those who have negative attitudes (38.4% versus 6.3%)

The pattern in Table 6, which tabulates responses to the statement "Computers put most of us out of work," is almost identical to that in the previous table except for a slight increase in those that register a neutral attitude (60.4%). The number of respondents who show positive attitudes remains the same while those that show negative attitudes slightly decreases.

Table 5

V19 SOMEDAY A COMPUTER MAY TAKE OVER MY JOB

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	1	.6	.6	.6
DISAGREE	2.	60	37.7	37.7	38.4
NEUTRAL	3.	88	55.3	55.3	93.7
AGREE	4.	10	6.3	6.3	100.0
STRONGLY AGREE	5.	0	0	0	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 6

V8 COMPUTERS WILL EVENTUALLY PUT MOST OF US OUT OF WORK

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	3	1.9	1.9	1.9
DISAGREE	2.	57	35.8	35.8	37.7
NEUTRAL	3.	96	60.4	60.4	98.1
AGREE	4.	3	1.9	1.9	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

The third stem of the question on the impact of computers on employment creates a slightly different picture from the first two. On the statement "Computers create more jobs than they eliminate," respondents show less ambivalence, with neutral scores accounting for 38%. Both strong positive and strong negative responses increase. The cumulative score for those who respond strong positive and positive shows a generally positive attitude among those who commit themselves.

Table 8 and Figure 8 show the composite scores for all three questions on the issue of impact on employment. The highest score is registered by neutral responses (51.4%). Cumulative scores for strong positive and positive responses (42.3%) are much higher than the cumulative scores for negative and strong negative responses (6.3%).

Table 7

V2 COMPUTERS CREATE MORE JOBS THAN THEY ELIMINATE

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	21	13.2	13.2	13.2
AGREE	2.	60	37.7	37.7	50.9
NEUTRAL	3.	61	38.4	38.4	89.3
DISAGREE	4.	3	1.9	1.9	91.2
STRONGLY DISAGREE	5.	14	8.8	8.8	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 8

COMPOSITE FREQUENCY FOR IMPACT ON EMPLOYMENT

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	25	5.2	5.2	5.2
POSITIVE	2.	177	37.1	37.1	42.3
NEUTRAL	3.	245	51.4	51.4	93.7
NEGATIVE	4.	16	3.4	3.4	97.1
STRONG NEGATIVE	5.	14	2.9	2.9	100.0
	TOTAL	477	100.0	100.0	

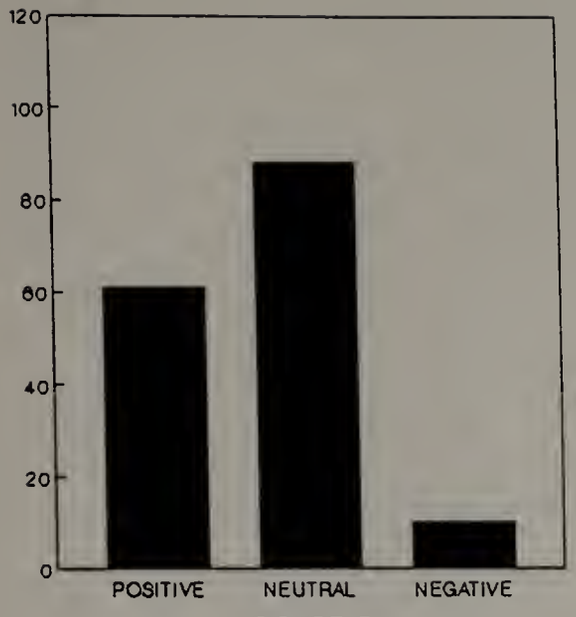

FIGURE 5

FREQUENCY GRAPH: VARIABLE # 19
Someday a computer may take over my job

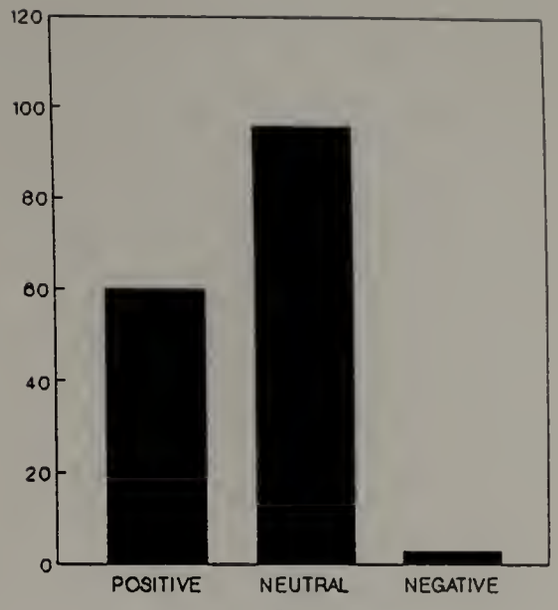

FIGURE 6

FREQUENCY GRAPH: VARIABLE # 28
Computers put most of us out of work.

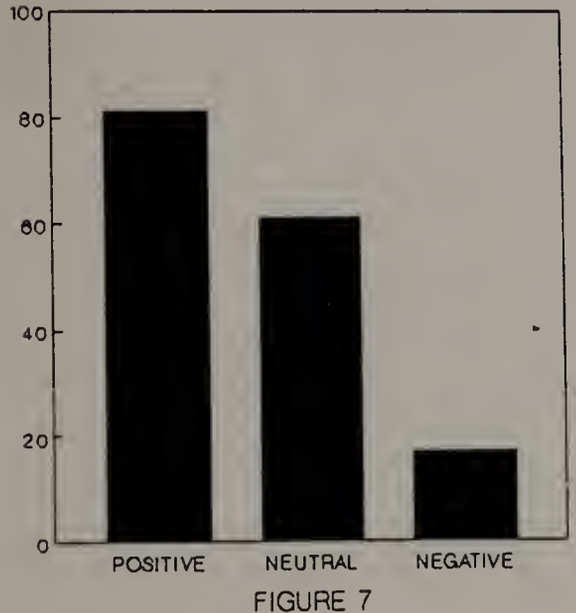

FIGURE 7

FREQUENCY GRAPH: VARIABLE # 2
Computers create more jobs than they eliminate

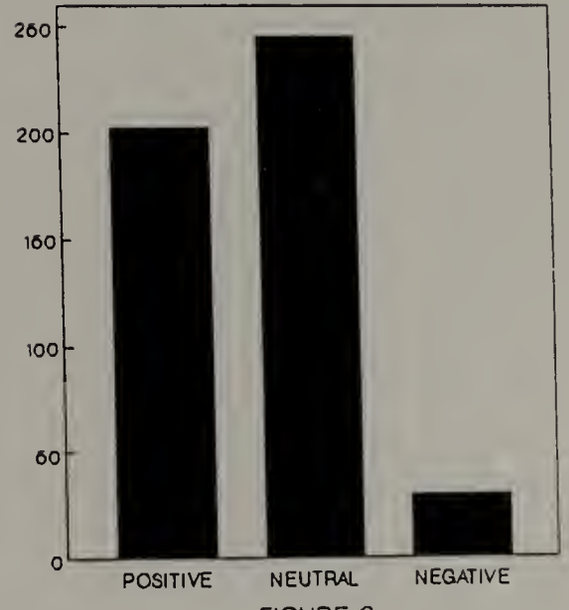

FIGURE 8

COMPOSITE FREQUENCY GRAPH
Impact on employment

Group III - Computer errors

Three questions seek to measure respondents' attitudes toward computer error. The three questions are stated as follows:

3. I rarely have troubles attributed to computer error.
10. We humans are more error-prone than computers.
13. The number of computer errors is larger than most people think.

Table 9 and Figure 9 show the breakdown of responses to Question No. 3. In this case, the neutral responses account for about a third (34.6%). Of those who commit themselves, more than half (56%) feel positive or strongly positive about the computer's propensity to cause problems for them due to computer error, whereas 7% have negative or strong negative attitudes.

The responses to the second stem statement on the issue of the accuracy of computers are seen in Table 10 and depicted in graphic form in Figure 10. Neutral responses are low (24.5%) compared to those for the previous statement. And there is a strong cumulative score of 72.3% for the positive or strongly positive responses as compared to the fairly low score on negative or strongly negative responses.

Table 9

V3 I RARELY HAVE TROUBLES ATTRIBUTED TO COMPUTER ERROR.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	28	17.6	17.6	17.6
AGREE	2.	61	38.4	38.4	56.0
NEUTRAL	3.	55	34.6	34.6	90.6
DISAGREE	4.	4	2.5	2.5	93.1
STRONGLY DISAGREE	5.	11	6.9	6.9	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 10

V10 WE HUMANS ARE MORE ERROR-PRONE THAN COMPUTERS

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	39	24.5	24.5	24.5
AGREE	2.	76	47.8	47.8	72.3
NEUTRAL	3.	39	24.5	24.5	96.9
DISAGREE	4.	3	1.9	1.9	98.7
STRONGLY DISAGREE	5.	2	1.3	1.3	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

The third-stem statement on the issue of accuracy of computers shows a very high neutral score. Table 11 shows that 66% of those surveyed say that they are either undecided or do not know, in response to the statement "The number of computer errors is larger than most people think." The likely reason for the high number of neutral responses is that people are being asked to express an attitude on a statement in which they are not sure of the facts. It is also interesting that of those who commit themselves, those who give negative or strongly negative answers outnumber those who give positive or strongly positive answers, 23.8% to 9.4%, a departure from the patterns established in the earlier statements.

The composite scores on the issue of the accuracy of computers reflect the overall pattern that has been established, which is, that there is a fairly high number of neutral responses and that among those who commit themselves, those who have positive attitudes outnumber those who have negative attitudes. In this case, as shown in Table 12 and depicted graphically in Figure 12, the neutral responses account for 41.7% of the answers, 45.9% represent positive or strongly positive answers while the negative or strongly negative answers represent 4% of the population.

Table 11

V13 THE NUMBER OF COMPUTER ERRORS IS LARGER THAN MOST PEOPLE THINK

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	7	4.4	4.4	4.4
DISAGREE	2.	8	5.0	5.0	9.4
NEUTRAL	3.	105	66.0	66.0	75.5
AGREE	4.	33	20.8	20.8	96.2
STRONGLY AGREE	5.	6	3.8	3.8	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 12

COMPOSITE FREQUENCY FOR ACCURACY OF COMPUTERS

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	74	15.5	15.5	15.5
POSITIVE	2.	145	30.4	30.4	45.9
NEUTRAL	3.	199	41.7	41.7	87.6
NEGATIVE	4.	40	8.4	8.4	96.0
STRONG NEGATIVE	5.	19	4.0	4.0	100.0
	TOTAL	477	100.0	100.0	

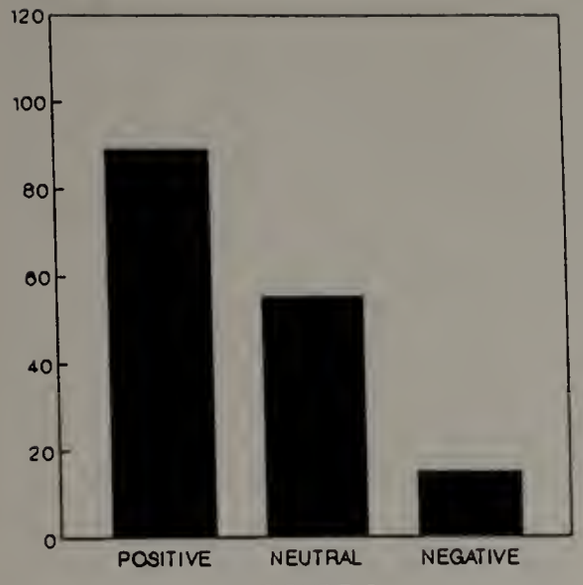

FIGURE 9

FREQUENCY GRAPH: VARIABLE # 3
I rarely have troubles due to computer error.

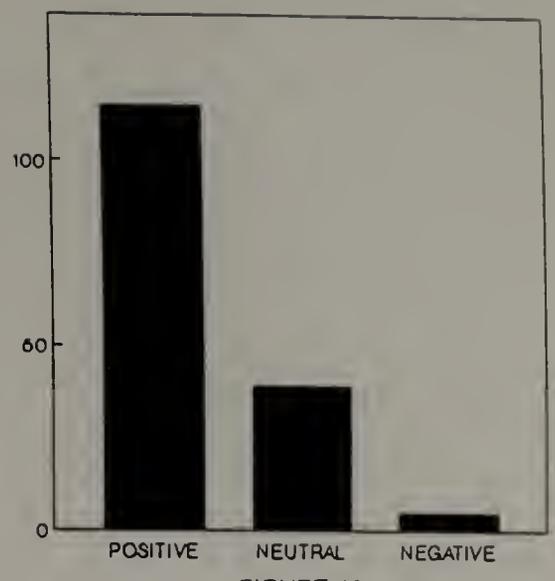

FIGURE 10

FREQUENCY GRAPH: VARIABLE # 10
We humans are more error-prone than computers.

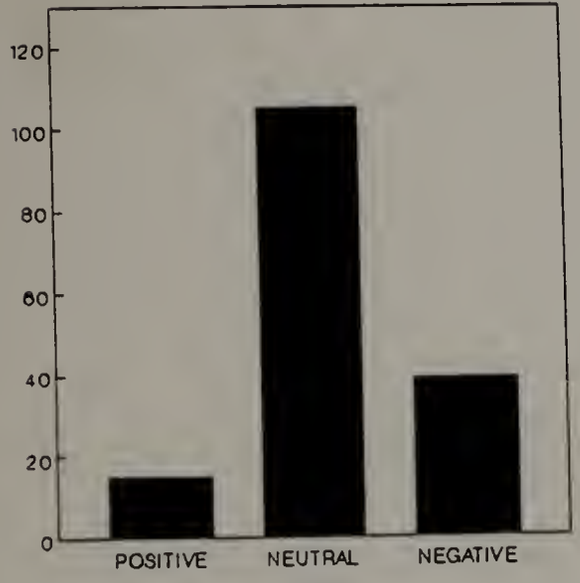

FIGURE 11

FREQUENCY GRAPH: VARIABLE # 13
The number of computer errors is larger than most people think.

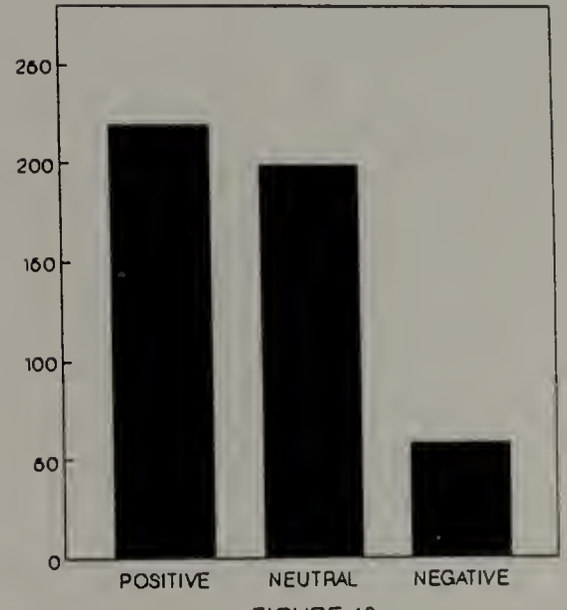

FIGURE 12

COMPOSITE FREQUENCY GRAPH
Accuracy of computers

Group IV - The value of numbers

One of the dominant issues in attitudes toward the computer is the feeling that the computer is very impersonal and this feeling is often described through such phrases as ". . . feeling as though I am just a number." Thus it was fitting to measure the over-all attitude of respondents to the computer's use of numbers. In designing the three questions, it was thought that at least one of the questions should not explicitly refer to numbers but rather to the implied reason for the computer's use of numbers, which is to promote efficiency. The theory was that the word "numbers" is an automatic red flag which might immediately draw negative responses. In order to elicit the latent positive attitude to the value of the computer's use of numbers, some subtlety in the framing of the question was considered useful.

The three questions in this category are as follows:

14. Oftentimes, I feel I have no more meaning to society than a pack of computer cards.
9. Computers reduce us to numbers
4. Computerized information files enable businesses to run more efficiently.

The responses to Question 14 are shown in Table 13 and graphically illustrated in Figure 13. As in a lot of cases, the mode response is neutral and there are hardly any extreme attitudes. None has a strong positive response and

only one of the 159 has a strong negative response. Of the non-neutral responses, however, the positive responses (46.5%) strongly outnumber the negative responses (5.5%). The low negative and high neutral results seem to suggest that even in the most intimate level, the respondents are at least ambivalent on the value of numbers.

The responses to the second stem of the question, shown in Table 14 and Figure 14, changes the picture somewhat. Here, there is a marked increase in the percentage of negative answers (26.4%), slightly higher than the positive answers which account for 20.8%.

When the word "numbers" is eliminated, as it is in Question No. 4, and the issue is efficiency, the results are overwhelmingly positive. Neutral answers are down to 3.8% and all positive answers account for 93.7%. The results of Question No. 4 are shown in Table 15 and illustrated in Figure 15.

The composite picture is shown in Table 16 and Figure 16, where respondents have a generally favorable attitude to the computers' use of numbers with positive scores accounting for 53.7% of the population.

Table 13

V14 OFTENTIMES, I FEEL I HAVE NO MORE MEANING TO SOCIETY THAN A PACK OF COMPUTER CARDS.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	0	0	0	0
DISAGREE	2.	74	46.5	46.5	46.5
NEUTRAL	3.	76	47.8	47.8	94.3
AGREE	4.	8	5.0	5.0	99.4
STRONGLY AGREE	5.	1	.6	.6	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 14

V9 COMPUTERS REDUCE US TO NUMBERS

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	16	10.1	10.1	10.1
DISAGREE	2.	17	10.7	10.7	20.8
NEUTRAL	3.	84	52.8	52.8	73.6
AGREE	4.	31	19.5	19.5	93.1
STRONGLY AGREE	5.	11	6.9	6.9	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 15

V4 COMPUTERIZED INFORMATION FILES ENABLE BUSINESSES TO RUN MORE EFFICIENTLY.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	80	50.3	50.3	50.3
AGREE	2.	69	43.4	43.4	93.7
NEUTRAL	3.	6	3.8	3.8	97.5
STRONGLY DISAGREE	5.	4	2.5	2.5	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 16

COMPOSITE FREQUENCY FOR NUMBERS AND DEPERSONALIZATION

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	96	20.1	20.1	20.1
POSITIVE	2.	160	33.5	33.5	53.7
NEUTRAL	3.	166	34.8	34.8	88.5
NEGATIVE	4.	39	8.2	8.2	96.6
STRONG NEGATIVE	5.	16	3.4	3.4	100.0
	TOTAL	477	100.0	100.0	

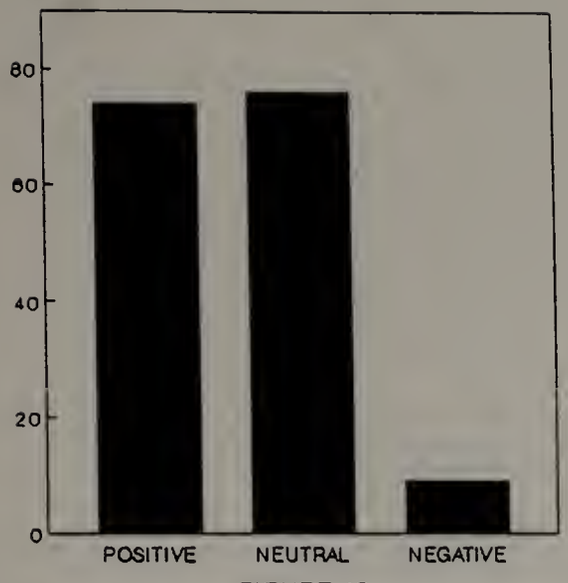

FIGURE 13

FREQUENCY GRAPH: VARIABLE # 14
Oftentimes I feel have no more meaning than a bunch of computer cards.

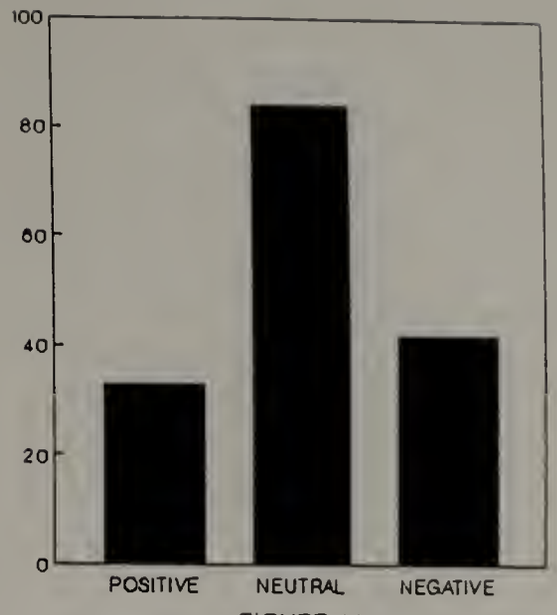

FIGURE 14

FREQUENCY GRAPH: VARIABLE # 9
Computers reduce us to numbers.

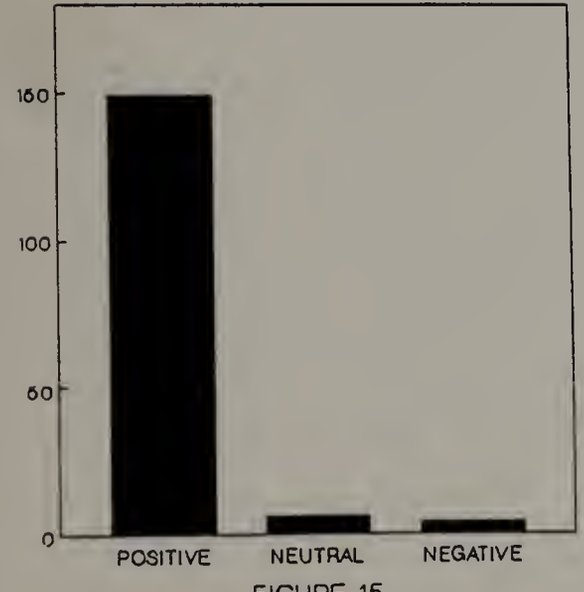

FIGURE 15

FREQUENCY GRAPH: VARIABLE # 4
Computer information files enable businesses to run more efficiently.

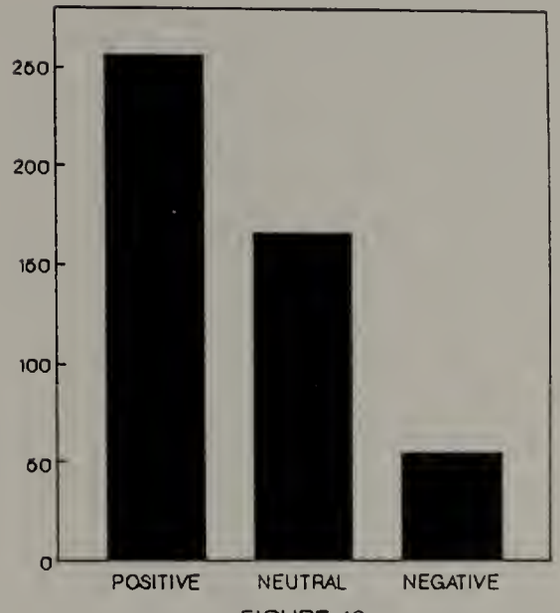

FIGURE 16

COMPOSITE FREQUENCY GRAPH
The value of numbers

Group V - Human Control over computers

The issue of whether or not humans are losing control over computers is asked in three ways, as follows:

11. I do not feel that computers are going out of control.

5. We humans no longer completely control computers.

18. Humans will always be in control of computers.

As Table 17 shows, responses to Question No. 11 are positive, for the most part, the strong positive and positive responses accounting for a cumulative frequency of 78.6%, compared to 5.7% who register negative answers, all of which, interestingly, are strongly negative.

The second stem question on the issue of human control over computers, Question No. 5, does not yield as high positive returns as its first person stem counterpart as almost half of the group have returned neutral answers (49.7%). Still, the positive answers (39.6%) are more than three times the negative answers (10.7%). Table 18 shows the breakdown of responses for Question No. 18 and Figure 18 is the graphic illustration.

Table 17

V11 I DO NOT FEEL THAT COMPUTERS ARE GOING OUT OF CONTROL

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	24	15.1	15.1	15.1
AGREE	2.	101	63.5	63.5	78.6
NEUTRAL	3.	25	15.7	15.7	94.3
DISAGREE	4.	0	0	0	94.3
STRONGLY DISAGREE	5.	9	5.7	5.7	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 18

V5 WE HUMANS NO LONGER COMPLETELY CONTROL COMPUTERS.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	6	3.8	3.8	3.8
DISAGREE	2.	57	35.8	35.8	39.6
NEUTRAL	3.	79	49.7	49.7	89.3
AGREE	4.	15	9.4	9.4	98.7
STRONGLY AGREE	5.	2	1.3	1.3	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

The responses to the third person stem question on human control over computers, Question No. 18, are in Table 19, showing that most respondents have positive attitudes. 67% are either positive or strongly positive while only 6.9% are either negative or strongly negative.

The composite scores for the three questions on human control over computers are compiled and shown in Table 20 and graphically illustrated in Figure 20. Overall, the survey respondents have positive attitudes on the issue of human control over computers. Composite positive and strong positive answers account for 62.1% of the total while composite negative and strong negative answers represent 7.8%.

Table 19

V18 HUMANS WILL ALWAYS BE IN CONTROL OF COMPUTERS.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	23	14.5	14.5	14.5
AGREE	2.	85	53.5	53.5	67.9
NEUTRAL	3.	40	25.2	25.2	93.1
DISAGREE	4.	1	.6	.6	93.7
STRONGLY DISAGREE	5.	10	6.3	6.3	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 20

COMPOSITE FREQUENCY FOR HUMAN CONTROL OVER COMPUTERS

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	53	11.1	11.1	11.1
POSITIVE	2.	243	50.9	50.9	62.1
NEUTRAL	3.	144	30.2	30.2	92.2
NEGATIVE	4.	16	3.4	3.4	95.6
STRONG NEGATIVE	5.	21	4.4	4.4	100.0
	TOTAL	477	100.0	100.0	

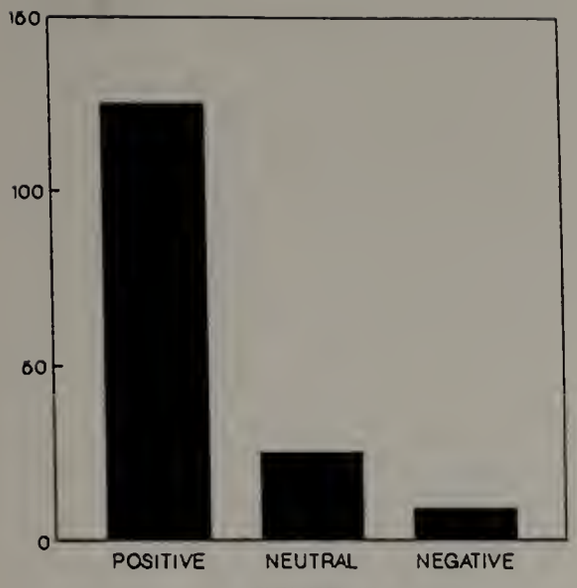

FIGURE 17

FREQUENCY GRAPH: VARIABLE # 11
I do not feel that computers are going out of control

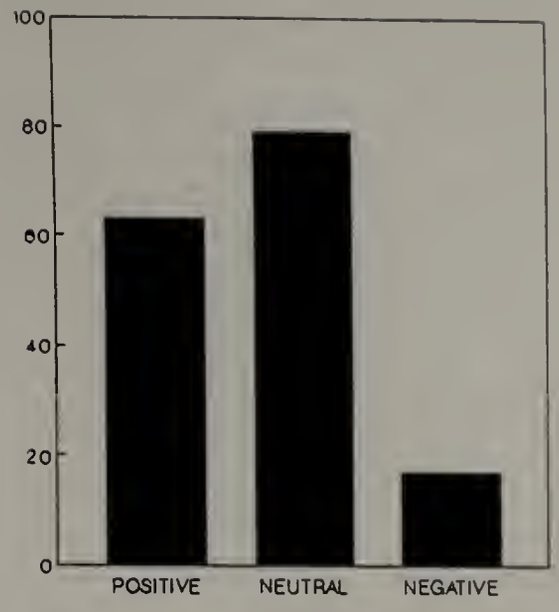

FIGURE 18

FREQUENCY GRAPH: VARIABLE # 5
We humans no longer control computers.

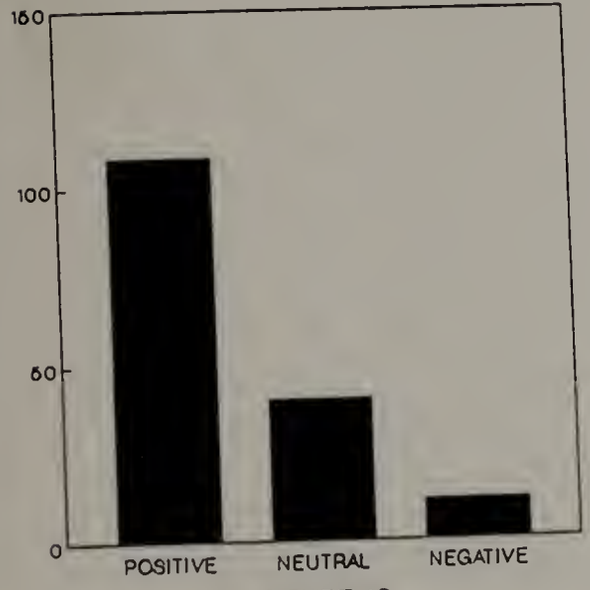

FIGURE 19

FREQUENCY GRAPH: VARIABLE # 18
Humans will always be in control of computers

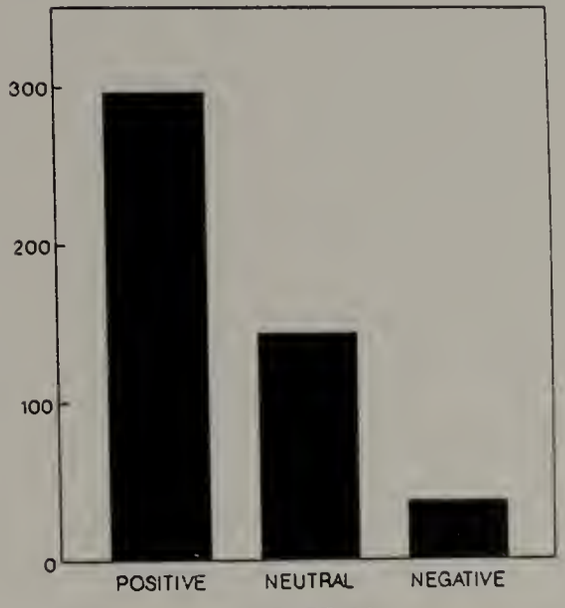

FIGURE 20

COMPOSITE FREQUENCY GRAPH
Human control over computers

Group VI - Computers and the improvement of education

The three questions that measure the population's attitudes toward the role that computers will play in the improvement of education are as follows:

12. My own teaching would not significantly improve even if I had more access to computers.

20. Thanks to computers, our children will be able to learn more.

6. Computers will improve the quality of education.

The different responses to the three above questions seem to suggest that while the survey population thinks that computers will have a positive impact on the quality of education, most do not see computers improving the quality of their own teaching. It would seem as though the respondents see the potential of computers in education but are reluctant to play a leading role.

Table 21 shows the breakdown of responses to Question 12 and Figure 21 is the graphic illustration of the same data. The positive and strong positive responses together make up a small percentage of the total (15.7%) compared to the negative and strong negative responses which account for 43.4%, nearly half of the total.

When the question is asked in the first person plural, there is a dramatic increase in the number of positive responses. As shown in Table 22 and Figure 22, the positive

and strong positive answers to Question No. 20 represent 59% of the total responses while the negative and strong negative answers together account for 19.5%, almost a three to one ratio.

Table 21

V12 MY OWN TEACHING WOULD NOT SIGNIFICANTLY IMPROVE EVEN IF I HAD ACCESS TO COMPUTERS

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	9	5.7	5.7	5.7
DISAGREE	2.	16	10.1	10.1	15.7
NEUTRAL	3.	65	40.9	40.9	56.6
AGREE	4.	54	34.0	34.0	90.6
STRONGLY AGREE	5.	15	9.4	9.4	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 22

V20 THANKS TO COMPUTERS, OUR CHILDREN WILL BE ABLE TO LEARN MORE.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	28	17.6	17.6	17.6
AGREE	2.	66	41.5	41.5	59.1
NEUTRAL	3.	48	30.2	30.2	89.3
DISAGREE	4.	4	2.5	2.5	91.8
STRONGLY DISAGREE	5.	13	8.2	8.2	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

The third person stem responses echo the second person stem responses. As shown in Table 23 and Figure 23, the positive and strong positive responses together constitute nearly two thirds of the population (61.6%). This is a substantial majority, compared to the negative and strong negative responses which together make up 24.5%.

The composite score, laid out in Table 24 and Figure 24, shows that over-all, nearly half of the survey population (45.5%) has positive attitudes about the impact of computers on education. The interesting thing is that while in a general sense, this population, composed of community college faculty, feels that computers will have a positive impact on education, they do not feel that their own teaching will significantly be improved by computers.

Table 23

V6 COMPUTERS WILL IMPROVE THE QUALITY OF EDUCATION

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	27	17.0	17.0	17.0
AGREE	2.	71	44.7	44.7	61.6
NEUTRAL	3.	30	18.9	18.9	80.5
DISAGREE	4.	3	1.9	1.9	82.4
STRONGLY DISAGREE	5.	28	17.6	17.6	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 24

COMPOSITE FREQUENCY FOR IMPROVEMENT OF EDUCATION

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	64	13.4	13.4	13.4
POSITIVE	2.	153	32.1	32.1	45.5
NEUTRAL	3.	143	30.0	30.0	75.5
NEGATIVE	4.	61	12.8	12.8	88.3
STRONG NEGATIVE	5.	56	11.7	11.7	100.0
	TOTAL	477	100.0	100.0	

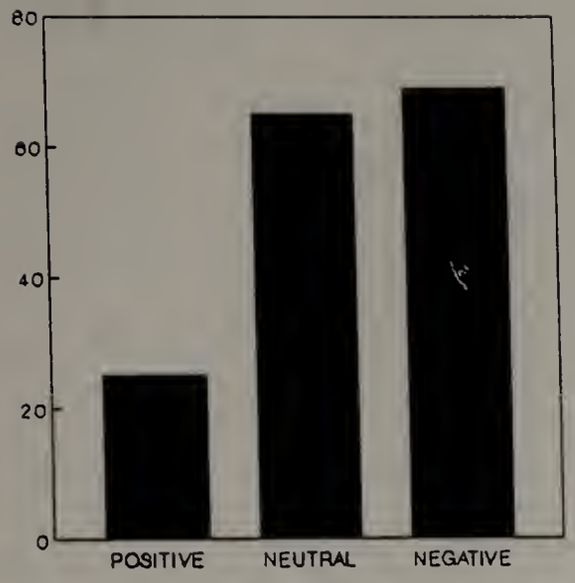

FIGURE 21

FREQUENCY GRAPH: VARIABLE # 12
My own teaching would not improve even if I had access to computers

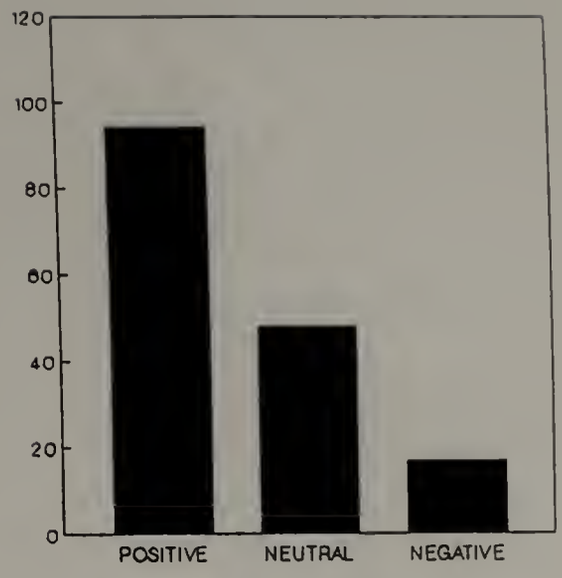

FIGURE 22

FREQUENCY GRAPH: VARIABLE # 20
Thanks to computers, our children will be able to learn more.

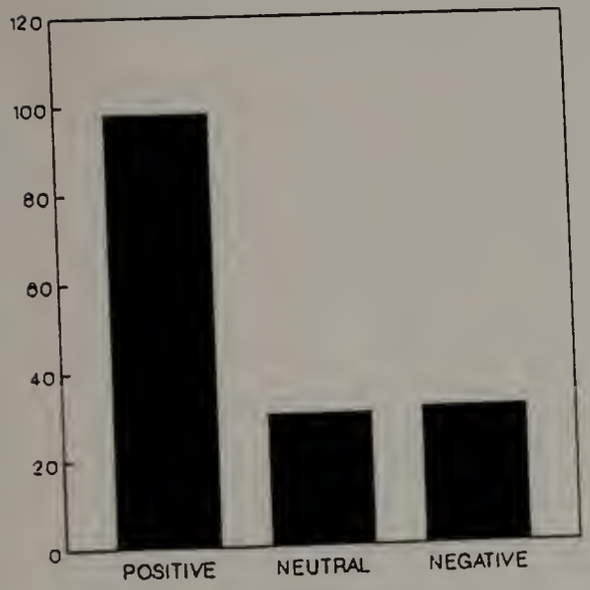

FIGURE 23

FREQUENCY GRAPH: VARIABLE # 8
Computers will improve the quality of education.

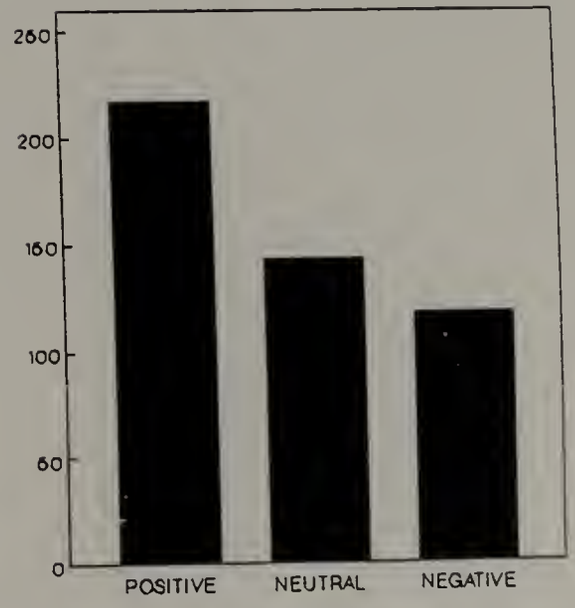

FIGURE 24

COMPOSITE FREQUENCY GRAPH
Impact on education

Group VII - Invasion of Privacy

One of the issues that traditionally evoke negative attitudes toward computers is invasion of privacy. Three questions were framed to elicit responses on this issue. They are:

7. I think computer systems which protect my privacy will someday be designed.
21. People pry too much into our private lives using computers.
16. Because of computerized files, too many people have information about other people.

Table 25 and Figure 25, which compile the responses to Question 21 would seem to suggest that most people are not bothered by the issue of invasion of privacy. Only a total of 15.7% show either a negative or strong negative response while 44% show either a positive or strong negative response. Based on the phrasing of the question, it seems that most of those surveyed are optimistic about future prospects for remedying the problem of computers improving people's privacy.

Table 26 and Figure 26 show a slightly different picture. For the most part, respondents are noncommittal when the question is asked, using the second stem. 59.7% give neutral answers. Of the non-neutral answers, 22.6% provide negative and strong negative answers while 17.6% are either positive or strongly positive.

Table 25

V15 I THINK SYSTEMS TO PROTECT MY PRIVACY WILL SOMEDAY BE DESIGNED.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY AGREE	1.	11	6.9	6.9	6.9
AGREE	2.	59	37.1	37.1	44.0
NEUTRAL	3.	64	40.3	40.3	84.3
DISAGREE	4.	11	6.9	6.9	91.2
STRONGLY DISAGREE	5.	14	8.8	8.8	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 26

V21 PEOPLE PRY TOO MUCH INTO OUR PRIVATE LIVES USING COMPUTERS.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	8	5.0	5.0	5.0
DISAGREE	2.	3	1.9	1.9	6.9
NEUTRAL	3.	73	45.9	45.9	52.8
AGREE	4.	60	37.7	37.7	90.6
STRONGLY AGREE	5.	15	9.4	9.4	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

The third stem of the question evokes the strongest feelings on the issue of the invasion of privacy, mostly negative. This is reflected first in the very low percentage of neutral answers (11.9%.) The negative and strong negative feelings together comprise 83% of the population while only 5% have positive or strong positive feelings. The breakdown of responses to Question No. 16 is on Table 27 and is graphically shown in Figure 27.

As the responses to all three questions are consolidated, attitudes are distributed through the entire continuum. The composite table on invasion of privacy is Table 28 and the same figures are graphed on Figure 28. They show that while 57.3% of the surveyed population is non-committal, 40.4% are either negative or strongly negative and 22.2% are either positive or strongly negative on the issue of invasion of privacy.

Table 27

V16 BECAUSE OF COMPUTERIZED INFORMATION FILES, TOO MANY PEOPLE HAVE INFORMATION ABOUT OTHER PEOPLE.

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONGLY DISAGREE	1.	7	4.4	4.4	4.4
DISAGREE	2.	1	.6	.6	5.0
NEUTRAL	3.	19	11.9	11.9	17.0
AGREE	4.	94	59.1	59.1	76.1
STRONGLY AGREE	5.	38	23.9	23.9	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

Table 28

COMPOSITE FREQUENCY FOR INVASION OF PRIVACY

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	27	5.7	5.7	5.7
POSITIVE	2.	79	16.6	16.6	22.2
NEUTRAL	3.	178	37.3	37.3	59.5
NEGATIVE	4.	137	28.7	28.7	88.3
STRONG NEGATIVE	5.	56	11.7	11.7	100.0
	TOTAL	477	100.0	100.0	

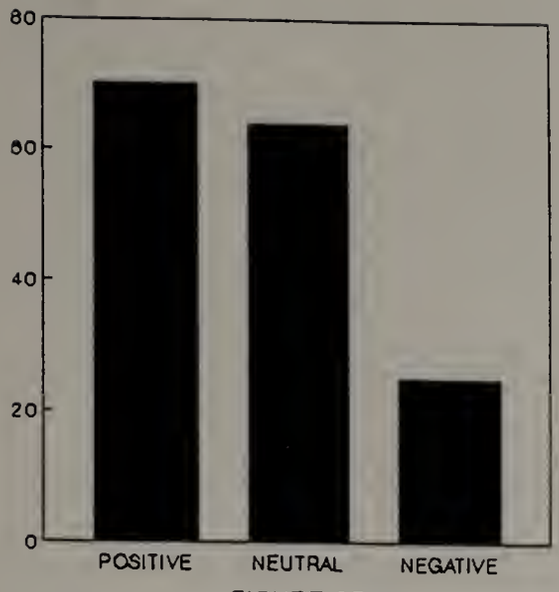

FIGURE 25

FREQUENCY GRAPH: VARIABLE # 15
I think systems to protect my privacy will someday be designed.

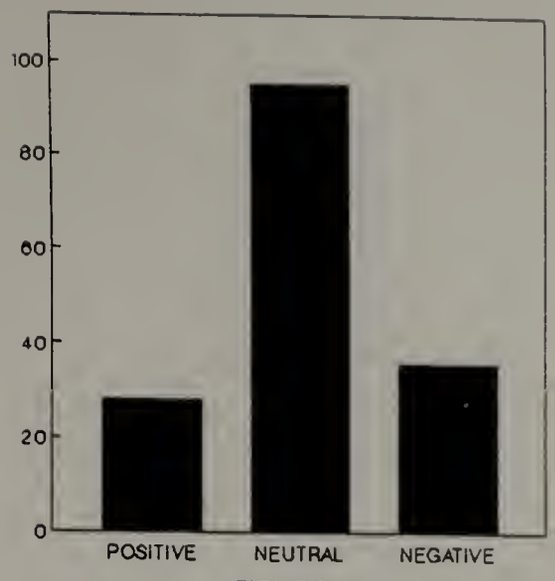

FIGURE 26

FREQUENCY GRAPH: VARIABLE # 21
People pry too much into our private lives using computers.

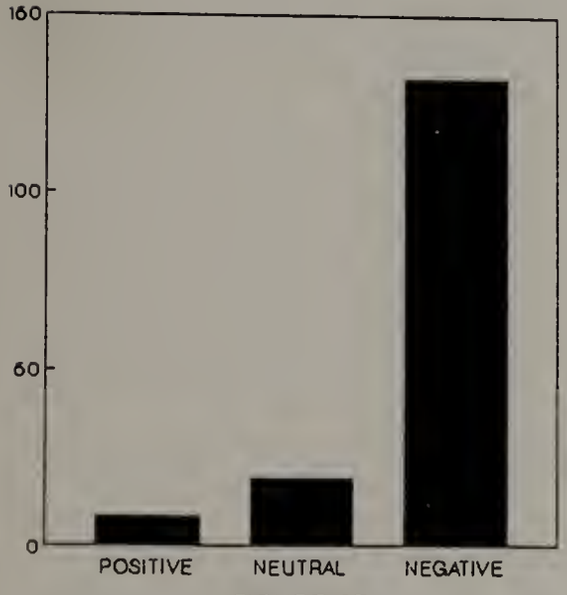

FIGURE 27

FREQUENCY GRAPH: VARIABLE # 16
Because of computerized information files, too many people have information

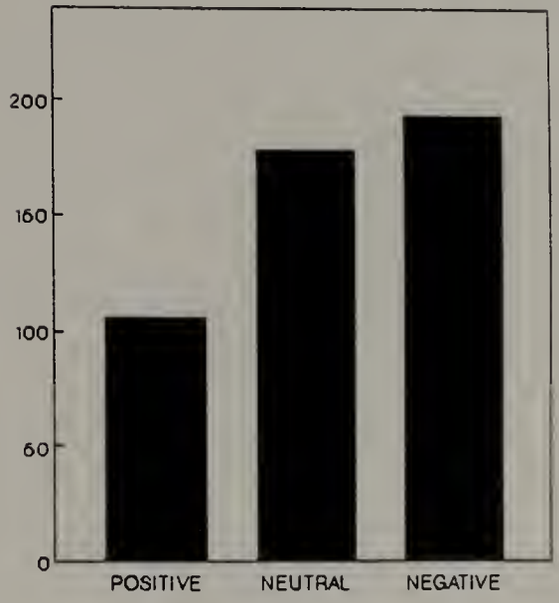

FIGURE 28

COMPOSITE FREQUENCY GRAPH
Invasion of privacy

Frequencies by question stem

With the aid of the program Lotus 1-2-3, the frequency tables are grouped and consolidated into three, each table corresponding to a question stem. The purpose is to see if any differences in frequency distribution arise when control by question stem is introduced.

The distribution pattern appears to be uniform across all three tables, reflecting the trend seen in the previous tabulations, which show that majority of the respondents have either positive or neutral attitudes. However, there are slight shifts in the frequency of positive attitudes as the stem changes. This would seem to support the idea that as the distance increases, attitudes toward the computer also become more positive.

Stem No. 1 - First person singular

The consolidated frequencies on Stem No. 1 are shown in Table 29 and graphically illustrated in Figure 29. Neutral responses register the highest frequency (42%). However, they are roughly matched by the cumulative frequencies of positive and strong positive responses (42.4%). The negative and strong responses are 10.7% and 4.9%, respectively, for a combined negative score of 15.6%.

Table 29

COMPOSITE FREQUENCY FOR FIRST PERSON SINGULAR STEM RESPONSES

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	82	7.4	7.4	7.4
POSITIVE	2.	390	35.0	35.0	42.4
NEUTRAL	3.	468	42.0	42.0	84.5
NEGATIVE	4.	119	10.7	10.7	95.1
STRONG NEGATIVE	5.	54	4.9	4.9	100.0
	TOTAL	1113	100.0	100.0	

Stem No. 2 - First person plural

The distribution pattern in Stem No. 2, as shown in Table 30, is about the same as that of Stem No. 1, with a slight increase in the share of the positive and negative responses which now register a cumulative score of 48.9%, an increase of 3.2% over Stem No. 2. Correspondingly, the frequency of negative responses decreases very slightly from 15.6% in Stem No. 1 to 13.3% in Stem No. 2, a difference of 2.3%.

Table 30

COMPOSITE FREQUENCY FOR FIRST PERSON PLURAL RESPONSES

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	146	13.1	13.1	13.1
POSITIVE	2.	361	32.4	32.4	45.6
NEUTRAL	3.	458	41.2	41.2	86.7
NEGATIVE	4.	90	8.1	8.1	94.8
STRONG NEGATIVE	5.	58	5.2	5.2	100.0
	TOTAL	1113	100.0	100.0	

Stem No. 3 - Third person

Of the three stem groups, this group registers the highest frequency of positive responses. As Table 31 and Figure 31 show, the cumulative frequency of the strong positive and positive answers represents 45.6% of the total. However, the significance of this increase in positive responses is somewhat diminished by a corresponding increase in negative responses. Strong negative and negative responses together account for 24.4%, compared to the corresponding responses in Stem No. 2 (13.3%).

Grand composite frequency

To show an overall picture, all 21 frequency tables are consolidated in a grand composite table. The resulting picture shows that the survey respondents generally have a positive attitude toward the computer. As shown in Table 32 and Figure 32, the strong positive or positive responses together make up 45.6% of the total. A little more than a third of the respondents are noncommittal. A little more than a sixth of the population (17.8%) are either negative or strongly negative toward computers.

Table 31

COMPOSITE FREQUENCY FOR THIRD PERSON STEM RESPONSES

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	184	16.5	16.5	16.5
POSITIVE	2.	360	32.3	32.3	48.9
NEUTRAL	3.	297	26.7	26.7	75.6
NEGATIVE	4.	137	12.3	12.3	87.9
STRONG NEGATIVE	5.	135	12.1	12.1	100.0
	TOTAL	1113	100.0	100.0	

Table 32

GRAND COMPOSITE FREQUENCY FOR VARIABLES 1 TO 21

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
STRONG POSITIVE	1.	412	12.3	12.3	12.3
POSITIVE	2.	1111	33.3	33.3	45.6
NEUTRAL	3.	1223	36.6	36.6	82.2
NEGATIVE	4.	346	10.4	10.4	92.6
STRONG NEGATIVE	5.	247	7.4	7.4	100.0
	TOTAL	3339	100.0	100.0	

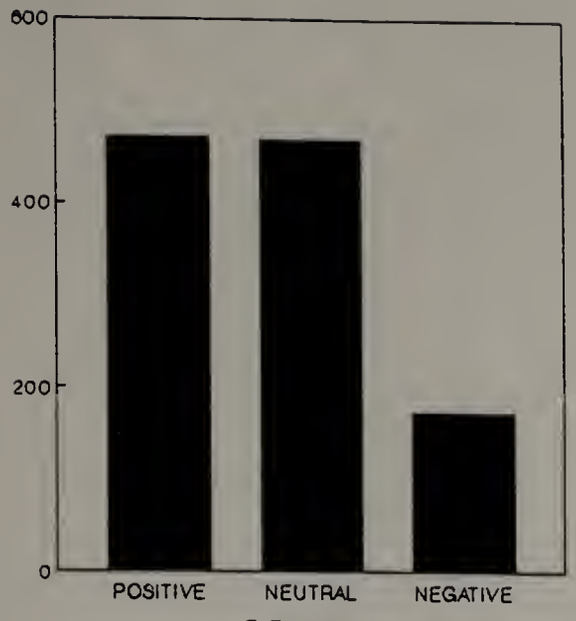

FIGURE 29

COMPOSITE FREQUENCY GRAPH
First stem responses

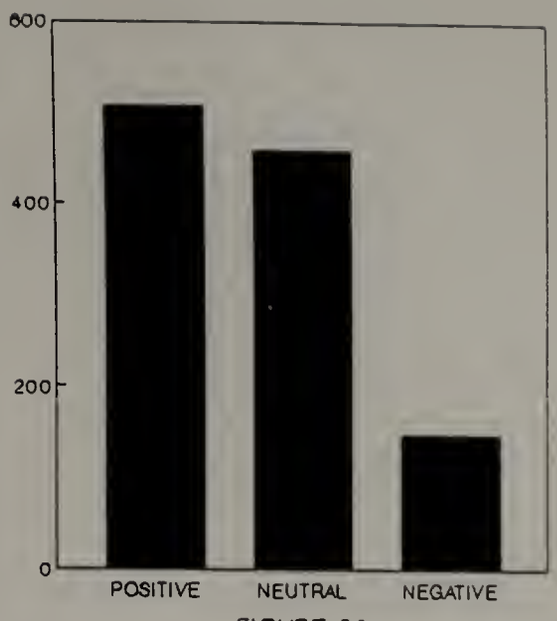

FIGURE 30

COMPOSITE FREQUENCY GRAPH
Second stem responses

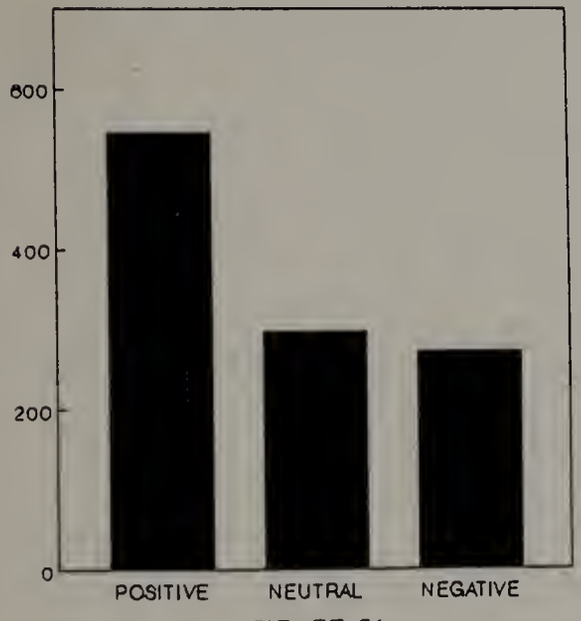

FIGURE 31

COMPOSITE FREQUENCY GRAPH
Third stem responses

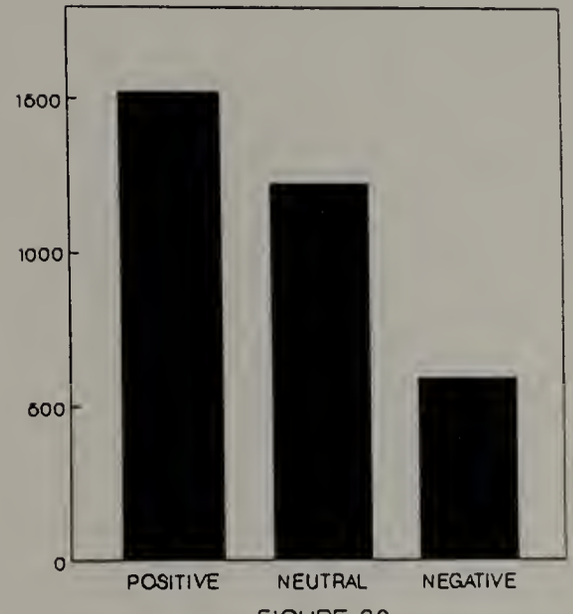

FIGURE 32

COMPOSITE FREQUENCY GRAPH
All variables

Crosstabulations by Demographic Variables

To determine if any significant differences exist between demographic groups within the survey population, crosstabulations were obtained, using as independent variables the results of Questions 23 to 40 and one other variable that was coded in, namely, the interviewee's school.

There were two general dependent variables available. One of these was a general attitude toward computers which was arrived at by adding the values of an interviewer's responses to Questions 1 to 21 and dividing the resulting score into five, corresponding to the five categories in the response scale.

The other general dependent variable was the response to Question No. 22, which measured the interviewee's feeling towards using computers in teaching. The frequency distribution of reponses to this question, as shown in Table 33, shows that there was a general eagerness to use computers in teaching among the surveyed population. 29.6% of those surveyed were very eager to use computers in the classroom and 36.5% were eager. Adding the two frequencies, it showed that two-thirds of the population were eager to very eager to use computers in teaching. In comparison, only 8.2% showed some reluctance and an even smaller number, 6.9% were very reluctant. Figure 33 is a bar graph with the

responses collapsed into three categories, namely positive, neutral and negative.

Table 33

V22 OVER-ALL FEELING TOWARDS USING COMPUTERS IN TEACHING

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
VERY EAGER	1.	47	29.6	29.6	29.6
EAGER	2.	58	36.5	36.5	66.0
NEUTRAL	3.	30	18.9	18.9	84.9
SOME RELUCTANCE	4.	13	8.2	8.2	93.1
VERY RELUCTANT	5.	11	6.9	6.9	100.0
	TOTAL	159	100.0	100.0	

VALID CASES 159 MISSING CASES 0

As the population is broken into subgroups, the frequencies in some individual cells are so small that it becomes necessary to collapse categories. The categories in both dependent variables, general attitudes toward computers and over-all feeling towards using computers in teaching, are collapsed into three, namely, postive, neutral and negative.

Some of the independent variables which had a lot of categories in the original questionnaire also have to be collapsed, as needed.

Faculty rank and attitudes

The purpose of this analysis is to determine if the rank of a community college faculty member is a predictor of attitudes toward computers in general and the use of computers in teaching. The survey respondents are divided into five categories, namely, full professor, associate professor, assistant professor, instructor and other.

As shown in tables 34 and 35, faculty rank cannot be a predictor of attitudes toward computers in general or computers in teaching. Chi squares for general attitudes and feelings towards use of computers in teaching are .6905 and .1039.

Table 34

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY TEACHING STATUS

AVATT	V23 COUNT / ROW PCT / COL PCT / TOT PCT	PRO 1.	ASSOC 2.	ASSIST 3.	INSTR 4.	OTHER 5.	ROW TOTAL
1. POSITIVE		9	12	10	11	3	45
		20.0	26.7	22.2	24.4	6.7	28.3
		23.1	42.9	26.3	24.4	33.3	
		5.7	7.5	6.3	6.9	1.9	
2. NEUTRAL		28	16	27	33	6	110
		25.5	14.5	24.5	30.0	5.5	69.2
		71.8	57.1	71.1	73.3	66.7	
		17.6	10.1	17.0	20.8	3.8	
3. NEGATIVE		2	0	1	1	0	4
		50.0	0	25.0	25.0	0	2.5
		5.1	0	2.6	2.2	0	
		1.3	0	.6	.6	0	
COLUMN TOTAL		39	28	38	45	9	159
		24.5	17.6	23.9	28.3	5.7	100.0

CHI SQUARE = .6905

Table 35

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY TEACHING STATUS

		V23					
	COUNT / ROW PCT / COL PCT / TOT PCT	PROF 1.	ASSOC 2.	ASSIST 3.	INSTRU 4.	OTHER 5.	ROW TOTAL
V22							
1. EAGER		26	22	19	30	8	105
		24.8	21.0	18.1	28.6	7.6	66.5
		66.7	78.6	50.0	68.2	88.9	
		16.5	13.9	12.0	19.0	5.1	
2. NEUTRAL		8	4	13	5	0	30
		26.7	13.3	43.3	16.7	0	19.0
		20.5	14.3	34.2	11.4	0	
		5.1	2.5	8.2	3.2	0	
3. RELUCTANT		5	2	6	9	1	23
		21.7	8.7	26.1	39.1	4.3	14.6
		12.8	7.1	15.8	20.5	11.1	
		3.2	1.3	3.8	5.7	.6	
COLUMN TOTAL		39	28	38	44	9	158
		24.7	17.7	24.1	27.8	5.7	100.0

CHI SQUARE = .1039

Tenure and Attitudes

Would untenured faculty members be more prone to be innovative and thus more eager to embrace the new technology than those who are tenured? To seek an answer to this question, the survey population was divided into four groups according to tenure, namely, tenured, multiple year contract, one-year contract and other. The catergory "other" applied to temporary and part time faculty who were on less than a one-year contract, if any.

The analysis shows that tenure cannot be a predictor of attitudes of the survey population either toward computers in general or the use of computers in teaching. The results are shown in Tables 36 and 37. In both instances, whatever differences exist among the sub-groups are insignificant. Chi squares for general attitudes and overall feeling in teaching are .4104 and .2405, respectively.

Table 36

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY TENURE STATUS

AVATT	V24	1. TENURED	2. MULTI YR CONTRACT	3. YEARLY CONTRACT	4. OTHER	ROW TOTAL
1. POSITIVE	COUNT	22	2	15	6	45
	ROW PCT	48.9	4.4	33.3	13.3	28.7
	COL PCT	29.7	9.1	36.6	30.0	
	TOT PCT	14.0	1.3	9.6	3.8	
2. NEUTRAL	COUNT	50	19	25	14	108
	ROW PCT	46.3	17.6	23.1	13.0	68.8
	COL PCT	67.6	86.4	61.0	70.0	
	TOT PCT	31.8	12.1	15.9	8.9	
3. NEGATIVE	COUNT	2	1	1	0	4
	ROW PCT	50.0	25.0	25.0	0	2.5
	COL PCT	2.7	4.5	2.4	0	
	TOT PCT	1.3	.6	.6	0	
COLUMN TOTAL		74	22	41	20	157
		47.1	14.0	26.1	12.7	100.0

CHI SQUARE = .4104

MISSING OBSERVATIONS = 2

Table 37

CROSSTABULATION OF
OVER-ALL FEELING IN TEACHING BY TENURE STATUS

V22	COUNT / ROW PCT / COL PCT / TOT PCT	V24 TENURED 1.	MULTI YR CONTRACT 2.	YEARLY CONTRACT 3.	OTHER 4.	ROW TOTAL
1. EAGER	COUNT	46	15	27	15	103
	ROW PCT	44.7	14.6	26.2	14.6	66.0
	COL PCT	62.2	71.4	65.9	75.0	
	TOT PCT	29.5	9.6	17.3	9.6	
2. NEUTRAL	COUNT	17	5	8	0	30
	ROW PCT	56.7	16.7	26.7	0	19.2
	COL PCT	23.0	23.8	19.5	0	
	TOT PCT	10.9	3.2	5.1	0	
3. RELUCTANT	COUNT	11	1	6	5	23
	ROW PCT	47.8	4.3	26.1	21.7	14.7
	COL PCT	14.9	4.8	14.6	25.0	
	TOT PCT	7.1	.6	3.8	3.2	
COLUMN TOTAL		74 47.4	21 13.5	41 26.3	20 12.8	156 100.0

CHI SQUARE = .2405

Number of Years Teaching and Attitudes

The previous question had to do with the correlation between attitudes toward the computer and job security. The next question has to do with the correlation between experience in teaching and attitudes toward the computer. Both are related but each has a different emphasis. In this instance, there appear to be certain significant differences among population groups.

Table 38 shows the breakdown of general attitudes by number of years of teaching. It shows that the relatively inexperienced teachers tend to have a more positive attitude toward computers than their experienced colleagues. 30.8% of those who have 1 to 3 years teaching experience and 52.6% of those who have taught 4 to 6 years have positive attitudes toward computers. This compares with 22.2% among those who have taught 7 to 9 years and 4.8% among those who have taught 10 to 12 years. Interestingly, those who have taught more than 12 years show a positive attitude that is comparable to those who are just starting out. One possible explanation for this resurgence in positive attitudes among teachers with lengthy experience could be that the latter have attained their career goals and are more tolerant of things that are new, figuring that they are so close to retirement that any changes are not going to affect them adversely. On the other hand, younger faculty are hungry

for advancement and recognition and they may hope to achieve these with the aid of their knowledge in computer technology. The fact that those who have taught between 10 and 12 years register the lowest positive response tells the story. It may be this group that is caught in between, being too young and with still a lot of years left to teach to be able to ignore the changes that are happening around them and yet with enough time invested in the system to be protective of the status quo.

Significant differences are likewise seen in the crosstabulation of feelings toward teaching with computers with number of years teaching. The pattern is that the less experienced a faculty member is, the more eager that person is to use computers in teaching. Table 39 shows that almost all of those who have 1 to 3 years experience teaching (92.3%) have positive feelings. There is a big dip among those who have taught 4 to 6 years and the interest goes up again among those who have taught 7 to 9 years. Predictably, those who have taught more than 12 years are not as eager to use computers in class as most of their younger colleagues.

Table 38

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY NUMBER OF YEARS TEACHING

		V25					
	COUNT	1 TO 3 YEARS	4 TO 6 YEARS	7 TO 9 YEARS	10 TO 12 YEARS	OTHER	ROW TOTAL
	ROW PCT	1.	2.	3.	4.	5.	
AVATT	COL PCT						
	TOT PCT						
1.		4	10	4	1	26	45
POSITIVE		8.9	22.2	8.9	2.2	57.8	28.3
		30.8	52.6	22.2	4.8	29.5	
		2.5	6.3	2.5	.6	16.4	
2.		9	9	14	18	60	110
NEUTRAL		8.2	8.2	12.7	16.4	54.5	69.2
		69.2	47.4	77.8	85.7	68.2	
		5.7	5.7	8.8	11.3	37.7	
3.		0	0	0	2	2	4
NEGATIVE		0	0	0	50.0	50.0	2.5
		0	0	0	9.5	2.3	
		0	0	0	1.3	1.3	
COLUMN TOTAL		13	19	18	21	88	159
		8.2	11.9	11.3	13.2	55.3	100.0

CHI SQUARE = .0407

Table 39

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY NUMBER OF YEARS TEACHING

V22	COUNT / ROW PCT / COL PCT / TOT PCT	V25 1 TO 3 YEARS 1.	4 TO 6 YEARS 2.	7 TO 9 YEARS 3.	10 TO 12 YEARS 4.	OTHER 5.	ROW TOTAL
1. EAGER		12	11	14	13	55	105
		11.4	10.5	13.3	12.4	52.4	66.5
		92.3	57.9	77.8	65.0	62.5	
		7.6	7.0	8.9	8.2	34.8	
2. NEUTRAL		0	2	3	7	18	30
		0	6.7	10.0	23.3	60.0	19.0
		0	10.5	16.7	35.0	20.5	
		0	1.3	1.9	4.4	11.4	
3. RELUCTANT		1	6	1	0	15	23
		4.3	26.1	4.3	0	65.2	14.6
		7.7	31.6	5.6	0	17.0	
		.6	3.8	.6	0	9.5	
COLUMN TOTAL		13	19	18	20	88	158
		8.2	12.0	11.4	12.7	55.7	100.0

CHI SQUARE = .0345

Age and Attitudes

The survey population is divided into five age groups, as follows: 20-29, 30-39, 40-49, 50-59, 60 and above. The mode frequency is at 40-49, with 32.5% of the faculty in that age group, followed by those who are 30-39, representing 29.3%. This means that at the time of the survey, the majority of the faculty members are between 30 and 50.

The crosstabulation of age with general attitude (Table 40) does not yield significant results. However, it is interesting that the two groups that show the highest positive attitude scores are those who are between the ages of 30 and 50.

Table 41 shows that significant results are obtained in the crosstabulation of age with overall feeling towards the use of computers in teaching, with a chi square of .0146. Here, a general pattern is established whereby the younger a faculty member is, the more eager he or she is to use computers in teaching. Among all who are 50 or under, about 3/4 are eager to use computers in teaching, with the mode frequency of 76.1% found among those who are between 30 and 39. As the faculty member gets older, interest in using computers in the classroom declines. Among the 50-59 age group, a little more than half (52.6%) are eager to use computers in class while among those who are approaching

retirement (60 and above), a little more than a third (36.4%) would like to use computers in teaching.

Table 40

CROSSTABULATION OF
GENERAL ATTITUDE TOWARD COMPUTERS BY AGE

AVATT	V37 COUNT / ROW PCT / COL PCT / TOT PCT	20-29 (1.)	30-39 (2.)	40-49 (3.)	50-59 (4.)	60 (5.)	ROW TOTAL
1. POSITIVE	COUNT	2	18	17	6	2	45
	ROW PCT	4.4	40.0	37.8	13.3	4.4	28.5
	COL PCT	18.2	38.3	33.3	15.8	18.2	
	TOT PCT	1.3	11.4	10.8	3.8	1.3	
2. NEUTRAL	COUNT	9	28	34	30	8	109
	ROW PCT	8.3	25.7	31.2	27.5	7.3	69.0
	COL PCT	81.8	59.6	66.7	78.9	72.7	
	TOT PCT	5.7	17.7	21.5	19.0	5.1	
3. NEGATIVE	COUNT	0	1	0	2	1	4
	ROW PCT	0	25.0	0	50.0	25.0	2.5
	COL PCT	0	2.1	0	5.3	9.1	
	TOT PCT	0	.6	0	1.3	.6	
COLUMN TOTAL		11	47	51	38	11	158
		7.0	29.7	32.3	24.1	7.0	100.0

CHI SQUARE = .1992

NUMBER OF MISSING OBSERVATIONS = 1

Table 41

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY AGE

V22	COUNT / ROW PCT / COL PCT / TOT PCT	V37 20-29 (1.)	30-39 (2.)	40-49 (3.)	50-59 (4.)	60 (5.)	ROW TOTAL
1. EAGER	COUNT	8	35	37	20	4	104
	ROW PCT	7.7	33.7	35.6	19.2	3.8	66.2
	COL PCT	72.7	76.1	72.5	52.6	36.4	
	TOT PCT	5.1	22.3	23.6	12.7	2.5	
2. NEUTRAL	COUNT	2	4	9	13	2	30
	ROW PCT	6.7	13.3	30.0	43.3	6.7	19.1
	COL PCT	18.2	8.7	17.6	34.2	18.2	
	TOT PCT	1.3	2.5	5.7	8.3	1.3	
3. RELUCTANT	COUNT	1	7	5	5	5	23
	ROW PCT	4.3	30.4	21.7	21.7	21.7	14.6
	COL PCT	9.1	15.2	9.8	13.2	45.5	
	TOT PCT	.6	4.5	3.2	3.2	3.2	
COLUMN TOTAL		11	46	51	38	11	157
		7.0	29.3	32.5	24.2	7.0	100.0

CHI SQUARE = .0146

NUMBER OF MISSING OBSERVATIONS = 2

Main Academic Area and Attitudes

In an attempt to cover as many as possible, 16 academic areas were spelled out in the questionnaire with "others" as a 17th category. The returns were coded into three categories, namely, humanities, sciences, social sciences and others. As shown in Table 42, the chi square for the crosstabulation of main academic area with attitudes is at

a close look at the statistics. The results appear to support conventional thinking, which says that those who are in the sciences tend to have more positive attitudes toward the computer than those who are in the Humanities. 40% of the science teachers register positive attitudes, compared to 17.4% among their Humanities counterparts. Social Science teachers are somewhere in between the Science and the Humanities teachers. Most of those who are categorized as "other" (30% positive) teach in two-year technical career courses such as Secretarial Service, Police Science, and Early Childhood Education. The crosstabulation of feelings toward the use of computers in teaching with main subject area (Table 43) yields significant statistics. Again, as expected, the Science teachers have the highest percentage of people who are eager to use computers in teaching (78%) and they are followed by the Social Science teachers (71.2%). Among the Humanities teachers, 53.3% are eager to use computers in class.

Table 42

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY MAIN ACADEMIC AREA

AVATT	V26	OTHER 17.	HUMANITIES 50.	SCIENCE 60.	SOCIAL SCIENCES 70.	ROW TOTAL
POSITIVE	1.	3	8	20	14	45
		6.7	17.8	44.4	31.1	28.5
		30.0	17.4	40.0	26.9	
		1.9	5.1	12.7	8.9	
NEUTRAL	2.	6	37	30	36	109
		5.5	33.9	27.5	33.0	69.0
		60.0	80.4	60.0	69.2	
		3.8	23.4	19.0	22.8	
NEGATIVE	3.	1	1	0	2	4
		25.0	25.0	0	50.0	2.5
		10.0	2.2	0	3.8	
		.6	.6	0	1.3	
COLUMN TOTAL		10	46	50	52	158
		6.3	29.1	31.6	32.9	100.0

CHI SQUARE = .1337

NUMBER OF MISSING OBSERVATIONS = 1

Table 43

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY MAIN ACADEMIC AREA

		V26				
	COUNT / ROW PCT / COL PCT / TOT PCT	OTHER 17.	HUMANI-TIES 50.	SCIENCE 60.	SOCIAL SCIENCES 70.	ROW TOTAL
V22						
	1.	5	24	39	37	105
EAGER		4.8	22.9	37.1	35.2	66.9
		50.0	53.3	78.0	71.2	
		3.2	15.3	24.8	23.6	
	2.	3	15	3	8	29
NEUTRAL		10.3	51.7	10.3	27.6	18.5
		30.0	33.3	6.0	15.4	
		1.9	9.6	1.9	5.1	
	3.	2	6	8	7	23
RELUCTANT		8.7	26.1	34.8	30.4	14.6
		20.0	13.3	16.0	13.5	
		1.3	3.8	5.1	4.5	
	COLUMN TOTAL	10 6.4	45 28.7	50 31.8	52 33.1	157 100.0

CHI SQUARE = .0336

Highest academic degree and attitudes

The breakdown of the survey population by highest degree attained shows that about 3/4 (76.6%) have their Master's degrees. There is a small number (8.2%) of teachers whose highest degree is a Bachelor's. The rest either have doctorates (10.8%) or a C.A.G.S. (4.4%).

Crosstabulations of both general attitutes and feelings toward computers in teaching by highest degree attained yielded no statistically significant results and are reported in Tables 44 and 45, respectively. Of the two, Table 45 has a lower chi square and has some interesting data. It appears that all subgroups show an eagerness to use the computer in their teaching but the most enthusiastic is the Bachelor's group where 100% are eager to use computers.

Table 44

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY HIGHEST DEGREE

	V27				
COUNT / ROW PCT / COL PCT / TOT PCT	DOCTOR 1.	CAGS 2.	MASTERS 3.	BACHELORS 4.	ROW TOTAL
AVATT					
1. POSITIVE	7	4	29	4	44
	15.9	9.1	65.9	9.1	27.8
	41.2	57.1	24.0	30.8	
	4.4	2.5	18.4	2.5	
2. NEUTRAL	10	3	88	9	110
	9.1	2.7	80.0	8.2	69.6
	58.8	42.9	72.7	69.2	
	6.3	1.9	55.7	5.7	
3. NEGATIVE	0	0	4	0	4
	0	0	100.0	0	2.5
	0	0	3.3	0	
	0	0	2.5	0	
COLUMN TOTAL	17	7	121	13	158
	10.8	4.4	76.6	8.2	100.0

CHI SQUARE = .3870

NUMBER OF MISSING OBSERVATIONS = 1

Table 45

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY HIGHEST DEGREE

		V27				
	COUNT					
	ROW PCT	DOCTOR	CAGS	MASTERS	BACHELORS	ROW TOTAL
	COL PCT					
	TOT PCT	1.	2.	3.	4.	
V22						
1.		11	6	75	13	105
EAGER		10.5	5.7	71.4	12.4	66.9
		64.7	85.7	62.5	100.0	
		7.0	3.8	47.8	8.3	
2.		4	0	25	0	29
NEUTRAL		13.8	0	86.2	0	18.5
		23.5	0	20.8	0	
		2.5	0	15.9	0	
3.		2	1	20	0	23
RELUCTANT		8.7	4.3	87.0	0	14.6
		11.8	14.3	16.7	0	
		1.3	.6	12.7	0	
COLUMN TOTAL		17	7	120	13	157
		10.8	4.5	76.4	8.3	100.0

CHI SQUARE = .1480

NUMBER OF MISSING OBSERVATIONS = 2

Gender and attitudes

Does the commonly held belief that gender plays a role in predicting attitude toward the computer apply for commmunity college faculty? To seek an answer to this question, crosstabulations were made of general attitudes and feelings toward teaching with computers by gender. In both instances, no significant results were obtained.

Table 46 shows the breakdown in responses by gender. Although the table shows that the frequency of positive responses for male respondents (30.7%) is slightly higher than that of their female counterparts, none of the females claim to have negative attitudes toward computers.

Likewise, there are no statistically significant differences in the overall feeling of both genders toward the use of computers in their teaching. As seen in Table 47, males and females in the population surveyed have roughly equal percentages that are either eager or reluctant to use computers for teaching. Parenthetically, it would be interesting to explore how much sexual stratification exists among community college faculty compared to those from other institutions of higher education. At least in the area of attitudes toward computers and their use in teaching, there seems to be no evidence of sexual stratification among this group of community college faculty.

Table 46

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY SEX

	V38			
	COUNT / ROW PCT / COL PCT / TOT PCT	MALE 1.	FEMALE 2.	ROW TOTAL
AVATT				
1. POSITIVE		31	13	44
		70.5	29.5	28.0
		30.7	23.2	
		19.7	8.3	
2. NEUTRAL		66	43	109
		60.6	39.4	69.4
		65.3	76.8	
		42.0	27.4	
3. NEGATIVE		4	0	4
		100.0	0	2.5
		4.0	0	
		2.5	0	
COLUMN TOTAL		101	56	157
		64.3	35.7	100.0

CHI SQUARE = .1640

NUMBER OF MISSING OBSERVATIONS = 2

Table 47

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY SEX

V22	COUNT / ROW PCT / COL PCT / TOT PCT	V38 MALE 1.	V38 FEMALE 2.	ROW TOTAL
EAGER	1.	65	39	104
		62.5	37.5	66.7
		65.0	69.6	
		41.7	25.0	
NEUTRAL	2.	20	9	29
		69.0	31.0	18.6
		20.0	16.1	
		12.8	5.8	
RELUCTANT	3.	15	8	23
		65.2	34.8	14.7
		15.0	14.3	
		9.6	5.1	
	COLUMN TOTAL	100	56	156
		64.1	35.9	100.0

CHI SQUARE = .8079

NUMBER OF MISSING OBSERVATIONS = 3

We will next examine the outcome of several variables that have direct bearing on experience with the computer. In the survey, a number of questions were asked that were designed to measure the amount of experience with and exposure to computers and computer-related activities that the respondents had. The importance of this next set of variables cannot be taken lightly. If, for example, clear correlations emerge beween computer experience and exposure, on one hand, and positive computer attitudes, on the other, then, the agenda becomes a little clearer for those professionals who are charged with the computer training of community college faculty.

A computer at home and attitudes

Conventional wisdom seems to suggest that if you give a person a computer to use in the privacy of his home or office, then, in due time, that person will develop confidence in his ability to use the computer, resulting in positive attitudes. When the survey was given, the ratio of faculty that owned a computer to those who did not was 1 of every 2. Since then, so many of the same faculty have purchased their own computers and at this time, the ratio is probably closer to 2 faculty members who have a computer at home to 1 who does not.

Regrettably, the questionnaire only asked respondents whether they had a computer at home and did not ask for specifics, such as type of computer, how long they had owned

the computer and how the computer was being used. Then, as now, the term computer could mean anything from a $65 arcade type game machine to a $10,000 small business system.

Table 48 is a crosstabulation of general attitude toward computers by home computer ownership and Table 46 is a crosstabulation of overall feeling in teaching with computers by home computer ownership. Chi squares are .1824 and .0879, respectively, just a shade above the accepted norm and therefore making them worth some discussion.

Table 48 seems to suggest that those who own a computer at home generally have a more positive attitude toward computers than those who do not. The frequency of positive responses for home computer owners is 35% as compared to that of non-owners who register a positive response rate of 25%.

Table 49 suggests that those who own computers at home are eager to use computers in their teaching than those who do not own their own computers. The frequency of eager responses for computer owners is 78.4% compared to 60.7% for non-owners.

Table 48

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY COMPUTER AT HOME

AVATT	V30 COUNT / ROW PCT / COL PCT / TOT PCT	NO (0)	YES (1.)	ROW TOTAL
1. POSITIVE		27	18	45
		60.0	40.0	28.3
		25.0	35.3	
		17.0	11.3	
2. NEUTRAL		77	33	110
		70.0	30.0	69.2
		71.3	64.7	
		48.4	20.8	
3. NEGATIVE		4	0	4
		100.0	0	2.5
		3.7	0	
		2.5	0	
COLUMN TOTAL		108	51	159
		67.9	32.1	100.0

CHI SQUARE = .1824

Table 49

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY COMPUTER AT HOME

		V30		
	COUNT / ROW PCT / COL PCT / TOT PCT	NO (0)	YES (1.)	ROW TOTAL
V22				
1. EAGER		65	40	105
		61.9	38.1	66.5
		60.7	78.4	
		41.1	25.3	
2. NEUTRAL		24	6	30
		80.0	20.0	19.0
		22.4	11.8	
		15.2	3.8	
3. RELUCTANT		18	5	23
		78.3	21.7	14.6
		16.8	9.8	
		11.4	3.2	
COLUMN TOTAL		107	51	158
		67.7	32.3	100.0

CHI SQUARE = .0879

NUMBER OF MISSING OBSERVATIONS = 1

Computer use in school work and attitudes

The question asking if the respondents have used computers in school work is an undifferentiated one. There is no attempt to qualify the type of computer work and so this allows considerable latitude. The term "school work" is not limited to classroom-related activity; in all likelihood, some of the work is related to non-academic tasks such as committee and co-curricular activity. Nor does the question qualify what type of computers are used. Those who have used computers in school work outnumber those who have not by a ratio of 2 to 1.

The results show that there is no correlation between having used computers in school work and general attitudes toward the computer. Table 50 crosstabulates the use of computers in school work by general attitude and the chi square is .3924.

We get a different picture when these subgroups are asked about their overall-feeling toward the use of computers in teaching. In this case, a strong correlation between use of computers in school work and positive feelings about using computers in teaching seems to exist. Table 51 shows that of the 107 who indicated that they have used computers in school work, 82.2% are eager to use computers in teaching and only 8.4% are reluctant. In comparison, among those who have not used computers in

school work, only 33.3% are eager to use computers in teaching while 27.5% are reluctant.

Table 50

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY
HAVING USED THEM IN SCHOOL WORK

AVATT	V31 COUNT / ROW PCT / COL PCT / TOT PCT	NO (0)	YES (1.)	ROW TOTAL
1. POSITIVE		11	34	45
		24.4	75.6	28.3
		21.6	31.5	
		6.9	21.4	
2. NEUTRAL		39	71	110
		35.5	64.5	69.2
		76.5	65.7	
		24.5	44.7	
3. NEGATIVE		1	3	4
		25.0	75.0	2.5
		2.0	2.8	
		.6	1.9	
COLUMN TOTAL		51	108	159
		32.1	67.9	100.0

CHI SQUARE = .3924

Table 51

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY
HAVING USED THEM IN SCHOOL WORK

		V31			
	COUNT				
	ROW PCT	NO		YES	ROW
	COL PCT				TOTAL
	TOT PCT	0		1.	
V22					
	1.	17		88	105
EAGER		16.2		83.8	66.5
		33.3		82.2	
		10.8		55.7	
	2.	20		10	30
NEUTRAL		66.7		33.3	19.0
		39.2		9.3	
		12.7		6.3	
	3.	14		9	23
RELUCTANT		60.9		39.1	14.6
		27.5		8.4	
		8.9		5.7	
	COLUMN	51		107	158
	TOTAL	32.3		67.7	100.0

CHI SQUARE = .0000

NUMBER OF MISSING VALUES = 1

Use of the school computer center and attitudes

Surprisingly, there are more who indicate having used the school's computer center than those who simply state having used computers in school work. Of the 159 faculty surveyed, 110 say they have at one time used the services of the school computer center while 49 have not.

How the use of the school computer center correlates with attitudes is shown in Table 52 and 53, both of which show statistically significant data.

Table 52 crosstabulates general attitudes toward computers with use of the computer center. Among those who have used the school computer center, 32.7% have positive attitudes while 25% have negative attitudes. In contrast, among those who have not used the computer center, only 18.4% have positive attitudes while 75% have negative attitudes.

Likewise, there seems to be a positive correlation between use of the computer center and eagerness to use computers in teaching, as shown in Table 53. Among those who indicate having used the school computer center, 77.7% are eager to use computers in teaching while 6.4% are reluctant. On the other hand, among those who have not used the school computer center, 42.9% are eager while 32.7% are reluctant.

Table 52

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY
HAVING USED COLLEGE COMPUTER CENTER

	V36			
	COUNT	NO	YES	ROW TOTAL
	ROW PCT	0	1.	
AVATT	COL PCT			
	TOT PCT			
1. POSITIVE		9	36	45
		20.0	80.0	28.3
		18.4	32.7	
		5.7	22.6	
2. NEUTRAL		37	73	110
		33.6	66.4	69.2
		75.5	66.4	
		23.3	45.9	
3. NEGATIVE		3	1	4
		75.0	25.0	2.5
		6.1	.9	
		1.9	.6	
COLUMN TOTAL		49	110	159
		30.8	69.2	100.0

CHI SQUARE = .0380

Table 53

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY
HAVING USED COLLEGE COMPUTER CENTER

V22	COUNT / ROW PCT / COL PCT / TOT PCT	V36 NO (0)	V36 YES (1.)	ROW TOTAL
1. EAGER		21	84	105
		20.0	80.0	66.5
		42.9	77.1	
		13.3	53.2	
2. NEUTRAL		12	18	30
		40.0	60.0	19.0
		24.5	16.5	
		7.6	11.4	
3. RELUCTANT		16	7	23
		69.6	30.4	14.6
		32.7	6.4	
		10.1	4.4	
COLUMN TOTAL		49	109	158
		31.0	69.0	100.0

CHI SQUARE = .0000

NUMBER OF MISSING OBSERVATIONS = 1

Reading computer books and attitudes

The questionnaire asks the respondent to indicate whether or not he or she has read a book on computers. No qualifications are sought regarding the type of computer book read so there is a wide range of possibilities.

Roughly two thirds (65.4%) of those surveyed say that they have read books on computers and 34.6% have not. There does not appear to be any significant correlation between having read a computer book on general attitude toward computers. However, a correlation seems to exist between reading about computers and feelings about the use of computers in teaching.

Table 54 is the crosstabulation of general attitudes by having read a computer book. It shows that the frequencies of positive attitude responses among those who read a computer book and among those who do not indicate having read a computer book are 28.8% and 27.3%, respectively.

When the above subgroups are asked about their feeling towards using computers in their teaching, the results show a clear pattern. In this case, reading about computers seems to positively correlate with eagerness to use computers in teaching. Table 55 shows that among those who have read a computer book, 75.7% are eager to use computers in teaching while 9.7% are reluctant. Among those who have not read a computer book, 49.1% are eager to use computers in teaching while 23.6% are reluctant.

Table 54

CROSSTABULATION OF
GENERAL ATTITUDE TOWARD COMPUTERS BY
HAVING READ BOOKS ON COMPUTERS

	V32			
	COUNT			
	ROW PCT	NO	YES	ROW
	COL PCT			TOTAL
	TOT PCT	0	1.	
AVATT				
1.		15	30	45
POSITIVE		33.3	66.7	28.3
		27.3	28.8	
		9.4	18.9	
2.		37	73	110
NEUTRAL		33.6	66.4	69.2
		67.3	70.2	
		23.3	45.9	
3.		3	1	4
NEGATIVE		75.0	25.0	2.5
		5.5	1.0	
		1.9	.6	
COLUMN		55	104	159
TOTAL		34.6	65.4	100.0

CHI SQUARE = .2273

Table 55

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY
HAVING READ BOOKS ON COMPUTERS

		V32		
	COUNT / ROW PCT / COL PCT / TOT PCT	0 NO	1. YES	ROW TOTAL
V22				
1. EAGER		27	78	105
		25.7	74.3	66.5
		49.1	75.7	
		17.1	49.4	
2. NEUTRAL		15	15	30
		50.0	50.0	19.0
		27.3	14.6	
		9.5	9.5	
3. RELUCTANT		13	10	23
		56.5	43.5	14.6
		23.6	9.7	
		8.2	6.3	
	COLUMN TOTAL	55	103	158
		34.8	65.2	100.0

CHI SQUARE = .0029

NUMBER OF MISSING OBSERVATIONS = 1

Enrollment in computer courses and attitudes

One of the strong indicators of a faculty member's commitment to computers is enrollment in computer courses. Thus, a question seeking to measure the number of computer courses taken by the respondent was included in the questionnaire. The question simply asks the respondent to indicate how many credits in computer education he or she has taken. The ensuing responses are then coded in two ways. A frequency table shows two groups, one saying they have taken computer courses and the other not indicating that they have taken computer courses. Another table breaks the survey population down into subgroups according to the number of credits in computer education they have taken.

As shown in the next four tables, the results show that there appear to be some correlations between attitudes and enrollment in computer courses.

Table 56 crosstabulates general attitude toward computers with whether or not the respondent has taken computer courses. Those who took computers represent 44% of the survey population. In this group, 35% have positive attitudes toward computers. Those who have not taken computer courses represent 56% of the survey population. Among them, 22.5% have positive attitudes toward computers.

Table 57 crosstabulates how the respondents feel about using computers in teaching according to whether they have

taken computer courses. Among those who have taken computer courses, 79.7% are eager and 10.1% are reluctant whereas among those who have not taken computer courses, 56.2% are eager and 18% are reluctant.

Table 56

CROSSTABULATION OF
GENERAL ATTITUDE TOWARD COMPUTERS BY
HAVING TAKEN COMPUTER COURSES

AVATT	V33 COUNT / ROW PCT / COL PCT / TOT PCT	NO (0)	YES (1.)	ROW TOTAL
POSITIVE	1.	20	25	45
		44.4	55.6	28.3
		22.5	35.7	
		12.6	15.7	
NEUTRAL	2.	68	42	110
		61.8	38.2	69.2
		76.4	60.0	
		42.8	26.4	
NEGATIVE	3.	1	3	4
		25.0	75.0	2.5
		1.1	4.3	
		.6	1.9	
COLUMN TOTAL		89	70	159
		56.0	44.0	100.0

CHI SQUARE = .0636

Table 57

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY
HAVING TAKEN COMPUTER COURSES

		V33			
	COUNT				
	ROW PCT	NO		YES	ROW
	COL PCT				TOTAL
	TOT PCT	0		1.	
V22					
	1.	50		55	105
EAGER		47.6		52.4	66.5
		56.2		79.7	
		31.6		34.8	
	2.	23		7	30
NEUTRAL		76.7		23.3	19.0
		25.8		10.1	
		14.6		4.4	
	3.	16		7	23
RELUCTANT		69.6		30.4	14.6
		18.0		10.1	
		10.1		4.4	
	COLUMN	89		69	158
	TOTAL	56.3		43.7	100.0

CHI SQUARE = .0070

NUMBER OF MISSING OBSERVATIONS = 1

Those who indicated having taken computer courses are divided into three subgroups as follows:

Group I = 1 to 9 credits

Group II = 10 to 18 credits

Group III = 19 credits and above

As shown in Table 58, the mode frequency is with Group I, representing 25.8% of the survey population. In this group, 34.1% have positive attitudes toward computers and 4.9% have negative attitudes. Interestingly, the second group shows some ambivalence; there are as many that have positive attitudes as have negative attitudes (25% each). The group that has taken the most computer courses, however, are definitely more positive than negative in their attitudes toward the computer. In this group, 47% have positive attitudes toward the computer while none have negative attitudes.

Table 59 is the crosstabulation of respondents' feelings about the use of computers in their teaching according to the number of computer courses they have taken. This table seems to show a correlation between the two variables. It appears that the more computer courses one takes, the more eager he or she is to use computers in teaching. Among those in Group I (less than 10 credits), those who are eager to use computers in teaching represent 75%. Among those in Group II (10 to 18 credits), the figure is 83.3% while among these in Group III (19 credits and above, the figure is 88.2%

Table 58

C R O S S T A B U L A T I O N O F
GENERAL ATTITUDE TOWARD COMPUTERS BY
NUMBER OF COMPUTER COURSE CREDITS TAKEN

AVATT	V34	NOT APP (0)	1-9 (1.)	10-18 (2.)	19+ (3.)	ROW TOTAL
POSITIVE	1.	20	14	3	8	45
	ROW PCT	44.4	31.1	6.7	17.8	28.3
	COL PCT	22.5	34.1	25.0	47.1	
	TOT PCT	12.6	8.8	1.9	5.0	
NEUTRAL	2.	68	25	8	9	110
	ROW PCT	61.8	22.7	7.3	8.2	69.2
	COL PCT	76.4	61.0	66.7	52.9	
	TOT PCT	42.8	15.7	5.0	5.7	
NEGATIVE	3.	1	2	1	0	4
	ROW PCT	25.0	50.0	25.0	0	2.5
	COL PCT	1.1	4.9	8.3	0	
	TOT PCT	.6	1.3	.6	0	
	COLUMN	89	41	12	17	159
	TOTAL	56.0	25.8	7.5	10.7	100.0

CHI SQUARE = .1686

Table 59

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY
NUMBER OF COMPUTER COURSE CREDITS TAKEN

V22	COUNT / ROW PCT / COL PCT / TOT PCT	V34 NOT APP (0)	1-9 (1.)	10-18 (2.)	19+ (3.)	ROW TOTAL
1. EAGER		50	30	10	15	105
	ROW PCT	47.6	28.6	9.5	14.3	66.5
	COL PCT	56.2	75.0	83.3	88.2	
	TOT PCT	31.6	19.0	6.3	9.5	
2. NEUTRAL		23	4	2	1	30
	ROW PCT	76.7	13.3	6.7	3.3	19.0
	COL PCT	25.8	10.0	16.7	5.9	
	TOT PCT	14.6	2.5	1.3	.6	
3. RELUCTANT		16	6	0	1	23
	ROW PCT	69.6	26.1	0	4.3	14.6
	COL PCT	18.0	15.0	0	5.9	
	TOT PCT	10.1	3.8	0	.6	
COLUMN TOTAL		89	40	12	17	158
		56.3	25.3	7.6	10.8	100.0

CHI SQUARE = .0535

NUMBER OF MISSING OBSERVATIONS = 1

Respondent's school and attitude

As an unobtrusive method to keep track of the respondents' school, interviewers were given color-coded questionnaires. The respondents were unaware that there were three different colors of questionnaires being used. The color scheme was as follows: Blue for Berkshire, Green for Greenfield and White for Wachusett. The choice of colors also provided an excellent mnemonic as the first letters of each color matched the first letter of its corresponding college.

Table 60 is a crosstabulation of general attitudes by college and it seems to show a correlation between the two variables. Mt. Wachusett Community College scores highest in positive attitudes. Among its faculty, 41.5% have positive attitudes toward computers and none have negative attitudes. Greenfield Community College is next with 24% of its faculty scoring on the positive scale versus none on the negative scale. Bringing up the rear is Berkshire Community College where only 19.6% have positive attitudes while 7.1% have negative attitudes.

The crosstabulation of feelings towards using computers in teaching and the college of the respondents does not yield significant results and is reported below as Table 61.

The results shown in Table 61, however, suggest that some institutions may be more conducive to the development

of positive attitudes toward computers than others. It might be fruitful to investigate what each campus is doing.

Table 60

CROSSTABULATION OF
GENERAL ATTITUDE TOWARD COMPUTERS BY COLLEGE

AVATT	V40 COUNT / ROW PCT / COL PCT / TOT PCT	B.C.C. 1.	G.C.C. 2.	M.W.C.C 3.	ROW TOTAL
1. POSITIVE		11	12	22	45
		24.4	26.7	48.9	28.3
		19.6	24.0	41.5	
		6.9	7.5	13.8	
2. NEUTRAL		41	38	31	110
		37.3	34.5	28.2	69.2
		73.2	76.0	58.5	
		25.8	23.9	19.5	
3. NEGATIVE		4	0	0	4
		100.0	0	0	2.5
		7.1	0	0	
		2.5	0	0	
COLUMN TOTAL		56	50	53	159
		35.2	31.4	33.3	100.0

CHI SQUARE = .0080

Table 61

C R O S S T A B U L A T I O N O F
OVER-ALL FEELING IN TEACHING BY COLLEGE

V22	V40	B.C.C.	G.C.C	M.W.C.C.	ROW TOTAL
		1.	2.	3.	
1. EAGER	COUNT	38	30	37	105
	ROW PCT	36.2	28.6	35.2	66.5
	COL PCT	69.1	60.0	69.8	
	TOT PCT	24.1	19.0	23.4	
2. NEUTRAL	COUNT	11	11	8	30
	ROW PCT	36.7	36.7	26.7	19.0
	COL PCT	20.0	22.0	15.1	
	TOT PCT	7.0	7.0	5.1	
3. RELUCTANT	COUNT	6	9	8	23
	ROW PCT	26.1	39.1	34.8	14.6
	COL PCT	10.9	18.0	15.1	
	TOT PCT	3.8	5.7	5.1	
COLUMN TOTAL		55	50	53	158
		34.8	31.6	33.5	100.0

CHI SQUARE = .7223

NUMBER OF MISSING OBSERVATIONS = 1

The preceding discussion has shown that the survey yielded some very valuable data on general attitudes toward computers as held by the faculty of the three community colleges in the study, as well as a measure of how the same faculty feels about using computers in their teaching.

It is important to acknowledge that the data presents some good opportunities for further analysis that we have not pursued. For example, a more detailed analysis of each of the seven issues and how each one correlates with the respondents' demograpic variables might produce some interesting results. This further analysis is particularly useful because when we consolidate the responses to all the questions into one variable which we call "general attitude", we obscure the differences between the parts that make up that general attitude. A good illustration of this is the response on the issue of invasion of privacy, which is the only one among the seven issues in which the respondents showed more strong negative than positive attitudes towards computers. This may suggest that an in-depth study of the place of the issue of invasion of privacy in determining attitudes toward computers is in order.

Analysis of the Interviews

Introduction

A lot of changes took place between the time that the 1984 survey was prepared and administered and the time that the 1988 followup interviews were undertaken. For example, more literature emerged on the subject of attitudes of educators toward computers. The period from 1982 to 1985 appears to have been a time of gestation. During that time, schools rushed to acquire a lot of computers. A lot of attention was focused at that time to such issues as content and definition of computer literacy, access to computers, and the effects of computers on learning. It was universally assumed that the more computers in the hands of students, the better; one computer per student was the goal. More recently, attention has been focused on the need to get computers into the hands of teachers.

In pre-microcomputer days, teachers' psychological distance from the computer could be partly attributed to lack of access, a problem that was not easy to solve at that time. Computers were then huge, expensive and considered the specialty of a select group such as mathematicians and data processors. With the advent of microcomputers, few teachers now go to work without seeing

a computer. Access may not be as critical an issue as it used to be. As one colleague has wryly observed, there is no more excuse. Yet, why then are computers used unevenly? Why are there places where it is virtually impossible to get access to computers because so many are using them and why are there places where the computers are gathering dust?

Ownership of Computers and Attitudes

From the point of view of the faculty in the survey population, one of the most important things that happened was that it became easier for everyone to acquire their own computers. Two things made this possible. One was the proliferation of inexpensive personal computers, mostly what became known as IBM PC clones. Soon after its introduction in 1982, the IBM Personal Computer became the industry standard in personal computers. Its 16-bit processor set a new standard in microprocessing speed and its double-sided floppy drives provided increased storage capacity. All of these plus IBM's reputation and support services helped to make the IBM PC a virtual favorite among hobbyists and small businesses operators. As the IBM PC became a viable productivity tool, more businesses, large and small, bought it in quantity. More importantly for the average computer user, the IBM PC, with its increased

capabilities, enabled the creation of more user-friendly software. Furthermore, the IBM PC's open architecture and the use of a non-proprietory operating system, namely MS-DOS, invited the manufacture of computers that could run software that was written for the IBM PC. Following the lead made by such organizations as COMPAQ, dozens of companies sprouted whose almost exclusive purpose was to manufacture IBM PC clones. Because they were put together with components that were made overseas where labor was cheap, many of these new computers were offered at incredibly low prices with little or no compromise in quality.

The other important thing that happened was the increased availability of institutional money to purchase computers. The most notable of these sources was what was commonly called Ed Needs money, short for Educational Needs, an outgrowth of the new contract signed between the faculty union and the Commonwealth of Massachusetts. The new contract, which covered the periods between July, 1983 and June 1986, stipulated that every unit member was entitled to a certain percentage of a pool earmarked for educational needs. This percentage translated to about $700 for every unit member for the life of the contract, which by the spring of 1986, when the money was being made available, was only a couple of hundred dollars shy of a basic system.

From the interviews, it appears that many among the community college faculty elected to use their Ed Needs money to buy a computer. For example, a content analysis of the interviews shows that of the 22 people interviewed, 15, representing 68.1%, indicated that they owned computers and one of the six who did not was at the time actively shopping for one. The figure of 68.1% was a marked increase over that of 1984, when 32.1% of the faculty surveyed indicated that they owned their own computers. 14 of the 15 who owned computers specified the type of computer they used. Of the 14, nine had IBM or IBM compatible machines, two had Macintoshes, two had Apple IIs and one had a Commodore 128.

For some, the purchase of a computer helped change their attitudes toward computers. One interviewee said that not only would he not have bought his computer without the Ed Needs money but that his acquisition of the computer was largely responsible for his change in attitude, as the following excerpt from the transcript reveals:

Q - . . . . . Now, has your attitude toward the computer in general changed in the last three to five years?

A - Yeah.

Q - Which way?

A - More positive.

Q - More positive. Are there any events in the past three to five years that have more or less influenced those changes?

A - Yeah. I bought a computer.

Q - Oh, you bought a computer....

A - No, the state bought one for me. This was with some of my Ed Needs money.

Q - The Ed Needs money, was that a very important event then, the coming of the Ed Needs money, to the extent that, if you didn't get the Ed Needs money, you may have been hesitant to buy one?

A - I know I would never have bought one.

Q - You'd never have bought one.

A - Without that kind of money, I'd eat the hardware. I'd have bought a bicycle instead.

Not all the interviewees were as candid in attributing to their acquisition of a computer their changes in attitude, but most of them admitted that having their own computer did open a new world for them.

The personal/network computer dichotomy

Another thing that resulted from the sudden acquisition of computers by the faculty was that for some, the perception of what the word "computer" means and what it stands for seems to have changed. As the interviews proceeded, it became clear that a dichotomy was emerging and the term "computer" was probably inadequate. When asked what they thought about the computer, most seemed to have one set of attitudes for the personal computer and another set of attitudes for the network computer. This dichotomy started to come out in the very first interview,

and it became necessary after that to make sure at the outset of each interview to explore the presence of the dichotomy so as to eliminate any confusion regarding the meaning of terms. Here is how that dichotomy was uncovered in the first interview.

Q - Can you more or less describe what your feelings are toward computers in general at this time?

A - Oh I think computers are very helpful and very useful, and I see more and more people using computers in various fields. I myself would like to use a computer; however, I'm facing a hurdle in making the first major step in getting started ... and I've mentioned this a number of times. I would like to use the computer primarily as a word processor, but also I would like to investigate the possibilities of using the computer in relation to my history classes, perhaps on a tutorial basis. I would like to explore avenues of use for a computer for my classes.

Q - So as a whole, when you talk about computers in general, and, of course, when we say computer in general, you are not just referring to the computer right behind you, but also the computers used in the banks, the computers used by Social Security, and database, and so on.

A - Okay, okay, I see. Okay.

Q - Not just the desktop computers...

A - Okay, I understand.... Let's talk first about the computer as a database. I think they are very, very efficient and can be very, very helpful, but I'm concerned about the invasion of privacy. I think this is a major concern of a number of people, but I am very concerned about the information that does get distributed and is kept on file, in effect criminally, and think that there should be stricter laws -- I don't know what the current laws are on privacy, but I believe that there should be more laws, stricter laws, protecting people from information that does not have to be disseminated. Not only information, too, but also in the banking area, too. I have questions about information being distributed

there; for example, the automated teller service that perhaps someone can get one's code, I don't know what term it is, and wipe out your bank account. That may be a little far-fetched or a little extreme, but apparently the possibility does exist. My primary concern is the release of information, personal information, that really no one has a business of having.

Q - Okay. So, in broadening the understanding of computers and our attitudes toward computers, I see now that you draw a distinction, don't you, between the computers out there being used by businesses and the computer on my desktop.

A - Yeah.

Q - Why do you make this distinction?

A - Well, I probably see the computer on the desktop as less dangerous than the computers out there. I may be mistaken (chuckle), but I see that as a less of a threat to invasion of privacy.

Q - Okay, so there is a distinction between the computers that are, that have your name and putting you on a mailing list and the one that is on your desktop. And the main reason is that yours is not connected to anything.

A - No, it's just hooked into the wall.

This interviewee, a professor of History, was one of those who took advantage of the Ed Needs money, purchased an IBM compatible two-floppy disk system and set it up in his office at the college. At the time of the interview, he had owned his computer more than a year but had made little progress in learning how to use it. However, he had enough rudimentary knowledge of wordprocessing to be able to begin to appreciate his computer's potential as a productivity tool. It was therefore very interesting and useful to know that in defining his attitudes toward computers, he did not put his personal computer in the same

category as the network computer. For the moment, anyway, whatever reservations he had about not using the computer to its full potential had nothing to do with his attitudes toward network computers. As the above transcript revealed, he had something to say on such traditional issues as invasion of privacy and control of the computer but apparently these were not deterring him. So once the distinctions were clarified, it was easier to isolate what his problem was. Here is how it went:

> Q - Okay. Has there been any time before that you were less than enthusiastic about computers in general, including the one that is on your desktop?
>
> A - Well, I'd say when around four, five years ago, I really was indifferent to computers. I didn't think they were very applicable to my area, but the past few years, based on new information coming out, new materials, I see that it can be very applicable. And again I have to push myself a lot to get cracking with the computer. I can see its importance to the academic area . . .
>
> Q - Right. Now, so your attitude is no problem anymore. You accept this...
>
> A - It is not a problem. It is just a case of making the leap and sticking to it. I just find it, and I -- this may sound like an excuse and probably is an excuse -- but the daily routine, taking care of this and taking care of that, getting this done and getting that done, and by the day's end the interest in doing something with the computer has passed.

As shown above, the interviewee was able to explore his past and present feelings about the computer, noting that in the past he was "indifferent" but no longer is. And it was just a question of finding the right time and

making the commitment to "get cracking with the computer," to use his term, so he could more fully realize his computer's potential. Note, however, that he was honest enough to admit his doubts that time was the only reason for his hesitations.

Based on the above interview and several others, there seemed to be a class of faculty members, mostly new computer users, who seemed to forget that the personal computer is indeed a computer and not just a highly sophisticated typewriter. Because of their focus on the computer's role as a personal productivity tool, this class of faculty members may not have been able to fully grasp the impact of the personal computer as an information manager and disseminator. They were not concerned that the proliferation of computers among the general population can exacerbate the old problems and raise the same issues of concern that had been raised in the past. Conceivably, their attitudes can change again once personal computers start getting networked within the schools on a wider scale than they are now.

One English teacher revealed an ambivalent attitude after some probing questions. Initially, she seemed to be wholeheartedly positive toward computers but demurred when presented with the whole picture.

> Q - So are you saying that you've always had a highly positive attitude toward the computer regardless of whether you understood them. Just somehow you felt that they were good - the most exciting, to use your own words - the most exciting development

of our time. Are you saying that without any reservation?

A - I'm saying that without any reservation. I can see the computer as an ally and an aid to work, to man in general and especially to teachers.

Q - Great. Do you see any changes in your attitude in the future toward computers - say if it went one way or the other? Anything that's happening these days that would make you more excited or anything in the opposite direction. When I ask about reservations, for example, think about what people say about invasion of privacy and what it does to jobs and recordkeeping and so on and so forth.

A - Well, yes, I can say truthfully that sometimes I feel overwhelmed by the computer and the sudden flood of information. I feel that it causes stress. My mailbox is constantly filled at home and at school with literature that's been produced by computers from everywhere.

Q - And what does that do to you?

A - Well, for one thing, it takes my time. Because I feel, still feel obliged to open every envelope and to at least read a little bit of.. and get a sense of what this letter is about. But what I classify as trash mail is getting monumental. I'm on the mailing lists that are now generating new mailing lists. And it seems that that's horrid. I also feel frustrated with the computer at times when it bogs down or gets ... what's the expression .. get's turned off or logged out or whatever.

Q - Yeah..

A - I get frustrated when I go to stores or banks and the computer is taking forever to process or they can't find me in the computer, and that kind of thing. But even though I'm overwhelmed and frustrated, I'm also aware of the potential of what the computer can do for me, where I can put my hands on a computer and find information very quickly.

There were some whose love affair with the personal computer was such that they seemed to be either unaware of the larger issues or unwilling to deal with them. One

English teacher who had a highly positive attitude toward computers, when asked about the issue of invasion of privacy, answered that although he recognized that the problem may exist, he does not think about it in daily life and does not get personally threatened by it. Another computer devotee, a Speech teacher, did not care to discuss larger issues, saying that he could not generalize. He claimed that he could only look at the computer from what he was able to do with it.

Most respondents had enough experience with both personal and network computers to be able to relate to both and describe their feelings.

How people described their positive attitudes

In response to the question, "What are your attitudes toward the computer?", most of the interviewees indicated that they had positive feelings, although with varying levels of intensity. Five of the 22 said that they had unqualified positive attitudes toward computers and the majority (12) generally had positive attitudes but held some reservations. Three had some strong positive feelings for the personal computer but had strong negative feelings toward network computers. Only one indicated strong negative feelings toward computers and one did not care one way or the other.

It was very interesting to listen to those who expressed very strong positive feelings toward the computer, especially those who had previously harbored some strong negative feelings. One such person was a part time English teacher who recounted his conversion as follows:

Q - Okay. Now, so would it be correct to say that, on the whole, you have a positive attitude toward computers as of now.

A - Yes, I do.

Q - Does that represent a change in your thinking?

A - Oh, absolutely.

Q - When you say absolutely, would you describe what things happened to you -- you can go back as far as you want, as far as I'm concerned -- that would more or less detail how you changed your attitude, where it came from, what provoked you to change; any specific incidents, influences, whatever...

A - Well, first of all, my initial impression of computers, which I would think, probably from the moment computers really started getting into the air pervasively was probably about 10 years ago. I would say that my initial impression was very negative about them, and what they represented to me was mechanism, automatism, freedom-limiting machines. I really had no idea what computers did. And I just sort of, because I didn't know, thought of them in a very mass-thought way, that "oh, computer is something that is technical that's making our society more technical with the worst..." without really knowing what computers did, or what they do, or how they work. And I was very kind of disquieted about academic computing -- I didn't like that term first of all "academic computing" -- in our situation at the college ... and I didn't also like the fact that there was a lot of money being put into academic computing, as a faculty member, and never really being told what academic computing was or could be. And also, it seemed to me that everyone was rushing to teach students a new language, the language of word processing and computer languages, and I felt that students didn't know how to use their own language, which is English -- how to write it, and

> there is something wrong with teaching them how to compute without first making sure that they knew how to write. So I had a lot of negative attitudes about it. I had never really seen word processing in action, however. And then I took a ... when my dissertation program got some idea about computing, then I began computing and word processing in that program. And I was still very leery of it. It just represented to me machines and programs and stuff that I didn't know at all. Then in my ... a change came in really one moment. I was, about five years ago, visiting a friend of mine who was a professor in Montreal. She had just gotten a word processor. First of all, it was a beautiful piece of equipment, and she was a very articulate and bright woman, and she was very excited about her computer, and she said I have to show it to you. And I said, "Oh, even you. Now I've lost another one to computers." And she said, "Look at what it can do." And she turned it on -- I think she had the Word Perfect program. And she just started to type away and show me what it could do, and I was absolutely fascinated by it. And I decided that I needed one of those, and it wasn't long ... And then, I got my own word processor, and of course once you have a word processor, you realize what word processors got and how antiquated anything else is, and so now, I would say that I am a devotee.

In all cases, interviewees were asked, at the outset, to describe their attitudes toward computers, in the hope that responses to the question would draw out succinct statements that would encapsulate their thinking. Some cooperated by offering a phrase or two. For those who did, the term "useful" was the most recurrent, with five respondents employing the word. The second most common word used was "tool," given by four people. One respondent used both words together, saying that he regarded the computer as "a very useful tool." The frequency of the use of those two words indicated that most positive statements came from those who discovered how their personal

productivity could be enhanced by the use of the personal computer. Some respondents were even more directly to the point in describing the computer's usefulness. In answer to the question of how he felt about computers, one interviewee replied that computers can be a "time-saver." Even those who did not offer a descriptive phrase often talked about the computer in terms of its usefulness to them.

A variant of the term "useful" is the term "necessary." One teacher who straddles both the Humanities and Sciences by teaching Foreign Language and Computer Languages, said that in his college, they have a "very strong sense of necessity . . . . about the use of the computer," going on to describe a wide range of applications for which he and his colleagues employ computers. Along the same theme was a comment made by one professor implying that computers have become so much a part of life now that we could not do without them. This is how he described his attitude:

> . . . . We couldn't go back to the pre-computer days, no way. Processing of information, plus the quantity of information we've got available is because of computers. And the ability to deal with that information is thousands of times what it was twenty years ago, and that's great.

One teacher replied to the question by saying that the computer has made life easier for him. This response came from an English professor who used his computer primarily for wordprocessing. He said that the computer gives him a

greater control over the details of the work that he assigns to his students, makes communication easier, and arouses his curiosity.

Two respondents used the word "exciting" to describe their attitude toward the computer. One of them, an English teacher, called the computer "the most exciting development of our time." The other, a Speech and English teacher, when asked to give a phrase or two to describe his feelings, replied, "Exciting, unlimited possibilities, and a great toy." Parenthetically, this interviewee was the only one among the 22 who openly admitted that he often played games on his computer and enjoyed the experience, saying that some of the games kept his mind active.

Negative attitudes toward the computer

Of the 22 who were interviewed, only one person presented strong negative feelings - - but even these negative feelings need to be qualified. This interviewee, a Speech teacher, admitted that he was very afraid of computers and yet also felt that sooner or later, he would have to get involved in computers but hoped that in the future, computers would become more user-friendly. As the following excerpt from the interview transcript indicates, he had some insights on how computerphobes like him might get involved in computers in the future:

Q - O.K. Here we go. We're recording. The subject is attitudes toward computers and my question is: How would you describe your attitudes toward computers in general?

A - Fear. Fear and misunderstanding. I have had some very, very basic training in computer language and flowcharting but nonetheless I personally have a fear of them in that they appear to be so involved and they appear to be so complex and the language appears to be so non-traditional that I prefer to avoid them if at all possible. . . .

Q - Now you say you are afraid of them?

A - Yeah. They're so modern. They're so progressive and they have so many components. By components, I mean so many commands that I would have to know. So many nuances that I would be afraid that I would just get deeper and deeper into trouble.

Q - You have done some thinking about your attitude toward computers. At the same time you see some people getting into computers, right? And that has not changed your attitude at all?

A - Well, I figure that there is a certain amount of inevitability. I will probably have to deal with them in the future. What I am hoping is that they will become so user-friendly that even somebody like I can handle them. So I think that probably the computer people realize that they're probably gonna have two kinds of clientele - the highly scientific clientele and they can make computers as complicated as they want for those people, and then there's gonna be the traditional laymen clientele and they're gonna have to make computers very simple for those kinds of people. And I'm just hoping that if I wait long enough, it will be like a typewriter. . . .

Q - O.K. So you think, that in the future if things become more user-friendly, your fear is going to dissipate a little bit and you might think of getting into computers yourself.

A - Yeah. And even if the fear does not dissipate, I expect that I''m probably gonna have to confront it sooner or later. It's an inevitability and part of the job and stuff and the way things are going to have to deal with it.

Q - I like your use of the word "inevitability"

because I think that's a very accurate description of how a lot of people feel.

A - That's part of life.

Another interviewee, a teacher of Speech and Drama, thought that computers were very useful and yet admitted to some fear of them. Like the other teacher previously cited, she was reluctant to get involved with computers because of her lack of knowledge and a feeling of awe toward computers.

The above two interviewees shed some light on the nature of computerphobia as it still exists among community college faculty. Undoubtedly, there are a few others of their kind.

Most negative feelings about computers were expressed by the very same people who had positive feelings but had certain reservations. Although they regarded the computer as a useful tool, they saw some dangers to society and some major and minor annoyances that the computer brings.

Among the traditional issues that are often raised against computers, one of the issues most cited by the 22 interviewees was that the computer complicates life. One English teacher said that she felt overwhelmed by the computer, complaining about the volume of mail that she now has to open. Another, also an English teacher, thought that the computer has only increased paper load. One teacher of ethics, philosophy and peace studies cited

wastefulness as his negative attitude, sharing stories of redundant mailings from industry and government which go unchecked because the computer is so stupid that it can not distinguish between different ways that a person's name is written.

Some teachers saw the computer as a mixed blessing in that it solves one problem only to create another. An example given by one Speech teacher was what the computer has done for research. Recently, the library at his college acquired a computerized database of periodical listings, the computer equivalent of the Reader's Guide to Periodical Literature. The problem was that while this database enabled students and faculty to speed up their collection of bibliographical listings, it also created frustration because a lot of the listings were not available in their own library. To this interviewee, the example he cited showed that computerization can only succeed where the necessary support systems are also put in place.

Following the above theme of computers and how they can complicate life, a number of complaints dwelt on the pains involved in the process of computerizing some administrative functions such as, for example, registration and posting of grades.

Surprisingly, invasion of privacy was not mentioned a lot among the negative attitudes. Even those who mentioned it did so in passing. The teacher who was

involved in peace activities wondered what kind of files the FBI and the CIA kept on him and his friends but otherwise did not reveal any paranoia toward computers as a result of his concern over invasion of privacy.

Not a single teacher raised the issue of the impact of the computer on employment, or at least no one thought that the advent of the computer was a threat to their job security.

An issue raised by one faculty member was computer addiction. He said that he finds that people spend time and energy playing with something they don't really need, assigning to the computer certain tasks that they could do better with traditional media such as pencil and paper. Related to the issue of wasted time and energy is the issue raised by some who wondered whether the time spent in learning how to use the computer was worth it. Complicating matters, as one teacher pointed out, is incompatibility between machines so that as one upgrades from one machine to another, he has to start learning again.

After analyzing how the interviewees described their positive and negative attitudes toward computers, we can make the following summarizing observations:

1. Some of the interviewers distinguished between personal computers and network computers. For those who made such a distinction, attitudes toward personal

computers seemed to be positive and that most negative attitudes appeared to be directed toward network computers.

2. The majority of interviewees had mixed feelings about computers. Most had positive attitudes toward computers but expressed some reservations.

3. Most of those who had positive attitudes described the computer as "useful", or a "tool" or both. Others called the computer "exciting" and one said that computers made life easier for him.

4. Very few openly expressed fear of the computer but those who did also felt that sooner or later, they would have to get involved with computers.

5. Among those who held negative attitudes, some claimed that computers make life more complicated, or lead to wastefulness. Others raised the issue of invasion of privacy. No one was concerned by the impact of computers to employment. There were some who wondered if the time spent in learning how to use computers was worth it.

Factors influencing attitude toward computers

There was hardly anyone among the interviewees whose attitude toward the computer did not change at some time although some experienced more dramatic changes than others. There were some who qualified the changes in their attitude saying, for example, that they had always been positive in their attitude toward computers but stayed away

from computers for awhile because they doubted their abilities. Then, once they got their hands on a computer, their attitude changed. One such interviewee described his change in glowing terms.

> Q - . . . . Do you see that you have changed your attitude toward the computer?
>
> A - I've always respected the computer; I've always admired anybody who really understood and could use it effectively and efficiently. And I thought it was exciting to know the kinds of things that could be done with it. What changed was my belief that I probably could never understand how to use the computer. I never felt that it was something I could do. All the syntaxing, all the stuff that I'm learning now, how to use it and make it work.
>
> Q - So, you might say then that somehow the computer has added something to what you know about yourself, too.
>
> A - Oh, absolutely. I'm thrilled. You remember how I used to call you? Remember what J... said the other day? It's like a pit. You don't know where you are. I know that feeling. You don't remember it, probably.
>
> Q - I think I do.
>
> A - And here's this thing. You don't know what to do with it. And you learn a little bit, you learn a little bit, and all of a sudden you come to understand it. That's exciting.

Similar thoughts were expressed by two English teachers. One said that he "had always been positive but was ignorant", and the other said she had always been "enthusiastic but frustrated."

Of the 22 interviewees, nine indicated having changed from reluctant to enthusiastic. Two described themselves as always having been positive and in the last few years have become more positive.

It was hardly possible to find anyone whose attitudes toward computers did not undergo some kind of transformation. One person said that he never had any attitude toward computers because he never used them, although when pressed, he did admit that since others found them useful, he thought computers must be useful, too.

No one said they became more negative in their overall attitude toward computers, although there was one whose attitude toward the use of computers in teaching changed from positive to negative. This person was a teacher of English who started out extremely excited about using the computer in the classroom and now thinks differently. He described his change in attitude.

Q - How do you feel about computers in general?

A - I use the computer to do word processing, and I'm beginning to really like it, and I think at this point, in that area the computer is a very useful tool. I'm developing some composition sections that work exclusively via word processing. I am a bit reluctant to applaud many of the other educational uses of the computer. I believe that it's much too much like television, and I have a bias against television as an educational tool, regardless of the content. I think that the process of receiving things by way of television is not a good educational process, and I think that this is the same process when you are looking at it, the computer screen. So, I almost don't allow my kids to use their personal computer at home for things, except like word processing and a limited number of games.

Q - So, you do have certain misgivings and reluctance about the use of the computer other than word processing at this point.

A - Yes.

Q - And, as you say, your biases are transferred from your attitude toward the use of television as an instructional tool.

A - Yes.

Q - All right. Did you always feel this way about computers? Was there a point in time, for example, when you didn't want to touch a computer?

A - I think there was. My first experience with computers was a word processing workshop.

Q - How long ago was that?

A - Oh, three or four years ago. And then I, not only used word processing, but I began to teach it. And then I studied in graduate school instructional applications of computers, and I think for a while I was extremely excited about using the computer in the classroom...

Q - You mean, positively excited?

A - Yes. As I studied different programs and thought about it more, I've come to the conclusion that we have a long ways to go before the computer does what we would like to do.

Q - So your excitement was somewhat dulled, or blunted, by the realization that software is not progressing as rapidly as you hoped it would. Are you optimistic?

A - Well, the software will get better, but the medium will remain the same. So, I can't get fully optimistic, but I think in terms of economics, the computer is a very useful tool. Our educational system will make more use of the computer, because it would be economically necessary, I think, to do it that way. I'm not convinced yet that we'll be getting better educated.

When asked what events or circumstances influenced their change of attitude toward the computer, the interviewers gave a wide variety of answers. A very common answer had to do with the immediate environment at their respective colleges. Some mentioned the influence of

enthusiastic colleagues who ignited their interest directly through workshops conducted on campus or indirectly by example. One elderly teacher of English describes how watching one of his colleagues conduct a composition class with the aid of computers affected his attitude toward computers.

Q - Do you have any colleagues that use a computer directly in the classroom?

A - Yes. [M. .] does. That's one of the reasons why I suggested you talk to him. His students literally write their papers on computers, and then they're called up, and he'd call them up in his office. He looks at them and will make suggestions on the computer. They go back, look at their paper, take [M. .]'s suggestions, work with those suggestions, and finally there's a copy that is printed up, and he has that and gives a grade on it.

Q - Are there any regular Comp teachers who use the computer the way [M. .] does?

A - I don't think anyone else in the Division does. It's marvelous. I've watched him do it, and I am sort of envious that he does that. He writes books and other things on it. He types very well that I am very .... well, I have only four years left. I guess I am an old dog at this point. I did watch him sit down and write. I do go and look over his shoulder, and discuss with them what they are doing, and ask them why they are doing it, and make suggestions and that kind of stuff. Of course, he does them through the machine. He alternates classes with them; you know, they are not completely separated from him. When they are writing their paper, it's as if when I say to my students, "Okay, you're pretty good now. Go home and write it, and turn it in Monday." They turn it in on the machine, and he calls them up.

This professor admitted feeling some envy at the sight of his colleague doing wonderful things with the computer in the classroom, hinting that were he not so close to

retirement, he would have tried doing similar things with the computer. In fact, there seems to be evidence that peer pressure was partly responsible in influencing the attitude of some toward the computer. For example, one teacher implied that until he saw other people in his own Division of Humanities using the computer, he was not in a hurry to computerize.

A - Two years ago. But, I mean, before that, maybe five or six years ago, I had two reactions, I think. I can remember two reactions: One was disdain. I thought this was too mechanized, and it's not natural, and it's going to inhibit me. And my other reaction was plain fear. I was afraid of it. I was afraid I'm gonna turn this machine on, and I'm going to get into it and I wouldn't know where to go. And then I won't know how to get out of it, and I'm going to lose everything I've written. You know, I didn't understand it. I think that fear came from lack of understanding.

Q - Right. And what finally convinced you that somehow you had to do it?

A - The force of the environment .... (Ha-ha-ha!)

Q - Could you be more specific?

A - In other words, there were more people using it. More people in the Humanities. It was okay for the people in the sciences to use it. It was okay for computer people to use it. But when people in the Humanities started to use it and discovered that they could do things that were useful -- they could make assignments, they could work up programs for their classes, they could do their own writing, I began to realize that this was something I ought to look into. That was two years ago. And ever since then, it's just been a matter of time and getting the money because I had promised myself I was gonna buy a computer.. . . Oh, I saw colleagues using it, right in their offices. Saw one here, and then a few months later another one over here, and then everytime I'd go to the Administration, I'd see that the secretaries are now working on computers.

> I'd ask them, too, "How are you doing? How do you like this?" And well, you know, you got really positive reactions.

What this teacher referred to as "the force of the environment" is somewhat similar to what others called "the inevitability of the computer." Some admitted that for some time they adopted a "wait and see" attitude, wondering how long the computer phenomenon would last. One teacher said that although she did not think computers would go away, she "sort of hoped" that they would not be as popular. Gradually, as computers proliferated in society she came to accept them as inevitable and decided to take "the big step."

A number of people cited the positive influence of some forms of institutional support that came in the form of training workshops, financial support of special projects and the creation of special committees and administrative positions whose function it was to help develop computer literacy among the faculty. In one college, the creation of a Humanities Division computer committee helped to encourage newcomers to try the computer.

One of the apparently more successful administrative moves was the creation in one campus of a paid position whose function was to support the faculty. The person who filled this position was responsible for setting up faculty computer workshops, monitoring the hardware and software needs of the faculty, introducing the faculty to the most

recent developments and working one-on-one with the faculty in solving their computer problems, to mention a few. As the testimony of faculty members at that campus showed, this program was successful. A number of teachers were influenced in a positive way, directly or indirectly, by the work of the person who occupied this position.

It appears that part of the success of this in-house faculty trainer stemmed from his style, which consisted in giving plenty of support to faculty who wanted to experiment. We can capture the flavor of that style from the transcript of an interview with one of the teachers at that campus. This was an English teacher who confessed that like many others in his field, he had a lot of computer phobia in the early stages but, in large part due to the assistance of the campus faculty trainer, he not only overcame his phobia but himself became one of the leading innovators at his college.

A - . . . And I also have to say that we have a computer-assisted instruction at the college.

Q - Oh, tell me something about that. Is that a position?

A - Yeah, held by a fellow named [G . . .]. And his sole purpose is to promulgate the use of the computer in various ways throughout the college. And what I found very useful with him is his attitude. His extremely open and free-wheeling experimental attitude which was absolutely essential for me because I do write poetry and write plays and a lot of writing. I'm a creative person and most of my experience with this kind of thing has been people who do have equipment and supervise it tend to be very protective of it. And

they tend, unwittingly, to freeze people out. And so I've always stayed away from overhead projectors and all of that. Now, this guy turned that whole thing around for me. He would give me a computer and say, "Here, do what you want." Well, what should I do? I mean, what are the laws? He says, do what you want. And that was extremely useful so I would just go down and just kind of tinker and explore on my own. And that's what led to incorporating it in various ways in the writing process. That's an emphasis I should make, too. For me, first of all, I am workshop-oriented. Process-oriented in writing and I'm convinced that 90% of writing is rewriting. And I've always tried to find ways to improve teaching in that particular regard and I know it's a very difficult thing because the process is very difficult to see and it's not fair when somebody's looking over your shoulder. And the computer seems to promise some possibility there. And so the first time around I set up a kind of mobile unit with a 25 inch display. And I would use the computer in class and demonstrate, using student papers, the process of rewriting. Getting the students to look at this first line, for example. How could you say it better than somebody in the back of the room and type up the thing. What could they say? Then, I can actually incorporate it. You see, that's what's so unusual. Right before their very eyes, they could see the transformation. . .

Q - . . . . So you say that he was a very strong influence. And he was hired by the college to have that position?

A - Yeah . . .

Q - . . . But anyway, continuing the chronology. So you started using the Apple II for showing what you can do by moving around words and sentences - things like that.

A - Well, he and I put together that mobile unit. Which he quickly gobbled up for instructors in areas where perhaps a little more useful than in mine like say, teaching word-processing. But now, what I've been doing lately is to offer students in the freshman section, specially, the opportunity to do their work on the IIE's in the Apple Orchard and there's a critical issue, too, because we are fortunate to have a huge room that's got about 35, at last count, computers in it. I use students in gentle terms and in

> attractive ways I can. I invite them to do their work on the computer. Then, I have a computer in my office which taps into that. This is fairly recent. This began last year and it's really quite phenomenal. Then, again, I'm still in the experimental stages and so I'm not sure what to make of that. But what has been fascinating is that there's no wall to the classroom. There's no time constraint, anymore. Any time a student wants to write, he or she can go in there and write. Any time I want to converse with them via the computer, I can.

The preceding discussion dealt with attitude change among the faculty interviewed and the factors causing their attitudes to change. In summary, we can make the following observations:

1. Almost all of the interviewees admitted that in the last few years, their attitudes toward computers changed. Some qualified their answers by saying that their attitudes never really changed but what changed was their confidence in their ability to handle the computer.

2. The overwhelming majority of whose who changed their attitudes changed in a positive direction.

3. One faculty member changed from positive to negative only in one area, namely, the use of computers in teaching.

4. Of the factors that triggered a change of attitude in a positive direction, those that were cited were: watching colleagues at work, "the force of the environment," training workshops, the creation of a division computer committee and the presence of an in-house faculty trainer.

How they were introduced to computers

The initial introduction to computers was certainly the beginning of a process of change for most of the interviewees, and so it was interesting to see what the their first experiences with computers actually was.

In this regard, one common theme was the influence of other members of the family. A number of the interviewees did not have first hand experience with computers until some family need came along and then felt they had to obtain a personal computer. One Speech/English teacher was initially encouraged to buy a computer partly because his wife is an accountant and he thought that a computer would help her with her profession. Another, an Art teacher, cited the fact that his wife was a student in Business and his son wanted to do graphics in school. Interestingly, one teacher who admitted some apprehension with computers thought that she would probably buy one for her daughter.

In the above instances, the faculty member bought the computer for the family and then was drawn into using the computer. In some cases, the reverse was true in that the faculty member bought a computer for himself and became the influence to his family. One such interviewee described the transformation in his family's attitudes toward the computer.

Q - Very nice. Very gladdening. Well, is there anything you would like to add?

A - I think I have put in some changes. As an English instructor, originally, I was a little bit skeptical of spelling checkers. But I watched my daughter who happens to be a number one spelling goof-up. And after I hollered and screamed about her spelling, she finally said to me one day, how can I spell it correctly if I don't know what is the correct spelling. There's a logic to that. I went out and bought a spelling checker and showed her how to use it. And it made changes easy. It also developed a sensitivity in her about spelling errors. The machine was simply pointing out that here's a word that wasn't in the dictionary. Your spelling is so far off that I can't even guess. I can remember an incident. She was probably a junior at that time. She corrected one of her papers and then went upstairs and corrected all of her previous papers. So apparently it made an impression - that kind of thing. I have seen some growth. My ideas have changed.

Q - One thing about this interview. I think this is the first time that I have heard the computer affect a whole family so vastly as you have described. I think that's terrific.

A - What was interesting is that when I got the first one, [M . .] was upset and then I came home with the second one and she wasn't quite so sure if she liked the keyboard. And then when my daughter took the Sanyo to college with her, we were without a computer at home for about two weeks. And it was her decision to buy another one.

Q - She felt so deprived. (chuckle)

A - Yeah. She found that even though we have a typewriter, she didn't want to use a typewriter. And so I just kind of smiled and pushed her into the direction of a hard drive and all the other things.

Q - Ha! Ha! You were so devious, weren't you?

A - Yeah!

Q - Well, this has been a very interesting conversation. Thank you very much and I hope to meet you sometime when I come over to [your school].

A - Sure. Please do, Fred.

For some, their initial experience with computers happened before they started teaching. For one teacher, the advent of the personal computer became the impetus for developing a second career based on previous experience with computers in the Navy. Others had their first experience with computers in connection with college or graduate school work.

There were some who got their start because computers were or became part of the job. Such was the case in one school where some of the English teachers were introduced to computers because several writing courses were being taught with the use of the facilities of the computer laboratory. Another English teacher first got into computers because he was the advisor to the school paper and discovered that his students' work would be facilitated by transmitting material by modem to the place where the paper was being typeset and printed.

A number had their first experience with computers through in-house workshops and still others got their introduction at workshops or conferences out of campus. One teacher was introduced to computers by a colleague from another school.

How they use the computer

All those who were using a computer did so to make themselves more productive as teachers. Overwhelmingly, word processing was the primary activity and for most, the only application.

Only one of the 22 interviewed was using a spreadsheet and even then, on an exploratory basis. The skew toward wordprocessing and away from other business applications such as spreadsheets is probably due to the fact that this population of interviewees was entirely in the Humanities.

Two teachers initially used computerized test banks that were provided by publishing houses but one felt dissatisfied with them and decided to produce his own by using a wordprocessor.

Only one of those interviewed had done any programming but only for home use.

One interviewee used the computer extensively for extra-curricular work. This teacher and his wife were involved in activities which required the generation of lists with the use of a database management program.

Of those who used the computer in the classroom, the overwhelming activity was wordprocessing for teaching English composition. One Music teacher was exploring the use of the synthesizer as a teaching device.

What they hope for in the future

All interviewees, those were using computers as well as those who were not using them, expressed some hopes for the future. Those who were not using computers felt that because of their inevitability, they would eventually become computer users themselves. One such faculty said that for people like him, their involvement with computers would be hastened by computers becoming user-friendly. Other teachers felt that more availability of computers on campus would help them and their colleagues. A few expressed their hopes for the future in terms of individual projects for new courses and new personal computer skills. One of them desired to develop his programming abilities so that he could generate his own courseware. One English teacher expressed a desire to create an honors program for freshman writers, using wordprocessing as a tool.

CHAPTER V

RESULTS AND RECOMMENDATIONS

The purpose of this study was to focus on community college faculty attitudes toward the computer and their willingness to use computers in their teaching. The main objective was to identify any significant differences in attitudes among groups of faculty and to see if demographic variables as well as experience with computers correlated with attitudes. Faculty from three small community colleges in Western Massachusetts were chosen as subjects for the study. Two instruments were used for data collection. One was a survey administered to 159 of the faculty members, and the other was an open-ended interview with a subset of faculty members.

Summary of Findings

In summary, the survey showed that the faculty of the three community colleges basically have positive attitudes toward computers and are generally eager to use computers in their teaching. Examination of some variables as possible predictors of these attitudes suggests the following:

1. Those who are new in teaching at the three community colleges (1 to 6 years) and those who have taught

there a long time (more than 12 years) have more positive general attitudes toward computers than those who have been teaching for a medium number of years (7 to 12 years.) Further, those who are very new in teaching (1 to 3 years) are the most eager to use computers in teaching.

2. The younger the faculty members are, the more eager they are to use computers in teaching.

3. Compared to their colleagues in the Physical Sciences and Social Sciences, faculty in the Humanities have the least positive general attitudes toward computers and show the greatest reluctance to use computers in teaching.

4. Those who have used computers in school work are generally more eager to use computers in teaching than those who have not used them in school work.

5. Those who have used the services of the school computer center are more likely to have positive attitudes toward the computer and are more eager to use computers in teaching than those who have not used those services.

6. Those who have read books on computers are more eager to use computers in teaching than those who have not read those books.

7. Those who have enrolled in computer courses have more positive attitudes and are more eager to use computers in teaching than those who have not enrolled in such courses. Moreover, the more computer courses they have

taken, the more eager they are to use computers in teaching.

The follow-up interviews of 1988 yielded very interesting and useful data to augment the conclusions derived from the 1984 survey. A lot of the information was anecdotal but informal content analysis also showed certain trends. Care must be exercised in generalizing from the data, though, especially since the population was quite small and they were entirely from the Humanities.

It appears from the interviews that in the last few years, a significant percentage of the faculty purchased their own personal computers, and from their own testimony, ownership of a personal computer contributed to a positive change in their attitude. Availability of institutional money seems to have encouraged many to purchase their own computers, most of the money coming in the form of Educational Needs funds set up by the collective bargaining agreement entered into between the Commonwealth of Massachusetts and the faculty union.

For some, ownership of a personal computer appears to have helped break down one of the typical attitudinal barriers: the feeling of invasion of privacy. As the 1984 survey showed, the issue of invasion of privacy was the only one among the seven issues explored in which the respondents showed more negative than positive attitudes. In brief, the personal computer showed for some that you can compute and not have your privacy invaded.

Parenthetically, this new positive attitude may again change as networking becomes commonplace.

Some negative attitudes remain as a few faculty still perceive the computer as a factor that complicates life. Others stay away from the computer out of fear, and still others are waiting for more user-friendliness before they embrace new technology.

There is a strong feeling from the interviews about the "inevitability" of the computer, to use a term employed by one of the interviewees. Some of those interviewed felt the pressure coming from their colleagues who have exhibited positive results in their use of computers in the classroom.

Among the institutional practices that seem to have contributed to an improvement in attitudes, one of the most important appears to be that of the availability of an in-house staff position whose primary task is to facilitate the training of faculty. One of the three campuses studied has such a staff person and the testimony of those with whom he has worked one-on-one seems to show the effectivity of such an approach in breaking down attitudinal barriers.

General Recommendations

The results of the study can be used in a couple of ways. One way is to use the findings as guidelines for

designing programs of attitude change directed at the faculty in the three particular community colleges studied. Along these lines, other community colleges might also benefit, provided they understand that the three community colleges studied share certain unique characteristics. They are all small, located in a rural area in the Northeastern United States, and staffed by faculty most of whom received their graduate degrees from local colleges and universities.

The other way to use the findings is to point toward areas for further investigation. For example, the study can be replicated, using populations other than community college faculty. Also, possible predictors of attitude other than those investigated in this study may be examined.

Recommendations for Community Colleges

On the basis of the findings in both the 1984 survey and the 1988 interviews, the following recommendations are made for the community colleges studied and other institutions who can see some usefulness for the guidelines set forth here:

1. Continue the practice of making Educational Needs money available. This will enable those who do not have computers to buy their own and for those who already own

computers to upgrade their systems and keep up with rapid technological changes.

2. Create a staff position whose primary task is to support faculty with information, instruction and access to equipment.

3. Encourage the development of computer interest groups among faculty that have things in common. For example, users groups may be organized among those belonging to the same academic division.

4. Make school computers available to more faculty. This may include designating areas in the school's computing center for the faculty's exclusive use, as well as installing personal computers in the offices of faculty members who express and demonstrate a need for such computers.

5. Make the acquisition of computer skills a high priority in faculty development. This means that more money should be made available to support faculty attendance in computer conferences and enrollment in computer courses, and that in-house computer workshops for faculty be held frequently. Whenever possible, these in-house workshops should be based on direct computer applications tailored to the specific requirements of the participants' disciplines.

6. Take advantage of the positive aspects of peer pressure by recognizing and rewarding the efforts of faculty who invest extra time and effort to acquire

computer skills and show positive effects on their teaching and productivity.

Recommendations for Further Research

Some areas for further investigation were suggested by the 1984 survey and others were suggested by the 1988 follow-up interviews. The following are recommended:

1. Replicate the survey, using other populations, perhaps including one or more community colleges that are located in an urban setting.

2. Compare the attitudes of community college faculty with those of their counterparts in four-year state colleges.

3. Study the impact of the attitude of community college administrators toward computers upon the attitude of their faculty.

4. Study the role of the in-house faculty trainer as an agent of attitude change.

5. Study the impact of computer clusters and interest groups on the attitude of community college faculty.

6. Use as dependent variables any of the seven issues used in this study to define general attitude toward computers. For example, a study might describe or measure community's college faculty's perception of the impact of the computer on educational processes.

In the past ten years, incredible progress has been made in computer technology, opening up exciting new opportunities for the use of that technology in education. If the computer is to fulfill its promise as an adjunct to the teaching process, more attention needs to be focused on identifying the attitudes of those who are going to use them for instruction, as a prelude to attitude change. The study of the attitudes of community college faculty toward the computer not only adds to general knowledge but focuses on a population that plays a key role in society.

APPENDIX A

SURVEY QUESTIONNAIRE

The following questionnaire contains statements about how you feel about computers. There are no right nor wrong answers.

If you feel that the statement is definitely true, encircle SA (strongly agree).
If you feel that the statement is more true than false, encircle A (agree).
If you don't know the answer or are undecided, encircle N (neutral) and on the far right, encircle either U (undecided) or DK (don't know).
If you feel that the statement is more false than true, encircle D (disagree).
If you feel that the statement is definitely false, encircle SD (strongly disagree).

****

		RESPONSE					REASON	
1.	Computers are making our lives better.	SA	A	N	D	SD	U	DK
2.	Computers create more jobs than they eliminate.	SA	A	N	D	SD	U	DK
3.	I rarely have troubles attributed to computer error.	SA	A	N	D	SD	U	DK
4.	Computerized information files enable businesses to run more efficiently.	SA	A	N	D	SD	U	DK
5.	We humans no longer completely control computers.	SA	A	N	D	SD	U	DK
6.	Computers will improve the quality of education.	SA	A	N	D	SD	U	DK
7.	Computers improve the quality of life.	SA	A	N	D	SD	U	DK
8.	Computers will eventually put most of us out of work.	SA	A	N	D	SD	U	DK
9.	Computers reduce us to numbers.	SA	A	N	D	SD	U	DK
10.	We humans are more error-prone than computers.	SA	A	N	D	SD	U	DK
11.	I do not feel that computers are going out of control.	SA	A	N	D	SD	U	DK
12.	My own teaching would not improve even if I had more access to computers.	SA	A	N	D	SD	U	DK

13.	The number of computer errors is larger than most people think.	SA A N D SD U DK
14.	Oftentimes I feel I have no more meaning to society than a pack of computer cards.	SA A N D SD U DK
15.	I think computer systems which protect my privacy will someday be designed.	SA A N D SD U DK
16.	Because of computerized information files, too many people have information about other people.	SA A N D SD U DK
17.	My life has been complicated by computers.	SA A N D SD U DK
18.	Humans will always be in control of computers.	SA A N D SD U DK
19.	Someday a computer may take over my job.	SA A N D SD U DK
20.	Thanks to computers our children will be able to learn more.	SA A N D SD U DK
21.	People pry too much into our private lives using computers.	SA A N D SD U DK
22.	On balance, my over-all feeling towards using computers in my teaching is that I am . . . _____ very reluctant to do so _____ somewhat reluctant to do so _____ essentially neutral toward doing so _____ somewhat eager to do so _____ very eager to do so	SA A N D SD U DK

In order that we can properly interpret the data in the preceding pages, kindly check which categories apply to you. Please do not write your name. This study is completely anonymous.

I. Teaching Status

A. Present Rank

_____ Full professor
_____ Associate professor
_____ Assistant professor
_____ Instructor
_____ Other (specify)
_____

B. Tenure Status

_____ Tenured
_____ Multiple-year contract
_____ Yearly contract
_____ Other (specify)
_____

C. Number of Years Teaching

_____ 1 to 3 years
_____ 4 to 6 years
_____ 7 to 9 years
_____ 10 to 12 years
_____ Other (specify)
_____

D. Main Academic Area (check only one)

_____ Basic Communication/Speech
_____ Radio/TV/Journalism/Media
_____ Art/Drama/Music
_____ History/Philosophy/Religion
_____ Literature/Languages
_____ Mathematics
_____ Biological sciences
_____ Physical sciences
_____ Allied Health Professional
_____ Management/Marketing/Accounting
_____ Office Administration/Secretarial Science
_____ Behavioral Science
_____ Police/Military Science
_____ Early Childhood Education
_____ Data Processing/Computer Science
_____ Engineering
_____ Other (specify)
_____

II. Highest Academic Degree

_____ Doctorate
_____ C.A.G.S.
_____ Master's
_____ Bachelor's
_____ Other (specify)

III. Computer Experience (Please check all items that apply to you.)

I have:

_____ never seen a computer.
_____ written a computer program(s).
_____ a computer at home.
_____ used computers in my school work.
_____ read a book(s) on computers.
_____ taken _____ (how many) credits in computer education.
_____ wrecked a computer in anger.
_____ used the services of the school computer center.

IV. Personal Data

Age: _____ 20-29
_____ 30-39
_____ 40-49
_____ 50-59
_____ 60 and above

Sex: _____ Male
_____ Female

APPENDIX B

STATEMENTS CLASSIFIED BY TOPIC AND DISTANCE

IMPACT ON EMPLOYMENT

1. Computers create more jobs than they eliminate. (+)
2. Computers will eventually put most of us out of work. (-)
3. Someday a computer may take over my job. (-)

CONTROL OVER COMPUTERS

1. Humans will always be in control over computers. (+)
2. We humans no longer completely control computers. (-)
3. I do not feel that computers are going out of control. (+)

ACCURACY AND DEPENDABILITY

1. The number of computer errors is larger than most people think. (-)
2. We humans are more error-prone than computers. (+)
3. I rarely have troubles attributed to computer error. (+)

IMPACT ON QUALITY OF LIFE

1. Computers improve the quality of life. (+)
2. Computers are making our lives better. (+)
3. My life has been complicated by computers. (-)

IMPACT ON EDUCATION

1. Computers will improve the quality of education. (+)
2. Thanks to computers, our children will be able to learn more. (+)
3. My own teaching would not improve significantly even if I had more access to computers. (-)

DEPERSONALIZATION AND NUMBERS

1. Computerized information files enable businesses to run more efficiently. (+)
2. Computers reduce us to numbers. (-)
3. Oftentimes I feel I have no more meaning to society than a pack of computer cards. (-)

INVASION OF PRIVACY

1. Because of computerized information files, too many people have information about other people. (-)
2. People pry too much into our private lives using computers. (-)
3. I think computer systems which protect my privacy will someday be designed. (+)

Notes:

1. Statements with a (+) denote affirmative polarity or a favorable attitude and the reverse is true for statements with a (-).

2. Total number of positive statements: 10; total number of negative statements: 11.

APPENDIX C

BELIEFS ABOUT COMPUTERS SCALE

1. A person today cannot escape the influence of computers.
2. Computers are beyond the understanding of the typical person.
3. Credit rating data banks are a worthwhile use of computers.
4. Our country would be better off if there were no computers.
5. Computers make mistakes at least 10% of the time.
6. Computers are a tool, just like a hammer or lathe.
7. Computers will improve health care.
8. Someday I will have a computer, or a computer terminal, in my home.
9. Programmers and operators make mistakes but computers are, for the most part, error-free.
10. Computers slow down and complicate simple business operators.
11. Computers will improve law enforcements.
12. A computer may someday take my job.
13. Computers isolate people by preventing normal social interactions among users.
14. It is possible to design computer systems which protect the privacy of data.
15. Computers will replace low-skill jobs and create jobs needing specialized training.
16. Computers will improve education.
17. Computers will create as many jobs as they eliminate.

Source: Randy Ellsworth and Barbara E. Bowman, "A 'Beliefs about Computers' Scale Based on Ahl's Questionnaire Items," The Computing Teacher (December, 1982), p. 33.

APPENDIX D

LEE'S SURVEY OF COMPUTER ATTITUDES AMONG AMERICANS (1970)

1. Electronic brain machines are kind of strange and frightening.
2. They are so amazing that they stagger your imagination.
3. They sort of make you feel that machines can be smarter than people.
4. They are very important to our man-in-space program.
5. They will help bring about a better way of life for the average man.
6. With these machines, the individual person will not count for much anymore.
7. They can think like a human being thinks.
8. These machines will free men to do more interesting and imaginative things.
9. They are becoming necessary to the efficient operation of large business companies.
10. Someday in the future, these machines may be running our lives for us.
11. They make it possible to speed up scientific progress and achievements.
12. There is no limit to what these machines can do.
13. They work at lightning speed.
14. These machines help to create unemployment.
15. They are extremely accurate and exact.
16. These machines can make important decisions better than people.
17. They are going too far with these machines.

Source: Perry R. Morrison, "Survey of Attitudes toward Computers," Communications of the ACM, Vol. 26, No. 12 (December, 1983), p. 1056.

APPENDIX E

MATTHEWS AND WOLF'S TWO FACTOR QUESTIONNAIRE

FACTOR I - APPRECIATIVE ATTITUDE

Our lives will continue to be better because of computers.
The world is better because of computers.
Computers mean progress.
Computers are really unnecessary.
Computers are making our lives better.
Computers are improving our lives.
Computers help us achieve what we want.
Computers really help us.
Life would not go as well without computers.
We need computers.
I appreciate computers.
The solution to our problems lies in improved technology.
My knowledge of what is going on in the world is more up-to-date because of computers.
By doing tedious tasks, computers allow people to do more creative work.
Technology has solved some of the world's major problems.
Large computerized information files enable businesses to run more effectively.
Computers simplify life.
Many of the services we take for granted would not be possible without computers.
Computers have helped improve the quality of products.

FACTOR II - CRITICAL ATTITUDE

Computers are decreasing our freedom.
Computers have too much control over people's lives.
We are becoming too dependent on computers.
The amount of control computers have over our lives leaves me with a feeling of powerlessness.
Computers allow businesses to take advantage of us.
Our freedom is being limited by computers.
Technology is changing our lives too rapidly.
People are becoming too dependent on computers.
Computers represent a real threat to privacy.
Sometimes I feel I have no more meaning to society than a pack of computer cards.
My life has been over-complicated by computers.
Computers reduce people to "numbers".
Technology will cause the destruction of the human race.
Because of computerized information files, too many people have information about other people.
Because of technology, I have less time to do the things I enjoy.
Technology has complicated my life needlessly.

The number of "computer errors" is larger than most people think.
Technological advancements are spoiled by the social problems they create.
We no longer completely control computers.
Computers in the home will create problems.

Source: Walter M. Matthews and Abraham W. Wolf, "Measuring Attitude Toward Computers: The Computer Appreciator-Critic Attitude Scales" (paper presented to the American Educational Research Association Conference, Montreal, April 11-15, 1983).

APPENDIX F

RAYMOND BEAUREGARD'S QUESTIONNAIRE

COMPUTER ATTITUDE QUESTIONNAIRE

This part of the questionnaire contains the statements relative to how you feel about computers. There are no right or wrong answers. Please give only one answer for each statement.

If you feel that a statement is true, check the space under SA. (SA stands for strongly agree).
If you feel that a statement is more true than false, then check the space under A (Agree).
If you are undecided about the statement, check the space under U (Undecided).
If you feel that a statement is more false than true, check the space under D (Disagree).
If you feel that a statement is definitely false, check the space under SD (Strongly disagree).

****

		SA	A	U	D	SD
1.	Computers only make mistakes when people give them the wrong information to process.	0	0	0	0	0
2.	Computers are more reliable than people.	0	0	0	0	0
3.	It is very difficult to correct computer errors.	0	0	0	0	0
4.	With the use of computers people can be treated more as individuals.	0	0	0	0	0
5.	Computers improve the lives of all of us.	0	0	0	0	0
6.	Computers are dehumanizing individuals and turning them into numbers.	0	0	0	0	0
7.	The potential of computers and their influence on society is barely realized.	0	0	0	0	0
8.	Computers make more errors than people.	0	0	0	0	0
9.	Computers will create more leisure time for people.	0	0	0	0	0
10.	Computers do not have the capability of assisting the classroom teacher in many subject areas.	0	0	0	0	0
11.	Computer records are always very accurate.	0	0	0	0	0
12.	Our government is very concerned about the regulation of computer uses in our society.	0	0	0	0	0
13.	Science and math are about the only classes which can benefit from the use of computers.	0	0	0	0	0

		SA	A	U	D	SD
14.	Computer records cannot be tampered with, therefore, they provide much more security than the typical manual system.	0	0	0	0	0
15.	Computers will decrease our freedoms.	0	0	0	0	0
16.	Education in America would be in serious trouble without the use of computers.	0	0	0	0	0
17.	Computers pry too much into our private lives.	0	0	0	0	0
18.	Computers create more jobs than they eliminate.	0	0	0	0	0
19.	Computers break down frequently.	0	0	0	0	0
20.	Computers have not caused any great problems in my teaching.	0	0	0	0	0
21.	Computers can think for themselves.	0	0	0	0	0
22.	I have more favorable feelings towards computers than I did five years ago.	0	0	0	0	0
23.	Computers are affecting the lives of all of us.	0	0	0	0	0
24.	Computers should be used to keep track of criminals, not students and teachers.	0	0	0	0	0
25.	Computers represent a real threat to my individual rights.	0	0	0	0	0
26.	My own teaching would be better if I had access to a computer.	0	0	0	0	0
27.	Computers have raised my standard of living.	0	0	0	0	0
28.	Computers increase the quality of education.	0	0	0	0	0
29.	Computers are forcing people into one common mold.	0	0	0	0	0
30.	Computers greatly increase the chance of a global war.	0	0	0	0	0
31.	The American government has become much more efficient since they began using computers in many departments.	0	0	0	0	0

32.	Computer jobs require a great deal of training.	0	0	0	0	0
33.	Computers should not be used to teach children.	0	0	0	0	0
34.	Schools should spend more time on computer education.	0	0	0	0	0
35.	People are becoming too dependent on computers.	0	0	0	0	0
36.	Computers allow for the more efficient use of human effort.	0	0	0	0	0
37.	Computers cause people to lose jobs.	0	0	0	0	0
38.	Computers will help improve the kinds of information and services available to teachers.	0	0	0	0	0
39.	Computers do not contribute significantly towards the invasion of privacy.	0	0	0	0	0
40.	I rarely have troubles because of computers.	0	0	0	0	0
41.	Computers are really enemies of working people.	0	0	0	0	0
42.	Computers do not really affect the lives of ordinary people.	0	0	0	0	0
43.	Computers are going to lead us into a "push-button" war.	0	0	0	0	0
44.	Computers are a menace to society.	0	0	0	0	0
45.	Computers are a help when working with numbers but they are useless when working with ideas.	0	0	0	0	0
46.	The computer is just another machine which man can control for his own use.	0	0	0	0	0
47.	Computers actually increase employment.	0	0	0	0	0
48.	Computers enrich and enhance man's existence.	0	0	0	0	0
49.	Computers are very dependable.	0	0	0	0	0
50.	The introduction of computers has raised the skill level of many jobs.	0	0	0	0	0

51.	Teachers should refuse to allow computers to operate within their classrooms.	0	0	0	0	0
52.	The increased usage of computers n public schools will provide more personalized attention for students.	0	0	0	0	0
53.	It is none of the government's business to try to regulate the uses of computers.	0	0	0	0	0
54.	Computers will help to regiment people into a colossal, bureaucratic machine.	0	0	0	0	0
55.	My teaching load has diminished since the computer has taken over part of my bookkeeping duties.	0	0	0	0	0
56.	Computers can "disobey" the instructions of those who control them.	0	0	0	0	0
57.	Computers will eventually put most of us out of work.	0	0	0	0	0
58.	In most schools that have them, a computer is merely a "status symbol".	0	0	0	0	0
59.	Because computers have an unforgiving memory, our lives in the near future will be much more difficult.	0	0	0	0	0
60.	Computers should be regulated by the government in much the same way as the public utilities.	0	0	0	0	0
61.	Large segments of our population will be condemned to substandard living conditions because of automation brought about by computers.	0	0	0	0	0
62.	Computers have made my household bills a lot easier to understand.	0	0	0	0	0
63.	Almost all students should know something about computers.	0	0	0	0	0
64.	It almost takes a college education to understand about computers.	0	0	0	0	0
65.	Computers are very reliable tools.	0	0	0	0	0
66.	Society's capacity to solve difficult problems has been greatly improved since the advent of computers.	0	0	0	0	0

67.	Computer technology offers many excellent employment opportunities to non-college graduates.	0	0	0	0	0
68.	Personnel records maintained manually are secure from illegal tampering than are computerized files.	0	0	0	0	0
69.	Computers are well on the way to making mankind pawns of big business.	0	0	0	0	0
70.	Allowing computers to make decisions for us will eventually lead to more controls.	0	0	0	0	0
71.	You must know a great deal of math in order to understand and use computers.	0	0	0	0	0
72.	All of the computers in the world will not aid me in my teaching.	0	0	0	0	0
73.	Computers will make my work a lot easier.	0	0	0	0	0
74.	Many of my most crucial decisions are now made by computers.	0	0	0	0	0
75.	Computers will allow the government to gather more information about me than they have the right to know.	0	0	0	0	0
76.	It is almost impossible to "beat" a computer.	0	0	0	0	0
77.	Because of the widespread use of computers, too many people have too much information about other people.	0	0	0	0	0
78.	Computers eventually will improve education because they eliminate waste and duplication.	0	0	0	0	0
79.	Computers are an everyday necessity and should be used in all areas of the school.	0	0	0	0	0
80.	A lot of useless research is done in schools because a school system has a computer.	0	0	0	0	0
81.	Computers make it a lot easier to calculate but actually do nothing to improve man's life.	0	0	0	0	0
82.	Most administrators tend to use computers to collect data about insignificant matters rather than educational ones.	0	0	0	0	0
83.	Most schools with computer terminals are disappointed with the results so far.	0	0	0	0	0

Note:

The above computer statements were the ones which were selected by the group of judges as being the most appropriate for the attitude scale. The list was generated from a search of computer literature and selected in accordance with the criteria listed on page 52.

The judges included the Director of the WVU Computer Center, an educational research expert, a mathematician acquainted with computer education, an administrative education professor, and a leader in the movement to develop a technology-based education program. The content validity of the statements was derived from the expertise of these individual judges.

Source: Raymond J. Beauregard, Construction and Validation of a Scale to Measure the Attitudes of Teachers Toward Computers.

APPENDIX G

LUCAS' COMPUTER LITERACY ATTITUDE QUESTIONNAIRE

Rank on the following scale:

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

_____ 1. Computers can think.

_____ 2. Computers have improved the quality of life.

_____ 3. I could be replaced by a computer.

_____ 4. Computers will allow schools to achieve goals which are not otherwise possible.

_____ 5. Considering the labor they save, computers are easy to use.

_____ 6. Computers should be used to identify and monitor problem students.

_____ 7. Computer personnel are easy to work with.

_____ 8. Thanks to computers, "1984" is closer than ever.

_____ 9. Social Security numbers should be used as universal identifiers.

_____ 10. There are no computer problems, only people problems.

_____ 11. My own organization could be improved by computers.

_____ 12. All students should be exposed to computers.

_____ 13. Computers dehumanize people.

_____ 14. I feel powerless when dealing with a computerized service.

_____ 15. Teachers and administrators should have free access to computerized student records.

_____ 16. As computers become more common in schools, service to students will deteriorate.

_____ 17. Computers will reduce the need for school administrators.

_____ 18. Programmers should be held responsible for computer errors.

_____ 19. Computers allow types of instruction that are not possible in classroom settings.

_____ 20. Computers are a threat to freedom.

Source: "Planned Attitude Change While Teaching Computer Literacy", William Lucas, Office of Long-Range Planning and Analysis, University of Illinois, Proceedings of ACM Computer Science and Education Joint Symposium, February 1976, Anaheim, California.

APPENDIX H

LETTER AND CONSENT FORM

Dear fellow community college teacher:

My name is Federico I. Agnir, a professor at Greenfield Community College and a doctoral student at the University of Massachusetts School of Education. I am asking you to be one of the participants in a research project, which is a follow-up of a study I made in December, 1984 on the attitudes of the teachers in three community colleges in Western Massachusetts towards computers. The purpose of this follow-up is to determine if some changes in attitude have occurred since then and if so, what caused these changes.

The research procedure will consist of a 15 to 20 minute interview in person for those who are at Greenfield Community College or by telephone for those who are at Mt. Wachusett Community College and at Berkshire Community College.

I will be calling you to obtain your consent to participate and if convenient at that time, to interview you. I want to stress that your participation is voluntary and you are free to withdraw your consent without prejudice to the study.

This study is anonymous, and published results will make no reference to your name. However, I will very likely give descriptions that may be unique to you such as place of work, discipline area and history of involvement with computers. During the interview, which is qualitative, feel free to tell me what to keep off the record and I will honor your request. For the purpose of ensuring a good report and analysis, I will request that our interview be taperecorded.

If you have any questions about the research procedure, please contact me through any of the following addresses:

Home:

55 Cleveland St.
Greenfield, MA 01301
(413) 774-2663

Office:

Greenfield Community College
One College Drive
Greenfield, MA 01301
(413) 774-3131 ext. 302

University of Massachusetts:

Instructional Leadership
School of Education
Amherst, MA 01003
(413) 545-0246

To indicate your consent to participate in this project, kindly sign below and mail this form, using the enclosed self-addressed stamped envelope.

Signature _____

Today's date _____

APPENDIX I

SAMPLE TRANSCRIPTS

SAMPLE TRANSCRIPT # 1

Q - Hi, [M . .]. This is Fred Agnir. How are you doing?

A - Right on time, I see.

Q - Yeah. So, can I have your permission to record?

A - Oh sure.

Q - O.K. Now I'm recording. Now, as I said in my letter to you, the purpose of this interview is to get a sense of how my colleagues in the community colleges specifically GCC, BCC and WCC feel about the computer and the course of my conversations I am finding out that nobody has any one feeling about the computer. It seems that there is a variety depending on what kind of computer work they are talking about. So rather than pumping you with questions, we're just going to have a kind of a free-wheeling conversation on your experiences and so on so forth. First of all, when I ask how you feel about the computer, you may distinguish between different kinds of computers as people did - the computer on your desktop, as well as the computers in society, in banks, and so on so forth. And this is where the variety of feelings come out. So what can you say about your attitude toward the computer?

A - Well, fairly positive, I should say that. I'm still in the experimental stages of my work and trying to incorporate it into teaching. I use it in a lot of ways. I'm not sure what is the most fruitful. It's one of those things that you kind of do by semester.

Q - Now, tell me something. How did your attitude toward computers develop and what incidents led you to where you are?

A - Well, like a lot of people, I had a lot of computer phobia in the early stages.

Q - About when would you date that - your computer phobia?

A - Well, it could have been about 1980, I would say. And being outside of my field. It was one of those kind of things which was - it's kind of different.

Q - And when you say your field you're talking about English?

A - English, or primarily in writing. I have an advanced degree in the teaching of writing. It's an M.F.A. in

writing. So my specialty is writing. In terms of a quick chronology, at one time years ago, I was advisor to the college newspaper and of course in that situation I almost had to make some foray into the computer world because computers are pretty much standard equipment in newspapers. And so I got into the business of typesetting and so forth with the computer. And that was kind of an interesting introduction because I found that far more friendly and reliable than I thought it would be. You see, I always had the notion that machines are temperamental. They create more aggravation than they resolve. With the computer, I was extremely surprised.

Q - The typesetting equipment was that of a local newspaper, was it?

A - We used an Apple IIE at the college and generated our newscopy on that Apple and through modem transmitted it to a typesetter, our newspaper publisher in Athol. Now, in retrospect, that was the most complicated thing I put my fingers into because you get into the whole ASCII code and this and that and so forth but I would go in and experiment. And I also have to say that we have a computer-assisted instruction at the college.

Q - Oh, tell me something about that. Is that a position?

A - Yeah, held by a fellow named [G . .]. And his sole purpose is to promulgate the use of the computer in various ways throughout the college. And what I found very useful with him is his attitude. His extremely open and free-wheeling experimental attitude which was absolutely essential for me because I do write poetry and write plays and a lot of writing. I'm a creative person and most of my experience with this kind of thing has been people who do have equipment and supervise it tend to be very protective of it. And they tend, unwittingly, to freeze people out. And so I've always stayed away from overhead projectors and all of that. Now, this guy turned that whole thing around for me. He would give me a computer and say, "Here, do what you want." Well, what should I do? I mean, what are the laws? He says, do what you want. And that was extremely useful so I would just go down and just kind of tinker and explore on my own. And that's what led to incorporating it in various ways in the writing process. That's an emphasis I should make, too. For me, first of all, I am workshop-oriented. Process-oriented in writing and I'm convinced that 90% of writing is rewriting. And I've always tried to find ways to improve teaching in that particular regard and I know it's a very difficult thing because the process is very difficult to see and it's not fair when somebody's (unintelligible) . And the computer seems to promise some possibility there. And so the first time around I set up a

kind of mobile unit with a 25 inch display. And I would use the computer in class and demonstrate, using student papers, the process of rewriting. Getting the students to look at this first line, for example. How could you say it better than somebody in the back of the room and type up the thing. What could they say? Then, I can actually incorporate it. You see, that's what's so unusual. Right before their very eyes, they could see the transformation.

Q - Were you projecting this to a screen?

A - Well, they were 25 inch. It could be projected. We have that capacity but it's difficult to manage it. There were some problems there. There were mechanical problems in terms of visibility and all that. There's a bug there. We now have a much higher resolution screen which has solved that somewhat. But I'm not using that as much anymore. That was kind of experimental.

Q - Going go back to [G . .]. So you say that he was a very strong influence. And he was hired by the college to have that position?

A - Yeah.

Q - Just to go back to [G . .] because it's important to me to focus on the presence of one influential person that has the correct attitude and the right technique and so on. What is his background. Is he a computer science person?

A - Oh, I don't know. That's a good question. You know, if you wanted to, you should talk to him. You might call him. He is a sort of mixed bag. I think he is going for his masters in computer science now but I'm not even sure of that.

Q - But he reports to whom?

A - There, again is a good question. Again you might want to talk to him because I'm not sure what the hierarchy is and it has changed, I think, in the last couple of weeks. So I am not sure of his responsibility. I know he teaches remedial math and so forth..

Q - Well, I'm certainly going to call him, too. But anyway, continuing the chronology. So you started using the Apple II for showing what you can do by moving around words and sentences - things like that.

A - Well, he and I put together that mobile unit. Which he quickly gobbled up for instructors in areas where perhaps a little more useful than in mine like say, teaching word-processing. But now, what I've been doing lately is to

offer students in the freshman section, specially, the opportunity to do their work on the IIE's in the Apple Orchard and there's a critical issue, too, because we are fortunate to have a huge room that's got about 35, at last count, computers in it. I use students in gentle terms and in attractive ways I can. I invite them to do their work on the computer. Then, I have a computer in my office which taps into that. This is fairly recent. This began last year and it's really quite phenomenal. Then, again, I'm still in the experimental stages and so I'm not sure what to make of that. But what has been fascinating is that there's no wall to the classroom. There's no time constraint, anymore. Any time a student wants to write, he or she can go in there and write. Any time I want to converse with them via the computer, I can.

Q - You can? It's a network system.

A - Yeah, I'm networked with the Corvus in the Orchard. All the Apples are connected to that Corvus.

Q - So you could get into anybody's computer. You can see what everybody is doing anytime you want. Is that what it is?

A - Well, I'm not networked to that degree. What they'll do is to write on the computer and then save it to the Corvus. Then, I can call it up from the Corvus file. At the moment I don't believe that I could see what they are doing as they are doing it.

Q - I see. But that's still phenomenal. So how many are you who are networked to the Corvus among the faculty?

A - That's another good question for Gary.

Q - Yeah, but there are others.

A - But not in English. I'm the only one in English. I think it's safe to say that I'm the only English person in writing instruction that is networked. Now, there are others that are way ahead of me. I'm sure you'll find that in your college as well as others do. English seems to be the last ... Humanities seems to be the last.

Q - Well, there are quite a few people in our Humanities Division that are fairly up front there, except that we haven't gotten to the point of networking yet. I'm very, very envious of your situation there. What we have are just people who have their own computers, usually at home. There's hardly anybody who has their own computers in their offices among the teaching faculty.

A - Now what about access to students.

Q - The students have a lot of access. They can go there anytime they want.

A - So you have like a room.

Q - Right. But mainly, it's controlled by the business division. So it's usually for business-related courses and basic computer science and computer literacy courses. But as far as integrating them into the English curriculum, there is a room which the English faculty can use but they have classes in there using word-processing for doing compositions but it's not to the degree that it is developed over at your place where students can go anytime and then save their work to a master file and you can access these things and communicate with them by E-mail. IN effect, that's what it is because you can write messages in their files. Right? So you can comment on their work.

A - Right, I read the paper and look at what they have and then I make comments.

Q - And you don't have to have hard copy. You can just read their soft copy and electronically at any time, you can even probably do it at night by modem.

A - I'm hoping to have a modem in my home and that connects to there. Now, that's a little more complicated.

Q - You have a computer at home. It's an Apple IIE.

A - Yes.

Q - Right. Well, of course, the type of computer does not matter at this point. The important thing is you are networking. What about support from your colleagues and your administration. To what extent has that been a factor in your attitude toward the use of computers in the classroom?

A - Well, as much as [G . .] is an extension of the administration, it has been very good. I mean there are peripheral people here that ask questions. The support from my colleagues in the Humanities division is polite but noncommittal.

Q - Ha,ha. That's a good one.

A - They still have some phobias about the computer. So I don't look for much there. I just kind of go about my business and if something seeps out, and tickle their fancy

I'm always happy to demonstrate it or talk about it but several years ago I tried workshops things of that sort. But I don't know, I get the feeling now that it's something that they will have to ... I mean it will have to be generated internally and this is, in terms of their own attitudes. (The tape ran out at this point .Apparently, it was not noticed because when the taping resumed on the other side the conversation had turned to a different subject)

I don't see it, personally as ever replacing the teacher because it's too much ... as you can see, I'm the one that writes the notes on those papers. And whether I do it with a piece of chalk or a computer doesn't have anything to do with it. It's still a human being that has to respond. I've talked to Gary. WE had some discussions about artificial intelligence and one really has to recognize the limitations of the computer when getting involved with this sort of thing. You just cannot recognize conceptual things. And once you ... I think that would be a marvelous way to break down phobias. You can help somebody that can't recognize it now in terms of its connotative meaning. Perhaps he'd feel a lot better.

Q - So you recognize the computer as a useful tool but you have no reservations about the computer ever taking over because you think that humans will always be in control.

A - Providing, of course, we have enlightened administrations that are making these decisions. You see, from my point of view in my philosophy of teaching, if I had my way, the computer would in no way replace the teacher. But I also know that there are the business sorts out there who are always looking for bottom-line results here and there and in that case, it could. That's speculation and I know I am more pessimistic. In moments, I could see that happening. But in terms of true education, it could not.

Q - What do you plan for the future now? What are you trying to do with computers that you are not doing yet?

A - Well, I'd like to find more ways to get students interested in it. I find that one of the biggest obstacles for students is the typing ability. And so what I have to do is downplay that, whenever I mention the opportunity in class so that they don't feel as though they have to be typing 90 or a hundred words a minute. I find that beginning to decline a little bit as the years go on. It seems more and more students are coming in number one, with word-processing experience, and number two, some more typing skills than they did as recently as six or eight years ago.

Q - What do you think is happening. Why is it declining now?

A - The only thing I can think of is that the students are, like most students, are looking for assistance in any way they can whether it's technological assistance or otherwise. Many have their own dedicated wordprocessors at home and when a student comes up to me now, it's commonplace whereas five years ago, it would have been highly unusual...

Q - Well, [M . .], it's been...

A - There's just one other thing because you mention the future. The only thing is that I want to start an honors program. One of the things I'm particularly interested in is an honors program for freshman writers who will deal exclusively with word-processing. That's something we have not been able to do yet - that is, to have one section dedicated exclusively to word-processing students.

Q - Terrific. I gotta come and visit you, [M . .], 'cause you really have whetted my appetite for more information.

A - You may get in touch with [G . .] and you could sit down with both of us. We could just about chew your ears off.

Q - I think I'll do that sometime in the next few weeks. [M . .], I appreciate the time you have given me. I thank you very much. You have given me a lot of information for my project.

A - I wish you luck with it.

Q - Thank you. And the same thing to you.

SAMPLE TRANSCRIPT # 2

Q - Can you describe your attitude toward computers at this time?

A - Okay, let me see. I think computers can be a time-saver. One of the principal uses that I have for it, and again in terms of my own computer here at home: The word processing for our syllabus, speaking assignments -- all of tests are created using test banks. Also, when I want to go and make changes such as the lengths of the speech; if I want to change the number of points, that is in terms of its value, then I should just go in and punch in the right numbers, and out comes a piece of paper with the right information on it. Generally, I find, that while the publishers now are providing what I call bells and whistles, they give ancillary kinds of materials that are available for the textbooks and included in those is a test bank. And so, that makes life a little easier if you have one of those kinds of computers. Unfortunately, most of those are for Apple and IBM, and I have a Commodore....

Q - A Commodore.....

A - I really cannot use a lot of the materials given by publishing houses. At BCC, now most of our computers have switched over to IBM format. Anytime that we do get a new text, we always ask for IBM or Apple test banks. Generally, they're very positive, full of the right kind of help. One area that I would like to explore a little bit more when I have some time is the idea of outlining. I understand that the English program has some very nice computer packages that help as far as organization and outlining ...

Q - Did you get to look at any of those?

A - No, I haven't. I'd really like to see what those look like, and see if that's something I can work into my courses.

Q - Very interesting. Oh, you teach English?

A - No, I teach Speech.

Q - That's right. We're in the same department. As a matter of fact, I'm looking at outlining programs right now. I have the one for Apple coming, I forgot the name of the publishing company, but I'm looking at one for the Apple IIE and it's not quite as easy to do as it would be for the IBM as described. The way it works is that it helps the student with idea generation, braimstorming kind

of thing, and then prompts the student also to answer any questions, such as "What motivated you to get into this subject, blah-blah-blah?" and then whatever is the output which is going to be ASCII can be transferred to a word processor. It's a little awkward with the Apple IIE because of memory problems, but I am looking forward to the release of the IBM version.

A - Well, I think that that again is something I might be able to use when clients come to me for help.

Q - It's nice to hear somebody from Speech who is in to IBM because I've talked to a number of our colleagues. They're not quite as in to it as the English people are. Tell me something about your involvement in word processing. How did that get started?

A - Well, you know about the professional development money that's available through the state and through the collective bargaining process. We have to basically spend the money or lose it, and they end up giving it to someone else that didn't really earn it. I disagree with the concept, but I think it would be nice if they just give us an across the board raise, but if we are going use it, we might as well use it effectively. So that's why I got into computers. I started out by buying a typewriter that can also be used as a printer. Then, my son wanted to get into video games long ago. When he was little, I refused to go to video games with him, so we went to the computer. So he's learned computers, and so by putting all those pieces together, I've fallen back into it. And once I'm into it now, it seems I find it now very, very time-saving.

Q - So now you wouldn't have bought a computer were it not for those two things: one, your son asking for something to play with, and then the other was the availability of the money.

A - That's basically it.

Q - Before that, did you have some anxiety problems, perhaps, with the computer?

A - Oh, no, no. I've always been fascinated by them, you know. As a matter of fact, I bought for him when he was younger.
The first VIC that came out, they were expensive at the time, and with 5k memory (chuckle). So it was kind of a silly toy when you look at it now. So I got in way back then....

Q - About when would that be?

A - Let me see, he was probably about 10 and he's 16 now. So that's six years ago...

Q - 1982, or thereabouts.

A - Yeah.

Q - Have you taken any computer courses at all?

A - I took one, kind of an independent thing. I worked with one of the faculty members out there, and she taught Basic. I just tried to learn to do Basic, getting into programming. I find that now most of the things, most of the programming I learned I forgot, and I have to go back and review all the commands before I do anything with it. But I was writing little things, you know for my kids, so. My daughter was having a problem in spelling, so I wrote a little program for her, and I guess it did a few things. The screen would flash words long enough for recognition, but not long enough to pick up the letters and the words. And then she would have to type it incorrectly, and if she did it would flash up on the screen again. That's why, when she got it right then it would say "Fine" and then play a little song, as a matter of fact, when she got it right we call it a "victory song" and then she'd go on to the next word. So, I started playing around with the programming. It was kind of fun, but I found that I really didn't even need to get into that much because all the software was coming out and everything was ready to go. So I didn't need to program. I lost a lot of distance in that part of it. But I still like computers in spite of that.

Q - Yeah, but you have had a generally positive attiude toward computers all along?

A - Yeah, I always have....

Q - And your attitudes toward computers have generally been defined by your experience with hands-on experience. Anything at all that is negative?

A - One more positive, and then let me think of the negative. The other positive thing I found recently. We have a new computer system, and I haven't really gotten around to play with it yet. It's the Library's, the equivalent of the Reader's Guide to Periodic Literature...

Q - Oh. Wow!

A - I want to see if I can use it with my students now instead of turning in themselves bibliographic listings of assignment sheets, what they're doing now is just getting

this copied right out of the computer printer and handing it in.

Q - How do you feel about that, by the way?

A - Well, there's some pros and cons; that's where we might get into the negative side. Good thing is that there is a tremendous amount of talk, too. I think it's going to revolutionize how we do research. And the problems that I have about that is it's very easy for the students to simply say, "Here, I have all these sources," and not really use them, and they just list them and say, "Look, I did this, this and this." Unless you hear actual footnotes about notation in the speech itself -- I call them all footnotes -- if you don't hear those all footnotes, you really can't tell for sure if they're using it.

Q - Yeah, yeah.

A - That problem is the negative side. The other negative side, of course, is that we don't have all the listings in the library of the actual periodicals in the library that are available on that listing, so they might get a little frustrated when they go and try to find some of those things.

Q - Yes, it is really quite revolutionary for a community college.

A - I haven't had much chance to go and play with it again, but I am kind of excited about it....

Q - Do you know enough about it to know whether it is coming out of CD Rom or is it networked to a database somewhere or....

A - No, no. It's not networked at all; it's self-contained its own memory....

Q - Oh, so it must be one of those CD Rom devices then. It reads out of those laser disk kinds of things.

A - I think it is.

Q - Oh, wow!

A - We're getting into laser disks and are eventually replacing floppies.....

Q - Right, right. That's quite an investment, but I'm sure it's gonna pay off.

A - I think so. I think so.

Q - Oh, I see. Great.

A - And then, in terms of computers on the negative side, I find sometimes people spend a lot of time and energy playing with something they really don't need. Sometimes you can do things as fast, as quickly, with just some notes, sitting there with pencil and paper, and trying to do things. Another frustrating thing that I think most people have with word processing is that each program that you get you have to really study and learn, and so if you switch machines, switch even word processing programs within the computer, then you also have to re-learn. Once you get a general understanding of how the whole thing operates, it becomes faster and easier . There's still a certain amount of resistance, I think, by people. My wife is a good example of that. She just wants to type on the typewriter.

Q - Are you working on her?

A - (Chuckle) Very slowly.

Q - What plans do you have for the future, as far as involvement in computers?

A - Ah, the one thing that I've thought about was a hard disk just to.... for additional storage, but I think I might just wait on that and see what we have in the laser area.... additional storage. That's one thing I want to do. The other thing that I plan to do this summer is database. In fact I bought a package, just the database. I want to expand what I have in there as far as -- this is for personal use -- as far as finances. That's what I got to find out, how I can use that. And then, from there, I'm thinking of possible speech topics that I've heard over the years. One of the speeches that I have to do in Business Professional Speech is a goodwill speech on a company. And what I'd like to do is start a database and put all these different companies listed in there, so that when students go out to contact these companies, the same companies are not getting requests from students repeatedly. There'll be a big remark saying "Don't." Then they'll stay away from these companies that have been requesting help for quite a bit, and they'll go to some other companies. 'Cause we are limited in terms of the number of people that are here. My students have always had good cooperation from the community, in general. That's one of the other things I'd like to do, just to expand the database.

Q - So you intend to stay with your hardware system then.

A - The way it is right now, right.

Q - You have a Commodore 128?

A - It is a Commodore 128, and I have a Silver Reed typewriter printer that is a daisy wheel and has a really nice letter quality, and those plastic ribbons that you can discard.

Q - Have you heard of the GEOS operating system?

A - Not really.

Q - That's a new operating system for the Commodore 128.

A - Oh, GEOS?

Q - Right, GEOS.

A - I do have the GEOS package.

Q - You do have the GEOS package?

A - Right.

Q - I'm very eager to look at it. I understand it is being translated to Apple also.

A - Uh-huh.

Q - And what I understand is that it is supposed to be a poor man's Mac, is that right?

A - Right, uh-huh. What happens is that you end up with icons, double screen and user mouse and go over, hit the mouse, go over after that. The problem that I'm having, and I think it's quite insurmountable. I don't think it's unique to me, is the same problem a lot of people have, and that's compatibility between the printer, the driver and the interface, so that I can't get my printer to print out of that GEOS package....

Q - Oh, oh, I see.

A - And so I tried calling the company a couple of times, and all you get of course is a busy signal. As you know, they are swamped as well, so this time around I have a little more time, I think I better go back and try and play with that and see if I can figure it out.

Q - But generally, you have positive feelings about GEOS, do you?

A - Oh, yeah, it is a very impressive program.

Q - How about speed? Is that compromised at all because of the architecture....

A - Oh, no, no. It's very fast.

Q - I gotta take a look at it.

A - I also subscribe to Compute. And I just read in there, and I think it was the May issue, that if you type and if you are on the basic program -- now this does not apply to the GEOS, of course, but the basic program -- if you type the word in fast, it will double with speed; it goes from one megahertz to two megahertz... And I didn't realize that that was even available.

Q - Ah-ha. That's interesting.

A - And I do like the GEOS package. In fact, I was trying to get the additional one: the file alert, some of those, but I decided not to until I get this bug worked out as far as the interface and the printer gets better.

Q - Terrific. Hey, I'm glad to discover your presence over there. I think being in the same department we ought to get together sometime

A - That sounds like a good idea.

Q - Good.

SAMPLE TRANSCRIPT # 3

Q - How would you describe your attitude toward computers at this time?

A - Well, as you know I'm already pretty much involved with a specific program for composing music, and so I got software that's called Professional Composer and I bought a Macintosh for home use, so that I can work at my pleasure transcribing music, and actually writing music. And so at this juncture, I am pretty focused on the value of computer and, for me directly, with regards to creating music scores, as desktop aspect of it. But it's a much bigger subject.

Q - Now, I'm talking about attitudes right now and change of attitudes and so on. Let's go back a few years to see whether you can trace the changes in your attitude.

A - As it was, very reluctant to get involved.

Q - When you say reluctant, very reluctant to get involved, until when would you say you were very reluctant?

A - Well, to give you some figures -- six years ago?

Q - Until about six years ago you were very reluctant?

A - Six years ago, I was reluctant six years ago, in 1980.

Q - Six years ago, that will be 1982 because we are 88.

A - Maybe 1980-ish. At that time I wasn't involved in computers. I know my wife took a couple of basic courses, learning what was called Basic Language of computers and I didn't want to engage in that intellectual understanding of the duality of how the computer does its thinking. And the complexities of creating programs with that kind of entomology you had to have. I did buy at school here, I think about six years ago, a couple of programs that could be related to courses. One taught reading of music by scale degrees. The computer would give you a problem; if you created the problem correctly you would get complimented, and if you miss creating the problem, then the computer will tell you you were in error.

Q - So this was a quiz, or sort of a drill?

A - At that point, I started becoming more friendly towards the computer, 'cause I saw some of its application.

Q - Okay, let's start about six or five years ago when you say that first influence, or one of the first influences then, was a member of your family, namely your wife. And she took the course....

A - She took several....

Q - And she was very interested, and some of it began to affect you. But as I understand what you're saying, you were not very attracted to it yet, because it sounded very intellectual. I take it that you mean programming; you didn't think there was anything for you as far as programming was concerned.

A - I know I'm taking it from my reference point of wanting to write music where I come from, and to teach music from manuscript. And I saw the computer somehow de-personalizing. That, too, with my having to learn how to think like a computer.

Q - You didn't like that?

A - I didn't like that. Then we formed a committee here at school, in our division to.... (knock at door)

Q - And now, there's another influence then, the formation of a committee.

A - Well, we decided in our division to form a committee to look at the technology as it was available at school. It was available, I suppose, in the secretarial area, and could we or would we be interested in the growing availability of the technology for use in our courses in the Humanities? That's when I got programs that dealt with music fundamentals. Passport Design, I believe, was the first. And I played with those for a while. You had to know how to use a typewriter in order to react to the programs. And I'm very aware that a number of schools and colleges have turned to taperecorders and computers to teach what we would call remedial types of instruction, providing drill for music majors so that it wouldn't "eat up" faculty members' time is one of the benefits.

Q - Right, right.

A - So, this self-teach or, as we put it, computer-assisted instruction was very much the flag word at that point. And you helped me at that point. Remember, we wrote a grant, trying to acquire computers and, if we got the grant, we would be able to have six or seven stations for students to do this kind of basic work.

Q - So, again, formation of a committee being a part of a group that talked about computers a lot of times also helped change your attitude.

A - Right.

Q - So now, here you are at this date. What have you done since then? Recently, what have you been doing with computers?

A - Well, lately, the big surge is because of the school's anniversary year. I got involved in a number of projects, but the two major ones were the 26th of September when the Symphony played here and we got a community chorale to sing with the Symphony. The music for that chorale I had to write. I had to transcribe from a medley of songs from Sound of Music, and I know that people have teased me terribly about my handwriting, and at that point I wished I have had the capability and the expertise, 'cause I could have created that score in a much more legibleform had it come out of a music processing, such as the Macintosh.

Q - That was September 1987, and you still did not have the capability to use the computer for writing a score. What has happened since then that had changed the situation?

A - Then the other thing was that being the anniversary year, I wanted to do something unique to me as a composer, to express my salutations to the college, and so I looked for a text and found a poem by Dr. Ellis, and set that to music for choir, and that ends up being the big tribute from my real professional background. I had written the piece and copied it off of the lithograph and xeroxed it, and at that time the person who was to direct the piece was telling me how to difficult it was to read my score, and we had been talking, I'm not sure, but sometime in October I got to see a friend of mine who had a Macintosh and the Professional Composer, and how quickly, how user-friendly it is, and how quickly he was able to put the notes he was thinking of on to staff; and the second thing that got me was how clean the copy would come out when it ran off even on the basic image writer. And he showed me copies that came out of a laser printer, and I got carried away. I tried to get the College to buy for the music department the program which cost $500. So we could use it for my immediate personal purposes, as well as teaching students. And the College which is niggardly moneywise, and said "You buy it." I ended up buying it out of my own pocket 'cause they felt the money would be retrievable through Educational Needs, which it was. So I bought that program then. Let me see, I got it in November....

Q - Yeah, you expect more money, much more money than you were entitled to from Educational Needs, right?

A - Oh, I ended up buying the computer and the budget we went at least $30 to $400 of it that I spent. The Christmas-New Year's recess time was when I really learned, when I applied myself, I learned how to use the program. It was very frustrating at first because there was no clear instruction in the manual for writing the kinds of things I had written on the score. To write the piano part, one couldn't write just the G-clef and the Bass-clef; one had to write separate clefs for notes that went up and separate clefs for notes that went down, and there was (sic) all kinds of intricacies that I didn't even imagine were there. But I've gotten pretty good. My solutions to the problems came out to be the same solutions that would have been advised me through the customer service of the programming people, the program writers.

Q - Gave you a good feeling, too, huh?

A - Oh, yeah. I have written several pieces with the use of the computer....

Q - And are now much more legible?

A - All the way.

Q - And you save time?

A - Yeah.

Q - Let me ask you a question about the computer itself and its impact on your attitude towards computers a little. Would you say... how would you rank the acquisition of a computer as a kind of an influence, or having an impact on your general attitude towards computers itself?

A - I'm sold. I couldn't live without it now.

Q - That's right, but I mean if you did not have your computer, would it have made a difference in your attitude towards computers?

A - It goes almost like in a progression. When I do handwritten memos, people must struggle to read what I'm writing; when I type memos, since I'm not a good typist, they come up with errors and suffer it; when I do a memo on the word processor, then I quickly can correct what I see in front of it. I get very fine copy afterwards. So I've done my teaching materials for this semester on the computer.

Q - So most of what you do is still word processing....

A - Word processing....

Q - And then second is music processing....

A - Music processing, and lately I've been doing some graphics with it.

Q - How about use in the classroom itself. Is there any that you're doing right now?

A - That hasn't started.

Q - But are you thinking of it?

A - I was thinking about it just before we met.

Q - What specifically are you doing to prepare yourself for the future then? What are some of your visions?

A - There are two tracks. One is that the teaching of music basics is an area that the school, short-handed as we are, would well profit by providing those experiences without having to handle salaried instructors to provide it. The other one is that the student I just talked with before, same one who is doing his own compositions, and he had just done a copy of his piece here run off on the less of a music program, I am now fantasizing how I may be able to teach him and others composition and music theory, and also include the professor-composer making the manuscripts as part of the course.

Q - Yeah. I was gonna ask you.... Oh yeah, earlier in our interview, you said that about six years ago or so, you had some negative attitudes towards the computer, also because of the impersonal nature, and you thought that maybe the computer might make you de-personalized as well. Now as a result of all your experiences with the computer as a desktop facility, has that made any changes in your attitude toward computers in general, or do you still have some of those reservations?

A - Well, what I think has happened is that the computer technology, becoming user-friendly, has kindled in me the interest.... they marketed the computer in such a way that it got my interest. Had it not become user-friendly, I think I probably would still be resistant.

Q - Seeing it actually being user-friendly has really.... made you....

A - That's what did it!

Q - So, okay, that's high on your list.

A - Right.

BIBLIOGRAPHY

Alderman, D. and W. Mahler. "Faculty Acceptance of Instructional Technology: Attitudes Toward Educational Practices and Computer-Assisted Instruction at Community Colleges." Programmed Learning and Educational Technology. February 1977: 77-87.

Allison, Robert D. Instructional Computing in the Community College. Bakersfield Coll., Calif.:National Science Foundation, 1982.

Angel, Dan and Bill McCusker. "Survey Reveals Dramatic Growth of Computer Use." Community and Junior College Journal 53 May 1983: 23-25.

Beauregard, Raymond J. "Construction and Validation of a Scale to Measure the Attitudes of Teachers Toward Computers." Diss. West Virginia University, 1975.

Bracey, Gerald W. "Still Anxiety Among Educators Over Computers." Electronic Learning March 1988:20.

Brightman, Richard W. Coast's Practitioners REview Computer Assisted Instruction. Golden West College: Office of Educational Development, May 1972.

Campbell, Dale F. and William L. Ballenger. "The Future of Microcomputers in Community Colleges." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 101-107.

Certron, Marvin and Thomas O'Toole. Encounters With the Future: A Forecast of Life Into the 21st Century. New York: Mc-Graw Hill, 1983.

Compeau, Larry D. "A Microcomputer-Based Computer Science Program." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 51-60.

"Computers on Campus: The Good News, Bad News." U.S. News and World Report Oct. 7, 1985. 99:60.

Coovert, Michael D. and Melvin Goldstein. "Locus of Control as Predictors of Users' Attitude Toward Computers." Psychological Reports 47 (1980): 1167-1173.

Dellow, Donald A. and Lawrence H. Poole. "The Microcomputer and Its Impact on Community Colleges." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 5-12.

Dillman, Clifford Roger. "Behavioral Science Applications of Microcomputers." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 23-30.

Dolin, Edwin. "Computers - For Better and For Worse." Monster or Messiah?: The Computer's Impact on Society. Ed. Walter M. Mathews. Jackson: University of Mississippi, 1980.

Ellsworth, Randy and Barbara E. Bowman. "A 'Belief About Computers' Scale Based on Ahl's Questionnaire Items". The Computing Teacher December 1982: 32-34.

Gassee, Jean-Louis. The Third Apple: Personal Computers and the Cultural Revolution. San Diego: Harcourt Brace Jovanovich, 1985.

Gressard, Clarice and Brenda H. Lloyd. "Age and Staff Development Experience with Computers as Factors Affecting Teacher Attitudes Toward Computers." School Science nad Mathematics 85 (March 1985): 203-209.

Harris, D. and L. Nelson-Aeern, eds. Proceedings of NECC 1981 National Educational Computing Conference. Denton, Texas: North Texas University, 1981.

Heerman, Barry. "Computer-Assisted Adult Learning and the Community College Response." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 81-88.

Kerber, Kenneth W. "Attitudes toward Specific Computer Applications: Belief, Experiential, and Personality Correlates. American Psychological Association. Washington, D.C., 23 August 1984.

Landon, Michael de L. "A Historian Looks at the Computer's Impact on Society." Monster or Messiah?: The Computer's Impact on Society. Ed. Walter M. Mathews. Jackson: University of Mississippi, 1980.

Laurenzo, Frederick E. "Computers and the Idea of Progress." Monster or Messiah?: The Computer's Impact on Society. Ed. Walter M. Mathews. Jackson: University of Mississippi, 1980.

Levin, Robert L. "Computer-Assited Writing." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 41-49.

Linowes, David F. "Computers and the Learning Environment: Tasks for Teachers, Parents and Industry." Vital Speeches 51 (May 1, 1984) 439-442.

Lorimer, Elizabeth Lovejoy. "A Study to Identify Characteristics of Teachers Willing to Implement Computer-Based Instruction Using Microcomputers in the Classroom." DAI 41 (1980): 3343A. Memphis State University.

Mathews, Walter M. and Abraham W. Wolf. "Measuring Attitude Toward Computers: The Computer Appreciator-Critic Attitude Scales." American Educational Research Association. Montreal, 11 April 1983.

McKay, David R. "The Microcomputer in Business Education." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 32-39.

Naisbitt, John. Megatrends: Ten New Directions Transforming Our Lives. New York: Warner Books, 1982.

Norris, Cathleen M. and Barry Lumsden. "Functional Distance and the Attitudes of Educators Toward Computers." T.H.E. 11.4 (January, 1984): 129-32.

Offir, B. "Attitudes of University Instructors and Students Toward Using Computers for Learning: Discrepancies Between Thought and Action." Educational Technology May 1983: 26-28.

Peel, Mark S. and Dennis Callas. "Establishing a Campuswide Plan for Academic Computing: Critical Issues and Considerations at the Comprehensive Stage." Community College Reviewl (Fall 1983: 42-47.

Placke, Jean Elizabeth. "A Study of the Relationship of Teacher Attitude Toward Computers nad Leadership Style." DAI 44 (1983): 62A. University of Tulsa.

Ploch, Margie. "Micros Flood Campuses." High Technology. March 1984: 47-49.

Reece, Mary J. and Robert K. Gable. "The Development and Validation of a Measure of General Attitudes Toward Computers." Educational and Psychological Measurement 42 (1982): 913-916.

Scanland, Worth and Diane Slattery. "The Impact Of Computer-Based Instruction Upon Teachers: Two Perspectives." Educational Technology November 1983: 7-12.

Self, Charles C. "An Overview of Educational Technologies and Implications for Staff Development at the Community College Level." University of Massachusetts. Amherst. May 1983.

Shepard, Nolan E. "Technology: Messiah or Monster." Monster or Messiah?: The Computer's Impact on Society. Ed. Walter M. Mathews. Jackson: University of Mississippi, 1980.

"Something Doesn't Quite Compute." U.S. News and World Report 10 November 1986, 78-79.

Spraggs, Laurence D. "Microcomputers in Science Instruction." Microcomputer Applications in Administration and Instruction. Ed. Donald A. Dellow and Lawrence H. Poole. San Francisco: Jossey Bass, 1980. 13-21.

Triandis, Harry C. Attitude and Attitude Change. New York: Wiley and Sons, 1971.

Wagschal, Peter H. "A Last Chance for Computers in the Schools?" Phi Delta Kappan December 1984:251-254.

Wedman, John and Marvin Heller. "Concerns of Teachers About Educational Computing." AEDS Journal 18 (Fall 1984): 31-39.

Woodrow, Janice E. J. "Educators' Attitudes And Predispositions towards Computers." Journal of Computers in Mathematics and Science Teaching (Spring 1987): 27-36.