DEVELOPMENT, DELIVERY, AND EVALUATION OF A COMPUTER-ASSISTED LEARNING UNIT IN CONSUMER HOUSING

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BY

CONNIE JOHNSON LINSCHEID, B.A.

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We hereby recommend that the Thesis prepared under our supervision by Connie Johnson Linscheid entitled Development, Delivery, and Evaluation of a Computer-Assisted Learning Program in Consumer Housing

be accepted as fulfilling this part of the requirements for the Degree of Master of Science.

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To protect individuals we have covered their signatures.

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CHAPTER I

INTRODUCTION

The rapidly expanding population of students in classrooms today has created a need for changes in the teaching methods employed by the classroom teacher (Uffelman, 1978). This increasing student-teacher ratio was cited as an obstacle to optimum effectiveness in teaching students in a 1977 survey of 400 home economics teachers in Illinois (Spitze, 1977).

The diversity of student backgrounds, increasing student-teacher ratio and the wide range of student entry level skills create challenges for the classroom teacher today. Teachers are challenged to meet the needs of these students in an individualized manner while facing these obstacles:

- -increased amount of subject matter content
- -less time to teach the material due to more students
- -varied student needs and abilities
- -societal expectations that students retain more information

Home economics curriculum lends itself to the individualization of teaching students with varied learning characteristics. As student needs and learning characteristics increasingly vary, implementation and delivery of appropriate individualized methods of instruction in the home economics classroom will become more important.

Statement of the Problem

The traditional lecture, demonstration, discussion, and related activity methods of teaching do not always meet the needs of students of varying backgrounds and learning abilities. Classroom teachers are challenged to meet these needs while also contending with the increasing student-teacher ratio, diversity of student experience, wide range of student skill, and less time to spend individually with each student.

Research shows that self-controlled learning experiences, such as use of self-instructional learning centers, televised instructional programs, and computer-assisted learning, have been used effectively to meet students' needs (vonFeldt, 1978). Computer-assisted learning, one of the newer methods used for individualized instruction, can be implemented only if appropriate related instructional materials and computer programs are developed. At the present time these materials and programs are lacking in the area of consumer housing.

Purposes of the Study

The overall purpose of this study was to develop, implement, and evaluate a computer-assisted instructional unit on Kitchen Space and Dimensions for an introductory consumer housing course.

The specific purposes of the project were:

a. Identify basic concepts, principles, facts, terms, and federal regulations related to kitchen space and dimensions.

b. Develop a handbook with the topic outline, related information, references, and learning procedures for the students to follow.

c. Design a computer program including an item pool for pre and post-testing, a system which will allow students to test their content knowledge by retrieving the test items, selecting a response choice, and getting instant feedback on correctness of their answers.

d. Develop a handbook which will give students step by step instructions on how to use the computer terminal for studying the course content.

e. Implement the CAI Kitchen Space and Dimensions unit for field testing.

f. Evaluate the effectiveness of the computer program using pre and post-test scores and a student evaluation instrument.

Scope

This study was delimited in the following way:

The content dealt specifically with a unit of consumer housing on Kitchen Space and dimensions including movement space, traffic flow, work triangles, floor plans, storage space, standard kitchen cabinet dimensions, Federal Housing Authority standards, and other related space and dimensions information.

This study was limited in the following ways:

The computer-assisted learning program was delivered to an existing group of students enrolled in HECS 3713 Introduction to Family Housing in the College of Nutrition, Textiles, and Human Development at the Texas Woman's University.

Effectiveness of the program was determined by statistical analysis of student pre and post-test unit scores correlated with scores on the Student CAL Evaluation Questionnaire. There was no control group.

CHAPTER II

A REVIEW OF THE LITERATURE

Computer-assisted learning is a term applied to the use of a computer in a classroom as a supportive tool for instruction as opposed to a primary source of instruction (Dick, 1969). Computer-assisted learning has been described as the involvement and interaction of the student, teacher, and subject matter directly supported by the instructional component--the computer--inside the classroom (vonFeldt, 1977).

Individualized learning is increasingly popular in higher education, as it enables students to progress at their own pace, moving on to the next topic in a syllabus when they are ready for it, bound neither by the clock nor by the pace of other students.

This review of literature examined research related to computer-assisted learning as a way of individualizing instruction. The review was concerned with the early development of computer-assisted learning, the effectiveness of computer-assisted learning in relation to the improvement of instruction for students, and potential uses of computer-assisted learning in the home economics classroom. An examination of literature revealed that

little has been written in the past on computer-assisted learning in the field of home economics.

Development of Computer-Assisted Learning

Computer-assisted learning is a recent development in education. Computers have been a part of society for a much longer time period, but the development of computer-assisted learning in education has existed for only twenty years (Suppes, 1978). It was about fifteen years ago when educational institutions first began to support the intensive use of computers for educational purposes (vonFeldt, 1977).

Technology in the computer field has made an impact on computer-assisted learning's growth as more complex studies have been conducted concerning learning and behavior. The data processing industry has increased, thus bringing more computer equipment into government offices and schools. Through the years computer-assisted learning has gone through several stages of development to its current important place in education.

Origin of Computer-Assisted Learning

As early as 500 B.C. man has attempted to develop a system which permitted him to record numbers and solve simple equations. Within our present century society began to solve these problems with the use of the electronic computer developed in 1946 (David, 1978). In

1926, Dr. Sydney Pressey proposed that mechanization be integrated into the instructional process, and in 1954 B.F. Skinner implemented that proposal with his design of the teaching machine.

The complex evolution of computing skills and instructional techniques came together in the 1950's when a professor at Columbia University challenged IBM researchers to develop a system using a computer to simulate a teaching machine (David, 1978). Computer-assisted learning was first used by members of the computer industry who in the late 1950's used a computer to train their own personnel (Suppes and Macken, 1978). In 1960 the first computer-assisted instruction (CAI) language was developed enabling educators to directly develop their own curriculum ideas into computerized programs (McLagan and Sandborough, 1977).

Early computer systems used a teletype device for students to enter responses on the keyboard while answers or questions from the computer were printed on paper moving through the feed mechanism of the teletype. Later instructional computers used a Cathode Ray Tube (CRT) with a keyboard to display information from the computer and receive entries from the student respectively. The

CRT is a television-like screen which displays literal as well as diagrammatic material presented by the computer.

In 1963 a study was conducted on computer-assisted learning at Stanford University in California by Suppes and Atkinson in which elementary school children were tutored in mathematics at the university campus. Computer-assisted learning was first used in an elementary school in 1965 when 41 fourth-grade children where given arithmetic lessons on a daily basis in their classroom (Suppes, 1972).

Between 1964 and 1966 the National Science Foundation project at Dartmouth College and at the Massachusetts Institute of Technology was seriously conducting the beginnings of computerized classroom instruction (vonFeldt, 1977). According to a study at Stanford University, computer-assisted learning became an integral part of an elementary school curriculum when, in 1966, a mathematics and reading program was introduced using "individualized tutorial computer-assisted learning" over an extended period of time.

College level computer programs were developed in 1967 at Stanford University when an entire Russian language course was administered on a computer. The conclusion was made from a statistical evaluation that

positive academic achievement and a high positive student interest level resulted (vanCampen, 1970).

In 1959 a computer-assisted learning project entitled PLATO (Programmed Logic for Autcmatic Teaching Operations) was developed at the University of Illinois in cooperation with Control Data Corporation and the National Science Foundation (Lacey, 1977). Axeen (Note 1) reported that the PLATO system was used to teach undergraduate students the use of the library. Students were taught basic library skills on a computer terminal screen. After the material had been reviewed, students had the opportunity to apply these newly learned skills in their course work. Blitzer and Boudreaux (1969) reported on the use of the PLATO system in teaching nursing. In 1971 Coombs and Peters used the PLATO system to investigate the use of CAL in role playing techniques. Students interacted with the computer via a terminal to study roles relating to specific character studies. Computer games were also programmed using the PLATO system both for instructional purposes and for enjoyment.

Numerous computer-assisted learning programs and projects were completed at the Computer-Assisted Instruction Laboratory of the University of Texas in the 1970's (Homeyer, Note 2: Castleberry and Lagowski, 1970). Some of the projects included chemistry programs,

mathematics programs, and a comparison project between computer-assisted learning and traditional teaching methods.

Studies from 1964 to 1968 by Atkinson and Wilson cited three factors as related to the continued growth and implementation of computer-assisted learning in the classroom. The following three factors were reported: (a) the application of mechanized technology molded computer-assisted learning into more specific program patterns; (b) research evolving from psychologists like B. F. Skinner caused an increase in sophisticated educational technology; and (c) aid of the Federal Government to education via the National Science Foundation was provided for the purpose of conducting research in computer education.

Current Uses of Computer-Assisted Learning

Many new developments have evolved in the area of computers in education within recent years. No longer are computers limited to research and administrative purposes. The use of computers is becoming increasingly popular in various environments including the home. Because of this exposure, many students are becoming more familiar with this method of learning. A statement made by a former state governor thirteen years ago may

well come true within this century: "In time every educated individual in American society will come into contact with computers (Chafee, 1967, p. 14).

Educators, then, in the field of home economics will need to incorporate this method of instruction into their classrooms since students are going to be exposed to computers more and more. Trends toward individualization of instruction have supported the move toward use of computers in the classroom and primarily for the purpose of computerized learning (vonFeldt, 1977). It has been estimated that the national expenditure for education exceeded $100 billion annually by the end of 1979, with $5 billion spent on CAL. In an 18 month study on CAL in the United States, Boeing Computer Services (Renshaw, 1972) found that over 50 different CAL systems or languages were in use presently or in development. They also found that many leading universities have a separate CAL center or laboratory devoted to research and development, several elementary and secondary schools have implemented CAL programs, and that the U.S. Office of Education, the National Science Foundation, and the military are spending millions of dollars on CAL research and development.

It was estimated in 1974 that nearly 2 million college level students used computers in their classes

(Long, 1975). Twenty-six percent of all secondary schools currently use computers for instructional purposes (Darby, 1976).

Computing has been described as a new and fundamental resource in the same sense as reading, writing, and mathematics, and thus deserves an equal status in the academic curriculum (Luehrman, 1974). Fletcher (1975) concluded from reviews of present uses of computer-assisted learning that CAL at the secondary school and college level is about as effective as traditional instruction when used as a replacement. Hearings before the Subcommittee on Domestic and International Scientific Planning reported that the computer's role in aiding the handicapped is becoming an important concern for many in the field of CAL.

In 1975 nearly three-fifths of all secondary schools in the nation were using computers for educational purposes compared to one-third in 1970 (Seidel, 1980). A Congressional Science and Technology Subcommittee in 1977 reviewed the role of computers in education and recommended continued governmental leadership in this area.

The use of computer-assisted learning in the classroom has increased in recent years (Naval Personnel

Research and Development Center, 1975). The Carnegie Commission on Higher Education recommended an increase in 1973 in the use of electronic technology as a supplement or alternative to traditional teaching. The high cost of computer instruction and the resistance of some teachers to this type of technological assistance have prevented any widespread use of the computer in many educational fields, especially in home economics courses (Good and Sisler, 1975).

Two Types of Computer-Assisted Learning Systems

Although there are many educators that resist the use of computers in the classroom, the development of different computer systems continues. In reviewing the literature, the need to explain two of these computer-assisted learning systems was revealed. A distinction is made between two types of systems: adjunctive and mainline systems. The two systems represent the extremes of a continuum in the computerized learning process (Bunderson, 1974).

Adjunctive Systems

Adjunctive systems are defined by Bunderson (1974) as being in support of a regular classroom or laboratory instructional setting, and used for illustration of

quantitative relationships, simple simulation, or instructional review by means of drill, practice, or testing. The computer is utilized in this capacity as a teacher adjunct by simulating events, procedures, and experiments. It has been shown to effectively motivate students who have not responded well to traditional instructional methods (Bushnell and Allen, 1967).

Seldom does the adjunctive system deal with content which has not been introduced in class, but when new content is introduced, it is usually by discovery approach. This discovery approach method tends to place a great deal of the instructional burden upon the student (Bunderson, 1974).

Mainline Systems

The second type of computer-assisted system is designated as "mainline" because is supplants some or all of the usual teaching staff and classroom or laboratory facilities. This class of programs teaches new concepts and information, ideally in a highly effective and efficient manner (Bunderson, 1974).

Reference to the "tutorial" system is made by Bushnell and Allen (1968) in the same manner as Bunderson refers to the mainline system. The objective of the tutorial system is to assume the main responsibility of

the teacher for developing skill in the use of a given concept. Students are allowed to work at their own pace in an individualized manner with this system. The computer may act as evaluator, manager, tutor, and drill master, as well as a tool in problem solving (Bunderson, 1974).

Student Benefits of Using CAL

In 1967 the President's Scientific Advisory Committee challenged institutions to provide students with computer experience.

> In all fields where computing has been used, it has added a new dimension to education and has led the students to better comprehension of complex problems and greater insight into the meaning of quantitative expression. In these areas undergraduates have learned through preparation of and experimentation with computer programs of the care required to define a problem logically and fully, and the assumptions needed to obtain answers to complex problems. We predict that, in the future, almost all undergraduates will use computers profitably if adequate computing facilities are available (1967, pp. 7,8).

The benefits of using a computer to instruct students have been researched to a great extent within the ten years since that statement was made. These benefits of using CAL many times outnumber the benefits of teaching by traditional methods and adequately meet students needs as well (Seidel, 1980). With a relatively small number of students a given instructor

can be highly successful in teaching his/her subject. However, as the number of students increases without a simultaneous increase in teaching space, the teaching of the subject matter becomes more difficult and the instructor is faced with additional responsibilities. With such large classes of students the instructor is forced to devote less attention to an individual student's needs. In some classrooms the computer is used to help teach students who are having difficulty learning, or are more advanced, instructional materials (Darby, 1970; vonFeldt, 1977).

According to research by Lunetta and Blick (1973) comparing computer-assisted instruction of high school physics experiments with traditional laboratory experiments they found that the 80 CAI students learned more in one eighth the time and scored higher on test and assignments. The quality of learning by both CAI and traditional instructional methods is strongly affected by the quality of the instructional materials used (Simonsen and Renshaw, 1974).

There are many advantages of using computer-assisted learning cited in the literature. Among the major advantages of using this method of instruction and reasons for its near doubling growth and effectiveness

in the classroom within the last few years (Seidel, 1980; Charp and Altschuler, 1977) are its potential for providing individualized instruction to every student according to his capacity and at his own speed, and the ability to continually test and improve a lesson.

Advantages to using computers to aid instruction are described by vonFeldt (1977) as: (1) students receive an increased amount of teacher attention due to an increase in the amount of time made available to teachers when they utilize computer-assisted instruction in their classroom, (2) students learn at their own pace by individualized methods, and (3) learning time is reduced. Grimes (1977) adds that the computer is an extremely effective tool and, when used properly, it presents a realistic possibility for the improvement of instruction. As alternative methods of more effective instruction to increasing numbers of pupils are investigated, and the need for individualized instructional methods are recognized by educators, computer-assisted learning will become increasingly popular.

Motivational Benefits

One of the major concerns of educators has been that of motivating students to learn. When motivated, individuals perform better, scores are increased, and

students retain more information (Fletcher, Suppes, and Jamison, 1972).

CAL's learning characteristics require that computer programming designs be prepared in a systematic manner to provide for motivational interaction between the student and the curriculum. Positive results have been generated from several years of experimentation and research with computer-assisted learning curriculum and programs that are observable in the practical applications of CAL in the classroom. In pre-test and post-test results, CAL students have shown significant gains in the learning of reading and mathematics. These gains have been attributed to developments such as increased ability to individualize instruction and increased student motivation through interaction between the student and the computer program (Campbell, 1975).

Crandall (1975) reported on the sustained level of motivation evident in students working with CAL. He pointed out the value of the computer in helping "externally controlled" students to become more "internally controlled" individuals. In a study on the education of ethnic minorities, Crandall found that CAL helped students to reinforce the idea that learning outcomes were a result

of their own performance and not a result of some external control.

Of the few studies conducted on student attitudes toward computer-assisted learning, it has been revealed that this approach to learning is highly favored over traditional methods of instruction (Hartnett and Stewart, 1966; Mathis, Smith, and Hansen, 1970).

Benefit of Effectiveness

Alternative methods of providing more efficient instruction to increasing numbers of students were investigated by faculty members at the University of Delaware in 1973. Traditional quiz sessions and examinations did not provide for individualizing student progress nor did they provide for additional study and re-testing that would lead to more learning by more students (Uffelman, 1979). Procedures for testing were implemented on a computer using randomly selected test items printed as individualized tests in all subject areas offered at the University.

In 1974 tests were administered to 4,428 students by computer terminals at the Educational Resource Center on the University of Delaware campus. Two-thirds of the subjects reacted favorably to the survey. In 1976 tests were administered to 14,926 students again by

computer. Survey results were reported as highly favorable (90%) when students were asked to respond to questionnaire items related to their experience with CAL (Uffelman, 1979). Grades for final examinations in one course using CAL showed greater improvement than did grades in the same course taught during the preceeding semester by a traditional lecture and hourly examination mode.

Personal satisfaction from computer-assisted learning gained from an understanding of material presented, ability to learn at one's own pace, and the ability to interact with the material presented, help to promote an active learning interest in students in the educational process.

Use of computers in education has had records of both success and failure. One of the many successful schools in implementing the potential of computer-assisted learning is the Chicago school system which placed a computer-assisted learning system in ghetto schools in 1970 to teach reading and mathematics. By 1971, eight months later, each child had advanced approximately 1.1 years in his/her learning ability (Alderman, 1978).

Strong and consistent achievement gains in learning were reported by Hartnett and Stewart (1966) when computer-assisted learning was implemented. The study involved 120 students enrolled in basic studies courses at the University of South Florida. Sixty students enrolled in college courses taught by traditional methods of instruction were paired with sixty students of equal ability taking the same course by independent study. Comparison of their performance on an objective, final examination was made in six courses having at least 15 pairs of matched-ability students. The findings revealed significant differences between the two groups of students in two of the six courses favoring the independent study group. The mean performance on the final examination was higher in every case for those taking the course on an independent study basis. In two of the six courses the difference was large enough to be significant at the .05 level of confidence.

At the University of California, Irvine, the computer is presently used to teach approximately 300 students each quarter about introductory physics. Questions are developed by the instructor and programmed for storage in the computer. Students call the program up on the computer terminal screen and choose the correct

answer by punching in their response. The only resemblance to a course taught by conventional methods of instruction is a weekly summary lecture, a recommended textbook, and a printed final exam in the classroom. Students' reactions to this method of instruction were highly favorable. Test scores revealed a marked improvement in grades when compared with students taking the same course by traditional methods (Kiester, 1978).

Rather than seeking to revise or add to the normal curriculum, Suppes (1972) used computers to assist elementary teachers with the basic aspects of teaching mathematics. The introductory CAL course in Russian taught at Stanford University proved so popular that it greatly increased the enrollment in that subject; comparison with an identical course taught by traditional methods showed that students in the CAL course mastered more of the subject matter and fewer dropped out.

Fletcher and Atkinson (1972) found that elementary students who received supplementary CAL instruction in reading scored an average of .6 grade levels higher at the end of the year than students who received normal classroom instruction only. Morrison and Richardson (1972) found in comparison studies of students taking German by CAL methods that CAL was equally effective

when compared with such other methods of instruction as individual tutoring, language laboratory and media such as programmed instruction and filmstrips.

Chesser and Parkhurst (1977) estimated from research of computer use in the home economics field that "in family life education courses, the computer's full potential remains untapped." In an effort to capitalize on the value of the computer's use in working with personality inventories, rating scales, and checklists traditionally approached by a paper and pencil method, they programmed a computerized personality inventory. One-hundred and five students enrolled in a marriage and family relationships course at the University of Nebraska, Lincoln, participated in the study. Evaluation results from the control and experimental group were compared. Data indicated that students and teachers found the computerized inventory to have several advantages when compared to the manual inventory version. Students felt free to work at their own pace, voiced a sense of accomplishment, and could choose a convenient time to complete the inventory: "Positive acceptance voiced by the students indicated... that sensitivity to student's needs and abilities has its rewards." (Chesser and Parkhurst, 1977).

Teacher Benefits of Using CAL

As research has shown, student's grades and their attitudes about learning have improved greatly when CAL was used in the educating process. Most teachers desire to meet student's needs with sensitivity, and many of them are apprehensive about this new approach to teaching because they fear the computer eliminates the humanistic aspect of instruction in the classroom. Falzetta (1973) reported that computers can be valuable tools of humanization if educators use them to relate the curriculum to student's lives and to make schools more desirable places in which to learn. Grimes (1977) echoed this statement and added that the computer is capable of matching student needs with curriculum requirements and prescribing and presenting individualized and randomized exercises while providing teachers with evaluative data about each student's progress. Critics of computerized learning often attack the computer as being dehumanizing, yet in spite of this, the idea has been advanced that it is the use to which technology is put and not technology itself which is dehumanizing (Gerard, 1967; Suppes, 1970).

Computers in education allow teachers to create new and innovative quality instruction (vonFeldt, 1977).

Efficient cognitive instruction can be provided to the student through the computerized learning process. Findings on computer-assisted learning show that teachers are freed to deal with the affective matters such as students' values and feelings as well as creating a situation in which the teacher can serve in a satisfying matter as a human interface between students and machines (Falzetta, 1973).

Teachers are Still Needed

The newness of computer-assisted learning added to the existing suspicions, uncertainties, and the early claim of technologists that the computer would replace the classroom teacher, created a stir of resistance among educators. Because of these factors and others, many educators have resisted the use of a computer in the classroom as an alternative method of instruction, though positive results of its effectiveness with students were shown in research studies (Grimes, 1977).

Reports by developers of CAL materials increasingly state their recognition of the need for teachers not to be replaced by computers. Falzetta (1973) states that teachers are needed to facilitate learning and to merge the affective and cognitive domains in such a manner as to produce and enhance achievement and performance. As

stated by Bunderson (1975), CAL is defficient in its ability to answer the needs of students who ask "why" questions, implying that these needs must be met by teachers.

The computer in education is recently becoming one of the most important segments of the educating process. As educators learn more about computers, and the many benefits they offer to students and teachers, the fear of using them will diminish. Within the next two years, many of the major problems that have inhibited the acceptance of CAL will be solved (Simonsen and Renshaw, 1974).

Instructional Benefits

Computer instruction is a medium designed to promote efficiency in instruction. The computer allows for individualized instruction to occur without compromising the position of the student or the teacher in the instructional process. Computer instruction allows for maximum student interaction with the medium and still recognizes the teacher as an integral part of the instructional process. Educators have experienced more time for preparing instructional materials, consulting students, and conducting their own educational research afforded when computer-assisted instruction and learning is implemented.

Potential Uses for CAL

Computer-assisted learning is approaching the point where it will become widely accepted as a major teaching medium for providing individualized instruction in all facets of education. Many researchers in the field of computer-assisted learning agree that computers have the capacity to facilitate individualized instruction and that their flexibility permits a variety of instructional strategies including its use as a tool in aiding a student in the study of course material. Educators strongly believe that computers have the potential to enhance the productivity of the individual teacher and improve the quality of the learning process (Hammond, 1972). Computers have the potential of directing thousands of students to instruct themselves in various areas (vonFeldt, 1977).

Description of Testing

The most common area the computer is involved in is that of allowing students to study for exams (Uffelman, 1978). Suppes (1969) identifies the three kinds of activities comprising computer-assisted testing as drill and practice, tutorial, and interactive or problem-solving activities.

Tailored testing, another computer-assisted testing feature, is defined as any procedure by which particular items or groups of items are selected and administered to an individual based on an estimate of his/her ability (Suppes, 1969). Standardized tests are commonly administered to groups of students and thus are not written with the individual student in mind. Tailored testing seeks to provide the same information as group testing but presents fewer test items and tailors the items to the individual student's ability and need.

Value of Testing

Comparison of a computer-assisted learning system with the traditional methods of instruction reveals significant differences in the information flow and understanding of the material being taught (Zinn, 1965). An investigation of the effects of exposure to computer-assisted testing as an effective instructional method and its effects on attitudes toward computer-assisted learning was conducted in 1975 by Cartwright and Derevensky. Five computer quizzes consisting of 20 randomly drawn multiple choice questions were individually administered to subjects. Results showed that subjects exposed to computer-assisted testing had significantly more favorable attitudes toward computer testing than subjects not exposed to the computer method.

Good and Sisler conducted a study involving 50 students at Oklahoma State University enrolled in a basic clothing construction course. Twenty-six students in the control group took an examination by the traditional paper and pencil method at a required time period. The twenty-four students in the experimental group took the examination by computer at the time they desired. Data from the questionnaire revealed that the students preferred computer-generated testing to paper and pencil testing. Advantages to taking the examination by computer were indicated by the students as these: the computer seemed to take less time than the traditional method, the questions on the computer were easy to read, and test scores on the computer were available as soon as the student had completed the test (Good and Sisler, 1975).

Mathis, Smith and Hansen (1970) assessed the attitudes of 64 randomly selected college students at Florida State University before and after they experienced CAL. Testing was done by paper and pencil procedures. The Brown Scale (Brown, 1966), the Semantic Differential (Osgood, Succi, and Tannenbaum, 1957), and the Scale to Study Attitudes Toward College Courses (Hand, 1953) were used to measure student attitudes toward CAL. Two experimental groups were given 45 minutes of CAL

dealing with general psychology topics while two control groups read the same information from a textbook for 45 minutes. The researchers concluded that exposure to CAL, including testing, produced positive attitudes toward this type of system. They further concluded that CAL programs have a major advantage over other teaching methods, machines, or programmed texts in that the program can be designed for a particular student.

Implications for Research and Development

Interest in the potential value of computers as an aid to education continues to rise, but ambiguities and confusion as to the computer's place in terms of its instructional role keep educators from making full and confident use of it (Seidel, 1980). Although the success of the computer in educating the individual student has been reported in research studies, a consistent framework for evaluating computers in the instructional process is yet needed.

Future Developments

Individualized instruction has been a functioning part of the educational realm for many years, but educators agree that it is still difficult to deal with the extremes of slow and fast learners. Through conscious efforts of CAL developers, a close student/teacher

relationship has resulted from usage of computer-assisted learning. Taylor (1975) listed the following six efforts of CAL developers which have affected the development of that close relationship which also have had a great impact on future CAL developments:

1. Combining the specialized skills of curriculum development and computer programming in the development of CAL lessons.

2. Developing and field testing all curriculum materials in the classroom setting.

3. Systematizing the presentation of materials in a manner that is psychologically sound without regimenting the student.

4. Conducting personable computer dialogue with students in the instructional program.

5. Designing instructional programs for branching and randomizing so that they meet the individual needs of all students in all segments of the curriculum.

6. Handling the basic skills instruction, based on sophisticated principles of positive consistent reinforcement.

In the 1960's use of CAL was growing. In the 1970's the expected continuation of present CAL growth and new developments did not fully evolve as expected. At present

the elements of computer games and simulations are being developed which should have an evolutionary effect on the computer's instructional power. As the computer becomes more prevalent in the educating process, future generations of students and teachers will be involved with this instructional method.

Current developments in CAL are undergoing a maturation process. New techniques are continually being researched and developed (David, 1978). Although many CAL projects have been functioning for well over fifteen years, no clearcut advantages as to their effectiveness have been made. There are studies which show the advantages of using CAL over traditional instructional methods but the universal acceptance of these advantages by educators has not been made.

The new development of home "personal" computers will expose students more and more to this method of learning. During the past five years, technological advances have encouraged the purchase of computers for personal use in the home. At the 1977 Personal Computing Meet in Chicago it was estimated that in 1977 30,000 personal computers were in use across the country (Witz, 1978). In 1978 more than 200,000 home computers were sold (Cuppola and McGuire, 1979). It was estimated

that nearly one-half million home computer units were sold in 1979--double the number sold in 1978 (Flanagan, 1979). "In time, computers may well become complete household nerve centers" (Cuppola and McGuire, 1979). It is important for educators to be aware that individuals are being exposed to computers more and more in everyday life and should make them a more common feature in the classroom.

In the home economics field, CAL is very new. There have been few studies done on CAL in this field. Future research and development is needed as the time is approaching when the computer will become as much a part of the learning as "the pen, or blackboard, or text" (David, 1978). The educational premise of CAL lies in its ability to individualize and personalize the instructional process and to stimulate those students whose needs are not met by traditional methods of instruction.

Summary

As the computer has become more prevalent as part of the instructional strategy, it will continue to become an integral tool of learning for future generations of students as well as teachers. The tutorial and the drill and practice methods will continue to be used in solving particular types of instructional problems.

The use of the computer has increased steadily throughout the past 20 years. At the present time not only the frequency of use but the ways in which it can be used have been expanded. According to research findings, computer-assisted learning does have a positive effect on student's achievement. The benefits of computer-assisted learning are not restricted to the deprived or slower learners, rather to every student interested in learning, or not interested in learning by traditional methods of instruction. Students have varying needs, abilities, and interests which are not always met by traditional instructional methods.

New techniques are continually being developed and evaluated in education. There is little evidence in the literature that research in the area of home economics and computer-assisted instruction has been done extensively--or even at a minimum level. Need for research, development, and application of CAL in the area of home economics is evident.

Two studies conducted in the field of home economics were cited earlier in this chapter. Chesser and Parkhurst (1977) utilized the computer in conducting a personality inventory among students enrolled in a marriage and family relationship course at the University of Nebraska,

Lincoln. Survey data indicated that these students highly favored the computerized method to the traditional paper and pencil inventory version. Good and Sisler (1975) conducted a study at Oklahoma State University involving 50 students enrolled in a basic clothing construction course. Questionnaire responses of students taking an examination by the traditional paper and pencil method were compared to questionnaire responses of students taking the exam by computer. Questionnaire data revealed that the students preferred computer testing to paper and pencil testing.

CHAPTER III

RESEARCH PROCEDURE

The procedure for this study consisted of developing the computerized learning unit, developing and administering the Kitchen Space and Dimensions Pre and Post-Tests, developing the Computer-Assisted Learning Unit Manual, developing and administering the Student CAL Evaluation Qeustionnaire, and analyzing the data related to the tests scores and evaluation questionnaire.

Sample Population

The population for this study consisted of 25 students enrolled in the HECS 3713 Introduction to Family Housing course at the Texas Woman's University. This course is offered to undergraduate students who may or may not be home economics education majors. This one semester course is required for the home economics education majors.

The participants consisted of 25 female students at the sophomore, junior, and senior college levels enrolled in this housing course.

Obtaining Consent

In compliance with rules of the Human Research Committee of the Texas Woman's University, students

signed a consent form (see Appendix A) to use information collected during the process of this unit.

Developing the CAL Unit

A computer-assisted learning program was developed for this research project. The program consisted of an instructional unit on Kitchen Space and Dimensions, a 92 item test pool over the unit content stored in the computer, and an evaluation instrument.

Identification of the Content

The content for the unit outline consisted of purposes, objectives, concepts, facts, terms, references, and the pre and post-tests on the topic: Kitchen Space and Dimensions. The material for this unit was identified by a review of the following:

- -Basic Competencies for Beginning Teachers of Vocational Home Economics and the Conceptual Framework for Homemaking Education in Texas.
- -Texas Education Agency adopted textbooks for secondary vocational homemaking courses.
- -College level housing textbooks containing information pertaining to space and dimensions in kitchens.

Concepts, facts, terms, and skills pertaining to the housing unit on Kitchen Space and Dimensions (KSD) formed

the basis for the KSD Pre and Post-Test item pool. The topics and subtopics included were:

1. Laws and regulations
2. Building Codes and requirements thereof
3. Zoning Laws
4. Floor Plans
   a. measurements necessary
   b. the drawing and its features
   c. types of plans
   d. advantages/disadvantages of each floor plan
   e. required passage space
5. Work triangle
   a. purposes
   b. the work center
   c. advantages/disadvantages of each floor plan in relation to zoning and traffic areas
   d. dimensions of the work triangle
6. Location of the kitchen in the home
   a. effect on traffic areas
   b. in relation to other activities
7. Counters
   a. dimensions
   b. requirements in relation to FHA standards
   c. location for use
8. Eating Areas
   a. location in the home
   b. in relation to floor plans
   c. HUD standards
9. Shelving and Cabinets
   a. dimensions
   b. FHA standards
   c. requirements in relation to kitchen floor plans
10. Storage Areas
11. Kitchen modifications for the handicapped
   a. height modifications
   b. space modifications
12. Space
   a. for movement and travel
   b. for working
   c. for cabinets

For more information see Appendix B, pages 85-87 of the manual.

Pre and Post-test scores were rated in the following manner:

Range of % Correct	Rating
100-94%	Very High (VH)
93-88%	High (H)
87-82%	Average (A)
81-76%	Low (L)
75- 0%	Very Low (VL)

Each student was required to have a KSD Pre and Post-test score in order to receive credit for the housing unit. Though a score was required on each test, only the Post-test was actually used to calculate a final grade in the unit.

Developing Part I of the Manual

The Computer-Assisted Learning Unit Manual (see Appendix B) is a student's use guide to direct them through the computerized learning program. Information contained within the manual was developed to aid the student in completing the housing unit.

Part I of the Manual is the Kitchen Space and Dimensions Learning Unit which was developed to help the

student learn about kitchen space and dimensions. Part I includes:

1. An introduction to the Kitchen Space and Dimensions unit including a description of the unit content.

2. Directions for student use of the manual.

3. Identification and explanation of the purposes and objectives of this housing unit.

4. A list of concepts, facts, and terms related to this housing unit which the student can identify and study in the reference material available.

5. A complete list of reference materials for student's use in obtaining information related to the concepts, facts, and terms of Kitchen Space and Dimensions. These reference materials were held on reserve in the school library for student's use in enhancing their learning of the information in this unit.

6. Guidelines for successful completion of the computerized learning program including: a description of specific criteria the student must complete to receive credit for the unit.

7. Additional information in Part I consists of a Record of Progress sheet, a student/teacher contract form, and directions for taking the KSD Pre and Post-Tests.

Developing Part II of the Manual

Part II of the manual was developed to teach students how to use the computer to study for the Kitchen Space and Dimensions Unit Post-Test. Part II of the manual includes:

1. A description of the computerized learning program including an introduction to computer-assisted learning.

2. A statement of the purpose of the program including how the computer can be of benefit to the student in the individualized learning process.

3. A "How to Use" self-instructional section for the student includes: a step-by-step self-teaching instructional guide for the student, questions frequently asked when learning to use the computer, and related instructional material.

Developing the Computer Program

A simple computer program was designed using an already existing computer program entitled "Quest." The "Quest" system is a group of computer programs which allow the program developer to enter multiple-choice questions into a data base or computer file. This file is then stored within the main computer terminal until access to that particular program is needed. The Kitchen Space and Dimensions computer-assisted learning program consists of 92 multiple-choice test items. The students gained access to this computer program by entering specific source codes and numbers on a computer terminal keyboard. The items, stored in the computer, are then displayed on the terminal screen. The student then reads the multiple-choice question and selects an answer (lettered a, b, c, d, or e) and depresses the letter corresponding to that choice.

The purpose of the program is to (a) allow students to retrieve the KSD computer program and self-administer

a test over the items they desire, (b) keep an active record of the amount of time they spend at the computer and the number of times he/she used the terminal. Students could schedule time to use a computer terminal at their own convenience and were able to check their knowledge of the test items as often as they chose. Each student entered the computer under a personal identification number. The computer maintained a record of these two scores for each student according to the identification number entered by the student.

Administering the Computerized Learning Program

The Kitchen Space and Dimensions Computerized Learning Program was administered to the students in the following sequence with the use of a training session and the Computer-Assisted Learning Unit Manual.

Introduction

The computer-assisted learning unit was introduced to the students during the regular class meeting time for HECS 3713 Introduction to Family Housing. Students were allowed to select a code number from a list of given numbers. Each student wrote their name by the number they chose and made a record of this number for use on the Pre and Post-Tests, for logging into the computer, and for identification on the student evaluation questionnaire. The code numbers were placed in a sealed envelope until the research project was completed. The Post-Test scores were actually counted

toward the student's final grade in the course, and therefore, this information was obtained at the conclusion of the housing course after the project was completed.

KSD Unit Testing

Although some research studies have shown that students prefer to take tests by computer (Good and Sisler, 1975), this study employed the paper and pencil method of testing because the facilities available in the present computer system could not ensure independent student's work with computer-assisted testing.

Administering the Pre-Test

The 86 item KSD Pre-Test was administered to each student in written form in a supervised classroom. Students were told and shown how to take the paper and pencil Pre-Test in the classroom using standardized test response forms. This process is also described in the Computer-Assisted Learning Unit Manual.

CAL Unit Manual

A copy of the Computer-Assisted Learning Unit Manual was given to each student. Following a brief oral explanation of the manual and its use in this unit, each student signed the two copies of the CAL student/teacher contracts provided in the manual.

Training Session

The twenty-five students were then taken as a group to a bank of computer terminals located in the TWU Computer Center. With the aid of the CAL Unit Manual students learned how to use the terminals to test their knowledge of kitchen space and dimensions. A computer specialist was available to assist students who had any difficulty gaining access to the test item pool.

Administering the Post-Test

At the conclusion of the computer question study period (three weeks) the KSD Post-Test (identical to the Pre-Test) was administered to the students in the same manner as the Pre-Test was administered at the beginning of this unit.

The Student CAL Evaluation Questionnaire

The student CAL Evaluation Questionnaire consists of 53 items with a Likert type response mode, seven times with a yes-no response mode, and ten questions with an open-ended response mode. The open-end response items were included for formative curriculum evaluation and revision purposes.

The questionnaire items were designed to obtain information concerning: (a) student length and frequency of computer use, (b) student attitudes and perceptions

toward the computer-assisted learning unit, (c) student's previous experience using a computer, and (d) student suggestions for the improvement of the computer-assisted learning unit. For more information see Appendix C.

The Likert type items allowed students to express the degree to which they agreed or disagreed with 53 of the statements on the questionnaire. The degrees of responses were: Strongly Agree (5), Agree (4), Undecided (3), Disagree (2), and Strongly Disagree (1).

Students were given questionnaire variable scores by summing evaluation item responses within each of the fourteen variables for which the 70 questionnaire items were developed. This data were correlated with KSD Pre and Post-Test scores using Spearman Rank Correlations to identify relationships between test scores and evaluation questionnaire responses.

Field Test

A preliminary field test of the questionnaire, the computer program, and the manual were made during the summer school semester of 1980. Twenty graduate students enrolled in the course EDCI 5303 Problems in the Teaching of Mathematics pre-tested and evaluated the computer program and manual. Revisions in the questionnaire,

computer program, and the manual resulted from their responses and suggestions collected on an evaluation form.

Administration of the Student CAL Evaluation Questionnaire

Students completed the Student CAL Evaluation Questionnaire (see Appendix C) in class immediately after completing the KSD Post-Test. A total of ten evaluation questionnaires were returned.

Analysis of Data

Data from the Student CAL Evaluation Questionnaire and the KSD Pre and Post-Tests were analyzed by the following methods: Frequency Count Distributions, Spearman rho correlations, and correlated *t* tests.

The following relationships were investigated:

1. KSD Pre-Test scores and Student CAL Evaluation Questionnaire data.
2. KSD Post-Test scores and Student CAL Evaluation Questionnaire data.
3. KSD Pre/Post-Test gain scores and Student CAL Evaluation Questionnaire data.

The use of Frequency Distributions allowed an organizing of the data in order to identify significant relationships. Correlated *t* tests for matched data were appropriate because the data from each student's Pre-Test could be correlated with Post Test data, and Pre/Post-Test gain scores could be correlated with Student CAL Evaluation

Questionnaire data. Spearman rho correlation coefficients allowed each variable from the evaluation questionnaire to be paired with pre-test scores, post-test scores, and pre/post-test gain scores. $p < .05$ was used to determine significant relationships between the data.

CHAPTER IV

DATA ANALYSIS

Overview

Twenty-five undergraduate students participating in this study completed the Kitchen Space and Dimensions (KDS) pre and post-tests over the unit material in a supervised classroom setting. Pre and post-test scores were analyzed with a *t* test for dependent group means to determine significant differences.

After completing the unit post-test each student evaluated the Computer-Assisted Learning (CAL) program by completing the CAL Evaluation Questionnaire. The students' evaluation of the unit is reported in percentage and frequency distributions.

Data from the KSD pre and post-test scores and the student CAL Evaluation Questionnaire were analyzed to determine significant relationships among students' attitudes twoard the CAL program, students' use of the computer, and their success in the unit. Pre-test scores, post-test scores, and gain scores were correlated with students' questionnaire data using Spearman correlation coefficients.

Pre-test, Post-test, and Gain Scores

After validating and revising the original 92 test items, a total of 86 items were included on the KSD pre and post-tests. These items were stored in the computer for students' access for review, self-testing, and drill over the KSD unit material. Scores were derived for individual students by summing the number of correct responses to the 86 test items.

The pre and post-tests for this study were administered in the classroom. The results of a *t* test of students' pre-test and post-test scores are shown in Table 1.

Table 1

t Test of Students' Pre-Test and Post-Test Scores on KSD Exams

Test	M	SD	t
Pre	40.72	9.96	14.25*
Post	76.80	9.19	

Note. N=25.

*p .05.

The mean of the pre-test scores was 40.72 points while the mean of the post-test scores was 76.80 points

for the group of twenty-five students. The mean gain score was 36.12 points. A significant difference was found between the pre and post-test means at the .05 level.

Pre-test scores

The range in pre-test scores was 27 points with a high of 58 and a low of 31 points. Ten students received pre-test scores below 45 points, or 52 percent correct out of 86 total possible points.

Post-test scores

The range in post-test scores was 37 points with a high of 86 and a low of 49 points. Four students scored 86, or 100 percent correct on the post-test. The lowest pre-test score (31 points) was received by the student who also received one of the four highest post-test scores of 86 points.

Student Evaluation Questionnaire

Fourteen variables were identified to develop the Student CAL Evaluation Questionnaire (see Appendix C). Items were developed to collect data related to these variables. The fourteen variables and related items are:

Variable	Item
1. Attitude toward computer use	1,2,3*,4
2. Student's value of information in unit	5,6,7

3.	Value of CAL method	8*,9,10,11,12*,13, 14*,15,16,17,18*,47
4.	Value of computer's benefit	21,22,23,35,48,49
5.	Purpose of computer's use	30
6.	Perceived computer use	28,29*,31,32,33,34*
7.	Value of references	36,38,42
8.	Effectiveness of training	53
9.	Value of content	39
10.	Overall evaluation	43,44,45,46,57,59
11.	Read all the references	56
12.	Tried more than once to get computer working	51
13.	Computer worked first time	52
14.	Entry level computer experience	24,50,58

Note. *items which were negatively coded

The questionnaire included three types of response modes. There were 53 Likert type scaled items; there were seven items with a yes-no response mode, and ten open-ended questions. The open-ended questions were included for formative evaluation and revision of the computerized learning program.

Response values ranged from five (strongly agree), being the highest or most positive response, to one (strongly disagree), being the lowest or most negative

response. Of those items numbers 8, 12, 14, and 18 signified an interaction type learning style preference.

Data from the student's evaluation of the CAL KSD unit were analyzed using Spearman correlations. These findings are summarized in Table 2. Twenty-five of the correlations between the fourteen evaluation variables shown in Table 2 were found to be significant at the .05 level.

Table 2

Students' Evaluation of KDS-CAL:
Percentage and Frequency Distributions

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Attitude toward computer use	____	.34*	.44*	.68*	.05	.68*	.11	.34*	-.04	.64*	-.07	.22	.10	.04
2. Value of information in unit		____	-.05	.47*	-.08	.28	.28	.13	.35*	.34*	.47*	.24	-.06	-.44*
3. Value of CAL method			____	.50*	.06	.21	-.03	.46*	-.08	.51*	-.11	.08	.10	-.06
4. Value of computer's benefit				____	.03	.62*	.19	.28	.10	.86*	-.06	-.11	-.05	-.11
5. Purpose of computer's use					____	.23	.09	-.08	-.44*	-.13	-.30	.17	-.37*	-.04
6. Perceived computer use time						____	.22	-.13	-.13	.40*	-.16	.15	-.25	.02
7. Value of references							____	-.14	.46*	.30	.39*	-.18	-.03	-.16
8. Effectiveness of training								____	-.22	.44*	-.04	.07	.39*	.10
9. Value of content									____	.27	.52*	-.26	.08	-.42*
10. Overall evaluation										____	.05	-.24	.16	-.05
11. Read all references											____	.30	.04	-.39*
12. Tries more than once to get computer working												____	-.07	-.28
13. Computer worked first time													____	.31
14. Entry level computer experience														____

Note. N=25.

*p .05.

Significant positive relationships

There was a significant positive relationship between variable 1 "attitude toward computer use" and the following six variables: "value of information in unit," "value of CAL method," "value of computer's benefit," "perceived computer use time," "effectiveness of training," and "overall evaluation." The correlation between variable 1 "attitude toward computer use" and variable 2 "value of information in unit" was .34. The relationship between variable 1 and both variable 4 "value of computer's benefit" and variable 6 "perceived computer use time," was the same (.68). The correlation of variable 10 "overall evaluation" with variable 1 "attitude toward computer use" resulted in a significant correlation of .64.

A significant positive relationship was found between variable 2 student's "value of information in unit" and the following four variables: "value of computer's benefit," "value of content," "overall evaluation," and "read all the references." The relationship between variable 2 "value of information in unit" and both variable 4 "value of computer's benefit" and variable 11 "read all the references" was a correlation of .47. The correlation of variable 2 with variable 9 "value of content" was .35 and with variable 10 "overall evaluation" the result was .34.

The analysis revealed a significant positive relationship between variable 3 "value of CAL method" and the following three variables: "value of computer's benefit," "effectiveness of training," and "overall evaluation." The correlation between variable 3 "value of CAL method" and variable 4 "value of computer's benefit" (.50) and variable 10 "overall evaluation" (.51) is approximately the same. The correlation of variable 3 with variable 8 "effectiveness of training" was .46.

There was a significant positive correlation between variable 4 "value of computer's benefit" and "perceived computer use time" and "overall evaluation." The correlation between variable 4 and variable 6 "perceived computer use time" was .62. The correlation between variable 4 and variable 10 "overall evaluation" was .86. A significant relationship was also noted between variable 6 "perceived computer use time" and "overall evaluation" variable 10 (.40).

A significant positive correlation was found between variable 7 "value of references" and variable 9 "value of content" and variable 11 "read all the references." Variable 7 and variable 9 were correlated at .46. The correlation between variable 7 and variable 11 "read all the references" was .39. The data also indicated a significant

correlation between variable 9 "value of content" and variable 11 "read all the references" (.52)

There was a significant positive correlation between variable 8 "effectiveness of training" and variable 10 "overall evaluation" and variable 13 "computer worked first time." The correlation between variable 8 and variable 10 "overall evaluation" was .44. The correlation between variable 8 and 13 "computer worked first time" was .39.

Significant Negative Correlations

There was a significant negative correlation between variable 2 "value of information in unit" and variable 14 "entry level computer experience" (-.44). A significant correlation was also noted between variable 14 "entry level computer experience" and both variable 9 "value of content" (-.42) and variable 11 "read all the references" (-.39).

A significant negative correlation also existed between variable 5 "purpose of computer's use" and both variable 9 "value of content" and variable 13 "computer worked first time." The correlation between variable 5 and 9 "value of content" was -.44. The correlation between variable 5 and variable 13 "computer worked first time" was -.37.

Correlations Between Students' Test Scores and CAL Evaluation Questionnaire Data

Students' KSD pre-test, post-test, and gain scores were correlated with the fourteen CAL evaluation variables using Spearman correlation coefficients. Data from the evaluation variables are shown in Table 3.

Table 3

Correlation Between Students' KSD Scores and Use and Attitudes Toward CAL

Variables	Pre-test Scores	Post-test Scores	Gain
1. Attitude Toward Computer Use	.23	.21	-.06
2. Value of Information in Unit	.28	.17	-.08
3. Value of CAL method	.43*	.06	-.45*
4. Value of Computer's Benefit	.20	.07	-.15
5. Purpose of Computer's Use	-.01	-.05	-.10
6. Perceived Computer Use	-.03	-.15	-.15
7. Value of References	.08	-.09	-.10
8. Effectiveness of Training	.28	.39*	-.01
9. Value of Content	-.02	-.23	-.08
10. Overall Evaluation	.27	.18	-.13
11. Read all References	.29	.12	-.07

Table 3

Continued

Variables	Pre-test Scores	Post-test Scores	Gain
12. Tried more than once to get computer working	.26	.18	-.10
13. Computer worked first time	.21	.28	-.02
14. Entry-level computer experience	-.03	-.12	-.02

Note: N=25.

*p<.05.

The Spearman analysis resulted in identifying the following three significant relationships between the CAL evaluation questionnaire variables and students' test scores: pre-test scores and questionnaire variable 3 "value of the CAL method," post-test scores and variable 8 "effectiveness of training," and gain scores and variable 3 "value of CAL method."

A significant but moderate relationship exists between the students' pre-test scores and variable 3 (.43). The results of the data analysis indicate there was no significant relationship between post-test scores and variable 3 "students' value of CAL method." Post-test scores

significantly correlated with variable 8 "effectiveness of training" (.39). Gain scores significantly correlated with variable 3 "value of CAL method (-.45).

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study involved an individualized instructional method using the computer to meet student's learning needs which are not always met by the traditional methods of teaching. The purpose of this study was to develop, deliver, and evaluate a computer-assisted learning unit on Kitchen Space and Dimensions in consumer housing. Data were collected using the KSD pre and post-tests and the Student Evaluation Questionnaire, developed by the researcher. The tests and evaluation instrument were administered to an existing group of undergraduate students enrolled in the course HECS 3713 Introduction to Family Housing at the Texas Woman's University. The sample consisted of twenty-five students at the sophomore, junior, and senior levels. The data were tested using a *t* test for dependent groups and Spearman correlation coefficients.

Objectives

Objectives of this study were to: (a) identify, develop, and compile the instructional material for a computer-assisted learning unit on Kitchen Space and Dimensions, (b) develop the Kitchen Space and Dimensions Computer-Assisted learning program, (c) develop a Computer-

Assisted Learning Unit Manual for student's use in obtaining credit for the housing unit, (d) develop instructions for student's use in learning how to use the computer, (e) deliver the Kitchen Space and Dimensions Computer-Assisted Learning program to a group of housing students, (f) design a Student Evaluation Questionnaire for use in evaluating the effectiveness of the computer program, (g) identify any existing relationships between and among individual and combined pre-test scores, post-test scores, gain scores and Student Evaluation Questionnaire data.

Findings and Conclusions

A significant relationship between pre and post-test means was found using a *t* test for dependent groups. A significant correlation was found between pre-test scores and "value of CAL method" at $p < .05$. A positive correlation indicates that those students who scored high on the pre-test valued the computer more than those students who scored low on the pre-test.

A significant positive correlation between students' post-test scores and questionnaire variable 8 "effectiveness of training" indicates that those students who received high post-test results felt the training they received in CAL was effective. The inverse relationship

is also true in that students who received low test results felt the training in CAL was ineffective.

Pre/post-test gain scores were correlated with individual questionnaire data using Spearman correlation coefficients. A significant inverse correlation between gain scores and questionnaire variable 3 "value of CAL method" (-.45) indicates those students who received low gain scores also received the highest pre-test scores and indicated they highly valued the CAL method of study. Four of the questionnaire items within variable 3 signified an interaction type learning style preference. A low response score on these four items indicate a preference for the CAL method. These results suggest a strong relationship between students' value of the instructional method and students' success with the material they are learning. Campbell (1975) attributed gains in pre/post-test scores to a motivational effect of the student interacting with the computer. Alderman (1978), Hartnett and Stewart (1966) found that test scores of students who took courses taught by the computer-assisted learning method were significantly higher than test scores of students who took courses taught by traditional methods of instruction. Similar findings were reported by Durrett and Richards (1976). Test results of twenty-four students

in an experimental group using a computer to learn about children's behavior were compared with test results of thirty students in the control group who observed children in a laboratory nursery school. Results of the data analysis revealed that all students improved from pre to post-test but the experimental group improved more than the control group.

The results revealed a significant relationship existed between students' "attitude toward computer use" and "overall evaluation" of the CAL unit (.64 $p<.05$). Although the students in this study did not take the pre and post-tests directly from the computer, they were allowed to use the computer stored items for self-testing and drill purposes as frequently as they desired between the pre and post-tests. According to other studies, students generally have a favorable attitude toward computer-assisted testing (Cartwright and Derevensky, 1975; Good and Sisler, 1975). Hartnett and Stewart (1966), and Mathis, Smith, and Hanson (1970) found that students favored computer-assisted learning over traditional methods of instruction.

A significant relationship between "value of CAL method" and "value of computer's benefit" (.50) and "overall evaluation" (.51) suggests that students who

valued the computer-assisted learning method gave a high rating to benefit of using a computer as well as a high rating to the overall CAL unit. According to responses to open-ended evaluation questionnaire items the students in this study valued the freedom to control their own learning pace. These findngs are similar to those of Chesser and Parkhurst (1977) who found that students prefer working at their own pace and felt a sense of accomplishment when using a computer to study.

A significant correlation between "value of computer's benefit" and "overall evaluation" (.86 p .05) indicates that students who felt using a computer was a benefit to them rated the overall evaluation of the CAL unit very highly. Students in this study also indicated they appreciated knowing what material to study for on the unit examination, favored working individually, and working at their own pace. Crandall (1975) found that students became self-motivated in their learning when a computer was used in the instructional process. Other findings support the benefit of using a computer as providing instruction to individual students according to his or her capacity and at his or her own pace (Seidel, 1980; Charp and Altsculer, 1977).

The significant relationship between "evaluation of computer's benefit" and "perceived computer use time" (.62) indicates the more hours a student spent studying on the computer the more the student felt it benefited them. Student's use of the computer as recorded automatically ranged from .60 to 5.37 hours at the computer. Students in this study were given two weeks to study the unit material on the computer. Fredricks and Hoover-Rice (Note 2) found that significantly less training time was needed by twenty subjects in an experimental group learning math by computer than twenty subjects in a control group learning math by traditional instructional methods. The student questionnaire indicated the students in their study gave a high rating to the computer-based math course. Boren (1977) found that students using a computer in a food and nutrition course were able to spend a mean of thirty minutes less on a food and nutrition analysis than students using the traditional method of analysis.

Most of the students (76.4%) in this study rated the "overall evaluation" of the CAL unit very high. The data revealed significant correlations between "overall evaluation" and six of the questionnaire variables: "attitude toward computer use" (.64), "value of information in unit" (.34), "value of CAL method" (.51), "value of computer's

benefit" (.86), "perceived computer use time" (.40), and "effectiveness of training" (.44). These findings suggest that students in this study felt the computer-assisted learning method was a valuable aid to their learning experience. Student's responses to open-ended evaluation items indicated a consistent desire to use the CAL method again, favored the use of a computer, and felt it helped them learn the unit material.

A low negative correlation between "purpose of computer's use" and "value of content" indicates that although the student valued the CAL method and manual in this study there exists a relationship between the quality of the instruction and quality of the instructional materials used. The students' low score on this variable may be due to overexposure to the unit content and instruments in this study. This finding is supported by Simonsen and Renshaw (1974) who found that the quality of learning with CAL can be affected by the quality of the instructional materials used with it.

Recommendations

Based on the findings of this curriculum development and evaluation project the following recommendations are made:

Curriculum Development

Based on the findings related to students' test scores, their overall evaluation of the unit, and the CAL method, students value this learning method and gained significantly from pre to post testing. Although students in this study took the pre and post-tests by paper and pencil in the classroom, the instructional method of computer-assisted testing should be used in courses where CAL is employed.

The Computer-Assisted Learning program in this study was concerned with Kitchen Space and Dimensions, one unit of an introductory housing course. Educators could use CAL in all areas of home economics. Studies using the CAL method have been done in home economics in the areas of food and nutrition (Boren, 1977), family life courses (Chesser and Parkhurst, 1977), and child development (Durrett and Richards, 1976) which have shown significant gains in students' test scores when a computer was used in the instructional process.

In this study the data indicated a relationship between the quality of the instruction and the quality of the instructional materials used. A study by Simonsen and Renshaw (1974) support that finding. Each of the 86 test items on the computer were stated as multiple choice

questions. The data indicated a negative correlation between content and purpose of using the computer in this study, which suggested students may have been overexposed to the material or became bored with the 86 multiple choice test items. Questions on the computer should be varied enough to include true/false questions, fill-in blank questions as well as multiple choice questions. This might eliminate boredom and reduce the tendency for students to memorize the material presented.

Students in this study were told and shown how to use the computer to study for the unit post-test. Although they could use "Help coupons" located in their CAL unit manual when they needed help with the computer or the unit material a teacher or supervisor was not always immediately available at the computer or at other times the student was not at the computer when the instructor was available. Students in this study consistently indicated a need to ask questions and felt frustrated when the computer didn't work for them. Bryon (1976) found that students still have questions to ask the teacher even when computer-assisted learning is the method of instruction employed. Thus, the computer is still not replacing the teacher. He/she is still needed. The teacher should indicate a

specific time period each day when he/she would be available to students' needs at the computer.

In this study the students' post-test grade was reflected in their final grade for the housing course. Although the students' pre and post-test scores were found to be significant in this study, was the student motivated by the course grade or the computer-assisted learning method? The CAL method could be employed in a course unit as was done in this study or used solely for the purpose of motivating slower or faster learners.

To summarize the following curriculum development projects would seem to be useful:

1. Teachers should use CAL in all areas of home economics. More CAL projects should take place in housing and comsumer science.

2. Computer questions need to be varied.

3. Teachers should be available to help students around the computer terminal area.

4. Teachers should use CAL to help meet slow and fast students' needs.

Future Research

The subjects in this study were twenty-five female undergraduate students. Further research should be done involving both sexes and with varying age groups. Chesser

and Parkhurst (1977) found that although members of both sexes in their study had positive attitudes toward the overall value of the computer experience, females tended to be significantly more positive than males. Several studies have been done involving children of pre-school age, elementary age and college age students. There is little information in the literature of high school age students' involvement with computer-assisted learning.

Actual computer-use time as automatically recorded by the computer ranged from .60 to 5.37 hours. Those students who received low pre/post gain scores generally spent less time at the computer studying. Sixty-five percent of the students in this study used the computer less than two hours. Further study and comparison needs to be done concerning a required minimum amount of computer use time in relation to students' performance. Campbell (1975) attributed test score gains to the student's use of a computer.

Based on the information gained from this study the following research projects are recommended:

1. Further research with CAL should involve males and females.

2. Further research is needed in CAL with high school students.

3. Further research is needed with CAL where a specific minimum computer use time is required.

APPENDIX A

CONSENT FORM

CONSENT TO ACT AS A SUBJECT

FOR RESEARCH AND INVESTIGATION

I hereby authorize Connie Linscheid and Texas Woman's University HECS department to use my responses to the Student Evaluation Instrument to evaluate the effectiveness of this computer-assisted learning method. I understand that my name will not be identified on the evaluation instrument or in the publication of the results. I understand that the return of my evaluation questionnaire constitutes my informed consent to act as a subject in this research study. I also understand that the information supplied on this evaluation questionnaire will be helpful in evaluating this computer-assisted learning method of instruction and the existing computer program.

_____ _____

Subject's signature Date

APPENDIX B

CAL UNIT MANUAL

75

A COMPUTER-ASSISTED LEARNING UNIT MANUAL

"Kitchen Space and Dimensions"

THE DEPARTMENT OF
HOME ECONOMICS AND CONSUMER SCIENCES
COLLEGE OF NUTRITION, TEXTILES, AND HUMAN DEVELOPMENT
AT
THE TEXAS WOMAN'S UNIVERSITY

TO THE STUDENT

This COMPUTER ASSISTED LEARNING UNIT has been planned to make your learning experience about Kitchen Space and Dimensions more fun and informative through the use of a computer. You can control the pace and scope of your learning with the aid of this manual, the test item pool which is stored in the computer, and the instructional resources that are on reserve in the library.

THE MANUAL

PART I

The first part of this manual pertains to information about Kitchen Space and Dimensions. It lists the purposes, objectives, topics, and references for this instructional unit. By reading this entire section before you actually begin studying you will gain a clearer understanding of the scope of the unit and can concentrate more effectively on each topic. As you follow the instructions and complete the steps described, you can independently acquire the information needed to pass the KSD post-test.

PART II

The second part of the manual will teach you how to use the computer terminal to study for the KSD

post-test. Step by step instructions are included to help you become familiar with a computer terminal keyboard, learn how to use a terminal, and respond to the questions that will appear on the screen.

TABLE OF CONTENTS

PART I

KITCHEN SPACE AND DIMENSIONS

PART II

COMPUTER USE GUIDE

PART I

KITCHEN SPACE AND DIMENSIONS

SECTION A

Section A contains information about Kitchen Space and Dimensions including an overview of the topic, overall purpose, and objectives of the unit. The list of unit topics will give you an idea about what you will be learning. The references listed contain all the information you need to answer the computerized unit pre-test.

SECTION B

Section B contains the materials and instructions you will need to complete the unit. You will be completing each of the following steps as you meet the requirements for the CAL KSD unit.

STEP 1: Complete the STUDENT/TEACHER CONTRACT FORM.

STEP 2: Take a written PRE-TEST in the classroom, over information.

STEP 3: Learn how to use the COMPUTER using the directions provided in Part II of this manual.

STEP 4: Study the QUESTIONS on the COMPUTER in preparation for the Unit Post-Test.

STEP 5: Read material on reserve in the library as needed.

STEP 6: Take a written POST-TEST in the classroom, over the unit information.

SETP 7: EVALUATE the computer-assisted instruction unit using the Student Evaluation Questionnaire.

Each of these steps plays an important part in your learning about Kitchen Space and Dimensions and should be completed in order for you to receive credit for this unit. They have been planned to make your learning experience more beneficial and enjoyable.

LET'S LEARN ABOUT KITCHEN SPACE AND DIMENSIONS: AN OVERVIEW

The Kitchen has undergone perhaps more transformations within the last half century than any other room in the American home. In the precentral heating days, the warmth of its coal or wood burning range made it as much a place for entertaining friends as a center for food preparation and preservation. Moreover, its size was quite large in comparison to today's more compact version, and served as quantitative proof of its importance.

Through this early American kitchen initially consisting of a rectangular space with the basic equipment necessary for preparing and serving meals, has emerged the sophisticated energy efficient kitchen we have available to us today.

Almost all modern American homemakers approve of and welcome the mechanized magic of our time, and the labor-saving, space age kitchen designs. But the early sterile design approaches to the room that contained these modern wonders was too barren. The efficient laboratory look was not wanted in the most-used room of the house. The majority of American families eat most of their meals in the kitchen and, in many homes, it

is the primary daytime living space. With the passing of time, the perfection of push-button controls and other devices, the kitchen was somewhat reduced in size and became more utilitarian than social in function.

Rising costs of housing and the homemaker working outside of the home have also created interest in smaller kitchens. It becomes an even greater challenge to the homemaker to plan this space and skillfully manage proper kitchen dimensions to acquire the greatest comfort, efficiency, pleasure, and use of space for the housing dollar.

The shape, size, and uses of the kitchen depend largely on personal preference and those who will use it--typically the homemaker and the family. Some homemakers do not mind the extra exercise and enjoy a large, open kitchen plan. Some do not like to and others cannot bend over to get things from low storage areas or put something in the oven. Homemakers who do not mind bending over like things to be compact and do not want to waste time walking to and fro. Thus, to suit individual needs or preferences, four basic kitchen floor plans and their variations have evolved.

Kitchens have long been the place of family activity. The kitchen may serve as a family meeting place, a place

for dining, or a workshop for a creative cook. Kitchens offer a place of solitude and rest. Many kitchens include a laundry area, a home office, or a place to pursue a hobby. The kitchen does indeed serve many purposes for different members of the family, but this is accomplished only when it is planned with such activities in mind. It can easily be designed to keep out "intruders" and isolate the homemaker from family and guests if so desired, but with careful planning it can become the favorite room in the home for everyone. With the diversity of activity, types of equipment, and personalities it serves, one can easily see why this has been the most researched and modified room in the home.

The design in today's kitchens involve use of modern appliances such as the microwave oven which require less space and provide for more than one function. Often a kitchen plan opens onto a patio area which provides for convenient dining, an area for overflow of guests, and freedom from isolation of the homemaker from her family or guest while preparing food.

In this unit you will learn about KITCHEN SPACE AND DIMENSIONS through your study of the QUESTIONS

contained on the computer and the information in the selected REFERENCES.

Note: The preceeding information was developed from the following references:

Sherwood, Ruth. Homes Today and Tomorrow, Chas. Bennett and Co., Inc.: Illinois, 1976, 333.

St. Marie, Satenig S. Homes Are for People, John Wiley and Sons, Inc.: New York, 1973.

PURPOSE AND OBJECTIVES OF THIS UNIT

The purpose of this housing unit is to teach you some basic concepts, facts, and terms about space and dimensions in kitchens. This information will enable you to plan kitchens, evaluate existing ones, and revise kitchen arrangements for greater efficiency, comfort, and use of space.

Objectives of this Unit:

The Post-test will determine the extent to which you have reached the following objectives:

ZONING LAWS, BUILDING CODES, and HOUSING REGULATIONS

1. Identify important criteria for preparing floor plan drawings and elevations.
2. Know the criteria for allocation of space in the kitchen in relation to federal standards and zoning laws.

FLOOR PLANS

1. Identify the four basic kitchen plans.
2. Recall the required allotment of space in relation to movement and function in the four basic floor plans.
3. Compare and contrast the four basic kitchen plans.
4. Identify the role of architectural developments in relation to today's kitchen.

5. Identify the effect of large glass areas and the open-plan upon various kitchen characteristics and functions.

WORK TRIANGLE

1. Identify various zones in the home and their effect upon one's choice of floor plan.
2. Recall when energy saving kitchens were developed.

LOCATION OF KITCHEN IN THE HOME

1. Recognize the basic characteristics of each kitchen plan and their effect upon the home and family.

COUNTERS AND CABINETS

1. Identify criteria for allocation of space in relation to counters and cabinets.

EATING AREAS

1. Determine the amount of space needed in the dining area for serving, cleanup, and eating.

STORAGE AREAS

1. Identify the appropriate space allotment for the basic kitchen work area and its effect upon storage space and work efficiency.

HANDICAPPED

1. Determine necessary space adaptations, in relation to counters and aisle space, for the handicapped.

SPACE

1. Identify important space and dimensions characteristics.
2. Determine the importance of equipment arrangement in relation to space and efficiency.
3. Analyze the effect on space of selecting the particular pieces of equipment for the kitchen.

KITCHEN SPACE AND DIMENSIONS

Related Unit Topics

The following topics relate to this housing unit on Kitchen Space and Dimensions. I suggest that you read the information contained in the reference materials to aid your understanding of the information covered in the computer questions. The topic outline below is provided to help you study for the Kitchen Space and Dimensions unit Post-Test.

TOPICS

1. Zoning laws, building codes, and housing regulations and requirements in relation to kitchens.
2. Floor plans
   a. measurements necessary
   b. the drawing and its features
   c. types of plans
   d. advantages and disadvantages of each floor plan
   e. required work and passage space
3. Work triangle
   a. purposes
   b. the work center
   c. advantages/disadvantages of floor plan in relation to zoning and traffic areas
   d. dimensions of the work triangle

4. Location of kitchen in the home
   a. effect of traffic areas
   b. in relation to other activities
5. Counters and cabinets
   a. dimensions
   b. requirements in relation to FHA standards
   c. location for use
   d. requirements in relation to kitchen floor plan
6. Eating areas
   a. location in the home
   b. in relation to floor plans
   c. HUD standards
7. Storage areas
   a. in relation to equipment
   b. in relation to work efficiency
8. Kitchen modifications for the handicapped
   a. height modifications
   b. space modifications
9. Space
   a. for movement and travel
   b. in relation to equipment arrangement for efficiency
   c. in relation to selecting particular pieces of kitchen equipment

REFERENCES

The following references are in the library. You can record your reading activity by using the Progress Check Sheet on page 97 of this manual.

1. HOMES ARE FOR PEOPLE, St. Marie, Satenig S.

   John Wiley and Sons, Inc.: New York, 1973.

Pages	Topics
36-45	Dining space, movement space
82-83	Physical space needs
115-159	Eating areas, food preparation space
185-200	Storage space

2. HOMES TODAY AND TOMORROW, Sherwood, Ruth

   Chas. Bennett Co., Inc.: Illinois, 1972, revised.

Pages	Topics
165-166	Laws and regulations
190-194	Floor plans
195-203	Evaluating floor plans
333-381	Location of kitchen, work center, kitchen shapes

3. HOUSING, AN ENVIRONMENT FOR LIVING, Keiser, Marjorie B.

   Macmillan Publishing Co., Inc.: New York, 1978.

Pages	Topics
46-50	Floor plan drawings
123-135	Movement space, handicapped space

150-175	Food preparation space, movement space
207-220	Zones
216-220	Triangle, location of kitchen

4. INSIDE TODAY'S HOME, Faulkner, Ray and Faulker, Sarah Holt, Rinehardt, and Winston: New York, 1968, 3rd ed.

Pages	Topics
66-81	Cabinet and drawer dimensions, centers

5. THE HOUSE: PRINCIPLES, RESOURCES AND DYNAMICS, Agan, Tessie J. B. Lippincott Co.: Philadelphia, Penn., 1965.

Pages	Topics
82-95	Zoning, circulation, dining area

PART I

SECTION B

This section contains:

- -An explanation of the pre and post-tests and grading procedure
- -Suggested time schedule for completing tasks
- -Student Progress Check Sheet
- -Student Contract Form

KITCHEN SPACE AND DIMENSIONS UNIT

Pre-Test and Post-Test

All of the items related to the KSD Unit are stored in the computer by the unit topics as well as in numerical sequence. You may use this information in any way that best suits your individual needs. You may want to test your knowledge over all the topics, noting the areas where you need more knowledge of KSD. There are 92 questions in the computer database for possible use on the Pre and Post-tests. These questions were taken from the information contained in the reading references. The questions in the computer database are based on the unit objectives and the KSD topics listed on pages 88 and 89.

You will be given a PRE-TEST over the Kitchen Space and Dimensions Unit material to assess your initial knowledge. It will be administered to you in the classroom by the instructor. Your grade on the pre-test will not be used to determine your final grade for this unit, however you must take the pre-test to earn credit for this unit.

The POST-TEST will be administered at the conclusion of your agreed-upon contract time period. This test will also be administered in the classroom, as a paper and pencil test using computer test sheets.

Grading

Your GRADE for this Computer-Assisted Learning Unit will be based upon your POST-TEST SCORE. You will take the pre and post-tests in written form in the classroom. Only the KSD Post-test will determine your grade for the KSD unit, but you are required to take both the KSD Unit Pre and Post-test, complete the contract form, and complete the Student Evaluation Questionnaire.

The following GRADING SCALE will be used:

Percent Correct	Grade
100-94%	A
93-88%	B
87-82%	C
81-76%	D
75-0%	F

ESTIMATED TIME SCHEDULE TO FOLLOW

TOWARD COMPLETING UNIT STEPS

These are estimated TIME ALLOTMENTS for completing the following unit steps. An estimated amount of time for completing this course is two weeks. You may desire to spend more time on one step than is suggested or find that you do not need as much time to complete certain steps. The schedule below is provided for you to help you plan your own time with your advisor and decide upon the length of time you will need to complete the unit.

Steps		Estimated Time Needed
1.	In classroom learn about the CAL on Kitchen Space and Dimensions.	ONE class period
2.	Take the unit PRE-TEST in classroom.	ONE class period
3.	Receive unit MANUAL and participate in a COMPUTER-USE demonstration.	ONE class period
4.	READ THE MANUAL: Part I and II	ONE hour
5.	Fill out CONTRACT form	FIVE minutes

		Time
6.	Bring the CAL Manual to the COMPUTER CENTER. Retrieve the Kitchen Space and Dimensions unit program and begin studying the questions for the unit POST-TEST.	THREE-SIX hours
7.	READ THE REFERENCE MATERIAL related to Kitchen Space and Dimensions unit on reserve in library.	THREE-FOUR hours
8.	Review: using reference material and computer questions in preperation for the unit post-test.	SIX-TEN hours (Add #6 and 7)
9.	Take the unit POST-TEST in the classroom.	ONE class period
10.	Complete the CAL Student EVALUATION Questionnaire.	THIRTY minutes

STUDENT PROGRESS CHECK SHEET

YOUR NAME:_____ SS NUMBER:_____

BEGINNING DATE:_____ COMPLETED DATE:_____

COURSE NUMBER:_____

Step	Date Completed
1. Fill out CONTRACT FORM and sign	_____
2. Take KSD PRE-TEST in the classroom	_____

3. On the lines below, RECORD the DATE, NUMBER of com- QUESTIONS you have completed that day, and the amount of TIME you spent at the computer accordingly.

	Date	Questions	Time Spent
Computer Use	_____	_____	_____
Computer Use	_____	_____	_____
Computer Use	_____	_____	_____
Computer Use	_____	_____	_____

4. READ THE REFERENCE MATERIAL from list:

	Date, and Check if Completed
Homes Are for People....	_____
Homes Today and Tomorrow	_____
Housing, An Environment Living.....	_____
Inside Today's Home.....	_____
The House.....	_____

5. PRE-TEST/POST-TEST in the classroom

Test Scores

Pre-Test	Date Scheduled_____	Date Completed_____	Score_____
Post-Test	Date Scheduled_____	Date Completed_____	Score_____

DIRECTIONS FOR USING THE

CAL STUDENT/TEACHER CONTRACT FORM

The STUDENT/TEACHER CONTRACT FORM on the following page is an agreement between you and the instructor stating that you will complete this COMPUTER-ASSISTED LEARNING UNIT on Kitchen Space and Dimensions within the agreed-upon time period. When you and the instructor have signed the contract, the instructor will keep one copy and you will retain the other copy.

In order to receive credit you must:

1. complete the unit within the time you have agreed upon with your instructor, and
2. successfully complete the unit Post-test with at least 76% accuracy

THE TEXAS WOMAN'S UNIVERSITY

HOME ECONOMICS AND CONSUMER SCIENCES

COMPUTER-ASSISTED LEARNING UNIT

Kitchen Space and Dimensions

STUDENT/TEACHER CONTRACT

This is to certify that _____ is
(Your Name)
contracting to complete the computerized learning unit on KITCHEN SPACE AND DIMENSIONS by _____.

In order to receive course credit for this housing unit I understand that I must successfully complete the housing unit Post-test according to the guidelines stated in this manual with 76% accuracy and within the agreed upon time period.

The following scale will be used to interpret exam scores.
A= 100-94%; B= 93-88%; C= 87-82%; D= 81-76%; F= 75-0%

_____	_____
(student's signature)	(student's address)
_____	_____
(course number and name)	(phone number)
_____	_____
(instructor's signature)	(date)

COMPUTER USE GUIDE

The test items for a housing unit, Kitchen Space and Dimensions, have been stored in a computer database. This section of the manual contains step by step instructions which will enable you to learn how to use a computer terminal and retrieve these test items. By following the instructions carefully, and with practice, you can use the terminal to test your knowledge of the items, learn the correct answers, and prepare for the post-test which will be given in class. Listed below are five aspects of the learning process which are explained on the following pages.

-Learning to Use the Computer Terminal Keyboard

-Using the Terminal to Retrieve Test Items

-Computer Terminal Keyboard Diagram

-Questions Frequently Asked

-Help Coupons

HOW TO USE THE COMPUTER TERMINAL

Learning to use the Computer Terminal Keyboard

As you can see from looking at the COMPUTER TERMINAL KEYBOARD DIAGRAM on page 105, a computer keyboard is very similar to a typewriter keyboard. Both are used in a similar way. Some of the keys you will need to become familiar with are described below. Locate these keys on the diagram prior to your computer use training session.

Key	Purpose
CTRL	This is the abbreviation for "control." To get the computer's attention you will do what is called a "control C." Hold the CTRL key down and press the letter C key while you are holding CTRL down. Then release both keys. See additional directions for establishing communication with the computer on page 110.
RUB OUT or DELETE	This key is used to erase mistakes. To erase, depress the RUB key the number of times necessary to erase your mistake. You will not see the mistake erased, but the computer will have erased it from its memory. After

you have "erased" simply type the correct symbols.

ESC — This is an abbreviation for "escape." (You may wish you could at some point, but that is not exactly what this means.) You will use this key in the login procedure as outlined on page

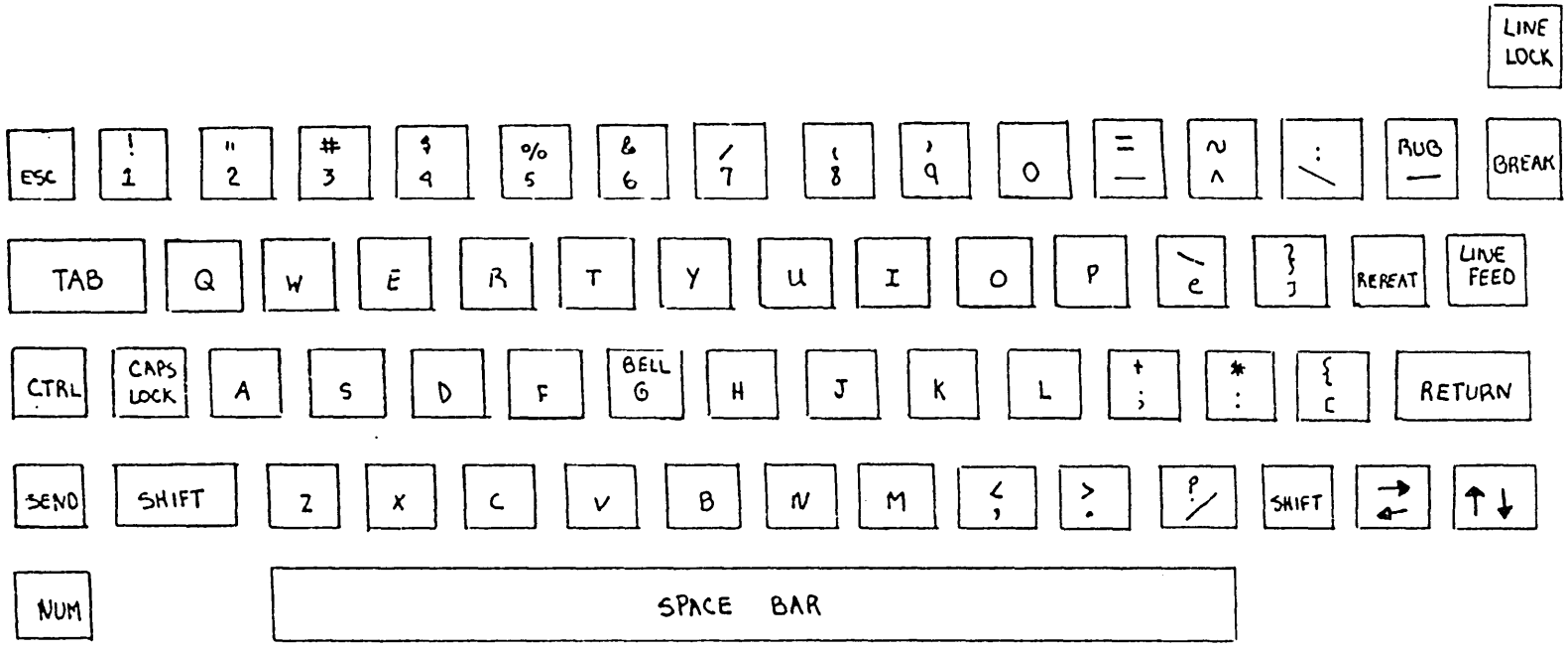
RETURN — The return key is used on a typewriter. When you have completed typing a line, depress the return key.

SPACE BAR — This bar serves the same purpose as the space bar on a typewriter. When using a computer terminal, however, you must be even more careful to include all spaces, and the precise number of spaces where needed. Precision is more critical to your success when using a computer keyboard than when using a typewriter.

< > — These two symbols are called angle brackets. Remember to hold the shift key down while you depress the key

with one of these characters on it, if the character is located at the top of the key.

COMPUTER TERMINAL KEYBOARD DIAGRAM



USING THE TERMINAL TO RETRIEVE TEST ITEMS

LET'S BEGIN: Each step given here is important. You cannot skip any step. All spaces, words, and periods are important. You cannot change, delete, or add any symbols and get the program to work for you.

Directions for Login

You have been given a code number which you will use to gain access to the computer program on Kitchen Space and Dimensions. The amount of time you spend at the terminal and the number of times you use the computer will be automatically recorded.

Step

1. Turn the power switch on. The location of this switch will vary from one terminal to another. It will usually be located on the back.

   NOTE: If you are using a terminal other than one directly connected to the computer you must also use a telephone, and instructions for this procedure are provided on page 110 of this manual.

2. Identify yourself (a process called "login") to the computer.

   a. While holding the CTRL key down, press the "C" key.

   b. Type LOGIN.

c. Press the ESCAPE key.

d. Type. HECS.IMPSONxxx (Where xxx is where you will place your code number.)

e. Press the ESCAPE key.

f. Type in your password which was recorded in class.
NOTE: You will not see the password on the screen because it is a s e c r e t!!

g. Press the RETURN key.

3. Now, you are actually in the system and can retrieve the test items for the housing unit on Kitchen Space and Dimensions. To do this, perform the follow four steps:

a. Type CONNECT HECS.LIBRARY and press the RETURN key.

b. When asked for password, type CAI-Housing and press the RETURN key.

c. Type RUN<CAI>QUEST and press the RETURN key.

d. When the ? appears, type DATABASE HOUSE and press the RETURN key.

HOW TO RETRIEVE THE TEST ITEMS

4. A ? will appear on the screen. You must now choose a category from which you want to get test items. Press the RETURN key. The items are grouped by the

categories listed below. One item may be stored under more than one category. There will, then, be more than one way you can retrieve the same test item. These are the categories which you will choose from:

CATEGORIES:

KNOW (knowledge)	ACCE (access space)
COMP (comprehension)	HAND (handicapped space)
APPL (application)	LAW (building laws)
ANAL (analysis)	KITC (kitchens, general)
FUNC (function)	PLAN (floor plans)
COUN (counters)	CENT (centers)
CAB (cabinets	TRIA (triangles)
SPAC (space	DIN (dining space)
DRAW (floor plan drawings)	

5. When the ? appears type CAT and then press the RETURN key. The computer terminal will display the categories listed above.
6. Type the bold printed abbreviation of your choice to retrieve a question of that category. Press the RETURN key. After answering that question just press RETURN to get another question of the same category.
7. TO ANSWER A QUESTION: type the letter of your choice--a, b, c, d, or e, and press the RETURN key. The computer will tell you if your choice is correct.
8. TO CHANGE CATEGORIES: type a new category indicator after you answer a question.
9. To learn how well you are doing on your self test: after completing all the questions you wish, type

SCORE and the computer will give you the percent of total questions you have answered correctly.

HOW TO LOG OUT

10. This is an important step! When you want to stop using the terminal:

    a. Type BYE and press the RETURN key.

    b. Wait for the "curly a" to appear then type LOGOUT and press the RETURN key.

Do not leave the terminal until you have logged out.

QUESTIONS FREQUENTLY ASKED

1. May I use a computer terminal other than in the student/faculty terminal area?

   Certain departments on campus have their own terminals. You should check with your advisor or professor regarding the availability of these terminals for student use.

2. How do I use a terminal which requires a telephone "hook up"?

   To establish communication with the computer via a telephone line:

   a. Turn the terminal power switch to ON (back of terminal).
   b. Pick up the telephone receiver and dial 566-1050.
   c. Listen for a beep.
   d. Place the receiver snuggly into the padded coupler with the phone cord on the left side of the coupler.
   e. Make sure the power light and the carrier light are lit on the coupler. At this point, you use the terminal as you would any other.

3. What if I do the steps described in 2. above and the terminal doesn't work?

   Hang up the phone and start over.

4. Do I need to finish all of the questions at one time?

No, you can LOGIN and LOGOUT at any time and as often as you wish so long as the terminal isn't in use. You will learn to make notes of the items you have already answered so that you will know where you want to begin your next session.

ON THE SCREEN

5. Can I have a question repeated if I've already seen it once?

Yes. After you have answered a question, you can request any other question you want to see--either by category or by number. If you ask for a question by number type in NUMBER 3 for example or any number you want. Remember, if you ask for a question you have already seen, the computer will ask you if you want to see it again. You will answer by typing "Y" for yes or "N" for no.

6. What do I do if I just want to move to the next question in that category or list?

Type in NEXT after completing the previous question.

7. Do I have to answer the question even if I do not know the answer?

Yes. Once you have been given a question you must answer it. The computer will let you try until you get the correct answer.

8. Is it necessary that I type in every space and period?

If you have practiced using the terminal at all, you have probably learned that the answer to this question is "YES." The computer is very fussy about minor details. BE PRECISE!!!!

9. Why doesn't my password show when I type it?

Your password is known only to you and you don't want anyone else who might be watching you to see it. They could then login under your account. The computer would then credit the use time to you instead of them.

HELP COUPONS

Use the following coupons when you need help with the computer, the directions, the manual, or the readings. Place this form in the box marked COMPUTER HELP, located in the home economics building HECS department. Be sure that the description of your problem is clearly written. Indicate a time on the coupon that is convenient to reach you or check back for an answer to your coupon with your instructor.

!Help Coupon!

NAME_____ CONVENIENT TIME TO CALL YOU:

PHONE_____ _____

DESCRIPTION OF THE PROBLEM:_____

_____

_____

!Help Coupon!

NAME_____ CONVENIENT TIME TO CALL YOU:

PHONE_____ _____

DESCRIPTION OF THE PROBLEM:_____

_____

_____

!Help Coupon!

NAME_____ CONVENIENT TIME TO CALL YOU:

PHONE_____ _____

DESCRIPTION OF THE PROBLEM:_____

_____

APPENDIX C

KSD ITEM POOL

COMPUTER-ASSISTED LEARNING UNIT

KITCHEN SPACE AND DIMENSIONS

Item Pool

Floor Plan Types

1. Kitchen plans change to suit the changing social patterns of individuals in relation to the _____ when they are designed.

   a. time period
   b. existing government regulations
   c. costs of materials and labor
   d. both a and c
   e. none of the above

2. Today's kitchens may have large areas of glass which might have the greatest effect upon _____ in the kitchen.

   a. storage
   b. security
   c. remodeling
   d. lighting
   e. all of the above

3. All kitchen plans are one of the _____ basic kitchen plans or a variation thereof.

   a. two
   b. four
   c. five
   d. seven

4. The type of kitchen plan most often used in apartments is the _____ plan.

   a. Corridor
   b. U-shaped
   c. One-wall
   d. L-shaped

5. From the following list of descriptions choose the answer which best describes a disadvantage to the one-wall kitchen plan.

   a. lack of storage space
   b. lack of character
   c. length requires more walking than the other plans
   d. minimal lighting
   e. a and c above

6. A very close variation of the one-wall kitchen plan is the _____ plan.

   a. corridor
   b. U-shaped
   c. one-wall II
   d. L-shaped

7. Which of the following kitchen plans usually has more counter space than the other plans?

   a. corridor
   b. one-wall
   c. L-shaped
   d. U-shaped

8. In terms of convenience, experts consider the _____ plan a better selection over the other two plans listed below.

   a. L-shaped
   b. one-wall
   c. corridor

9. The U-shaped kitchen and L-shaped kitchen plans are considered most efficient mainly because they _____.

   a. are spacious
   b. have lots of storage space
   c. have only one door
   d. are open-plans

10. Which of the following are advantages to having a U-shaped kitchen plan?

    a. does not isolate the homemaker
    b. allows continuous work space
    c. prevents through traffic
    d. all of the above
    e. none of the above

11. Identify from the following list those things which would be considered advantages to the corridor kitchen plan.

    a. compact work triangle
    b. may be located between two rooms
    c. it can be a hallway
    d. both a and b
    e. all of the above

12. A major disadvantage to the corridor kitchen plan is _____.

    a. may be located between two rooms
    b. compact work triangle
    c. kitchen may be a hallway
    d. both a and b above
    e. all of the above.

13. In the corridor kitchen the sink is on the wall _____ the range.

    a. with
    b. opposite
    c. between the range and the refrigerator

14. Choose the statement below which best explains how a window placed at one end of a corridor kitchen can make this a very efficient plan.

    a. it eliminates busy traffic zones
    b. it eliminates dead end corner
    c. it gives this plan greater depth
    d. none of the above

15. In planning a kitchen for a non-contact or a contact person, it is important to plan for _____ while food is being prepared.

    a. socialization and interaction
    b. plenty of space to work in
    c. efficiency and ease in getting ingredients
    d. all of the above

16. The open-plan may create some problems for the homemaker. Select from the statements below those which might present problems for the homemaker in relation to the open-plan design.

    a. homemaker is not isolated
    b. guests and family flow freely in and out of the kitchen
    d. not enough storage space
    e. all of the above

17. Match the kitchen plan below which bests fits the following description.

    a. corridor plan
    b. one-wall plan
    c. L-shaped plan
    d. U-shaped plan
    e. contoured plan

    Is not considered the most efficient plan. Requires minimum of space. Usually used in studio apartments.

18. Match the kitchen plan below which best fits the following description.

    a. corridor plan
    b. one-wall plan
    c. L-shaped plan
    d. U-shaped plan
    e. contoured plan

    Work area is not a passageway. Experts consider this an improved plan but the best. Has an open space for dining or a counter.

19. Match one of the kitchen plans stated below to the following statement. Choose the best answer.

a. corridor plan
b. one-wall plan
c. L-shaped plan
d. U-shaped plan
e. contoured plan

Considered the most efficient arrangement of the other plans. Has the most counter space of all plans. Storage space may be easily increased without distorting this plan.

20. Match one of the kitchen plans stated below to the following description of a kitchen floor plan. Choose the best answer.

a. corridor plan
b. one-wall plan
c. L-shaped plan
d. U-shaped plan
e. contoured plan

Both ends of this kitchen plan may be open or one end may be a wall. Compact work triangle. Usually busy with people passing through this kitchen.

21. In which of the following plans is at least 5 feet of space allowed between opposite walls of cabinets?

a. U-shaped plan
b. corridor plan
c. one-wall plan
d. L-shaped plan
e. contoured plan

22. Which of the following descriptions listed below would best describe a plan suitable for the family who enjoys a great deal of outdoor and patio entertaining?

a. sectional-kitchen plan
b. open plan
c. isolated plan
d. information plan
e. contoured plan

23. Which of the following kitchen plans would be most suitable for the family who entertains frequently, has children, and is very active?

a. one-wall kitchen
b. corridor kitchen
c. L-shaped kitchen
d. all of the above

Use of Space

24. The amount of area devoted to wall space in a home usually equals about _____ of the total home.

a. 1/8
b. 1/2
c. 2/3
d. 3/4

25. _____ have changed the basic, efficient unit that was developed during the 30's.

a. zoning laws
b. covenants
c. architectural developments
d. districts

26. Kitchen planning reached a high state of perfection during the _____ when energy saving kitchens were developed.

a. 30's
b. 40's
c. 60's
d. 70's
e. 80's

27. In previous design periods the size of the kitchen was kept as small as possible in order to _____.

a. save household energy
b. save steps
c. create a work triangle
d. make it functional and aesthetic
e. all of the above

28. The room which has been researched and analyzed more than any other room in the home is the _____.

    a. kitchen
    b. family room
    c. bathroom
    d. living room

29. One of the major goals of kitchen planning is to incorporate _____ in the kitchen.

    a. functionalism
    b. aesthetics
    c. both a and b
    d. none of the above

30. Evaluate the following statements and choose those statements which describe characteristics on a kitchen plan that the homemaker should look for when deciding on a kitchen.

    a. excess kitchen space for future growth
    b. ample counter space
    c. an eating area
    d. all of the above
    e. b and c above

31. Which of the following is the best choice of cooking equipment to install towards accomplishing a diversified kitchen layout?

    a. separate built-in oven and cook top unit
    b. an all-in-one oven and cook top unit
    c. a fireplace
    d. none of the above

Cabinet Dimensions

32. _____ sets the standard requirements for cabinet shelving and wall cabinets.

    a. the builder
    b. HUD
    c. FHA
    d. the homemaker
    e. none of the above

33. In order to comply with FHA standards, a minimum of _____ linear feet should be provided for base and wall cabinets.

a. 5-8
b. 10-14
c. 12-18
d. 22-26

34. The minimum total area allowed for shelving and wall and base cabinets is _____.

a. 11 square feet
b. 15 square feet
c. 22 square feet
d. 50 square feet

35. The minimum area allowed for drawer area in the kitchen is _____.

a. 11 square feet
b. 15 square feet
c. 22 square feet
d. 50 square feet

36. The minimum amount of space allowed for countertop space in the kitchen is _____. (excluding sink and cooking units.)

a. 11 square feet
b. 15 square feet
c. 22 square feet
d. 50 square feet

Centers: Triangle

37. The term which describes a plan when all pieces of equipment are conveniently grouped for efficiency is _____.

a. triangled arrangement
b. zoning
c. floor plan
d. step-saving work triangle

38. Kitchen experts generally agree that the sides of the work triangle should measure no more than a total of _____ feet.

a. 12
b. 17
c. 20
d. 22
e. 25

39. A triangle longer than the total maximum recommended footage is not beneficial because _____.

a. it has too much counter space between work centers
b. it requires too much walking
c. it creates a cold looking kitchen

40. Where would the sink be placed in a standard work triangle arrangement?

a. next to the refrigerator on the same wall
b. next to the stove on the same wall
c. between the refrigerator and the range
d. between the refrigerator and the door

41. In the kitchen a triangle can be drawn between the three major work centers. The area between the sink and the refrigerator should measure _____.

a. 2-4 feet
b. 4-7 feet
c. 4-9 feet
d. 7-10 feet

42. In the kitchen the area between the sink and the range should measure _____.

a. 2-4 feet
b. 4-7 feet
c. 4-9 feet
d. 7-10 feet

43. The area between the range and the refrigerator should measure _____.

a. 2-4 feet
b. 4-7 feet
c. 4-9 feet
d. 7-10 feet

Centers: Function

44. The basic requirements for _____ are the same in any kitchen.

a. storage
b. food preparation
c. cleanup
d. all of the above
e. b and c above

45. The term used to describe the organizing of kitchens by putting similar tasks requiring similar ingredients and related utensils together in one place is _____.

a. work triangles
b. zones
c. plans
d. work centers

46. The best location in the kitchen for the range is _____.

a. under a window for good ventilation
b. at the end of a line of cabinets nearest the doorway
c. close to the sink
d. none of the above

Counters: Space

47. In some kitchens a counter or cabinet referred to as a _____ is installed in the open area.

a. divider
b. bar
c. oval counter
d. island

48. Identify the correct answer below to complete the following statement. Counter space should be continuous except where interupted by _____.

a. a window
b. the eating area
c. an appliance or door
d. a and c above
e. all of the above

49. Although individual heights may vary as much as 12.5 inches, comfortable working heights vary less than _____.

a. 2 inches
b. 6 inches
c. 12 inches
d. 16 inches
e. 20 inches

50. From the footages given below, identify the correct space allottment for the following description.

a. 4 feet
b. 3 feet
c. 3.5 feet
d. 2 feet
e. 1.5 feet

There should be at least _____ of counter space located at the opening side of the refrigerator/ freezer for unwrapping packages.

51. There should be at least _____ of counter space on each side of the sink in addition to the counter space adjacent to the refrigerator and range.

a. 4 feet
b. 3 feet
c. 3.5 feet
d. 2 feet
e. 1.5 feet

52. There should be at least _____ of counter space next to the range center.

a. 4 feet
b. 3 feet
c. 3.5 feet
d. 2 feet
e. 1.5 feet

53. The minimal amount of space required for an individual standing at a counter working (including arm and body movements of bending) is _____.

a. 26 inches
b. 48 inches
c. 38 inches
d. 64 inches

Dining Space

54. The early Americans in New England referred to the kitchen as the _____ where families ate as well as performed other activities around the warm hearth.

a. keeping room
b. family room
c. drawing room
d. activity room

55. In the 1930's only the _____ used space allotted to eating for other activities.

a. elderly
b. high-income families
c. low-income families
d. childless couples

56. In the 1960's though a separate dining room was available for eating, _____ percent of a family's meals were eaten in the kitchen.

a. 10
b. 20
c. 53
d. 64
e. 75

57. Which of the foreign cultures below has most influenced traditional American eating habits?

a. the Chinese
b. the Koreans
c. the French
d. the Scandinavians

58. According to HUD standards on size of eating area in comparison to the number of sleeping areas in each living unit, an efficiency apartment would have _____ a one-bedroom house.

a. less eating space than
b. more eating space than
c. the same eating space as

59. The amount of space you should allocate for each individual at the table is _____.

a. 21-25 inches
b. 27-35 inches
c. 12-18 inches
d. 40-48 inches

60. The amount of space allowed for someone to pass behind the chair to serve or remove food from the table is _____ inches from the table edge to the wall of another piece of furniture.

a. 12
b. 30
c. 26
d. 54

Floor Plan Drawings

61. If you were planning a new kitchen or wanted to remodel an existing one, what would be the first thing you would want to do?

a. get a loan
b. select a carpenter
c. draw a floor plan
d. choose your appliances

62. The best way to judge how much space you have in a room is:

    a. pace the room off with your feet
    b. move your furniture into the room and see how much space is left over
    c. measure the room and draw a floor plan to scale
    d. ask the builder

63. The term used to describe a drawing of one wall showing its features is:

    a. disector
    b. elevation
    c. partial
    d. dimensional

64. Architects use a scale of _____ for their drawings of house plans.

    a. 1/2 inch
    b. 1/4 inch
    c. 1 foot
    d. 1 inch

65. Which of the following is important to include on your preliminary floor plan drawing?

    a. the height of windows
    b. the direction the room faces
    c. the location of furniture
    d. the direction the doors open

Floor Plans: Zones

66. The type of zone which best describes the kitchen is:

    a. quiet zone
    b. social zone
    c. work zone
    d. private zone

67. _____ effect both the traffic pattern and location of equipment in the kitchen.

a. counters
b. door openings
c. electrical outlets
d. both b and c
e. all of the above

68. Movement from one place to another in a house is referred to as _____.

a. traffic zones
b. hallways
c. circulation
d. density

69. From your knowledge of space and zoning it can be concluded that the kitchen should be adjacent to the _____ for efficiency.

a. bathroom
b. receiving door
c. living room
d. dining room
e. both b and d

70. Analyze the following description of kitchen placement in the home and choose the answer which best fits. The kitchen should be located so that there is access to the front door, bathroom, and bedrooms without going through the living areas.

a. correct entirely
b. somewhat correct
c. incorrect
d. doesn't make sense

71. Buffering the noisy activities of the work zones from the social or quiet zones can be accomplished by the use of _____.

a. halls
b. doors
c. insulation
d. b and c only
e. all of the above

72. The work zone is _____ private than the social zone and _____ private than the quiet zone.

a. more, less
b. less, less
c. less, more
d. more, more

73. The most public parts of a social zone are the _____ which act as buffers between the public and private parts of a home.

a. traffic lanes
b. work centers
c. entrances
d. furnishings

Access Space

74. Routes of travel from one room to another and through an area within the house are called _____.

a. passageways
b. zonings
c. traffic lanes
d. causeways

75. Minimum aisle space in a kitchen should be _____.

a. 72 inches
b. 36 inches
c. 60 inches
d. 50 inches
e. 48 inches

76. HUD stipulates a minimum passage space of _____ in both U-shaped and corridor kitchens.

a. 40 inches
b. 51 inches
c. 5 feet
d. 22 feet
e. 72 inches

77. The floor space between the two opposite walls in a U-shaped kitchen should be at least _____.

a. 40 inches
b. 51 inches
c. 5 feet
d. 22 feet
e. 72 inches

78. The amount of space required to open a refrigerator door and remove food is _____.

a. 18 inches
b. 48 inches
c. 24 inches
d. 36 inches

79. How would a homemaker best solve the problem of carrying heavy packages of groceries from the garage to the kitchen?

a. carrying them through the front door--though it is further away--it is without obstruction
b. by making sure there are no obstructions in the way--thus having a direct route from the car to the kitchen
c. having someone help--though it is an inconvenience to that individual
d. using a familiar passageway in the home though it is uncertain whether or not this path is without obstruction

Building Laws

80. The term used to describe regulations establishing the type and quality of material to be used in kitchen building and the form of construction permitted is referred to as:

a. covenants
b. building codes
c. zoning ordinances
d. districts

81. FHA standards suggest that _____ be placed above the stove for best possible ventilation.

a. a window
b. an exhaust hood
c. an air conditioner vent
d. all of the above

82. FHA and HUD minimum standards require a ventible window area in the kitchen equivalent to _____ percent of the floor area.

a. 5
b. 15
c. 20
d. 25

83. Zoning laws are state adopted ordinances and are changed by _____.

a. congress
b. the state governor
c. the city board members
d. they are never changed

84. When building or remodeling a kitchen, it is necessary that your kitchen meet standard requirements for _____.

a. a realtor's inspection
b. an FHA loan
c. future remodeling
d. the city building inspection
e. both b and d

Space for the Handicapped

85. Modifications in the kitchen are necessary to provide comfort for the disabled. (the standard wheel chair, for example, reduces the users height and increases the width of space required). A path _____ wide and a turnspace _____ wide are required for wheelchair victims.

a. 20 inches and 42 inches
b. 54 inches and 36 inches
c. 36 inches and 54 inches
d. 58 inches and 20 inches

86. The vertical arm reach of an average adult seated in a wheelchair is _____ inches less than an average adult not in a wheelchair.

a. 2 inches
b. 6 inches
c. 12 inches
d. 24 inches

APPENDIX D

CAL STUDENT EVALUATION QUESTIONNAIRE

COMPUTER-ASSISTED LEARNING
STUDENT EVALUATION QUESTIONNAIRE

Department of Home Economics Education and Consumer Sciences
Texas Woman's University

Connie Linscheid Dr. June Impson

Please do not mark on this questionnaire. Use the Scan-Tron sheets provided for you. Put your code number on the Scan-Tron sheet.

Please indicate your responses to the following questions by marking the appropriate letter on your Scan-Tron sheet.

A= Strongly Agree
B= Agree
C= Undecided
D= Disagree
E= Strongly Disagree

1. Computer-assisted learning made studying a lot more exciting for me.

2. It was worth my time to go the computer to study.

3. The mechanics involved in using a computer distracted me from concentrating on the information.

4. I enjoyed this approach to learning.

5. I plan to use this information in my personal housing needs.

6. I plan to use this information in my teaching.

7. I wanted to know about Kitchen Space and Dimensions to make a good grade on the post-test.

8. I wished the instructor had talked about the content in class.

9. I like feeling responsible for my own learning.

10. I like to know exactly what knowledge will be expected of me on exams.

11. I enjoy the freedom to control my own learning pace.

12. I would rather work with an instructor than a computer.

13. I like to have new experiences in school.

14. I like to learn in group discussions.

15. I enjoy working alone.

16. I enjoyed the freedom to determine when I would review for the test.

17. I enjoyed the freedom to control the amount of knowledge I wish to learn at one time.

18. This method of computer-assisted learning was too impersonal for me.

19. The printed directions for using the computer terminal were easy to follow.

20. The computer-use guide was effective in teaching me how to use the computer.

21. By taking a test over the unit material with the aid of the computer, I was able to know whether I really understood the information.

22. I felt prepared to take the housing unit exam after studying with the computer.

23. The computer helped me to know how much more I needed to study for the exam.

24. The CAL unit was a new approach to learning for me.

25. I studied the reference material again after testing myself on the computer.

26. Using the computer helped me to know how to go back and restudy.

27. I used the computer to test my knowledge of the material after studying.

28. I had difficulty getting the system to work when I went to the computer to study.

29. I was more concerned with retrieving the questions on the computer than I was on studying for the exam.

30. I spent approximately (5,4,3,2,1) hour(s) studying on the computer. (If more than five or less than one, leave this question blank and go to the next question.)

31. I studied on the computer: more than 5 hours (mark (a)), less than 1 hour (mark (e)).

32. I found sufficient time to use the computer.

33. I completed retrieving all of the questions on the computer.

34. My schedule made it difficult for me to find time to use the computer.

35. I think I learned more about KSD because I used the computer to study for the exam.

36. I appreciated having the references reserved and identified for me.

37. The KSD (Part I) of the manual was confusing to me.

38. The reference material was interesting to me.

39. The topics seem relevant and important in relation to Kitchen Space and Dimensions.

40. The KSD (Part I) of the manual was well organized.

41. The KSD part of the manual (Part I) was clear to me.

42. I found the reference materials helpful.

43. I would recommend the CAL unit to other people.

44. From discussion with other students in the class I perceive that the CAL unit was well liked.

45. I learned a lot about KSD in this experience.

46. I would take another course that uses the CAL method of teaching.

47. With this computer-assisted learning unit I felt responsible for my own learning.

48. My interest in housing has been increased by this unit.

49. Through this computer-assisted learning unit I became actively involved in my own learning.

50. How much prior experience have you had using a computer terminal? (A= much, B= some, C= little, D = none).

Please answer Yes or No to the following:
A= Yes, B= No, C= Not Sure

51. I had to try more than once at the first training session to get the system to work.

52. I was able to make the program "work" at the first training session.

53. The trainer's instructions were clear to me.

54. I read the manual prior to the training session.

55. I have had kitchen planning in some kind of educational experience before (course, adult eduacation, individual study, etc,).

56. I read all the reference pages.

57. Your rating of this questionnaire:

very high	high	average	low	very low
(A)	(B)	(C)	(D)	(E)

58. Your previous experience with computer-assisted learning: I have used this method

often	some	once or twice	never
(A)	(B)	(C)	(D)

59. Your overall rating of this computer-assisted learning unit:

very high (A)	high (B)	average (C)	low (D)	very low (E)

60. Present college level status:

_____Freshman (A)

_____Sophomore (B)

_____Junior (C)

_____Senior (D)

_____Other (E)

61. Is this course required for your major?

_____Yes (A) _____No (B)

Please respond to the following open-ended sentences in the space provided.

62. Computer-assisted learning programs are helpful because

63. Computer Assisted learning programs are not helpful because

64. The things that would help improve this program most are

65. The things that would best help students in using this program are

66. The things I enjoyed most about this method of study are

67. The things I enjoyed least about this method of study were

68. The things that I like about this manual are

69. The things that I dislike about this manual are

70. The things that would help improve this manual are

71. Any other comments

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