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Paris, Karen Lee

A STUDY OF COMPUTER USE AND NEEDS IN SOUTHERN ARIZONA HOME
ECONOMICS CLASSROOMS GRADES SIX THROUGH TWELVE

The University of Arizona

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A STUDY OF COMPUTER USE AND NEEDS
IN SOUTHERN ARIZONA HOME ECONOMICS CLASSROOMS
GRADES SIX THROUGH TWELVE

by
Karen Lee Paris

A Thesis Submitted to the Faculty of the
SCHOOL OF FAMILY AND CONSUMER RESOURCES
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF SCIENCE
In the Graduate College
THE UNIVERSITY OF ARIZONA

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ABSTRACT

This research was conducted to study the extent of computer use in home economics classrooms in Southern Arizona. In doing this the researcher looked at: 1) when and how computers were used for classroom instruction, 2) reasons given for not using the computer, 3) teachers' beliefs about computers, 4) training teachers receive before and after graduation, 5) their feelings about past and future training, 6) how teachers felt about the available software, and 7) the characteristics of early adopters or innovators of other technology to see if there could be any relationship between the characteristics of adopters or innovators and users of computers. Many teachers are using computers, but there are problems such as inadequate software and lack of training that need to be corrected if computers are going to be used to the fullest.

CHAPTER 1

INTRODUCTION

Even though computers have been used in the field of education for a number of years, the importance of the computer as a teaching/learning tool is just now beginning to be fully realized. According to Bork (1984b, p. 240), by April of 1984 it was estimated that schools in the United States had 350,000 computers available to students in grades one through twelve. The predictions indicate that the number of computers in the schools will continue to increase (Melmed, 1984; Grayson, 1984) and that by 1986, 96 percent of schools will have computers (Ingersoll and Smith, 1984).

While some teachers are actively employing the computer in the classroom, many teachers are still either experimenting with how to use the computer effectively, or teachers are ignoring the computer completely (Grayson, 1984). It would seem that teachers who have used computers are much more likely to see the benefits that could be derived from classroom use. This is especially true if they feel they have had adequate training in the areas they deem as important. In addition, teachers might be more likely to employ computers in the classroom if they have

quality software that is suitable to their program. With the predictions for continued growth of computers for student use, it is important that teachers receive computer training and information on available software. This will help teachers to more effectively integrate computer use into the classroom.

While the literature concerning which teachers are likely to adopt or use computers in the classroom is just emerging, the literature on adoption of innovation, especially consumer items, offers some clues. When looking at purchasing of home computers, adopters (purchasers) were more likely to be middle-aged, have more education, and have more experience using similiar types of equipment than non-adopters (Dickerson and Gentry, 1983). Although there is no literature equating purchase to use, it is possible that teachers who elect to use computers in their classroom would have these same characteristics.

As a result of the public's increased interest in and concern about computer use in the schools, information to aid in educational policy decisions regarding computer use is needed concerning: the extent of computer use, teachers' training in computer use, and the availability of quality software. In the long run it will be important to determine the impact of computers on learning. However, as computer use in schools is in its infancy, a preliminary

step is necessary in order to find out if teachers are using computers.

Statement of the Problem

Home economics teachers deal with the impact of computers on society, the work place, and the home. Thus it is critical that we survey these teachers to determine the stage at which they are in their own computer use. This study seeks to identify which teachers are using computers, how they are using them, and why they are using them.

Objectives

The objectives of this study are to investigate:

1. If computers are being used for classroom instruction, and if so how,
2. Reasons that are reported for not using computers.
3. Teachers' beliefs about computers,
4. Training teachers received before and after graduation in computer use,
5. Teachers' feelings concerning this and future training,
6. Teachers' feelings about: their needs in computer software; exchanging information concerning software; and software use among teachers,

7. If the characteristics for teachers who use computers are the same or similiar to the characteristics of those purchasers of computers known as innovators or early adopters.

Research Questions

This study will survey selected Southern Arizona public school teachers of sixth through twelfth grade home economics classes to investigate:

1. Are computers being used for classroom instruction, and if so how?
2. What reasons are reported for not using computers?
3. What are teachers' beliefs about computers?
4. What training have teachers received before and after graduation in computer use, and from whom is/was training obtained?
5. What are teachers' feelings concerning this training, and what more training do they feel is needed?
6. What are teachers' feelings about: their needs in computer software; exchanging information concerning software; and software use among teachers?

7. Are teachers who use computers in the classroom more likely to be middle-aged, have more education, and have had more experience with other technical products/services?

Operational Definitions

For the purposes in this study, the following words are defined:

1. **Belief** - conviction of the truth of some statement.
2. **Computer** - a programmable electronic device that can store, retrieve, and process data.
3. **Early adopter or innovator** - person who uses an innovation in the early stages.
4. **Feelings** - opinion or beliefs of a person. Thus, used interchangeably with belief.
5. **Innovation** - anything perceived to be new by the user.
6. **Interactive** - to act upon each other.
7. **Opinion** - a view, judgment, or appraisal formed in the mind about a particular matter.
8. **Software** - programs, procedures, and related documentation used with a computer.
9. **Training** - instruction or process of receiving information.

All other terms are considered self-explanatory.

CHAPTER 2

LITERATURE REVIEW

This research was conducted to study the extent of computer use in home economics classrooms in Southern Arizona. In doing this the researcher looked at: 1) when and how computers were used for classroom instruction, 2) reasons given for not using the computer, 3) teachers' beliefs about computers, 4) training teachers receive before and after graduation, 5) their feelings about past and future training, 6) how teachers felt about the available software, and 7) the characteristics of early adopters or innovators of other technology to see if there could be any relationship between the characteristics of adopters or innovators and users of computers.

In the following literature review each of these will be discussed in order to provide background material. First, there is a discussion of the many roles the computer plays in education. Second, the advantages of using computers, to students and teachers is presented. Next, the researcher looks at the available software to examine the problems that exist and what teachers say they want and need in the way of software. Last, the researcher looks at the characteristics of early adopters or innovators in

order to speculate if there might be a relationship between the characteristics of this group and the characteristics of teachers who use computers.

Importance of the Computer in Education

The importance of the computer as an educational teaching tool has been recognized for quite some time. The computer can free the teacher from routine tasks and give him/her more time to interact with students on an individual basis. However, one of the concerns that people have about computers is that they will take their jobs. As early as 1972, U. S. News and World Report was assuring teachers that the computer was not meant as a replacement for them. This assurance is still being given (Bell, 1984; Dillon, 1985). According to Wallisch (1983), teachers will always be needed to show students which questions are necessary to ask in order to make knowledge meaningful.

Computers have many advantages. Students can work at their own pace using a computer, and can ask for an endless number of repetitions from the computer without feeling embarrassed (Martin and Norman, 1970). Students who would be left behind and just not ask questions have the opportunity, using a computer, to continue with an idea until they have mastered it. The computer is also very patient, never tires, and continues going until it is turned off (Loftus, 1982). Barger (1983) and Gray (1985)

both state that the immediate reinforcement and congratulatory statements the students receive from the computer have been found to be very important to learning. By using immediate feedback, testing becomes not only an evaluation process, but a learning process as well. Wrong answers are immediately remedied, and right ones are immediately reinforced (Barger, 1983). This allows the student to spend less time learning incorrect information and more time on correct and relevant information. The computer can also use the technique of branching. Branching allows students to go on to more advanced work if they are ready, or go back to simpler work until they are ready to move ahead (Barger, 1983; Loftus, 1982). This can be very useful in classrooms where students are all at various levels. Slow students can continue until they master the concept, while advanced students do not become bored due to the slow pace.

Computers allow for interactive learning. Bork (1984a) states that because of the constant interaction with the student, educators can more easily meet the needs of each student by individualizing his/her learning experiences, thus making learning experiences more effective.

Students and the Computer

In order for students to learn, they must take an active part in the learning process. The use of the computer puts the student in an active role in that process (Spiller and Robertson, 1984). The more time spent in direct contact with the material to be learned, the more active he/she is in that learning, and the more direct instruction he/she receives, the higher his/her final achievement will be. Jernstedt (1983) states that the computer is very effective in these areas. The interaction of the student and the computer demands that the student give his/her attention to the program. Unlike a lecture, the computer will not continue without the student's participation.

A student's self-esteem can be greatly improved by computer use (Chin, 1984). In studies done to compare students' attitudes toward computers and computing, it was found that before and after lessons the students felt that only the smartest people are needed to run computers. After the lessons the attitude that changed was the students feeling that they were part of that set of people (Bell, 1983). Courses in computer use should be made available to all students, not just a select few, in order to help erase the idea that only smart people have the ability and need to learn computer use.

In addition to placing the student in the active role of learning and improving student's self-esteem, the computer may be used to motivate students, to teach students how to think, and to encourage creativity. Motivation may be achieved by involving the student using a number of his/her senses, usually sight, sound, and touch. Methods of problem-solving or logical thinking may be developed by students learning to program a computer. Creativity may be encouraged because the computer is open to many programming possibilities (Barger, 1983).

Teachers and the Computer

In order for computers to be used successfully in the classroom, teachers need to be trained in their use. Grossnickle and Laird (1983) state that many of our educators completed their teacher training before computers were widely used. This coupled with the fact that teacher training is so complex, leaving limited time for extra courses, creates a tremendous need for effective training. Teachers are still experimenting with computers to find the most effective methods of using them, so they are not utilizing computers to their fullest (Grayson, 1984). Grossnickle and Laird (1983) recommend that training to help teachers utilize computers to the fullest should be on a continuing basis, and should allow teachers to begin at their own level and progress at their own rate. This

training is or will be necessary due to the fact that new advances are rapidly being made, and teachers need to keep up with those changes and advancements (Floyd, 1984).

Such computer training needs to motivate the teachers and provide them with means of determining how successful they have been in performing the tasks (Grossnickle and Laird, 1983). It is important that teachers receive the training in computers which will be most beneficial, especially in light of the fact that some state departments are requiring, or are planning to require, computer literacy coursework for teacher certification (Abernathy and Pettibone, 1984). Neibauer (1985) states that this training needs to include how to use the computer in a classroom. One of the ways this can be done is by letting teachers observe computer use in classrooms. Another way is to provide teachers with examples of actual classroom use. This lets teachers see how other teachers are successfully incorporating computers into their programs. Since many home economics teachers are using computers (Muller, 1985), this should be a means of helping home economics teachers locate software which should mesh with their particular programs.

Quality software needs to be made available to teachers. In home economics, teachers of foods and nutrition courses have the most programs to select from for use (Thomas, 1984; Dillon, 1985). Other subject areas of

home economics where teachers are using computers are consumer education, management and family finance, and career education (Muller, 1985). There are programs for other areas, but there is a very great need for quality software in all areas. Collins (1982) states that specialists in all areas need to learn programming or team up with programmers, in order to produce reliable and valid programs. This is especially true in any area of home economics that needs supplementary materials due to lack of books and materials, or ones which are out of date, such as in housing and interior design.

Software

In order for computers to be effective teaching/learning tools, quality software and materials are a must. There are large numbers of commercially-available software packages, but one of the problems is that most are low level drill-and-practice programs, or textbook-like tutorials (Zientara, 1983; Marcom and Bellew, 1985). The number of higher quality software packages has increased, but according to Grayson (1984) and Muller (1985) much of what is available has never had any meaningful type of evaluation. The knowledge is now available to produce educational software that would be a great improvement over what is presently being offered (Melmed, 1984) and it is thought that the well-established companies will begin to

develop more high quality software. Grayson (1984) says that this will be done in order to increase sales, and to protect their reputation.

Another problem with the software is that much of what is currently available does not meet the needs of the individual class, and teachers do not want to have to alter their content, format, or goals, in order to use the computer (Loftus, 1982). Surveys of teachers have shown that they want complete packages of software, including a teacher's manual, student handbook, activity sheets, and any other related materials that are available (Ingersoll and Smith, 1984).

Such software instruction needs to be as interactive as possible (Caldwell, 1982). Good software needs to motivate students and guide him/her at his/her own pace. It needs to use sound, color, graphics, and flashing to the best possible advantage in presenting the subject matter. It needs to use prompts, cues and encouragement to give the student immediate feedback (Bell, 1984; Caldwell, 1982).

In order to produce better quality and larger quantities of software, grants are being made to educational institutions (Hassett, 1984). In an effort to help educators obtain quality software, clearinghouses are being set up. It is the responsibility of the clearinghouse to collect, evaluate, and send information on

software to educators who request it (Grayson, 1984). This is one source that teachers can use to find quality software. According to Bork (1984a), there is a great need to fund the research and development of software if we are going to utilize the computer to its fullest.

Innovators or Early Adopters

In research conducted by Dickerson and Gentry (1983) concerning the purchase of home computers, innovators or early adopters were middle-aged, had more education, and had more experience with other technical products. Other researchers have also found that innovators, or early adopters, in general, have more education (Rogers, 1966; Kegerreis and Engel, 1969), are middle-aged (Labay and Kinnear, 1981), and have more experience with technical products (Hirschman, 1980). From these findings it would be expected that teachers, being a part of the general public, would possess at least some of these same characteristics. Teachers who have recently completed, or updated, their education are much more likely to have received training in computer use than people who graduated earlier. If this training was a positive experience, then teachers are more likely to use what they have learned in their classroom and to further their education in computer use.

Teachers, 30 to 50 years of age (Dickerson and Gentry, 1983), are more likely to use computers in the classroom if computer users have the same or similar characteristics as purchasers of computers. This may be due to the fact that they have been teaching for awhile, have their programs set up, and have the time to incorporate computer use into their programs. The teacher who is just beginning his/her teaching assignment needs the time to get his/her program running smoothly, and an older teacher may not have had any computer training.

It would seem that teachers who have used other technical equipment, such as video recorders, will be more likely to use computers. Having become comfortable using other technical equipment, they are more likely to experiment with computers, because they feel the computer can be mastered as well. As reported by Lin et al (1966), teachers are more willing to accept change if they feel the students will benefit from the innovation. It seems that this is more likely to happen, in the case of computer use, if the teacher has had positive experiences working with other types of technology. In addition, the teacher who had had hands-on-experience is much more likely to see the benefits that students could possibly derive from computer use.

In summary, it would appear that there are many advantages of using computers, not only to students but

teachers as well. Using computers, students are able to work at their own pace, receive congratulatory statements for work well done, and get immediate feedback on work and tests. Teachers are better able to individualize students' programs of learning, thus allowing the students to work at their own levels. Computers also allow teachers more individual time with students by handling routine tasks. However, since there is little known about which teachers actually use computers, but literature on who buys them, it has yet to be determined if this research base can be applied to use of computers by teachers. If we are to make the most of the advantages computers offer, it will be necessary to assess where teachers are at this point, so planning can be done for future training and software development.

CHAPTER 3

METHODOLOGY

Sample

In November, 1985, all teachers of home economics in Southern Arizona, grades six through twelve, (n=146), were contacted by mail and invited to participate in an inservice distance education project funded by the Arizona Agricultural Experiment Station (Kelly, 1985). In January, 1986, those teachers who agreed to be in the project plus all other home economics teachers in Southern Arizona were sent a questionnaire. All teachers were asked to complete the computer questionnaire, a teacher career stage inventory (TCS), and a stages of concern about innovation questionnaire (SoC). Since the TCS and SoC are part of the inservice distance education project and not part of this study, they will not be discussed or included in this paper.

Sample Description

Tables 1 through 7 provide descriptive information obtained from the questionnaire. The following descriptive information was learned about the respondents. As shown in Table 1, although respondents represented each of the age

TABLE 1
Percentage of Respondents
Categorized by Age

AGE RANGE	FREQUENCY	PERCENT
20 - 25	2	2.3
26 - 30	16	18.6
31 - 35	11	12.8
36 - 40	19	22.1
41 - 45	14	16.3
46 - 50	7	8.1
51 - 55	9	10.5
56 - 60	3	3.5
61 AND OVER	2	2.3
NR*	3	3.5
	<hr/> 86	<hr/> 100.0

*NR = No Response.

groups listed in the questionnaire, 69.8 percent (60) were between 26 and 45 while 24.4 percent (21) were 46 or over.

Almost half, 48.8 percent (42) of the respondents had been teaching for 11 or more years. (See Table 2). Twenty-six (30.2 percent) respondents had taught from five to 10 years, 12 (14 percent) for two to four years, and only 5 (5.8 percent) had taught one year or less.

As seen in Table 3, the academic level of the respondents was varied. Fifty-one (59.3 percent) either had a bachelors or bachelors plus 15 credits. Only three (3.5 percent) had a doctorate or 60 credits. Of the remaining 32 respondents, one (1.2) did not indicate academic level and the other 31 either had a masters, masters plus 15 credits, or a masters plus 30 credits.

More than half of the respondents taught grades nine, 10, 11, and 12. A large percentage taught grades seven (46.5 percent) and eight (48.8 percent). Only 10.5 percent of the respondents taught sixth grade. (See Table 4).

As shown in Table 5, the enrollment of schools in which respondents were teaching was varied. However, 66.3 percent of the respondents were teaching in schools with enrollments of 1000 or less.

The content areas that more respondents indicated they were teaching were foods and nutrition (65.1 percent), textiles and clothing (55.8 percent), child development

TABLE 2
Percentage of Respondents
Categorized by Number of Years Taught

NUMBER OF YEARS	FREQUENCY	PERCENT
1 OR LESS	5	5.8
2 - 4	12	14.0
5 - 10	26	30.2
11 OR MORE	42	48.8
NR*	1	1.2
	<hr/> 86	<hr/> 100.0

*NR = No Response

TABLE 3
 Percentage of Respondents
 Categorized by Education Level

EDUCATION LEVEL	FREQUENCY	PERCENT
Bachelors	21	24.4
Bachelors plus 15 credits	30	34.9
Masters	18	20.9
Masters plus 15 credits	8	9.3
Masters plus 30 credits	5	5.8
Doctorate or 60 credits	3	3.5
NR*	1	1.2
	86	100.0

*NR = No Response

TABLE 4
Respondents Categorized by Grade Taught

GRADES	FREQUENCY	PERCENT
6	9	10.5
7	40	46.5
8	42	48.8
9	44	51.2
10	48	55.8
11	48	55.8
12	48	55.8

TABLE 5
 Respondents Categorized by School Enrollment

ENROLLMENT OF SCHOOL	FREQUENCY	PERCENT
150 or less	5	5.8
151 - 500	29	33.7
501 - 1000	23	26.7
1001 - 1500	4	4.6
1501 - 2000	10	11.6
2001 - 2500	8	9.3
2501 or more	3	3.5
NR*	4	4.6
	86	100.0

*NR = No Response

(39.5 percent), consumer education (33.7 percent), and family relations (33.7 percent). (See Table 6).

Over one third, 39.5 percent, of the respondents indicated they were teaching in subject areas outside the field of home economics. These were quite varied and can be seen in Table 7.

Of the 86 respondents who returned useable questionnaires, 54 reported having access to computers at school. Some had a computer(s) located in the classroom while others had computers available to them for classroom use. Twenty or 23.3 percent of the respondents reported having computers at home.

Limitations of this Study

Since this study surveyed only home economics teachers in Southern Arizona, it cannot be generalized to teachers in other subject or geographic areas.

Instrumentation

Each teacher in the sample was sent a questionnaire (APPENDIX A) consisting of four parts. Teachers were asked to consider all home economics classes taught during the current semester. The first part of the questionnaire dealt with the teachers' access to and use of computers. The format for this section was multiple choice and short answer. Part two of the questionnaire dealt with teachers' attitudes concerning computers. This part of the

TABLE 6
 Respondents Categorized by Content Area Taught

CONTENT AREA	FREQUENCY	PERCENT
Child Development	34	39.5
Consumer Education	29	33.7
Family Relations	29	33.7
Foods and Nutrition	56	65.1
Housing and Interior Design	9	10.5
Textiles and Clothing	48	55.8
All of Above	20	23.3
HERO	4	4.7
Vocational Food Service	2	2.3
Health Care/Safety	1	1.2
Crafts	1	1.2
Sewing	1	1.2
Human Relations	1	1.2
Independent Living	1	1.2
Image for Success	1	1.2

TABLE 7
 Subjects, Other than Home Economics,
 Taught by Respondents

SUBJECTS	FREQUENCY	PERCENT
Language Arts and Math	1	1.2
Language Arts and Reading	1	1.2
Business Accounting and Shorthand	1	1.2
English	2	2.3
Math	4	4.7
7th Grade Geography	1	1.2
Reading	1	1.2
Student Council	2	2.3
Elementary Spanish and Study Skills	1	1.2
Language Arts and Study Hall	1	1.2
Study Skills	1	1.2
Computer Science	2	2.3
In-house Suspension	1	1.2
Decisions	2	2.3
Driver's Education	1	1.2
Remedial Reading	1	1.2
7th Grade American History	1	1.2
Health	2	2.3
Business Education-Typing and Accounting	1	1.2
Physical Education	1	1.2
Kindergarten	2	2.3
Humanities	2	2.3
Art and Typing	1	1.2
Social Studies and Career Education	1	1.2
NOA*	52	60.5
	86	100.0

*NOA = Teachers who are not teaching outside the field of home economics.

questionnaire used a Likert scale format. The third part of the questionnaire examined the teachers' own computer background. The format for this section was statements requiring multiple choice and/or short answers. The last section of the questionnaire requested descriptive information concerning the teachers themselves as well as their teaching responsibilities.

The questionnaire was printed on white 11 x 14 inch legal size paper. The pages were folded and stapled to form a booklet. The front of the questionnaire explained the purpose, gave an indication of time needed to complete the questionnaire, assured confidentiality, thanked the respondents, and gave the researchers' address. The title of the project was printed at the top of the front page and a picture of a letter and envelope was in the lower right corner. The questions to be answered for this study were on the inside ten pages. The back of the booklet had a picture of a computer in the upper left corner and a video camera in the lower right corner. A statement in the top right corner indicated that the blank space on the back page was to be used for any comments and suggestions that participants wished to make. A thank you for completing the questionnaire was printed in the lower left corner. The format for presentation of this questionnaire generally followed the format suggested by Dillman (1978).

Along with the questionnaire, a cover letter was sent. The cover letter was on University of Arizona letterhead stationery. Each cover letter was individually signed by the researcher, a graduate research assistant, and the project director, a University of Arizona faculty member. The cover letter introduced the research, explained the purpose of the study, promised the respondent confidentiality, assured the respondent of the importance of returning the questionnaire promptly, and included the researcher's stated appreciation to the respondents. The cover letter sent to teachers who had agreed to be in the distance education project included information concerning the project.

As a small incentive for filling out the questionnaire, a tea bag was included with the cover letter and questionnaire. A message was included which stated that the researcher hoped the receiver of the questionnaire would enjoy a cup or glass of tea while completing the questionnaire.

Validity and Reliability Procedures

The questionnaire used questions from a questionnaire developed by Dr. Beatrice Petrich, Professor of Continuing and Vocational Education, Schools of Family Resources and Consumer Sciences and Education at the University of Wisconsin-Madison. Dr. Petrich's

questionnaire was sent to 301 teachers, who were selected by systematic random sampling from a list of all teachers provided by the State Department of Public Instruction. After two mailings, 79 percent (240) were returned, fifteen of which were not usable.

Some of the original questions were edited for ease of coding, and new questions were also added. Because of the additional questions, the questionnaire was reviewed by a panel of teacher educators who were currently teaching about and using computers, and then pilot tested. The pilot test was carried out using teachers in the field of agricultural education. After reviewing the completed questionnaires and suggestions from the panel, a few changes were made to help insure clarity of the questionnaire.

Although computer purchase and use have yet to be correlated, this study used a question from a study by Dickerson and Gentry to see if there might be a relationship. This is the question concerning experiences with technical products/services found in section I, question 16, of the questionnaire. Questions 59 and 60 in section IV were added to the questionnaire as a part of the inservice distance education project.

The scale used to determine attitudes toward computers that was used was originally developed by Ahl (Ahl, 1976) and later modified by Ellsworth and

Bowman (Ellsworth and Bowman, 1982). The scale, plus three items added by Lichtman (Lichtman, 1979) was validated by Ellsworth and Bowman. This was done using students from an advanced computer programming class. Students indicated whether the items were indicative of positive or negative attitudes toward computers. The resulting 17 item scale was administered to undergraduates having little or no experience with computers. The reliability was .85 on a one month test-retest, and the internal consistency on the first testing was 0.77. For purposes of face validity, the original words "hammer or lathe" were changed to read "spoon or filmstrip projector" in question 29. In an effort to force respondents to make a choice, the neither agree nor disagree category from the original list was removed from the questionnaire for this study. The scoring for these items was one point for "Strongly Agree" to four points for "Strongly Disagree", except for the items marked with an asterisk (*). For these items the scoring was reversed, giving one point for "Strongly Disagree" to four points for "Strongly Agree". Agreement by the respondents to the items marked with an asterisk reflects a positive belief. For all of the other items a positive belief would be indicated by disagreement with the statement.

Data Collection

Each questionnaire was coded with the teacher's assigned number so that a record of returned questionnaires could be kept accurately. A self-addressed, stamped envelope was included with the questionnaire. The teachers were asked to return the questionnaire within two weeks. A follow-up post card (Appendix B) was sent to each teacher two weeks after mailing of the questionnaires to thank her/him for the prompt return of the questionnaires or to remind them to please fill out the questionnaire and return it promptly. The post card also informed teachers how to contact the researcher by telephone if another questionnaire was needed. Two weeks after mailing the post card another copy of the same questionnaire was sent to those who had not responded. They also received a self-addressed, stamped envelope, a cover letter suggesting that they had meant to respond but must have forgotten, and a packet of instant coffee.

After the second mailing the researcher had received 90 returned questionnaires for a response rate of 61.64 per cent. Of the returned questionnaires four (2.73 per cent) could not be used in the analysis. Three (2.05 per cent) were not complete and one (.68 per cent) was not teaching home economics classes.

According to Babbie (1983, p. 226), a response rate of 60 percent is considered good for analysis and

reporting. For this reason it was decided that a follow-up of the non-respondents would not be undertaken.

Data Analysis

Frequency analysis was conducted on each of the questionnaire items. Crosstabs were run on the items when necessary to provide a clearer picture of the information. These included items: 6 and 16, 16 and 54, 16 and 55, 16 and 57, 42 and 44, 4 and 54, 4 and 55, and 4 and 57. The mean and modal values from the Ellsworth and Bowman study were used to compare the group in their study with those in this study. Frequency analysis and crosstabs were run to compare the findings of this study with the Dickerson and Gentry findings.

CHAPTER 4

RESULTS

The purpose of this study was to examine the extent of computer use in Southern Arizona home economics classrooms. In doing this the researcher looked at: 1) computer use by teachers, 2) reasons that were reported for not using computers, 3) teacher's beliefs about computers, 4) training received before and after graduation, 5) teachers' feelings concerning training, 6) available software, and 7) characteristics of teachers who use computers for classroom purposes. The data for this study was collected using a mail survey. Questionnaires were mailed all 146 home economics teachers in Southern Arizona. Of the 90 questionnaires returned, 86 were useable.

Computer Use for Classroom Instruction

Of the 86 teachers who returned useable questionnaires, 54 or 62.8 percent indicated they have computer(s) located in the home economics department and/or have access to computer(s) for classroom use. The number of respondents who had computers located in the classroom was 31.5 percent. As shown in Table 8, the computer to

TABLE 8
 Computer Brands, Frequency and Percent of Teachers,
 Range of Available Computers,
 and Total Number of Available Computers
 (N = 54)

BRANDS	NUMBER OF TEACHERS	PERCENT OF COMPUTERS	RANGE OF NUMBER AVAILABLE	TOTAL
Apple	44	81.5	1 - 43	394
IBM	7	13.0	1 - 60	175
Commodore	13	24.1	1 - 64	199
Atari	2	3.7	1	2
TRS	3	5.6	7 - 16	31
Kaypro	1	1.9	1	1
Heathkit	1	1.9	15	15
Franklin	3	5.6	1 - 5	7
Rainbow	1	1.9	24	24
Pet	1	1.9	6	6

which most of the respondents, (81.5 percent) had access to was Apple. The Commodore was the computer to which the next largest percent (24.1) of teachers had access, and 13 percent had access to IBM computers. The number of computers respondents had available ranged from one to 64. It should be noted, however, that many of the respondents did not indicate the number of computers available and so it is assumed that this total number is less than what is really available.

As would be expected from the literature review, more teachers, 30 or 55.6 percent, reported using computers in the area of foods and nutrition. The amount of classroom time spent using the computer in the area of foods and nutrition was, for the most part, less than one hour per week. Twenty-one teachers or 70 percent of those who indicated using the computer in foods and nutrition reported using for less than one hour per week. Computer use was also reported in other content areas, and those results can be found in Table 9. In Table 10 the number of respondents who reported using computers is compared to the number who indicated teaching in those subject areas.

More than twice as many of the respondents who indicated computer use reported that they used the computer in more than one way. Moreover, 16 or 29.6 percent of respondents reported games as at least one of the ways they used computers. The other uses that were reported most

TABLE 9
 Content Area Computers Used In,
 Frequency and Percent of Teachers, and
 Amount of Time Spent Using Computers
 (N = 54)

CONTENT AREA	FREQUENCY	PERCENT	AMOUNT OF TIME
Child Development	3	5.6	2 = small 1 = NR*
Consumer Education	7	8.1	5 = small 2 = NR*
Family Relations	3	5.6	2 = small 1 = medium
Food and Nurtition	30	55.6	21 = small 5 = medium 1 = large 1 = extensive 2 = NR*
Housing and Interior Design	2	3.7	2 = small
Textiles and Clothing	3	5.6	2 = small 1 = medium
Careers	1	1.9	1 = medium
HERO	1	1.9	1 = extensive
Human Relations	1	1.9	1 = small

*NR = No Response

SMALL means less than 1 hour per week

MEDIUM means 1 hour to 1 hour 59 minutes per week

LARGE means 2 hours to 2 hours 59 minutes per week

EXTENSIVE means 3 or more hours per week

TABLE 10
 Teachers Who Report Using Computers
 Compared to Teachers Who Report Teaching Subject Area

SUBJECT AREA	COMPUTER USERS		ALL WHO TEACH AREA	
	#	% of 54	#	% of #
Child Development	3	5.6	34	8.8
Consumer Education	7	13.0	29	24.1
Family Relations	3	5.6	29	10.3
Foods and Nutrition	30	55.6	56	53.6
Housing and Interior Design	2	3.7	9	22.2
Textiles and Clothing	3	5.6	48	8.8
HERO*	1	1.9	4	25.0
Human Relations*	1	1.9	1	100.0
Careers*	1	1.9	NR	

*Subjects which were reported by respondents under the category of Others. Therefore, the number of teachers who were actually teaching in this subject area may be more than indicated.

NR = No Response
 F = Frequency
 P = Percent

frequently were drill, 14 or 25.9 percent, individualizing instruction, 13 or 24.1 percent, word processing, 11 or 20.4 percent, and students' grades, 11 or 20.4 percent. The uses that were reported the least often were for grocery records, budget, test generation, and development of software. Each of these was reported as a use by 1 or 1.9 percent of the respondents. For a breakdown of the number of ways and how respondents were using the computer, see Tables 11 and 12.

Reported Reasons For Not Using Computers

The number one reason for not using computers was not having access to computers for classroom use. Thirty-two of the 86 respondents, 37.2 percent, reported that they did not have access to computers at school.

Of the 54 respondents who indicated computer access at school, 23 or 42.6 percent indicated that they were not using computers for any purpose.

As shown in Table 13, in the case of respondents who did have access to computers (N=54), 16 or 29.6 percent listed inadequate software as a reason for not using computers. Three of the statements, "I do not have time", "available software is too expensive" and "I do not feel comfortable with computers", were reported by 12 or 22.2 percent as a reason they did not use computers in the classroom. It was interesting to note that the statements,

TABLE 11
Multiple Users of Computers at School

NUMBER OF USES	FREQUENCY	PERCENT
0	23	40.7
1	9	16.7
2	3	5.6
3	7	13.0
4	5	9.3
5	2	3.7
6	3	5.6
7	2	3.7
	<hr/> 86	<hr/> 100.0

Mean = 1.815

TABLE 12
 Teachers' Use of Computers
 (N = 54)

USE	FREQUENCY	PERCENT
Drill	14	25.9
Tutoring	9	16.7
Individualizing Instruction	13	24.1
Inventory	2	3.7
Grocery Records	1	1.9
Word Processing	11	20.4
Budget	1	1.9
Students' Grades	11	20.4
Test Generation	4	7.4
Testing of Students	1	1.9
Games	16	29.6
Promotional Flyers	7	13.0
Simulations	5	9.3
Development of Software	1	1.9
Affective Learning	3	5.6
Nutrition Evaluation	2	3.7
Banquet Invitations	1	1.9

TABLE 13
 Reported Reasons for Nonuse of Available Computers
 (N = 23)

REASONS	FREQUENCY	PERCENT
I do not have time.	12	52.2
Available software is inadequate.	16	69.6
Available software is too expensive.	12	52.2
Computer use does not fit into my program.	2	8.7
I do not know how to use computers.	11	47.8
I do not feel computer use is of benefit to my program.	2	8.7
I do not feel comfortable with computers.	12	52.2
Difficult to schedule time to have computers available.	5	21.7
Department has no software	3	13.0
Only one student can use at a time.	1	4.3
Another teacher borrowed my computer.	1	4.3
Need more ideas for classroom use.	1	4.3

"computer use does not fit into my program" and "I do not feel computer use is of benefit to my program", were reported by only two, 3.7 percent, of the respondents as reasons for not using computers.

Beliefs About Computers

When looking at teachers' beliefs about computers in this study, it was necessary to look at the group of respondents who had access to computers at school as well as those who did not have computer access.

First, of the 32 respondents who did not have computer access at school, 81.2 percent indicated they would like to have computers in their classroom. More of these respondents indicated that they would like to use computers for individualizing instruction, 78.1 percent, students' grades, 68.8 percent, inventory, 65.6 percent, grocery records, 59.4 percent, and games, 59.4 percent. Most of these teachers indicated they would like to use computers in more than one way. This results can be seen in Tables 14 and 15.

Those respondents who did not want a computer in the classroom were asked to give a brief explanation. Each of the explanations were different and were: "Do not know how to use computers", "Not needed for classes taught", "No time", and "Working with mentally retarded students". Two of the respondents gave no explanation.

TABLE 14
 How Respondents Would Like To Use Computers
 (Respondents Without Computer Access At School N=32)

USE	FREQUENCY	PERCENT
Drill	12	37.5
Tutoring	15	46.9
Individualizing instruction	25	78.1
Inventory	21	65.6
Grocery records	19	59.4
Word processing	12	37.5
Budget records	17	53.1
Students' grades	22	68.8
Test generation	16	50.0
Testing of students	15	46.9
Games	19	59.4
Promotional flyers	6	18.8
FHA records	2	6.3
Recipes	1	3.1

TABLE 15

Number of Ways Respondents Would Like To Use Computer
(Respondents Without Computer Access at School)

NUMBER OF USES	FREQUENCY	PERCENT
0	5	15.6
2	1	3.1
4	4	12.5
5	5	15.6
6	3	9.4
8	3	9.4
9	3	9.4
10	3	9.4
11	2	6.3
12	1	3.1
13	2	6.3
	32	100.0

Mean = 6.313

Even though the reasons are different it seems that with training in how to use computers and ideas for classroom use these teachers might find that they would like to have computers in their classrooms.

Most of the respondents who used computers indicated that they use them in more than one way. Asked if they had computers at home only 20 respondents (23.3 percent) indicated they did have a computer. Of the 20, 13 (65.0 percent) reported using their home computers. The most often reported uses for home computers are for word processing and school work. Nine (69.2 percent) indicated this as how they used computers while games and family records was indicated by 6 (46.2 percent) of the respondents. Tabulations of the number of ways and how respondents were using home computers can be found in Tables 16 and 17.

Only 15 (17.4 percent) of the 66 who did not have computers at home planned to purchase one in the coming year. The brands of computers that more of these respondents had or planned to purchase was Apple. Fifteen (42.9 percent) had or planned to purchase an Apple computer while 8 (22.9 percent) had or planned to purchase a Commodore. Tabulation of the brands of computer that respondents had or planned to purchase can be found in Table 18.

TABLE 16
Number of Ways Respondents
Reported Using Home Computers

NUMBER OF USES	FREQUENCY	PERCENT
1	4	30.8
2	1	7.7
3	3	23.1
5	2	15.4
6	3	23.1
	<hr/> 13	<hr/> 100.0

Mean = 3.308

TABLE 17
Uses of Computers at Home by Respondents N=13

USE	FREQUENCY	PERCENT
Games	6	46.2
Word processing	9	69.2
Family records	6	46.2
Meal planning	2	15.4
Lists	1	7.7
Recipes	3	23.1
School work	9	69.2
Money management	3	23.1
Home gardening information	1	7.7
Drill	1	7.7
Household inventory	1	7.7
Print shop	1	7.7

TABLE 18
 Brands of Computers Respondents Had at Home
 or Planned to Purchase Within the Year

BRANDS	FREQUENCY	PERCENT
Texas Instruments	3	8.6
Apple	15	42.9
IBM	3	8.6
Commodore	8	22.9
TRS	1	2.9
Zennith	1	2.9
Franklin	1	2.9
Leading Edge	1	2.9
NR*	2	5.7
	35	100.0

*NR = No Response

Many respondents who did not have access to computers at school indicated they would like to use computers in the same ways as reported by respondents with computer access. These included individualizing instruction, students' grades, and games. However, nonusers indicated they would use computers for grocery and budget records which were two of the least reported uses reported by respondents with computer access.

Beliefs About Computer Scale

The scale developed by Ahl (1976) and modified by Lichtman (1979) and Ellsworth and Bowman (1982), was used in this study to examine respondents' attitudes concerning computers. In an effort to force teachers to make a choice, the neither agree nor disagree category from the original list was removed from the questionnaire for this study. This may have resulted in some respondents selecting a given category, but others simply chose to leave the question blank.

Overall, at least half of those who did respond indicated a positive belief on each of the 17 scale items. On only six of the scale statements did less than 75 percent of the respondents indicate a positive belief. Those statements were: "Computers make mistakes at least 10% of the time", "Computers will improve health care", "Computers isolate people by preventing normal social

interactions among users", "It is possible to design computer systems which protect the privacy of data", "Computers will replace low-skill jobs and create jobs needing specialized training", and "Computers will create as many jobs as they eliminate".

As reported by Ellsworth and Bowman (1982), seven junior and 31 senior undergraduate students, who were majoring in computer science and taking advanced computer programming courses were asked to respond to the "Beliefs About Computers Scale". They achieved a mean score of 67.92 with a standard deviation of 4.43 while respondents in this study achieved a mean score of 50.19 with a standard deviation of 8.14. As would be expected, the mean score of the respondents of this study was lower than that of the computer science students. Since the category, neither agree nor disagree, was omitted from this questionnaire, the mean scores of the two groups cannot be used for a meaningful comparison. (See Table 19).

However, the respondents and the computer science students did achieve similar results on many of the modal scores. On only six of the items did the mode scores fall into different categories for the two groups. Those items were: "Computers are a tool, just like a spoon or a filmstrip projector", "Someday I will have a computer terminal in my home", "Computers slow down and complicate simple business operations", "Computers will improve law

TABLE 19
 Item Percents and Mean Scores on the Beliefs
 about Computers Scale for Home Economics Teachers
 (N=86)

ITEM	SA	A	N	D	SD	NR	MEAN
*24	73.3 71.1	24.4 23.7	2.6	1.2 2.6	0.0 0.0	1.2	3.69 1.37
25	1.2 2.6	5.8 18.4	21.1	53.5 44.7	38.4 13.2	1.2	3.27 3.47
*26	8.1 10.5	74.4 47.7	28.9	8.1 13.2	1.2 0.0	8.1	2.73 2.45
27	0.0 0.0	1.2 0.0	0.0	45.3 18.4	52.3 81.6	1.2	3.48 4.82
28	2.3 0.0	23.3 0.0	15.8	40.7 42.1	23.3 42.1	10.5	2.64 4.26
*29	44.2 50.0	53.3 44.7	2.6	2.3 2.6	0.0 0.0	0.0	3.42 1.58
*30	15.1 15.8	57.0 57.9	23.7	18.6 2.6	3.5 0.0	5.8	2.72 2.13
*31	34.9 55.3	44.2 31.6	7.9	15.1 5.3	2.3 0.0	3.5	3.05 1.63
*32	22.1 36.8	54.7 44.7	7.9	18.6 5.3	1.2 5.3	3.5	2.91 1.97
33	2.3 2.6	12.8 5.3	18.4	61.6 23.7	19.8 50.0	3.5	2.92 4.13
*34	27.9 23.7	57.0 28.9	39.5	5.8 7.9	0.0 0.0	9.3	2.94 2.32
35	0.0 0.0	0.0 7.9	26.3	53.5 28.9	44.2 36.8	2.3	3.37 3.95
36	5.8 0.0	30.2 13.2	26.3	51.2 52.6	8.1 7.9	4.7	2.52 3.55
*37	5.8 26.3	59.3 57.9	10.5	20.9 5.3	5.8 0.0	8.1	2.49 1.95
*38	4.7 13.2	53.5 44.7	28.9	37.2 13.2	1.2 0.0	3.5	2.55 2.42
*39	19.8 15.8	67.4 57.9	23.7	5.8 2.6	1.2 0.0	5.8	2.94 2.13
*40	10.5 15.8	58.1 39.5	42.1	19.8 2.6	0.0 0.0	11.6	2.56 2.32

SA = Strongly Agree
 A = Agree
 N = Neither Agree nor Disagree
 D = Disagree
 SD = Strongly Disagree
 NR = No Response

Top scores = Home Economics Teachers' scores
 Bottom scores = Computer Science Students' scores
 * = Scoring was reversed.

enforcement", "A computer may someday take my job", and "Computers will create as many jobs as they eliminate". A comparison of the the mode and mean scores for the computer science students and the respondents of this study can be found in Table 20.

Training Teachers Received

Twenty-two (25.6 percent) of the respondents indicated that they have had no training of any kind in computer use. Of the 64 respondents who have had training, 40 (62.5 percent) received at least some of their training through in-service workshops, 32 (50.0 percent) for college credit, and 20 (31.3 percent) for non-credit.

Even though respondents were asked to indicate the number of hours spent in computer training, it was clear that some indicated credit hours while others did not indicate the amount of time at all. For this reason it is suspected that the number of hours is lower than the actual number spent in computer training. The number of hours spent taking computer training, for those who did provide the information, ranged from one hour all the way to 200 hours. How respondents received training and the number of hours spent receiving that training can be found in Table 21.

TABLE 20
Comparison of Mode and Mean Scores
of Respondents and Computer Science Students

BELIEF	HET (N = 85)		CSS (N = 38)	
	MODE	MEAN	MODE	MEAN
*24. A person today cannot escape the influence of computers.	SA 73.3	3.69	SA 71.1	1.37
25. Computers are beyond the understanding of the typical person.	D 53.5	3.27	D 44.7	3.47
*26. Credit rating banks are a worthwhile use of computers.	A 74.4	2.73	A 47.4	2.45
27. Our country would be better off if there were no computers.	SD 52.3	3.48	SD 81.6	4.82
28. Computers make mistakes at least 10% of the time.	D 40.4	2.64	D 42.1 SD 42.1	4.26 4.26
*29. Computers are a tool, just like a spoon or a filmstrip projector.	A 53.3	3.42	SA 50.0	1.58
*30. Computers will improve health care.	A 57.0	2.72	A 57.9	2.13
*31. Someday I will have a computer, or a computer terminal in my home.	A 44.2	3.05	SA 55.3	1.63
*32. Programmers and operators make mistakes but computers are, for the most part, error free.	A 54.7	2.91	A 44.7	1.97
33. Computers slow down and complicate simple business operations.	D 61.6	2.92	SD 50.0	4.13
*34. Computers will improve law enforcement.	A 57.0	2.94	N 39.5	2.32
35. A computer may someday take my job.	D 53.5	3.37	SD 36.8	3.95
36. Computers isolate people by preventing normal social interactions among users.	D 51.2	2.52	D 52.6	3.55
*37. It is possible to design computer systems which protect the privacy of data.	A 59.3	2.49	A 57.9	1.95
*38. Computers will replace low-skill jobs and create jobs needing specialized training.	A 53.5	2.55	A 44.7	2.42
*39. Computers will improve education.	A 67.4	2.94	A 57.9	2.13
*40. Computers will create as many jobs as they eliminate.	A 58.1	2.56	N 42.1	2.32

HET = Respondents in this study (Home Economics Teachers)
CSS = Computer Science Students

TABLE 21
 Computer Courses Taken by Respondents
 Reported by Frequency, Percent, and Range of Hours
 N = 64

COURSES	FREQUENCY	PERCENT	RANGE OF HOURS
For college credit	32	50.0	1 - 24
For non-credit	20	31.3	1 - 30
From computer dealer	9	14.1	1 - 12
Through extension	7	10.9	1 - 10
Self-taught	18	28.1	1 - 200
In-service training	40	62.5	1 - 8
Cotton Incorporated	1	1.6	16
District workshop	1	1.6	3
Students and other teachers	1	1.6	10
Friend	1	1.6	NR*

*NR = No Response

Teachers' Feelings About Computer Training

More of the respondents who have had computer training, 36 or 56.3 percent, felt that the training they had received would need periodic updating. Twenty-five (39.1 percent) felt that the training was adequate for their present needs and 24 (37.5 percent) felt that the training needed to give them more ideas for the classroom. Nineteen (29.7 percent) felt that the training they had received was inadequate. This information can be found in Table 22.

Crosstabs were run on the computer courses and how respondents felt about the course or training. As shown in Table 23, more respondents who received their training for non-credit rather than for credit felt it was inadequate. This was the case for 35 percent of the non-credit respondents as compared to 18.8 percent for those who received training for college credit. A larger percentage of the respondents who had received at least some of their training through extension indicated they felt that the training was inadequate. This was the case for three of the seven respondents, or 42.9 percent. Fourteen of the 40 respondents, 35 percent, who received their training through in-service and seven of the 20 respondents who received their training for non-credit felt it was inadequate. The largest percentage of those respondents who felt their training had been adequate received their

TABLE 22
Respondents' Feelings About Training Received
N = 64

FEELINGS	FREQUENCY	PERCENT
Adequate for present needs	25	39.1
Inadequate	19	29.7
Will need periodic updating	36	56.3
Needed to give more ideas for classroom use	24	37.5

TABLE 23
 Respondents' Feelings About Computer Training
 Categorized by Type of Training Received
 (N =64)

TYPE OF TRAINING	FEELINGS	FREQUENCY	PERCENT
COLLEGE CREDIT		32	50.0
	Adequate	13	40.6
	Inadequate	6	18.8
	Need periodic updating	25	78.1
	Need more classroom ideas	16	50.0
NON-CREDIT		20	31.3
	Adequate	10	50.0
	Inadequate	7	35.0
	Need periodic updating	12	60.0
	Need more classroom ideas	9	45.0
COMPUTER DEALER		9	14.1
	Adequate	6	66.7
	Inadequate	0	0.0
	Need periodic updating	5	55.6
	Need more classroom ideas	6	66.7
EXTENSION		7	10.9
	Adequate	2	28.6
	Inadequate	3	42.9
	Need periodic updating	3	42.9
	Need more classroom ideas	2	28.6
IN-SERVICE		40	62.5
	Adequate	17	42.5
	Inadequate	14	35.0
	Need periodic updating	21	52.5
	Need more classroom ideas	13	32.5
SELF-TAUGHT		18	28.1
	Adequate	7	38.9
	Inadequate	2	11.1
	Need periodic updating	9	50.0
	Need more classroom ideas	9	50.0
OTHER		4	6.3
	Adequate	3	75.0
	Inadequate	1	25.0
	Need periodic updating	3	75.0
	Need more classroom ideas	1	25.0

training from someone other than those listed in the questionnaire. This was true for three of the four, or 75 percent of the respondents. This training was through a district workshop, Cotton Incorporated, and from students and other teachers. Six of the nine respondents, 66.7 percent, who received their training from computer dealers also felt the training adequate. At least half of the respondents, except those who received their training through extension, felt they would need periodic updating. Three or 42.9 percent of the respondents who received their training through extension felt they would need periodic updating. A larger percentage of the respondents who received their training from computer dealers, 6 or 66.7 percent, and those who were self-taught, 9 or 50.0 percent, indicated they needed to have more ideas for classroom use.

Respondents were asked what computer subject ideas would be of interest if they could take a computer course. Individualizing instruction was chosen by 64 (74.4 percent) followed by how to use a computer 57 (66.3 percent) and review of available software 56 (65.1 percent). All of the respondents, with the exception of seven, chose more than one subject idea that would interest them. This information can be found in Tables 24 and 25.

Next the respondents were asked what would influence them to take a computer course. The number one reason reported by 81.4 percent (70) was a feeling that

TABLE 24
Subjects That Would Interest Respondents
to Take a Computer Course

SUBJECTS	FREQUENCY	PERCENT
Vocabulary	36	41.9
How to purchase a computer	30	34.9
Developing computer programs	36	41.9
Instructional supplement	48	55.8
Drill instruction	33	38.4
Individualized instruction	64	74.4
Budget management	43	50.0
Test generation	43	50.0
Inventory	43	50.0
Self-contained programs	34	39.5
Review of available software	56	65.1
Software evaluation	41	47.7
How to use a computer	57	66.3
Computers and human values	24	27.9
Advantages/disadvantages of computer based instruction	37	43.0

TABLE 25

Number of Subjects That Would Interest Respondents
to Take a Computer Course

NUMBER OF SUBJECTS	FREQUENCY	PERCENT
0	5	5.8
1	2	2.3
2	3	3.5
3	8	9.3
4	4	4.7
5	8	9.3
6	13	15.1
7	6	7.0
8	6	7.0
9	4	4.7
10	7	8.1
11	7	8.1
12	4	4.7
13	1	1.2
14	2	2.3
15	6	7.0
	<hr/>	<hr/>
	86	100.0

Mean = 7.419

"computer use could help build/improve their program" followed closely by the feeling that "students would benefit from computer use" reported by 77.9 percent (67). "Specific ideas given for use in the classroom with extended training" was selected by 67.4 percent (58). Table 26 shows what respondents indicated would influence them to take a computer course.

Respondents' Feelings Concerning Software

When respondents were asked if they had always been able to find quality software that fit into their program, 30 (55.6 percent) responded no while only 4 (7.4 percent) responded yes. Twenty (37.0 percent) of the respondents chose not to answer this question

Table 27 shows the problems that respondents had found with the available software in that it was "too expensive" (18 or 33.3 percent), and "does not fit easily into my program" (11 or 20.4 percent). "Low quality", "students do not enjoy working with it", and "documentation or training on how to use is not complete" was indicated by 6 or 11.1 percent of the respondents. The available software was "too rigid, not flexible enough" and "information on what is available and works well is difficult to find" was indicated by three or 5.6 percent of the respondents.

TABLE 26

Ideas that Would Influence Respondents
to Take a Computer Course

INFLUENCES	FREQUENCY	PERCENT
Being able to observe computer use in other classrooms, schools, or districts.	42	48.8
Specific ideas given for use in classroom with extended training.	58	67.4
Being paid for the training.	45	52.3
Feeling that students will benefit from computer use.	67	77.9
Time from teaching duty to take training.	49	57.0
Feeling that computer use could help build/improve program.	70	81.4
Feeling that I can master the computer.	49	57.0
Courses offered to be taught in our area in order to cut travel time.	2	2.3
Credit given on salary schedule for course.	1	1.2
Courses made available during the summer.	1	1.2

TABLE 27
 Software Problems Stated by Respondents
 (N = 54)

PROBLEM	FREQUENCY	PERCENT
Too expensive.	18	33.3
Low quality.	6	11.1
Does not fit easily into program.	11	20.4
Students do not enjoy working with it.	6	11.1
Too rigid, not flexible enough.	3	5.6
Documentation or training on how to use is not complete.	6	11.1
Information on what is available and works well is difficult to find.	3	5.6
Too detailed, involved, and boring.	1	1.9
Does not network.	1	1.9
No problems.	4	7.4

The respondents also indicated what they liked about the available software. (Table 28) However, 39 (72.2 percent) of the respondents did not respond to this question. Of those who responded to the question, 5 (9.3 percent) indicated that the software was "simple, easy to use" while 3 (5.6) indicated that the software was "fun, exciting".

Three (5.6 percent) of the respondents reported having 11 or more software programs in their departments, 8 (14.8 percent) having six to 10 programs, and 29 (53.7 percent) having 5 or less programs. This number might include some respondents who had no computer programs because the category was worded as "five or less". There was no category for respondents to mark zero programs. Fourteen (25.9 percent) of the respondents chose not to answer this item, possibly indicating they have no software programs in their departments. Only four (7.4 percent) of the respondents indicated they had developed software themselves.

When asked how much the respondents were willing to pay for software programs, 5 (9.3 percent) said \$20 or less, 17 (31.5 percent) said \$21 to \$40, 8 (14.8 percent) \$41 to \$60, and 1 (1.9 percent) said \$61 or over.

In some cases, respondents had used software programs cooperatively with other departments within their school. This was the case with 15 (27.8 percent) of the

TABLE 28
What Respondents Like About Software
(N = 54)

SOFTWARE LIKES	FREQUENCY	PERCENT
Students enjoy	2	3.7
Simple, easy to use	5	9.3
Variety of programs available	1	1.9
Makes converting recipes easier	1	1.9
Fun, exciting	3	5.6
Self-instructing	2	3.7
Good food and nutrition programs	1	1.9
NR*	39	72.2

*NR = No Response

respondents while 3 (5.6 percent) reported cooperative use with in-service teacher education library. One (1.9 percent) respondent reported using software cooperatively with the National Dairy Council.

Respondents listed a variety of favorite programs. Some of these included Grab-a-Byte, Print Shop, and Food Facts. The source of favorite programs listed by more of the respondents was the Dairy Council, with foods and nutrition being the subject area in which more respondents indicated using favorite programs. A listing of favorite programs of the respondents can be found in Table 29. Tables 30 and 31 list the sources of the favorite programs and the content area where the favorite programs are used.

When the respondents were asked if they were willing to exchange information with other teachers concerning software they had used, 66 (76.7 percent) said yes, and 77 (89.5 percent) indicated they would like to receive information from others concerning how software had been used in their programs.

Innovators or Early Adopters

According to the literature review concerning the purchase of home computers, innovators or early adopters were middle-aged, had more education, and had more experience with technical products/services. If this research base can be applied to users of computers, then

TABLE 29
 Favorite Programs Reported by Respondents
 (N = 54)

PROGRAM	FREQUENCY	PERCENT
Grab-a-Byte	9	16.7
Print Shop	5	9.3
Food Facts	3	5.6
Snackmaster	1	1.9
Nutrition Vol I	1	1.9
Microcook	1	1.9
Eat Smart	1	1.9
Meats	1	1.9
Apple Works	1	1.9
Super Text	1	1.9
Apple Writer	1	1.9
Bankstreet Writer	1	1.9
Super Text	1	1.9
Grade Book	1	1.9
Teacher's Pal	1	1.9
Report Card	1	1.9
Apple Grade	1	1.9
Cross Word Magic	1	1.9
BSW	1	1.9
NAS	1	1.9
Coin-Coordinated Occupational Information Network	1	1.9
NR*	36	66.7

*NR = No Response

TABLE 30
Sources of Favorite Programs
Reported by Respondents
(N = 54)

SOURCE	FREQUENCY	PERCENT
Dairy Council	8	14.8
MI	1	1.9
Data IV	1	1.9
Apple Computer Company	1	1.9
Bell and Howell	1	1.9
MEEC	1	1.9
NR*	45	83.3

*NR = No Response

TABLE 31
Content Area In Which Favorite Programs Used
(N = 54)

CONTENT AREA	FREQUENCY	PERCENT
Foods and Nutrition	12	22.2
All	8	14.8
Food Service	2	3.7
Department Management	1	1.9
Family Relations	1	1.9
HERO	1	1.9
Careers	1	1.9
NR*	37	68.5

*NR = No Response

users of computers should have the same or similiar characteristics to those who purchase home computers.

Of the 54 respondents who indicated computer access at school, 32 or 59.3 percent were between the ages of 31 and 50. A larger percentage, 56.3 percent, of the respondents who were between 31 and 50 years of age reported using computers as compared to 43.7 percent for nonusers. See Table 32.

The next characteristic that was examined was that of educational level. Generally, respondents who were computer users did have higher education levels, except those with a masters degree plus 15 credits. The two highest degrees had an equal percentage of users and nonusers, and can probably be explained by the small number of respondents in each of those groups.

As shown in Table 33, the computer users had a higher percentage of respondents who held a masters degree, 66.7 percent as compared to 33.3 percent for nonusers, a bachelors plus 15 credits, 63.2 percent as compared to 36.8 percent for nonusers, and a bachelors degree, 60.0 percent as compared to 40.0 percent for nonusers. The nonusers had a higher percentage of respondents who held a masters plus 15, 66.7 percent as compared to 33.3 percent for users. An equal percentage of users and nonusers held a doctorate or 60 credits, and a masters plus 30 credits.

TABLE 32
 Percentage of Respondents
 With Computer Access at School
 Categorized by Age

AGE RANGE	USERS (57.4%)		NONUSERS (42.6%)	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
20 - 25	1	50.0	1	50.0
26 - 30	6	60.0	4	40.0
31 - 35	4	50.0	4	50.0
36 - 40	8	72.7	3	27.3
41 - 45	4	44.4	5	55.6
46 - 50	2	50.0	2	50.0
51 - 55	5	71.4	2	28.6
56 - 60	0	0.0	0	0.0
61 and over	1	100.0	0	0.0
NR*	0	0.0	2	100.0

*NR = No Response

TABLE 33
 Percentage of Respondents
 With Computer Access at School
 Categorized by Education Level

EDUCATION LEVEL	USERS (57.4%)		NONUSERS (42.6%)	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Bachelors	9	60.0	6	40.0
Bachelors + 15	12	63.2	7	36.8
Masters	6	66.7	3	33.3
Masters + 15	2	33.3	4	66.7
Masters + 30	1	50.0	1	50.0
Doctorate or 60 credits	1	50.0	1	50.0
NR*	0	0.0	1	100.0

*NR = No Response

In looking at years of teaching experience, the group of users had a slightly larger percentage who had taught for 11 or more years, 52.0 percent as compared to 48.0 percent for the nonusers. The users also had a slightly higher percentage, 56.3 percent, who had taught for five to 10 years as compared to 43.7 percent for computer nonusers. (See Table 34) Thus, the characteristics of innovators being middle-aged, having more experience, and having more education seems to be the same for respondents in this study.

Another means used to see if the respondents might be classified as innovators or early adopters was a list of 20 technical products/services which was included in the questionnaire. This was the list from Dickerson and Gentry (1983) plus the two statements, items 19) electronic networks and 20) compact disc player. The statement, "use automated teller machines", from the original Dickerson and Gentry list, was inadvertently omitted from the questionnaire.

As shown in Table 35, computer users were more likely to have used 10 or more of the technical products/services; however, two nonusers indicated using 14 or more of the products/services as compared to one computer user. Although these differences are slight, this

TABLE 34
 Percentage of Respondents
 With Computer Access at School
 Categorized by Number of Years Taught

NUMBER OF YEARS	USERS (57.4%)		NONUSERS (42.6%)	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
1 or less	3	75.0	1	25.0
2 - 4	6	75.0	2	25.0
5 - 10	9	56.3	7	43.7
11 or more	13	52.0	12	48.0
NR*	0	0.0	1	100.0

*NR = No Response

TABLE 35
Multiple Users of Technical Products/Services

NUMBER USED	USERS (57.4%)		NONUSERS (42.6%)	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
0	3	42.9	4	57.1
1	1	100.0	0	0.0
2	0	0.0	1	100.0
3	1	50.0	1	50.0
4	2	50.0	2	50.0
5	4	80.0	1	20.0
6	5	71.4	2	28.6
7	5	55.6	4	44.4
8	1	50.0	1	50.0
9	1	33.3	2	66.7
10	6	66.7	3	33.3
11	2	100.0	0	0.0
13	1	100.0	0	0.0
14	1	50.0	1	50.0
15	0	0.0	1	100.0

finding does contrast with the findings of Dickerson and Gentry (1983). They found that adopters were more likely to have used the most products/services.

Dickerson and Gentry (p. 232, 1983) stated that of the products/services listed, programmable pocket calculators and video television games were most similar in function to home computers. Adopters in their study were more likely than non-adopters to have used these two products. It was found in this study that users of computers also were more likely than nonusers to have used programmable pocket calculators and video television games. See Table 36 and 37.

Another finding of Dickerson and Gentry (1983) was that adopters were less likely to have used communication innovations such as speed dialing and alternative long-distance telephone systems. In this study a larger percentage of computer nonusers than users did indicate having used alternative long-distance phone service; however, a larger percentage of users than nonusers indicated having used speed dialing.

In summary, respondents in this study, who had computer access and were computer users, were more likely to have been middle-aged and have had more teaching experience than nonusers. Also, users were more likely to have held a masters, a bachelors plus 15 credits, or a bachelors degree. Nonusers were more likely to have held a

TABLE 36
 Technical Products/Services Used

PRODUCT/SERVICE	USERS (57.4%)		NONUSERS (42.6%)	
	#	%	#	%
Telephone answering service	6	54.5	5	45.5
Call waiting/ call forwarding	9	64.3	5	35.7
Income tax statements computer prepared	3	75.0	1	25.0
Automatic bill paying	2	50.0	2	50.0
Automatic bank deposits	7	58.3	5	41.7
Microwave oven	26	60.5	17	39.5
Pocket calculator	27	60.0	18	40.0
Alternative long- distance phone company	3	42.9	4	57.1
Cable television services	13	52.0	12	48.0
Automatic garage door opener	4	57.1	3	42.9
Entertainment channel	9	64.3	5	35.7
Digital watch or clock	23	57.5	17	42.5
Programmable pocket calculator	3	60.0	2	40.0
Video tv games	14	66.7	7	33.3
Speed dialing on telephone	7	58.3	5	41.7
Digital computer panel in car	3	50.0	3	50.0
Credit cards	25	61.0	16	39.0
Video recorder	19	61.3	12	38.7
Electronic networks	2	100.0	0	0.0
Compact disc players	1	20.0	4	80.0

TABLE 37
 Previous Experiences with Technical
 Products/Services
 As Reported by Dickerson and Gentry

PRODUCT/SERVICE	ADOPTERS (N=301) PERCENT	NON-ADOPTERS (N=338) PERCENT
Telephone answering service	14.9	8.9
Call waiting/Call forwarding	16.9	13.0
Computer prepared income tax statements	38.5	30.5
Automatic bill paying	22.3	16.3
Automatic deposits	33.9	23.1
Microwave oven	56.8	30.4
Pocket calculator	95.0	85.8
Alternative long-distance phone service	14.0	14.2
Cable television services	47.8	38.5
Automatic garage door opener	32.9	22.2
Entertainment channel	38.2	28.7
Digital watch or clock	85.4	74.9
Programmable pocket calculator	44.5	20.4
Video TV games	49.5	22.8
Speed dialing on telephone	12.0	12.1
Digital computer panel in car	7.0	3.6
Credit cards	87.7	77.8
Video recorder	18.3	9.5
Use automated teller machine	48.8	39.9

masters degree plus 15 credits. There was no difference in the percentage of users and nonusers who held either a masters plus 30 or a doctorate or 60 credits. Although a small percentage of nonusers reported using the most technical products/services (15), a larger percentage of users were more likely to have used 10 or more of the products/services. Therefore, it would seem that the characteristics of adopters in the Dickerson and Gentry study (1983) are very similiar to the characteristics of users of computers in this study.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter includes a discussion of results in this study and the implications to educators who have the responsibility of planning computer training for others. In addition, areas in which further research might be beneficial will be discussed.

Conclusions

Now that this study has been completed, what information has been learned? A discussion of each of the research questions will now be undertaken.

Are Computers Being Used For Classroom Instruction, and If So How?

Of the respondents who indicated computer access at school, 31 or 57.4 percent, reported using computers in the classroom. The most frequently reported uses were for games, drill, individualizing instruction, word processing, and students' grades. As was expected from the literature review, more respondents, 55.6 percent, indicated using computers in the subject area of foods and nutrition.

A major point that is emerging in the literature is the relationship between access and use (Dronka, 1985).

Although teachers in this study reported access, the amount of time actually spent using computers was very small. As most computer users readily admit, one must invest a considerable amount of time in learning how to use a computer prior to gaining its full advantage. While it is apparent that many teachers are integrating computer use into their classrooms, it is time for studies to be done to determine how computers can be of the most benefit to students. Information from these studies, along with details of how computers and software are used, would give other teachers ideas for classroom use. In addition, this would allow teachers to decide if their students could benefit from the same type of use.

What Reasons Are Reported For Not Using Computers?

Even though 54 respondents had access to computers at school, 23 reported not using computers at all. A variety of reasons were given. The reason most often reported dealt with software inadequacy. Also reported by a large percentage of respondents as reasons for not using computers were "software was too expensive", "did not feel comfortable with computers", "did not have time for computers", and "did not know how to use computers".

The report of inadequacy and high cost would suggest a need for research and development of software to meet the needs of the particular subject areas being

taught. In addition, a method of sharing information on how teachers are using current software would be beneficial. This would allow those interested in a particular software program to become familiar with the possible uses of the program without incurring the expense of purchasing the program.

What Are Teachers' Beliefs About Computers?

Overall, the respondents indicated positive attitudes concerning computers. For the most part, the modal scores of the respondents in this study and the computer science students reported in the Ellsworth and Bowman (1982) study fell in the same categories.

The fact that scores for home economics teachers and computer science students were similar would seem to indicate that computers are not a big mystery to home economics teachers. Many teachers are aware of the advantages of using computers, and are actively using them in their classroom. The reasons given by many other teachers indicate that with needed training they, too, might utilize computers in their classrooms.

What Training Have Teachers Received Before and After Graduation In Computer Use, and From Whom Is/Was Training Obtained?

Many respondents in this study had received computer training in a variety of ways. More than half had

received at least some of their computer training through in-service workshops. The next most often reported methods of training were for college credit, non-credit, and self-taught.

This suggests that educators who are responsible for teacher training/updating could help by offering courses in computer training. Since teachers are at various stages of learning, this training would need to be set up to meet the teacher's individual needs. Periodic updating would allow teachers to progress at their own pace with time to put into practice what they have learned. At each updating, new ideas for classroom computer use should be introduced. In this way teachers can share how computers and software have been used successfully in classrooms.

What Are Teachers' Feelings Concerning This Training, and What More Training Do They Feel Is Needed:

A majority of respondents felt that the computer training they had received would need periodic updating. Also, they felt that they needed more ideas for using computers in the classroom.

Individualizing instruction, how to use a computer, and a review of available software were the reasons more respondents indicated would interest them if they could take a computer course. More respondents said that the

feeling that computers could help build/improve their programs would influence them to take a computer course. Feeling that students will benefit from computer use and specific ideas given for use in the classroom with extended training were other influences selected by a majority of the respondents.

Since such a large percentage of respondents received computer training through in-service workshops, this should suggest to educators who are responsible for teacher training/updating that programs concerning how to use computers, ideas for classroom use, and software reviews would be beneficial.

What Are Teachers' Feelings About: Their Needs In Computer Software; Exchanging Information Concerning Software; and Software Use Among Teachers?

The problems that more of the respondents reported concerning software were those of high cost and low quality. What respondents liked about the available software was that it was simple and easy to use.

More of the respondents had five or less software programs in their department, and a small percentage reported cooperative use of software with other departments within their school. Overwhelmingly, respondents indicated they would like to exchange software information with others.

This is the time that is most important for teachers to share information regarding computers and software programs. Educators could help by setting up a means of communication among the teachers and encouraging teachers who have had successful experiences with computers and software to share with others. As is true of other programs that have been set up to mentor younger teachers, the computer nonuser could greatly benefit from a formal linkage with a computer user. In this way the teacher who is struggling with the problems of computer use could take advantage of the experiences of the computer user without risk of costly and time consuming mistakes.

However, the fact still remains that there is not adequate software to meet the instructional objectives of Southern Arizona home economics teachers. Lacking the ability to keep records, most programs function as electronic texts. Moreover, "the child cannot go backward or forward, skip around, repeat, or bypass sections. The program is inexorably linear and sequential, and its lockstep, oppressive, didactic nature is like having the most intrusive teacher perched on your shoulder" (Rosegrant in Dronka, 1985, p. 7-8). As Michael (in Dronka, 1985, p. 8) concluded "the problems of old-fashioned CAI software are not inherent in the technology, but are inherent in the knowledge-or lack thereof-of people

who design the programs." Thus, it should be evident that there is a need for the development of high quality home economics software that would allow students to develop higher levels of cognitive and affective activity.

Are Teachers Who Use Computers In The Classroom More Likely To Be Middle-Aged, Have More Education, and Have More Experience With Other Technical Products/Services?

More respondents who were computer users were between the ages of 31 and 50 and had more years of teaching experience. Computer users were also more likely to have held a masters, a bachelors plus 15 credits, and a bachelors degree. Users of computers were less likely to have held a masters degree plus 15 credits. There was no difference in the percent of users and nonusers who held either a masters plus 30 credits or a doctorate or 60 credits. Users of computers in this study had more experience with other technical products/services than did the nonusers.

As has been true in other studies, (Roger, 1966; Labay and Kinnear, 1981; Dickerson and Gentry, 1983), the characteristics of age, education and experience (i.e. years of teaching) suggest that these teachers have their programs set up and now have time to experiment with computer use. The younger teacher probably is still trying to get his/her program running smoothly. These teachers

could greatly benefit from the more experienced teachers' integration of computers into the classroom.

Recommendations For Further Study

This section will discuss suggestions for replication of this study and areas for further research.

Suggestions for Replication

Should this study be replicated, the following suggestions are made.

- . The idea of forcing respondents to make a choice on the beliefs scale was a mistake. By removing the neither agree nor disagree category, comparisons to other groups was greatly hampered.
- . In item three many of the respondents did not indicate the number of computers that were available for use. It might be better to make this a separate item in the questionnaire.
- . In item 12 it is possible that respondents who had no software programs circled the five or less choice. An additional choice of zero programs should be included. It might be better to place this question before question eight. A note should be added directing the respondents to skip to question 16 if they have no software programs.

- . In item 41 many respondents did not indicate the number of hours they had invested in computer training. Again, it might be better to make this a separate item with a clearer explanation that the number of hours is to indicate the amount of time invested in computer training and not credit hours.

Areas For Further Study

The respondents in this study have indicated that they need and want high quality software which meets the needs of their individual classroom. Studies of what these needs are would give programmers valuable information that would help them to prepare better programs. Studies of the foods and nutrition software programs, which more respondents indicated having used, might also help in the development of quality software for other subject areas.

Studies should be done to identify and develop quality in-service workshops to provide training in how to use computers and to update any previous computer training. Workshops that provide teachers with examples of actual classroom use or allow teachers to observe computers being used in classroom should be explored.

It seems that a network for exchanging information concerning software is definitely needed. Teachers could help each other by reporting what software they have used

and how it was used. A summary of such software programs would help those who are thinking about purchasing software. If schools could not afford to obtain their own library of software programs because of the high cost, perhaps they could contribute to the purchase of programs for an in-service teacher education library, or encourage development of public domain software where users pay a fee for documentation and updates rather than the program itself. In this way teachers might have access to more programs than those at their own school.

Of the 32 respondents who did not have computer access at school, 81.2 percent indicated they would like to have computers in their classroom. A study of these teachers, once they have computer access, would be interesting to compare to see if their answers would differ from those of teachers in this study who had computer access.

Summary

This research project examined the extent of computer use in Southern Arizona home economics classrooms. The researcher looked at: 1) computer use by teachers, 2) reasons that were reported for not using computers, 3) teacher's beliefs about computers, 4) training received before and after graduation, 5) teachers' feelings concerning training, 6) available software, and 7)

characteristics of teachers who use computers for classroom purposes. It is hoped that the information collected through this research project will be beneficial to educators who are responsible for the training of teachers.

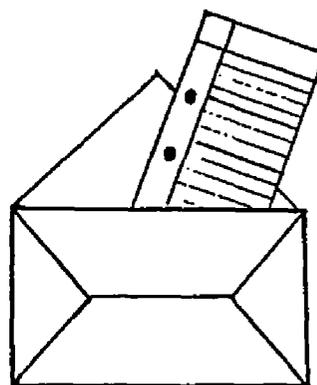
APPENDIX A: QUESTIONNAIRE

THE INSERVICE DISTANCE EDUCATION PROJECT

This survey is the first part of the Inservice Distance Education Project. The questionnaire deals with 1) computer access and use, 2) attitudes towards computers, 3) computer training, and 4) concerns with three types of educational innovations.

To complete the questionnaire you will need about 30 minutes. By completing the questionnaire it is assumed that your consent to participate in this part of the study has been given. All responses are confidential. Thank you for your time!

School of Family and Consumer Resources
University of Arizona
Tucson, Arizona 85721



Section I

This section is designed to gather information concerning computer access and use at school and at home. Please circle the number(s) of your selection and/or fill in the blanks as requested. In some cases you may be asked to skip several questions, so please read all directions carefully.

Q 1. Do you have personal computer(s) located in the home economics department?

1. NO
2. YES

Q 2. Are computers in your school available for your classroom use?

1. NO
2. YES

IF YOU DO NOT HAVE ACCESS TO COMPUTERS AT SCHOOL
PLEASE GO TO QUESTION 16

Q 3. What brand(s) is/are the computer(s)? Please indicate the number of each that is available.

<u>BRANDS</u>	<u>NUMBER</u>
1. TEXAS INSTRUMENTS	___
2. APPLE	___
3. IBM	___
4. COMMODORE	___
5. ATARI	___
6. TRS (RADIO SHACK)	___
7. KAYPRO	___
8. OTHER (PLEASE NAME) _____	___

Q 4. In which content area(s) do you use the computer? (Circle ALL the numbers that apply)

1. CHILD DEVELOPMENT
2. CONSUMER EDUCATION
3. FAMILY RELATIONS
4. FOODS AND NUTRITION
5. HOUSING AND INTERIOR DESIGN
6. TEXTILES AND CLOTHING
7. OTHERS (PLEASE LIST) _____

- Q 5. In the content area(s) named in question 4, how much time per week for each class is allowed for computer use?

SMALL means less than 1 hour
 MEDIUM means 1 hour to 1 hour 59 minutes
 LARGE means 2 hours to 2 hours 59 minutes
 EXTENSIVE means 3 or more hours

Amount of time per week
 (Circle your answer)

1. CHILD DEVELOPMENT	SMALL	MEDIUM	LARGE	EXTENSIVE
2. CONSUMER EDUCATION	SMALL	MEDIUM	LARGE	EXTENSIVE
3. FAMILY RELATIONS	SMALL	MEDIUM	LARGE	EXTENSIVE
4. FOODS AND NUTRITION	SMALL	MEDIUM	LARGE	EXTENSIVE
5. HOUSING AND INTERIOR DESIGN	SMALL	MEDIUM	LARGE	EXTENSIVE
6. TEXTILES AND CLOTHING	SMALL	MEDIUM	LARGE	EXTENSIVE
7. OTHER (Please list)	SMALL	MEDIUM	LARGE	EXTENSIVE

- Q 6. How do you use the computer? (Circle ALL the numbers that apply)

1. DRILL
2. TUTORING
3. INDIVIDUALIZING INSTRUCTION
4. INVENTORY
5. GROCERY RECORDS
6. WORD PROCESSING
7. BUDGET RECORDS
8. STUDENTS' GRADES
9. TEST GENERATION
10. TESTING OF STUDENTS
11. GAMES
12. PROMOTIONAL FLYERS
13. SIMULATIONS
14. DEVELOPMENT OF SOFTWARE
15. AFFECTIVE LEARNING
16. OTHER (PLEASE LIST) _____

- Q 7. If you have computer(s) available but do not use them, why? (Circle ALL the numbers that apply)

1. I DO NOT HAVE TIME
2. AVAILABLE SOFTWARE IS INADEQUATE
3. AVAILABLE SOFTWARE IS TOO EXPENSIVE
4. COMPUTER USE DOES NOT FIT INTO MY PROGRAM
5. I DO NOT KNOW HOW TO USE COMPUTERS
6. I DO NOT FEEL COMPUTER USE IS OF BENEFIT TO MY PROGRAM
7. I DO NOT FEEL COMFORTABLE WITH COMPUTERS
8. OTHERS (PLEASE EXPLAIN BRIEFLY)

- Q 8. Have you ALWAYS been able to find quality software that fits your program?

1. NO
2. YES

Q 9. What problems, if any, have you found with the available software?
(Circle ALL the numbers that apply)

1. TOO EXPENSIVE
2. LOW QUALITY
3. DOES NOT FIT EASILY INTO MY PROGRAM
4. STUDENTS DO NOT ENJOY WORKING WITH IT
5. TOO RIGID, NOT FLEXIBLE ENOUGH
6. DOCUMENTATION OR TRAINING ON HOW TO USE IS NOT COMPLETE
7. OTHERS (PLEASE STATE)
8. NO PROBLEM

Q10. What have you found that you like about the available software?

Q11. Have you developed software programs?

1. NO
2. YES

Q12. How many different software programs do you have in your department?

1. 5 OR LESS
2. 6 TO 10
3. 11 OR MORE

Q13. How much are you willing to pay for software programs?

1. \$20 OR LESS
2. \$21 TO \$40
3. \$41 TO \$60
4. \$61 OR OVER

Q14. Have you used software programs cooperatively with (Circle ALL the numbers that apply)

1. OTHER DEPARTMENTS WITHIN YOUR SCHOOL
2. COOPERATIVE EXTENSION
3. IN-SERVICE TEACHER EDUCATION LIBRARY
4. OTHER SCHOOLS
5. OTHERS (PLEASE LIST) _____

Q15. Please list your favorite programs, where you can obtain them, and the content area in which you use each program.

PROGRAM

SOURCE

CONTENT AREA IN WHICH USED

Q16. In the following list of technical products/services, please circle ALL the numbers of those which you use.

1. TELEPHONE ANSWERING SERVICE
2. CALL WAITING/CALL FORWARDING
3. INCOME TAX STATEMENTS COMPUTER PREPARED
4. AUTOMATIC BILL PAYING
5. AUTOMATIC BANK DEPOSITS
6. MICROWAVE OVEN
7. POCKET CALCULATOR
8. ALTERNATIVE LONG-DISTANCE PHONE COMPANY
9. CABLE TELEVISION SERVICES
10. AUTOMATIC GARAGE DOOR OPENER
11. ENTERTAINMENT CHANNEL
12. DIGITAL WATCH OR CLOCK
13. PROGRAMMABLE POCKET CALCULATOR
14. VIDEO TV GAMES
15. SPEED DIALING ON TELEPHONE
16. DIGITAL COMPUTER PANEL IN CAR
17. CREDIT CARDS
18. VIDEO RECORDER
19. ELECTRONIC NETWORKS
20. COMPACT DISC PLAYERS

IF YOU HAVE ACCESS TO COMPUTERS AT SCHOOL, PLEASE GO TO QUESTION 19

Q17. Would you like to have a computer in your classroom?

1. NO → PLEASE BRIEFLY EXPLAIN YOUR ANSWER IN THE SPACE BELOW
2. YES

Q18. How would you like to use a computer? (Circle ALL the numbers that apply)

1. DRILL
2. TUTORING
3. INDIVIDUALIZING INSTRUCTION
4. INVENTORY
5. GROCERY RECORDS
6. WORD PROCESSING
7. BUDGET RECORDS
8. STUDENTS' GRADES
9. TEST GENERATION
10. TESTING OF STUDENTS
11. GAMES
12. PROMOTIONAL FLYERS
13. OTHERS (PLEASE LIST) _____

Q19. Do you have a computer at home?

1. NO
2. YES → PLEASE GO TO QUESTION 21

Q20. Do you plan to purchase one in the next year?

- IF YES, PLEASE ANSWER
QUESTION 21 AND THEN
GO TO SECTION II
1. NO → IF NO, PLEASE GO TO SECTION II
2. YES

Q21. What brand of computer do you have at home, or what brand do you plan to purchase?

1. TEXAS INSTRUMENTS
2. APPLE
3. IBM
4. COMMODORE
5. ATARI
6. TRS (RADIO SHACK)
7. KAYPRO
8. OTHER (PLEASE NAME) _____

Q22. If you have a computer in your home, do YOU use it?

1. NO → IF NO, YOU MAY GO TO SECTION II
2. YES

Q23. How do YOU use your home computer? (Circle ALL the numbers that apply)

1. GAMES
2. WORD PROCESSING
3. FAMILY RECORDS
4. MEAL PLANNING
5. LISTS
6. RECIPES
7. SCHOOL WORK
8. MONEY MANAGEMENT
9. OTHERS (PLEASE LIST)

Section II

This section is designed to determine attitudes toward computers. Please read each statement and then circle the symbol that represents your feeling. The choices are: strongly agree (SA), agree (A), disagree (D), or strongly disagree (SD).

BELIEFS ABOUT COMPUTERS

Please indicate if you strongly agree (SA), agree (A), disagree (D), or strongly disagree (SD), by circling the appropriate symbol.

- | | | | | |
|---|----|---|---|----|
| 24. A person today cannot escape the influence of computers. | SA | A | D | SD |
| 25. Computers are beyond the understanding of the typical person. | SA | A | D | SD |
| 26. Credit rating data banks are a worthwhile use of computers. | SA | A | D | SD |
| 27. Our country would be better off if there were no computers. | SA | A | D | SD |
| 28. Computers make mistakes at least 10% of the time. | SA | A | D | SD |
| 29. Computers are a tool, just like a spoon or a filmstrip projector. | SA | A | D | SD |
| 30. Computers will improve health care. | SA | A | D | SD |
| 31. Someday I will have a computer, or a computer terminal in my home. | SA | A | D | SD |
| 32. Programmers and operators make mistakes but computers are, for the most part, error free. | SA | A | D | SD |
| 33. Computers slow down and complicate simple business operations. | SA | A | D | SD |
| 34. Computers will improve law enforcement. | SA | A | D | SD |
| 35. A computer may someday take my job. | SA | A | D | SD |
| 36. Computers isolate people by preventing normal social interactions among users. | SA | A | D | SD |
| 37. It is possible to design computer systems which protect the privacy of data. | SA | A | D | SD |
| 38. Computers will replace low-skill jobs and create jobs needing specialized training. | SA | A | D | SD |
| 39. Computers will improve education. | SA | A | D | SD |
| 40. Computers will create as many jobs as they eliminate. | SA | A | D | SD |

Section III

This section of the questionnaire will ask for information concerning computer training that you have had or may obtain in the future. Please respond by circling the number(s) of your selection and/or filling in your response.

- Q41. Have you taken a course(s) about computers? (Circle ALL the numbers that apply and indicate the number of hours)

<u>COURSE</u>	<u>HOURS</u>
1. FOR COLLEGE CREDIT	___
2. FOR NON-CREDIT	___
3. FROM COMPUTER DEALER	___
4. THROUGH EXTENSION	___
5. THROUGH IN-SERVICE TRAINING	___
6. SELF-TAUGHT	___
7. OTHER (PLEASE LIST) _____	___

IF YOU HAVE NOT HAD COMPUTER COURSES, PLEASE GO TO QUESTION 43

- Q42. If you have had course(s) about computers, do you feel this training (Circle ALL the numbers that apply)

1. ADEQUATE FOR YOUR PRESENT NEEDS
2. INADEQUATE
3. WILL NEED PERIODIC UPDATING
4. NEEDED TO GIVE MORE IDEAS FOR CLASSROOM USE
5. OTHERS (PLEASE LIST) _____

- Q43. If you could take a course about computers, please circle ALL the numbers of those things that would be of interest.

1. VOCABULARY
2. HOW TO PURCHASE A COMPUTER
3. DEVELOPING COMPUTER PROGRAMS
4. INSTRUCTIONAL SUPPLEMENT
5. DRILL INSTRUCTION
6. INDIVIDUALIZED INSTRUCTION
7. BUDGET MANAGEMENT
8. TEST GENERATION
9. INVENTORY
10. SELF-CONTAINED PROGRAMS
11. REVIEW OF AVAILABLE SOFTWARE
12. SOFTWARE EVALUATION
13. HOW TO USE A COMPUTER
14. COMPUTERS AND HUMAN VALUES
15. ADVANTAGES/DISADVANTAGES OF COMPUTER BASED INSTRUCTION

Q44. Please circle ALL the numbers of those things that would influence you to take a computer course.

1. BEING ABLE TO OBSERVE COMPUTER USE IN OTHER CLASSROOMS, SCHOOLS, OR DISTRICTS.
2. SPECIFIC IDEAS GIVEN FOR USE IN CLASSROOM WITH EXTENDED TRAINING
3. BEING PAID FOR THE TRAINING
4. FEELING THAT STUDENTS WILL BENEFIT FROM COMPUTER USE
5. TIME OFF FROM TEACHING DUTY TO TAKE TRAINING
6. FEELING THAT COMPUTER USE COULD HELP BUILD/IMPROVE MY PROGRAM
7. FEELING THAT I CAN MASTER THE COMPUTER
8. OTHERS (PLEASE LIST) _____

Q45. Would you be willing to exchange information with other teachers concerning software you have used?

1. NO
2. YES

Q46. Would you like to receive information from others as to how they are using/have used software in their program?

1. NO
2. YES

Q47. How are computers and software funded at your school? (Circle ALL the numbers that apply)

1. MATCHING FUNDS
2. VOCATIONAL EDUCATION FUNDS
3. GRANTS
4. TECHNOLOGICAL FUNDS FOR UPDATING CURRICULUM
5. FUND RAISING
6. INDUSTRIAL SUPPORT
7. TRADE ASSOCIATION AID
8. LOCAL DISTRICT FUNDING
9. NOT FUNDED
10. OTHER (PLEASE LIST) _____

Section IV

This section contains questions which will be used to describe you, your school, teaching experience, and teaching responsibilities. Please indicate your answer by circling the number(s) of the appropriate response, or by filling in your answer.

Q48. What grade(s) do you teach? (Circle ALL the numbers that apply)

1. 6
2. 7
3. 8
4. 9
5. 10
6. 11
7. 12
8. ADULT EDUCATION

Q49. What is the enrollment of your school?

1. 150 OR LESS
2. 151 - 500
3. 501 - 1000
4. 1001 - 1500
5. 1501 - 2000
6. 2001 - 2500
7. 2501 OR MORE

Q50. In what home economics content area(s) do you teach?

1. CHILD DEVELOPMENT
2. CONSUMER EDUCATION
3. FAMILY RELATIONS
4. FOODS AND NUTRITION
5. HOUSING AND INTERIOR DESIGN
6. TEXTILES AND CLOTHING
7. ALL
8. OTHERS (PLEASE LIST) _____

Q51. How many classes of home economics do you teach per day?

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6 OR MORE

Q52. How many preparations do you have per day?

1. 1
2. 2
3. 3
4. 4
5. 5 OR MORE

Q53. Do you teach in any other subject area?

1. NO
2. YES IF YES, PLEASE LIST _____

Q54. Check your age range

1. 20 - 25
2. 26 - 30
3. 31 - 35
4. 36 - 40
5. 41 - 45
6. 46 - 50
7. 51 - 55
8. 56 - 60
9. 61 OR OVER

Q55. What is the total number of years you have taught?

1. 1 OR LESS
2. 2 - 4
3. 5 - 10
4. 11 OR MORE

Q56. How long have you been at your present school?

1. 1 OR LESS
2. 2 - 4
3. 5 - 10
4. 11 OR MORE

Q57. What best describes your highest level of academic work?

1. BACHELORS
2. BACHELORS PLUS 15 CREDITS
3. MASTERS
4. MASTERS PLUS 15 CREDITS
5. MASTERS PLUS 30 CREDITS
6. DOCTORATE OR 60 CREDITS

Q58. Including yourself, how many teachers are there in your home economics department?

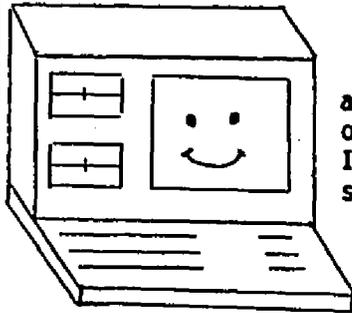
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6 OR MORE (HOW MANY) _____

Q59. Do you have access to VCR equipment at school or at home?

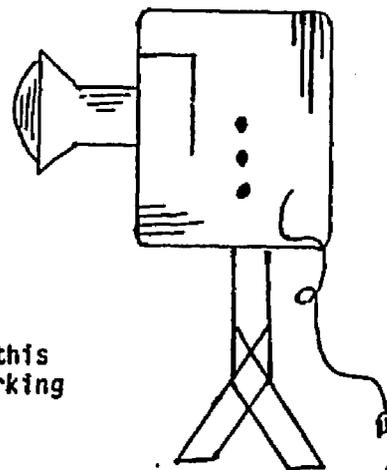
1. NO
2. YES

Q60. Is the VCR equipment you have access to

1. BETA
2. VHS



Is there anything else you would like to add about your feelings towards computers or the use of electronic media in education? If so, please make your comments in the space provided below.



Thank you very much for completing this questionnaire. We look forward to working with you in the future.

APPENDIX B: CORRESPONDENCE



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE
SCHOOL OF FAMILY AND CONSUMER RESOURCES

January 6, 1986

Dear

As you may be aware, the State Department of Education is considering computer literacy as a requirement for teacher certification. In order that programs might be designed to be of greatest benefit, we need to find out where our teachers currently stand in this area.

Enclosed with this letter is an indepth questionnaire on computer access and use, attitudes towards computers, computer training, and your experiences with different technologies. This questionnaire will assist us in preparing appropriate inservice materials on computer technologies. In addition, you will be assisting us in providing data for Karen Paris' thesis project. Karen is working towards a Master of Science degree in Home Economics Education and would appreciate your help.

As a small incentive for filling out the questionnaire, we have enclosed a tea bag for your use. We hope that you will enjoy a cup or glass of tea while completing the questionnaire.

Please be assured that all of your responses will be kept completely confidential. As in any research project, your responses will be assigned a code number; thus, when the research results are reported your name will not be connected with any responses you make on this questionnaire.

It is very important that we receive the completed questionnaire as soon as possible. We would definitely like the questionnaire returned by January 22, 1986. Enclosed with this assessment instrument is a return envelope for your convenience. If you have questions, please feel free to call Kathy or Karen at 621-1834. Thank you for completing the questionnaire. We appreciate the time and energy you have given for this task.

Sincerely,

Maureen E. Kelly

Maureen E. Kelly
Assistant Professor
Home Economics Education

Karen L. Paris

Karen L. Paris
Graduate Student
Home Economics Education

Kathryn L. Sweedler

Kathryn L. Sweedler
Research Assistant
Home Economics Education



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE
SCHOOL OF FAMILY AND CONSUMER RESOURCES

Dear

Like the post office, neither sleet nor snow nor holiday mail has kept us from delivering this long promised questionnaire to you. Voilà! ¡Viva!

Many of you have asked for more information about this Inservice Distance Education Project (InDEProject). The purpose of this project is to experiment with delivering home economics inservice education to teachers at a distance from campus. Delivery of this instruction will take three different forms: correspondence with written materials, computer disks, and video tapes. This year the instruction will focus on advanced methods of teaching.

In order to consider you as a participant and to place you in a delivery group, we need to know your experience with different technologies. Enclosed with this letter is the assessment instrument that you will need to complete to be considered for project participation. You will also find a return envelope for your convenience.

In addition, we have taken the liberty of incorporating with the assessment instrument an indepth questionnaire on computer access and use, attitudes towards computers, and computer training. This questionnaire will assist us with the InDEProject, as well as providing data for Karen Paris' thesis project. Karen is working towards a Master of Science degree in Home Economics Education and would appreciate your help.

Please be assured that all of your responses will be kept completely confidential. As in any research project, your responses will be assigned a code number; thus, when the research results are reported your name will not be connected with any responses you make on this questionnaire.

As a small incentive for filling out the questionnaire, we have enclosed a tea bag for your use. We hope that you will enjoy a cup or glass of tea while completing the questionnaire.

It is very important that we receive the completed questionnaire as soon as possible. We would definitely like the questionnaire returned by January 22, 1986. If you have questions, please feel free to call Kathy at 621-1834. Thank you for completing the questionnaire. We appreciate the time and energy you have given for this task!

Sincerely yours,

Maureen E. Kelly
Maureen E. Kelly
Assistant Professor
Home Economics Education

Karen L. Paris
Karen L. Paris
Graduate Student
Home Economics Education

Kathryn L. Sweedler
Kathryn L. Sweedler
Research Assistant
Home Economics Education



THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

COLLEGE OF AGRICULTURE
SCHOOL OF FAMILY AND CONSUMER RESOURCES

Dear friend,

We haven't heard from you! Did you receive the questionnaire from us in January? Could you have thrown it out? We realize that this past month has probably been very hectic, but we need your response.

Regardless of whether or not you use, enjoy, or believe in educational technology your opinion is critical to this study. The information gained by your response will be used to guide state home economics education priorities in the next few years.

Enclosed you will find another copy of the questionnaire and a return envelope. And in case you aren't a tea drinker, have a cup of coffee on us as you complete the questionnaire. As always, if you have a question please feel free to call us. You can reach Kathy and Karen at 621-1834.

We appreciate your participation and look forward to hearing from you soon. Thank you for your time and effort!

Sincerely yours,

Maureen E. Kelly
Maureen E. Kelly
Assistant Professor
Home Economics Education

Karen L. Paris
Karen L. Paris
Graduate Student
Home Economics Education

Kathryn L. Sweedler
Kathryn L. Sweedler
Graduate Assistant
Home Economics Education

Dear Friend,

Do you deserve three pats, two pats, or one pat?

Three pats from us if you have completed and mailed the questionnaire we recently sent you.

Two pats if you will fill out the questionnaire and mail it back now.

One pat if you will call Kathy or Karen at 621-1834 and ask for another questionnaire to be mailed to you.

Inservice Distance Education Staff

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