COMPARISON OF TWO METHODS OF TEACHING BEGINNING FOOD PREPARATION AT THE HIGH SCHOOL LEVEL

by

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ABSTRACT

This study provided evidence which helped determine if an individualized learning package method of teaching food preparation produces greater achievement scores for students on a measure of mastery than students taught by traditional methods.

Learning packages for a semester course were tested in three schools in Tucson, Arizona. An achievement instrument was administered to groups of intact learners. In addition to data collected from the achievement instrument the following data were tabulated about the students: sex, prior home economics experiences, primary language and general academic ability.

When data were analyzed there was found to be a significant difference in students' scores on achievement tests at schools A, B and C but not a significant difference in scores on achievement tests for those students using the learning packages and those taught by traditional methods. There was found to be no significant differences in achievement scores of Spanish and English speaking, below average and above average learners, male and female students and those with prior home experiences and those with none.
The investigator would recommend replicating the study with a larger sample and providing in-service training for teachers on learning package instruction methodologies.
CHAPTER 1

INTRODUCTION

The purpose of this study is to determine if a learning package method of teaching beginning food preparation produces greater achievement by learners than traditional teaching methods.

Rationale

Now that we have achieved education for all, let us seek education for each. We certainly have nearly achieved education for all, and we have it within our power to achieve education for each, but to do so we must change markedly in the next decade and constantly examine new avenues which seem to offer realistic improvements for the teaching-learning process (McLean and Hunt 1970, p. 2).

In recent years society has produced many different forces which are exerting tremendous pressure upon the educational system. Industry, business, enterprises, government, social agencies, service institutions and many other segments of modern society are placing increasing demands upon educational institutions. Never before in the history of education has the need for innovation, development and change on such a large scale been so pressing (McLean and Hunt 1970).
Humanism in Education

A new humanism has been developing in education that has created new demands and new forces for change. Signaling this humanism has been a climate of revolt in which students, parents and teachers have joined (Heathers 1974). Students, particularly at the high school and college levels, are disenchanted with traditional instruction. Criticism is leveled at irrelevance and dehumanization: "Why don't you pay more attention to my needs?" "I've studied this before!" "I already know how to do this." These are frustrating problems to handle for any teacher, yet, there is a legitimacy in these statements. Methods of instruction must meet the challenges of new generations and new ideas (Torkelson 1972).

Many students object to traditional teaching styles which are centered around the desires of the teacher. Traditional teaching styles attempt to mold the student to fit the learning environment. Traditionally taught classes exhibit specific characteristics. Daily lesson plans written by the teacher are based upon implications and consequences drawn from the general abilities of the class of students. The length of time spent on a concept is determined by the pace of the entire class. Learning experiences are used by the teacher to meet objectives and concepts for a total class of learners. All learning experiences are
completed by students at a prescribed time for a set period of time. All unit examinations are taken at a time set by the teacher when the teacher feels most students have reached the concepts and objectives for the unit of study. Teachers using a traditional method of instruction are directors of learning and disseminators of information.

When traditional methods of instruction are used, experiences or daily assignments are collected by the teacher and scored. Students, generally, are allowed to review their assignments when they are returned. Traditionally in home economics laboratory experiences, students perform a single preparation together as a group. Groups of learners in each kitchen are usually three to seven in number. The teacher might select from activities such as movies, field trips, demonstrations, lectures, discussions, filmstrips, puzzles, games, worksheets and experiments. Traditionally taught students are often only evaluated by the teacher. Students are often exposed to concepts as passive participants. They are directed by the teacher who manages their learning time.

Traditional teaching has been beneficial in the past for some learners. Students who come from disadvantaged sub-cultures or those students possessing poor self-concepts may benefit from more structured classrooms and less freedom of choice in the teaching-learning process (Fernald and DuNann 1975). But, many students do not fit into the
traditional teaching category. Many desire more choice in the learning matter and more effectual fulfillment of their needs.

Humanistic teaching offers a change from traditional in that the educator perceives students as individuals and tailors the curriculum to fit their needs. This humanization of schooling is hinged upon four changes from traditional practices and rationales: the assumption of an image of man as a proactive self capable of free and responsible action; the integration of cognition, feeling, aspiration and volition in educational processes; the conversion of bureaucratic structure to community in the social organization of educational institutions; and a radical revision of authority relations in schooling (Nash 1975, p. 5).

Essential elements of this approach are the restructuring of teaching to meet the educational needs of all learners (Duane 1974).

Humanistic teaching is meeting the needs of educators who are vocalizing and reacting to society's pressures to make education more vital and meaningful. However, it becomes increasingly more difficult to reach individual students' needs when one educator is faced with 35 students. Because the educational business becomes more expensive each year teaching on a tutorial level becomes prohibitive. Yet, practitioners as well as theorists believe that something must be done to make education more productive.
Individualized Instruction

One solution for the need to make education relevant to students is the adoption of individualized instruction. Individualized instruction is a type of teaching-learning in which the teacher gives consideration to the individual differences in needs, interests, skills, initiative and capacities of the learner. There are three categories of this type of instruction. The first, guided independent study, permits students at any grade level in any subject area to work on their own and at their own pace under the guidance of a teacher. Secondly, diversified-activity individualization uses multiple materials or experiences allowing the student to repeat activities until they demonstrate adequate mastery. Finally, creative-activity individualization allows students to engage in choice-making in studying problems and planning activities, choosing between various approaches and correlating results from other curriculum areas (Good 1973).

Learning packages offer a systematic approach to the individualization of instruction. After a topical outline and behavioral objectives are developed that are appropriate for the students, packages are prepared or purchased by the teacher. Students receive packages containing concise written statements of objectives defining precisely what it is that they are expected to accomplish. All other elements
of instruction are presented in ways that are interrelated and directed toward achieving the objectives. The four components of learning packages, generally, are (1) statements of objectives, (2) conceptual statements, (3) variety of learning activities, (4) pre- and post-tests.

Learning packages have many advantages from the students' points of view. First, students know exactly what is to be accomplished and what the teacher expects. Second, students work at their own achievement level, pace and according to their own particular learning style. Learning experiences are selected by students from a list of choices. The list of choices might include several different ways one concept can be learned. Students may choose to view a filmstrip, conduct an experiment or complete a reading assignment as means of learning the concept. The pace depends on individual needs and abilities of the students. More time is spent on some units while less time is spent on others. Learning packages emphasize the differentiated needs of each student. Some students are able to finish a course in less than the prescribed period. They are encouraged to make the best use of their time in completing the coursework. Learners receive more opportunity to complete manipulative tasks in the learning package method of teaching because they perform psychomotor activities in laboratory settings by themselves or in very small groups.
Special circumstances such as absences from the classroom do not leave students behind in the class work. Instead of missing a teacher's lesson which cannot usually be made up, students upon return merely pick up the materials where they left off before the absence. Learners can conduct self tests of their achievement by completing post-tests at the end of each unit.

The role of the teacher is modified through the use of learning packages. The learning packages serve as a management tool which releases the teacher from many routine duties that previously took much time. The teacher spends less time disseminating information, because fewer instructions have to be given; most are written into the packages. Extensive presentations of new materials are not required because more background information is now provided by other media. The teacher is freed to spend more time working with students individually or in small groups and to act in the capacity of a diagnostician, prescriber and evaluator of the learning process.

Concern for students as individuals and regard for individual differences are not new ideas to home economics teachers. Many home economics teachers have felt frustrated because of the wide range of abilities exhibited by students. Because of these feelings, some teachers have written or used commercially prepared learning packages in their classes.
in an attempt to facilitate the diversified grouping of students. These teachers believe that home economics instruction, especially in laboratory classes such as food preparation, needs to be broadened to encompass new media of instruction. Learning packages in food preparation can be a viable alternative to traditional methods of instruction. Yet, little research has been done on the effectiveness of learning packages as compared with traditional methods of teaching.

**Hypotheses to Be Tested**

It is the intent of this study to test the following null hypotheses.

1. There will be no significant difference in scores on a measure of mastery of content between students taught beginning food preparation in high school through traditional methods of instruction and those taught the same concepts through the use of learning packages.

2. There will be no significant difference in scores on a measure of mastery of content between students whose primary language is Spanish and those whose primary language is English whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.
3. There will be no significant difference in scores on a measure of mastery of content between male students and female students whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.

4. There will be no significant difference in scores on a measure of mastery of content between students who have not had any prior home economics experience and those who have had prior home economics experience whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.

5. There will be no significant difference in scores on a measure of mastery of content between students with below average general ability and those students with above average general ability whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.

Definitions

The following definitions apply to this study.

1. Achievement--knowledge attained or skills developed in school subjects designated by test scores (Good 1973).

2. Learning Package--a self-contained group of materials composed of objectives, concepts, learning
experiences and pre- and post-tests. Students select which learning experiences to complete. They may test out of a unit of instruction if they demonstrate that they have reached the objective and concept by passing a pre-test.

3. Individualized Instruction—a system of organizing learning experiences around the individual needs of students. Experiences are provided which are compatible with each student's skills and abilities in terms of what the student already knows and what the student needs to know.

4. Traditional Instruction—primarily expository teaching using media and laboratory work paced and directed by the teacher to meet the needs of the average learner.

Assumptions

The following assumptions were made.

1. Students were motivated to do their best on testing instruments.

2. The participating subjects from each intact group drawn were distributed in a normal fashion.

3. Teachers were competent in both methods of instruction.
4. Teachers were different in teaching experience and philosophy of education but those differences would not bias the results.

5. Test items used on testing instruments were not ambiguous to students.

6. Testing instruments would measure achievement.

7. Testing instruments were not biased toward one method of instruction.

Limitations

The following were limitations for this study.

1. The participating subjects were limited to groups of intact students enrolled in beginning food courses at three high schools during the fall semester of 1975.

2. One level of school, high school, was investigated. Junior high schools and junior colleges were not included in this study.

3. No data relating to teacher background characteristics, philosophy or attitudes toward teaching methodologies of the teachers participating in the study were collected.

4. Few prior studies in this subject area were available to be used as baseline data.
CHAPTER 2

REVIEW OF LITERATURE

In the late 1960s, the idea of individualized instruction began to appear in research literature. Although selective attention to individual differences as a basis for instructional planning was not new, a revival of the concept came into focus at this time. This investigator was able to locate literature in the field of individualized instruction and some on learning package instruction in other fields, but none in the specific field of home economics related to the study of food learning package instruction. The following review is headed individualized instruction and learning package instruction.

**Individualized Instruction and Learning Package Instruction**

Although the idea of individualization has appeared in research literature for some time, it was not until the 1960s that attempts to individualize the educational experience for millions of students became most noticeable. Non-graded schools, modular scheduling, programmed instruction and other techniques appeared (Duke 1975). Individualized instructional plans were varied in methodology and
structure. Some of the different structures in operation included Project PLAN, Individually Guided Education (IGE), Computer Managed Instruction (CMI), PLATO and the Duluth Plan. They were different by name, structure and methodology but dealt with curriculum in similar ways. Their common goal was to arrange the curriculum sequentially in small segments that related to performance levels or objectives to meet students' needs, taking them from where they were to where they wanted to go (Torkelson 1972).

Much of the early literature related to learning packages dealt with clarifying terminology and identifying the new roles evolving for both teachers, as facilitators, and students, as self-directed learners (Davis and Kirby 1970). Most of the earlier efforts in implementing learning packages took place in the elementary and secondary schools in the areas of mathematics and physical sciences. Since this investigator confined the study to secondary schools, elementary school literature did not have much relevance. Also the uniqueness of the investigator's study appeared to be more eminent because of the lack of other investigators in this subject area.

Another large segment of the literature dealt with developing individualized materials and learning packages (Johnson and Johnson 1970, Howes 1970, Esbensen 1968, Smith and Rapp 1969). Learning packages appeared to be the
most feasible for the classroom teacher to implement. One of the earliest and most widely distributed learning packages was LAPs (Learning Activity Packages). LAPs originated at Nova High School in Florida. From there, the LAP format spread to many sections of the country where imitators and off-springs appeared, such as the Teaching Learning Unit, the Duluth Learning Contract and Individually Prescribed Instruction. Another early learning package was UNIPAC, promoted by the Kettering Foundation. Almost all of these package formats shared common elements and differed only in length and scope but not in purpose (Mohan and Hull 1974). These plans offered assistance in structuring course objectives, concepts, student self-evaluation techniques and identification of varieties of learning experiences. Although they were in fields other than food they provided generalized guidelines and gave this investigator a general idea of how to proceed.

Home Economics Learning Packages (HELPs) (American Home Economics Association 1969) were first developed at Pennsylvania State University and were presented to the membership of the American Home Economics Association at the post-annual meeting Conference on Innovation in Consumer Education in June 1969 (Shear and Ray 1969). The first HELPs were designed to present concepts in consumer education but later HELPs covered a wider range of subject
matter. However, none of the foregoing were in the food areas.

One of the leaders in implementation and evaluation of individualized instruction was Decantur's (1972) Project 80. During a three-year, long-range project the main effort was designed to individualize and improve the educational process through the adoption of LAPs. The project started in 1969 and involved both elementary and secondary schools. Teachers for the project were selected and trained in the philosophy underlying individualization of instruction and the development of learning activity packages. Evaluation of Project 80 showed that the project successfully developed positive student attitudes toward self, teachers, education and school. Results from the test of academic progress (TAP) indicated that an individualized program based upon LAPs gained a level of achievement comparable to that of other schools in the district. In critiquing the review of research this investigator believes that the gradual transition into individualized instruction coupled with the training and selection of students and teachers in individualized instruction were basic to Decantur's success. This investigator was unable to adopt Decantur's research methods due to limited resources.

The editors of *Education U.S.A.* (1971, p. 3) visited 46 schools throughout the country and their investigation
of individualization helped this investigator adopt the type of instruction used in the foods learning package system. The Education U.S.A. report identified four general types of individualized instruction: (1) individually diagnosed and prescribed instruction, where the school sets objectives and selects the material and the student progresses at his own rate; (2) self-directed instruction, in which the school determines objectives and the student selects materials; (3) personalized instruction, where the student sets his own learning goals, then follows a program established by the teacher; (4) independent study programs, where the student selects his own goals and his own achievement methods.

Individually diagnosed and prescribed instruction was discarded by this investigator when setting up the food learning package method of instruction as being too rigidly organized for the student who would not have enough say in the decision-making process. Gilmore (1974) states that when students are involved in the decision-making process they are more highly motivated to learn. Independent study programs gave a great deal of leeway to the student in the selection of materials. The investigator believed that many students were too untrained and immature in goal-setting for the use of personalized instruction. So, a self-directed, learning package system, was chosen for this study
because boundaries were determined in which the student had freedom of choice to respond and react.

A 1973 study of college physics students in an introductory course analyzed "high-risk" students. Eight high-risk students were enrolled in the continuous progress physics course. High-risk students had one or more of the following attributes: (a) relatively weak high school preparation, (b) relatively low achievement tests scores in mathematics and/or physics and (c) relatively low verbal and/or quantitative aptitude test scores. High-risk students would not have been expected to complete a semester of traditional physics; yet, all of them completed the first semester under continuous progress, a type of self-directed study, seven with Bs and one with an A. Six continued with the second semester course, five completing it with Bs and one with an A (Moore, Hauck and Gagne 1973). The 1973 study led this investigator to hypothesize about the success of high risk students involved in the investigator's study.

The review of available literature revealed that a great many educators were interested in individualization of instruction. There was an increasing awareness of the need to direct attention to the individual students' learning needs. Individualization of instruction took many different forms, yet each method was similar in its focus and intent. Learning packages were one method of
individualizing instruction. There was a need to identify in general the process of individualized instruction and specifically learning package systems that lead to positive learning outcomes.
CHAPTER 3

EXPERIMENTAL/CONTROL GROUPS, PRE-/POST-TEST DESIGN AND PROCEDURES

This chapter contains the following sections: selection of subjects, procedures for securing the participants, development of the instrument, development of the independent variable and conduct of the experiment.

Selection of Subjects

The subjects in the study came from Tucson, Arizona, high school home economics classes studying beginning food preparation as elective courses. Five intact groups of students and home economics teachers at three different high schools participated in the study during the fall semester of 1975. Teacher A and teacher B monitored both an experimental class in which students were taught food concepts by a learning package method of instruction and a control class in which students were taught similar concepts by traditional methods. Teacher C taught only a control group. One hundred eight students, predominantly 9th and 10th grade girls, were enrolled in the five classes.

The three schools where the home economics classes were drawn possessed different community characteristics.
These characteristics were helpful in obtaining a general overview of participants in the study (Appendix N). School A was drawn from a community where 50 percent of the population spoke Spanish as a primary language. Eight percent and two percent respectively of school area C and B contained residents who spoke Spanish as a primary language. The mean family income level was the highest in community B, $13,629. Community A and B contained residents with similar mean family incomes, $8,539 and $8,800 respectively. Community B also contained the highest percentage of individuals 21 years or over who had graduated from high school, 62.8 percent. Community C contained 57 percent and community A 44.1 percent of individuals 21 years or over who had graduated from high school (Census Tracts, Tucson, Arizona 1972).

Procedure for Securing Participants

A small random sample of area home economics teachers was completed to obtain subjects for the study. In the spring of 1975, 15 letters were sent to home economics teachers teaching a one-semester beginning food course at the high school level. Two teachers from communities outside of Tucson and two teachers from Tucson volunteered to use learning packages in their classroom. Because of the distance from Tucson to those outlying communities the two outlying schools were not accepted as study participants.
The two Tucson teachers accepted for the study stated they would have a moderate food budget to work with and that they would be willing to administer achievement tests as well as compile necessary data for the study. Each of the two teachers selected volunteered an experimental as well as a control class. These classes would be drawn from regular, intact consumer and homemaking beginning food classes. A third home economics teacher was added to the study when it was discovered through course enrollment that one of the control groups numbered only five students.

**Development of the Instrument**

The measurement tool was a teacher-made achievement test. To insure content validity and to remove ambiguously stated questions a jury of students and educators read the test prior to its use by the project participants. Concepts selected for the semester achievement test were consistent with many district and school adopted curriculums. The achievement test was composed of 50 multiple choice questions related to beginning food preparation content (Appendix Q). Many of the questions on the instrument were drawn from evaluation tools developed at a prior time. The same instrument was the pre- and the post-test.
Development of the Independent Variable

Prior to the first draft of the food learning packages, objectives and concepts were adopted that were consistent with Tucson area scope and sequences used in many schools throughout the city. Beginning food concepts were defined as those necessary for an individual to possess basic food and nutrition knowledge and skills. Beginning food content was designed to sequence with one or two advanced semesters of food beyond the beginning course but still at the high school level. When the learning packages for beginning food were written ideas related to structure and content were drawn from a variety of sources. Teacher made devices and commercial tools were investigated. Workbooks, unit plans and curriculum guides were used as resources in the writing of the packages. Other ideas were drawn from single lesson plans.

After reading, previewing, sorting and categorizing materials a topical outline was drafted. This outline contained subject areas in like clusters: kitchen management, menu planning, breads and cereals, fruits and vegetables, meats and dairy products (Appendix B). Kitchen management was selected as a necessary prerequisite to all other areas of study because it dealt with principles of management. This unit was required before a student was able to begin the other laboratory units. A variety of resource materials
were identified and then clustered to follow the adopted outline. When learning experiences were selected for the learning packages an attempt was made to offer students a wide variety of media and methods from which to select. For each of the six units of study a 25 question pre- and post-test was written.

For each unit and section in the learning packages yellow colored cover sheets were used. The yellow sheets contained unit titles as well as instructions to the student to complete an optional pre-test if the student wanted to test out of the entire unit. The section cover sheets contained section titles, objectives and concepts for the unit and a variety of learning experiences from which to select. Each unit of instruction included self-contained learning experiences and content materials. Pre- and post-tests were color coded: pre-tests were green and post-tests were pink. The color differences aided the classroom teacher in supervising the learning environment.

During the fall and spring semesters of 1973-1974 three classes at Flowing Wells High School with a total of 137 students used the first draft of the teacher-made learning packages. After the packages were used for two semesters problems relating to the clarity of materials and procedures were evaluated and the learning packages were revised. Many aspects relating to classroom
management were altered. Two of the problems were the difficulty of roll taking and lack of privacy during testing. Many of the learning experiences did not contain sufficient directions so the students could work independently.

During the summer of 1975 a second draft of the learning packages was prepared correcting the aforementioned problems. This second edition of the packages was used in the pilot project for the present study under investigation (Appendix K).

To assist the teachers and students using the learning packages management components were presented to each teacher using the experimental method of instruction. The teacher's materials included: answer keys for pre- and post-tests and all learning experiences, suggested grading scales for tests and learning experiences, laboratory evaluation sheets for teacher and student use (Appendix J), a five-day plan for introducing the learning package system to students (Appendix D), an explanation of the role of the teacher in learning package instruction, a rationale for individualizing learning and a room set-up for fostering individual freedom and movement in the classroom (Appendix F). The student components included the following items: a copy of the students' contracts to be used in the course (Appendix G), market order and planning sheets for laboratory
experiences (Appendix I), and planning charts for students to help them pace their classroom time (Appendix H).

Conduct of the Experiment

Each teacher participating in the pilot study received an orientation prior to the beginning of the course. Teachers A and B met for their introduction one month prior to the opening of the school year. Teacher C met for instructions one week into the fall semester.

During the orientation each teacher received materials and instructions necessary for the study. In addition to the management components, teachers A and B received the following materials for their experimental classes: 20 learning packages for each unit of study, course outlines (Appendix B), student contracts (Appendix G), file folders for each student, achievement tests (Appendix Q), data sheet (Appendix P), course flow chart (Appendix E), and unit pre- and post-tests (Appendix L and M).

Teachers A and C received the following materials for their control classes: data sheet (Appendix P), achievement tests (Appendix Q), and basic food concepts sheet (Appendix C). All three teachers were instructed in the use of the data sheets and when to administer the achievement tests. Both control and experimental group teachers were told of the null hypotheses under study.
The experimental groups used the learning packages. The control groups were taught substantially the same concepts by teacher directed methods. Each of the classes began the course on the same day and received equal hours of instruction during the semester course. All students completed the achievement test as a pre-test during the first week of classes. Process evaluation was employed as participating teachers were telephoned periodically during the semester.

The experimental students used learning package system of instruction as a mode to learn food concepts. These students operated in a classroom where they were allowed freedom to utilize resource materials at will. They selected laboratory experiences they wanted to complete from the selected product preparations at the end of each unit section. They had the responsibility to check out audio-visual aids, score their own learning experiences and read from cookbooks or textbooks independently.

Students in the experimental classes operated from a contract for learning. They signed the contract during the first week of school for the first nine week grading period and then again half way through the semester for the second nine week grading period. Contracts presented to the student a definitely organized scheme of work and clarified teacher-student obligations such as boundaries, goals and
limitations. The food contracts were based upon both the quality and the quantity of coursework the student would accomplish as well as student attitude (Appendix G).

During laboratory experiences the experimental students were encouraged to evaluate their own laboratory competencies; the teacher also evaluated the laboratory experiences. Grades for laboratory experiences were arrived at by averaging both the teacher and student's grade. The control students were not evaluated in this manner. In the control classes the teacher assigned grades to each preparation group--one grade for all project participants.

Students using the packages either chose to pre-test out of the learning unit or complete the learning experiences in the unit. Students who chose to pre-test out of a unit contacted the teacher and asked for the pre-test, then went to a quiet area of the classroom to answer the test. Students returned the test and answers to the teachers' area when completed. All pre-tests were scored by the teacher. If students completed the test with 70 percent accuracy or better they were allowed to begin another unit of study and receive credit for the unit completed. When students completed a unit of study without pre-testing the unit was scanned to see what was involved. Students then were encouraged to plot in the planning calendar the length of time to be spent on that subject (Appendix H). Next, students
read through the list of learning experiences and selected ones to learn the prescribed objectives and big ideas. Usually students had a choice of reading, hearing or seeing as modes of learning. Some filmstrips offered as choices for learning experiences were not available at the experimental schools. When this happened an alternate filmstrip was offered to students. The alternate item contained similar content. After completing a written learning experience students scored their own papers from the answer key and labeled the papers with a grade from the scale in the answer key book. Students then returned the papers to the teacher's area so the teacher could read and comment on the learning experiences. An office aide filed all scored papers in the students' file folders for future reference and study. When a unit of instruction contained laboratory experiences students completed a market order and planning sheet two days before the planned experience. The learners were allowed to cook alone or with one other person who was studying the same unit. When the students were ready they obtained a post-test and then went to the quiet area in the room where they followed the same procedure as they would for a pre-test. When students completed the course of study early they had two choices. They could contract with the teacher to do a "quest" project (a student-initiated self-directed activity for the purpose of further
study related to the course objectives) or they could repeat units of study they wished to improve upon by completing different learning experiences and re-taking the post-test.

During the last week of school all classes completed the achievement test as a post-test. Teachers completed the data sheet and all three teachers were interviewed by the investigator. The teachers returned all achievement tests to the investigator but they were allowed to keep all other components of the study.
CHAPTER 4

DATA PRESENTATION AND ANALYSIS

The purpose of this study was to determine if students who were taught beginning food concepts by a learning package method of instruction scored significantly better on a measure of achievement than students taught similar concepts by traditional methods of instruction. This chapter contains the following sections: Data Collection, Coding of Data, Data Related to Subjects, Data Related to Raw Score Differences among Groups A, B, and C and Data Related to the Null Hypotheses.

Data Collection

During the semester participating teachers completed a data sheet which contained information about each student participant. Each teacher was asked to list the students who were participating in the experimental and the control class by grade level, sex, prior home economics experiences, primary language, general academic ability and pre-test and post-test achievement scores (Appendix P).

All students completed the pre-test for achievement during the first week of school. During the second week of the semester all pre-tests were mailed to the investigator.
Each test was scored by the investigator and a master data sheet from all schools was compiled. During the last week of school the students were given the achievement test as a post-test. All papers were mailed to and scored by the investigator. Scores from the post-test were added to the master data sheet.

Each teacher was interviewed after the course was completed. The teachers were asked to comment on classroom happenings during the semester course. They were asked about their students' progress during the course. They were asked if they, as the teachers, had observed any differences in achievement among students of: different sexes, different academic abilities, different prior experiences in home economics and different primary languages. Teachers were asked to list any difficulties their students had in adjusting to the learning packages as a method of instruction. They were asked to comment on why the students generally scored low on the achievement test. They were asked about their own personal skills in using learning packages as a method of instruction and what they would have done differently, if anything, if they were to duplicate the study. Both experimental teachers were asked if they would use learning packages again and if so, in what ways (Appendix D).
Coding of Data

Fourteen students from the control groups and 21 from the experimental groups were missing a score for either the pre- or post-test. These students entered the course late, left prior to the end of the 18-week period or were absent when the instrument was administered. Seventy-three students were included in the analyses of data (Table 1).

Table 1. Number of subjects in the study by treatment method and teacher grouping.

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Experimental Total Students</th>
<th>Total No. in Study</th>
<th>Control Total Students</th>
<th>Total No. in Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>28</td>
<td>14</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>B</td>
<td>26</td>
<td>19</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>--</td>
<td>--</td>
<td>23</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>33</td>
<td>54</td>
<td>40</td>
</tr>
</tbody>
</table>

Data from the master data sheet were coded and information was placed on IBM cards. Statistical analyses were run at The University of Arizona.
Data Related to Subjects

Three different schools participated in the project. School A included both an experimental and a control group. These students were primarily Spanish speaking girls and evaluated by their teacher as average in general academic ability. Most of the students had had prior home economics experiences. Half of the members of Community A were Spanish speaking with family incomes averaging approximately $8,500. Forty-four percent of the community residents over 21 had graduated from high school.

Students at School B were primarily English speaking and evaluated by their teacher as average to slightly above average in academic ability. More female than male students and over half had had prior experiences in home economics. School B served a community consisting of a majority of white families with mean family incomes of slightly less than $14,000. School B had the highest percentage of individuals 21 and over who had graduated from high school--62 percent.

School C's class was English speaking, of average intelligence, almost equally distributed between males and females and four out of 17 had had prior experiences in home economics. The community School C came from contained a majority of white families with mean family incomes only slightly above that of School A. The percent
of high school graduates was approximately mid-way between that of Schools A and B--57 percent.

At the conclusion of the semester study, test results were tabulated and the teachers were individually interviewed for student summary of performances. Such a report was used to supplement other findings.

Teacher A did not feel her students progressed to her satisfaction or theirs during the course because she felt many of her students were not in the food class to learn. She felt some were there because there were no other classes open to them. She felt uncomfortable with the packages because she had not read through each package and did not always have ready answers to learners' questions. She was uncertain if her philosophy of education fit the adoption of learning packages because sometimes students were unproductive during a given class period. She believed that some of her students were not motivated to be in school. She plans to use the learning packages for "special" students; those who enroll in the course late, go on home bound or are absent when a concept is introduced. She also plans to use the learning packages as a workbook and as a resource for students. She felt the classroom size was physically too small and too chopped up to allow easy flow of students and the independence and freedom recommended for learning package instruction. Teacher A felt female
students with prior home economics experiences did the best in overall achievement in the learning package treatment. Two students in Class A finished the course early. These two students planned and presented a dinner meal for friends and family.

Teacher B felt confused when many different students were in many different stages of learning. She believed that some students felt isolated when using learning packages. She expressed a dissatisfaction with her own supervisory skills and felt she did not push the students enough during the semester. She believed the students thought she was not interested in their learning accomplishments even though she was. She would have liked to have given them more individual attention during each class period. She felt that all students performed about the same except for those with above average academic ability; those students she felt performed better than the average and below average learners. She felt that some of the content in the packages contained too much detail. She will use the learning packages again in parts and in addition to other modes of instruction. Three students in Class B finished the course early. These students repeated some of the learning experiences and took some of the post-tests over to improve their semester grades.
Teacher C did not use the learning package method of instruction because she was a control group. She felt students with prior home experiences, primary language of English and above average academic ability did the best in her control class. She felt students performed poorly on the achievement test because they saw little value in the test and it was too advanced for beginning level competencies. If she was to participate in the study again she would motivate her students to do well on the achievement test by using it as a semester exam rather than in addition to other tools.

Data Related to Raw Score Differences Among Group A, B and C

The raw score differences were computed by taking the pre- and post-test scores for each student and finding the differences between the two scores. Some students showed positive gains and some students showed negative gains in raw score.

In Teacher B's experimental class one student did not show a positive gain in the difference in raw scores from the pre- and the post-test. When pre- and post-test raw gain scores were compared three students gained ten or more points. In the control group one student did not make a positive gain when pre- and post-test raw scores were compared. No students gained more than ten points.
Teacher C's control class showed 12 students with negative gains in raw scores. No students gained ten or more points when pre- and post-test scores were compared. Only five students earned a positive gain score.

The experimental Class A showed all students except four received positive gain scores. Two students gained more than ten points from the pre- to the post-test. The control class contained seven students with positive raw scores at or greater than ten points. Two students received negative raw gain scores.

After examining raw test scores using pre- and post-test scores among the three schools, five students in the experimental groups gained ten or more points between the pre- and post-test while seven students showed a positive gain of ten or more points in the control groups. All positive gains in the control groups were with Teacher A. In control group C, 12 students showed a negative gain in raw scores. Five experimental students received negative raw scores while 14 control group students received lower scores on the post-test than the pre-test. This evidence illustrates that students performed differently at the three different schools (Tables 2 and 3).

Data Related to the Null Hypotheses

The descriptive statistical analysis employed for the null hypothesis, there will be no significant difference
Table 2. The difference between raw scores from the pre- and the post-test by individual schools A, B and C.

<table>
<thead>
<tr>
<th>School</th>
<th>Experimental Students</th>
<th>Control Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Students</td>
<td>Raw Score</td>
</tr>
<tr>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4</td>
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<tr>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>-3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>-7</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>-11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6</td>
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<td>2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>C.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>4</td>
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<tr>
<td></td>
<td>1</td>
<td>-6</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>-11</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>-15</td>
</tr>
</tbody>
</table>
Table 3. The difference between the raw scores from the pre- and the post-tests by experimental and control groups.

<table>
<thead>
<tr>
<th>No. of Students</th>
<th>Raw Score Difference</th>
<th>No. of Students</th>
<th>Raw Score Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Students:</td>
<td></td>
<td>Control Students:</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>19</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>1</td>
<td>15</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>1</td>
<td>11</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>3</td>
<td>8</td>
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<tr>
<td>4</td>
<td>7</td>
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<td>7</td>
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<tr>
<td>3</td>
<td>6</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
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<td>2</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>-1</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>1</td>
<td>-3</td>
<td>2</td>
<td>-2</td>
</tr>
<tr>
<td>1</td>
<td>-7</td>
<td>4</td>
<td>-3</td>
</tr>
<tr>
<td>1</td>
<td>-11</td>
<td>2</td>
<td>-4</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>-6</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>1</td>
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<tr>
<td>2</td>
<td></td>
<td>2</td>
<td>-11</td>
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<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>-12</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td>-15</td>
</tr>
</tbody>
</table>
between scores on a measure of mastery by students taught foods concepts by learning packages and those taught by traditional instruction, was analysis of variance. The technique of analysis of variance uses the variance, the amount of variation of the scores of a sample from their group mean, to make conclusions about the means. When using analysis of variance the following assumptions were made.

1. The measures within each category represented random samples.
2. The sub-groups were homogeneous.
3. The population data from which the sub-groups sample were drawn was normally distributed.

The analysis of variance was employed to see if the means of the groups, control and experimental, differed significantly as a result of the learning package treatment. To determine whether a significant difference did exist an F test was utilized. The difference between the control and the experimental students was found to have an F value of 1.3125 which is not a significant score (Table 4).

The groups at Schools A, B and C were analyzed to see if there was a significant difference in schools rather than groups, control and experimental. The test for this significance difference was done through the use of the F test. The F value for the difference between the classes
Table 4. Analysis of variance of the difference between scores of achievement by students using traditional and learning package instruction.

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>118.6297</td>
<td>1</td>
<td>118.6297</td>
</tr>
<tr>
<td>Within groups</td>
<td>3268.4114</td>
<td>71</td>
<td>46.6640</td>
</tr>
<tr>
<td>Total</td>
<td>3387.0411</td>
<td>72</td>
<td></td>
</tr>
</tbody>
</table>

F = 1.3125*

* Significant at 0.05 = 3.98; 0.01 = 7.01.

at Schools A, B and C was found to have an F value of 12.5788 and was significant to the .01 level (Table 5).

Through the use of analysis of variance there was found to be no significant difference in the achievement levels of the students using learning packages and those students using traditional methods of instruction when taught food concepts. There was found to be a significant difference in achievement levels of students at Schools A, B and C. However, students taught by Teachers A, B and C performed differently but not as a result of the learning package method of instruction or the traditional mode of
Table 5. Analysis of variance of the difference between scores of achievement by groups at schools A, B and C.

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>895.4622</td>
<td>2</td>
<td>447.7311</td>
</tr>
<tr>
<td>Within groups</td>
<td>2491.5789</td>
<td>70</td>
<td>35.5940</td>
</tr>
<tr>
<td>Total</td>
<td>3387.0411</td>
<td>72</td>
<td></td>
</tr>
</tbody>
</table>

\[ F = 12.5788^* \]

* Significant at 0.05 = 3.13; 0.01 = 4.92.

instruction. The summary of the data computed through analysis of variance is presented in Table 6.

The statistical test employed for the following null hypotheses was multiple regression:

1. There will be no significant difference in scores on a measure of mastery of content between students whose primary language is Spanish and those whose primary language is English whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.
Table 6. F values for the difference between groups, difference between learning package and traditionally taught students and interaction.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups at Schools A, B and C</td>
<td>2</td>
<td>447.7311</td>
<td>12.5933</td>
<td>0.05</td>
</tr>
<tr>
<td>Learning package and traditional students</td>
<td>1</td>
<td>46.6640</td>
<td>1.3125</td>
<td>Not significant</td>
</tr>
<tr>
<td>Interaction</td>
<td>1</td>
<td>27.3083</td>
<td>.7681</td>
<td>Not significant</td>
</tr>
<tr>
<td>Error*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Error term is residual. The degrees of freedom, sums of squares and mean squares have been adjusted in terms of the control variables.

2. There will be no significant difference in scores on a measure of mastery of content between students with below average general academic ability and those students with above average general ability whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.
3. There will be no significant difference in scores on a measure of mastery of content between male students and female students whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.

4. There will be no significant difference in scores on a measure of mastery of content between students who have had prior home economics experiences and those who have not had prior home economics experiences whether taught beginning food instruction by traditional methods or through the use of learning packages in high school.

Through the use of multiple regression equations, it was possible to make predictions about the dependent variables from the data obtained from the independent variables. In setting up the statistical test, adjustments were made for the difference in classes at Schools A, B and C. Variables were analyzed by pre-test scores, the difference among groups and the post-test scores. Using multiple regression allows predictions to be made on one variable from data tabulated from other variables. The following characteristics of students which were analyzed are found in Table 7.
Table 7. Number of subjects by control and experimental grouping in schools A, B and C classified by primary language, general academic ability, sex and prior home economics experiences.

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Language</th>
<th>General Ability</th>
<th>Sex</th>
<th>Prior Home Economics Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Span.</td>
<td>Mean 2.0* Average</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>A:</td>
<td>Engl.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>8</td>
<td>2.158</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Experi­mental</td>
<td>9</td>
<td>1.857</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>2.008</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>B:</td>
<td>1</td>
<td>2.259</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Control</td>
<td>-</td>
<td></td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Experi­mental</td>
<td>2</td>
<td>2.053</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2.151</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>C:</td>
<td>1</td>
<td>2.000</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

* 1.0 below average; 2.0 average; 3.0 above average.
Primary Language

Each teacher was asked to evaluate their students' primary language. Teachers determined the primary language of each student by asking them, "If you were conversing with friends outside of the classroom, what language would you use?" Teacher A's control class contained a majority of English speaking students while her experimental class contained a majority of Spanish speaking students. Students at Schools B and C were assessed as primarily English speaking.

Using multiple regression an F value was computed using three different dependent variables: pre-test score, differences between pre- and post-tests and the post-test score. None of the three analyses indicated a significant F value. Using this statistical test there was found to be no significant difference between those students whose primary language was English and those whose language was Spanish when using either learning packages or traditional instruction (see Table 8).

General Academic Ability

Teachers were asked to give a general appraisal of each student in class. They were asked to rate their students as generally average, above average or below average in general academic ability. A mean score for general ability was tabulated. Teacher A's experimental group was
Table 8. F values for primary language of subjects by three different dependent variables.

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>F</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test score</td>
<td>2.443</td>
<td>Not significant</td>
</tr>
<tr>
<td>Difference between pre- and post-test</td>
<td>.542</td>
<td>Not significant</td>
</tr>
<tr>
<td>Post-test score</td>
<td>.122</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

assessed as slightly below average while all other classes were evaluated as average or slightly above average.

Using multiple regression an F value was computed using three different dependent variables: pre-test score, differences between pre- and post-tests and the post-test score. On examination of the analyses students who were evaluated by their teachers as being above average in general academic ability did do better on the pre-test than other students. This would appear obvious since that score was one of the indicators teachers used to evaluate students' abilities. However, when analyzing the difference in scores on the post-tests, there was found to be no significant difference in abilities in students using the learning packages
and those taught by traditional instruction. The above average students did no better nor no worse than the average or below average students (see Table 9).

Table 9. F values for general academic ability of subjects by three different dependent variables.

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>F</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test score</td>
<td>21.459</td>
<td>.000</td>
</tr>
<tr>
<td>Difference between pre- and post-test</td>
<td>.235</td>
<td>Not significant</td>
</tr>
<tr>
<td>Post-test score</td>
<td>.446</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

Sex

Schools A and B contained mostly girls in their beginning food classes. School C contained about equal numbers of females and males.

With multiple regression statistical models, an F value was computed using three different dependent variables;
pre-test scores, the differences between pre- and post-test, and post-test scores.

When examining pre-test scores only, girls did score better than boys at the .05 level of significance. Girls did better on the pre-test than the boys. However, when analyzing the difference on the post-test scores there was no significant difference between male and female students' achievement when taught through the use of learning packages or taught foods by traditional instruction. Both boys and girls performed in similar ways in food classes (Table 10).

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>F</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test score</td>
<td>4.103</td>
<td>.05</td>
</tr>
<tr>
<td>Difference between</td>
<td>1.439</td>
<td>Not significant</td>
</tr>
<tr>
<td>pre- and post-test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test score</td>
<td>3.400</td>
<td>Not significant</td>
</tr>
</tbody>
</table>
Prior Home Economics Experiences

Prior home economics experiences were any of the following: 4-H, home responsibilities or junior high school program enrollment. The teacher asked each student about the student's experiences in homemaking. At Schools A and B students entering the course had had some prior experiences in home economics. All but two students in each of Teacher A's control and experimental classes and Teacher B's control class had had some prior home economics experiences. Seven had had no prior experiences and 12 had prior experiences in Teacher B's experimental group. Teacher C's class contained 13 students with no prior home economics experiences and four students with prior experiences.

Using multiple regression, an F value was computed using three different dependent variables: pre-test score, difference between pre- and post-tests and the post-test score. When analyzing the dependent variable of pre-test a significance level of .01 was found. Students with prior home economics experiences did better on the pre-test than students who had no prior experiences in homemaking. When analyzing the difference between scores and the post-tests there was found to be no significant difference between students with prior home economics experiences and those with no experiences (Table 11).
Table 11. *F* values for prior home economics experiences of subjects by three different dependent variables.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>F</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test score</td>
<td>9.608</td>
<td>0.01</td>
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<tr>
<td>Difference between pre- and post-test</td>
<td>2.575</td>
<td>Not significant</td>
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<tr>
<td>Post-test score</td>
<td>0.824</td>
<td>Not significant</td>
</tr>
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</table>
CHAPTER 5

FINDINGS, CONCLUSIONS, DISCUSSION, RECOMMENDATIONS AND IMPLICATIONS

This study proposed to add pertinent information about achievement of students taught by learning packages as compared with students taught by traditional instruction in beginning food at the high school level.

Findings and Conclusions

At the conclusion of the study all three teachers were interviewed. They were asked to comment on attitudes and observational characteristics of the study participants and were asked to comment on future uses for the learning packages.

All three of these teachers volunteered for this study. At the orientation meeting the teachers expressed curiosity about learning packages and wished to explore this method of instruction. The investigator explained the procedure, obligations and responsibilities of learning package instruction. Once into the program, the teachers reported smooth progress but the magnitude of the new teaching method wasn't apparent until data were processed and final
interviews completed. At that time teachers conveyed their concerns.

All the teachers expressed a need for a new mode of instruction which would generate student's interest in learning about food. None of the teachers had had experiences with learning packages in foods or learning packages in other areas of instruction. Teachers A and B expressed some dissatisfaction with their personal teaching skills and with their accomplishments with the learning packages. Both believed they had not sufficiently motivated the students to learn by this new method of instruction. Both teachers saw future uses for learning packages in classrooms. However, they viewed learning packages for special problems and special situations as a mode of instruction rather than for an entire class of learners in a normal classroom setting. They believed that learning packages should function in isolation for special problems and special students. Neither teacher viewed the packages as a motivational and instructional tool to be used in conjunction with the classroom teacher's own good teaching methodologies.

This investigator concluded from the findings related to data compiled during teacher interviews that the lack of familiarity with the learning packages was a contributing factor to the lack of student achievement and teacher discontentedness. From the interviews the
investigator concluded that the learning package integration possibly took place too quickly. Teachers were perhaps not sufficiently trained in this mode of instruction. Students and teachers did not appear to be ready for the complete change to learning package instruction. None of the teachers were exposed to learning package teaching prior to this project. The investigator believes that this change in instruction might have been too all-encompassing for the participants and that students and teachers perhaps could have realized more success if they had been trained more specifically in how to teach and learn through learning package instruction.

The null hypothesis related to the measure of mastery by students taught food concepts by learning packages and those taught by traditional instruction was analyzed through the use of analysis of variance. There was found after computing an F value that there was no significant difference in the achievement levels of the students using the learning packages and those taught by traditional methods of instruction. There were found to be a difference in students' achievement at Schools A, B and C. These students at the three different schools performed differently but not as a result of the two teaching methods. Therefore the null hypothesis was accepted. From the findings related to the statistical test of analysis of variance the
investigator concluded that students achieved differently but not as a result of the learning package treatment or the traditional instruction for beginning food study.

In an attempt to identify why students performed differently at Schools A, B and C, data from the teacher compiled data sheets were analyzed through the use of multiple regression tests at the conclusion of the study. Data related to students' sex, prior home economics experiences, primary language and general academic ability were analyzed. The summary of findings related to this data showed that learning packages were successful in effecting learning gains for both boys and girls. Findings showed that students with primary language of Spanish did no better nor no worse than students whose primary language was English. The investigator concluded from this evidence that learning packages can be used by both the aforementioned types of learners. Students with prior home economics experiences did no better nor no worse than students without prior experiences in home economics when taught through the use of learning packages and traditional instruction. The most significant finding from the multiple regression statistical tests was that above average students did no better nor no worse than average or below average students when receiving food instruction through the use of learning packages or by traditional modes of instruction. The investigator
concluded that learning packages were a successful mode of learning for the aforementioned variety of learners. It was concluded that learning packages for food instruction can be as successful as more traditional modes of instruction and that a variety of learners, boys and girls, below average and above average academically able, Spanish and English speaking and those with with prior home economics experiences as well as those without prior experiences in home economics can use learning packages and make achievements in food knowledge and skills.

**Recommendations and Implications**

The following recommendations and implications may be derived from the data obtained by this study.

**Recommendations for Further Research**

1. A duplicate study should be conducted using at least six teachers, each with a control and an experimental class. A larger sample would produce a more substantial study.

2. Further research needs to be conducted reviewing processes of learning package instruction that produce positive or negative learning outcomes. One possibility is to isolate teaching characteristics such as teacher self-concept from modes of instruction.
3. Student and teacher attitudes toward learning package instruction should be evaluated in further research. An instrument developed and used to measure the attitudes of teachers and students in relationship to learning packages would provide meaningful data.

4. A study comparing student gains in specific social skills, decision making abilities, independence and self-confidence might identify advantages of learning package instruction other than achievement.

Recommendations for Teacher Education

1. It is evident from the reactions of the teachers in this study that learning package instructional and management skills need to be taught to classroom teachers.

2. The study illustrated that students differ greatly within the class and that classes differ from school to school. Teachers need to be aware of students' characteristics.

3. Learning packages can be used to teach foods to high school students. Therefore, learning package instruction can be offered as an alternative teaching method and should be included in teacher education programs.
Implications for Home Economics Teaching

1. Learning packages can be used to produce learning outcomes for food students at the high school level.

2. Learning package instruction can be used as a method of instruction in food study for boys and girls.

3. Learning package instruction can be used as a method of instruction in food study for students with primary language of Spanish as well as students with primary language of English.

4. Learning package instruction can be used as a method of instruction in food study for students who have not been exposed to home economics and for those who have had experiences in home economics.

5. Learning package instruction can be used as a method of instruction in food study for below average academically able students as well as above average academically able students.

6. From data gathered in this study it appears that learning packages may be helpful in producing positive achievement gains in students in heterogeneously grouped classrooms.
APPENDIX A

LETTER OF INQUIRY

May 26, 1975

Dear Home Economist,

Do you teach a beginning, one semester class in food? Are you tired of conventional food labs and instruction? Would you be willing to test an alternative method to teaching food? Read further . . . you might be eligible to participate in a mini field test!

WHY? During my years of teaching I've grown dissatisfied with "traditional" classroom instruction that places the responsibility for learning on the teacher's shoulders, holds the more capable students back and pushed the less able students ahead thus causing both groups to suffer. I believe learning packages for food is a viable alternative teaching method. I also believe that when a student completes an entire course with packages, their achievement of the course is equal to or greater than the traditionally taught student.

WHAT? I am looking for a few teachers to field test learning packages in food preparation. The course must be an 18-week beginning food class.

WHEN? The field test will take place during fall semester 1975.

REQUIREMENTS
A moderate budget is needed and the teacher must be willing to administer achievement tests during the semester. The willingness of the teacher to participate in a research project is the key to fair evaluation of the materials, I believe.
Linda Loomis (Mrs.)
Home Economics Teacher/Coordinator
Flowing Wells High School
3725 North Flowing Wells Road
Tucson, Arizona 85705
887-1100 (Ext. 61)

If you are interested in food learning packages, please call or write to me by June 6.

Sincerely,

/s/
Linda Loomis
<table>
<thead>
<tr>
<th>Suggested Length of Time</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 weeks</td>
<td>1. Kitchen Management</td>
</tr>
<tr>
<td></td>
<td>a. laboratory procedures</td>
</tr>
<tr>
<td></td>
<td>b. table etiquette</td>
</tr>
<tr>
<td></td>
<td>c. safety and sanitation</td>
</tr>
<tr>
<td></td>
<td>d. measuring</td>
</tr>
<tr>
<td></td>
<td>e. equipment</td>
</tr>
<tr>
<td>3 weeks</td>
<td>2. Meal Planning</td>
</tr>
<tr>
<td></td>
<td>a. nutrition</td>
</tr>
<tr>
<td></td>
<td>b. menu planning</td>
</tr>
<tr>
<td></td>
<td>c. buymanship</td>
</tr>
<tr>
<td>4 weeks</td>
<td>3. The Bread Group</td>
</tr>
<tr>
<td></td>
<td>a. quick breads and cereals</td>
</tr>
<tr>
<td></td>
<td>b. cookies</td>
</tr>
<tr>
<td></td>
<td>c. cakes</td>
</tr>
<tr>
<td>3 weeks</td>
<td>4. The Fruit and Vegetable Group</td>
</tr>
<tr>
<td></td>
<td>a. salads</td>
</tr>
<tr>
<td></td>
<td>b. fruits</td>
</tr>
<tr>
<td></td>
<td>c. vegetables</td>
</tr>
<tr>
<td>3 weeks</td>
<td>5. The Dairy Group</td>
</tr>
<tr>
<td></td>
<td>a. cheese</td>
</tr>
<tr>
<td></td>
<td>b. milk</td>
</tr>
<tr>
<td>2 weeks</td>
<td>6. The Meat Group</td>
</tr>
<tr>
<td></td>
<td>a. eggs</td>
</tr>
<tr>
<td></td>
<td>b. ground beef</td>
</tr>
</tbody>
</table>
APPENDIX C

BIG IDEAS

Beginning Food Concepts

Kitchen Management

a. When expectations for classroom functioning are understood by both teacher and students learning is fostered.
b. Accepting responsibilities and duties is the first step toward working together.
c. Table settings and table manners are signs of hospitality.
d. When one is familiar with kitchen equipment it is more likely that time will be saved, accidents will be prevented and work will be done more efficiently.
e. Work areas are usually safe if kept clean and orderly.
f. Sanitary practices include personal cleanliness as well as cleanliness of food, dishes and work area.
g. Dishes are washed by hand in hot soapy water starting with the cleanest dishes and ending with the dirtiest dishes.
h. When cooking terminology is understood one is more likely to be able to interpret recipe procedures.
i. Accurate measuring and use of equipment when baking is more likely to produce standard products.
Menu Planning

a. The four food groups are: breads and cereals, dairy, meat and fruits and vegetables.
b. The six essential nutrients are: fats, carbohydrates, water, protein, vitamins and minerals.
c. Fats supply energy as well as insulate and retain heat. Proteins build and repair tissue. Carbohydrates supply energy and cellulose to the body.
d. Each day teens need four servings from each food group except from meat. Two servings are needed from the meat group.
e. Calorie needs vary because of sex, age, metabolism, activity and body size.
f. Pleasing meals have a balance of nutrients, color, texture, taste, temperature, shape and are in line with family budget and taste patterns.
g. A wise shopper thinks, plans ahead and compares costs.
h. Large, chain, supermarkets which do not offer stamps usually offer the best buys for food items.

Breads and Cereals

a. Each piece of grain has an endosperm, germ and bran. They each contain valuable carbohydrates, protein, minerals and vitamins.
b. When producing standard products in cooked cereals, boil the liquid before adding cereal and stir often.
c. All quick breads have similar ingredients. Each ingredient plays a significant role in producing a standard baked product.

d. Quick breads are handled quickly and lightly to prevent heavy or dry products.

e. The proportion of liquid to dry ingredients and the method of shaping cookies produces different cookie types.

f. Cookies are a type of quick bread and can become heavy and dry if the dough is over handled.

g. When butter cakes are over-mixed a heavy, dry product with large cell structure results.

h. Generally, cake mixes are the least expensive, bakery cakes the most convenient and scratch cakes the best flavor.

Fruits and Vegetables

a. Salads have a variety of uses. They may accompany the meal, be served as an appetizer, be a main dish, add a garnish or serve as a dessert.

b. There are a wide variety of salad greens that can be used in salad preparations.

c. Salads may provide vitamins A and C as well as give bulk, color and variety to meals.
d. Fruit oxidation is prevented by adding high acidic fruits to the cut surface of apples, bananas and other tender fruits.

e. Fruits are used in desserts, salads, side dishes and beverages.

f. Fruits add bulk, flavor and vitamins A and C to our diets.

g. To conserve color, flavor and nutrient loss use as little water as possible and as short a cooking time as possible when preparing cooked vegetables.

h. Vegetables are essential to good health and supply high amounts of vitamins A and C.

Meats

a. Eggs can serve as a meat substitute in menu planning.

b. Eggs contain high amounts of protein and calcium.

c. Eggs are cooked at low temperature to keep the protein from becoming tough.

d. Eggs are graded according to exterior size and interior appearance.

e. Ground beef is inexpensive and versatile.

f. When cooking meat excess heat and/or prolonged cooking causes protein to toughen and products to be dry.

g. Moist heat cookery methods of preparation are used for less tender cuts of meat. Dry heat cookery methods of preparation are used for tender cuts of meat.
Dairy Products

a. High temperature or prolonged cooking time toughens the protein in cheese.
b. Cheese varieties are classified by texture, flavor and ripening processes.
c. When cheese melts it is done cooking.
d. Cheese is high in phosphorus, vitamin A, riboflavin, calcium and can be used as a meat substitute.
e. The objective of milk cookery is to prevent film formation, scorching and curdling.
f. Milk has a high protein content. When cooking milk, use a short cooking time, low temperature and stir often.
g. A white sauce consists of margarine, flour and milk.
h. Milk contains many essential nutrients and thus is one of nature's most nearly perfect foods.
APPENDIX D

INTRODUCTION TO LEARNING PACKAGE INSTRUCTION

Day 1: The teacher will present general class rules and regulations to students. Discuss seating arrangements, etc. Give the project achievement test to students. Have students sign contracts.

Day 2: The teacher will explain to students that they are to participate in a new project that was developed to aid student learning. It stresses learning at one's own rate. Show packages, file, grade book, resources, cookbooks, etc. Stress that the responsibility for student growth is on their shoulders. Stress that they can test out of a unit and explain how several students because of prior experiences—4-H, home, etc.—may be ahead of others. You do not want the whole class held back because of this, yet, you want each student, who has individual abilities, to grow and develop to his potential. Explain the flexible learning environment.

Day 3: Have two students role play how a typical day goes. Encourage students acting out the situation to
"ham" it up, yet, still getting the main points and steps across to the class. Do Lab Procedures section of Kitchen Management together so the class will all get off to a positive start.

Day 4: Discuss grading and record keeping management aspects. Allow students to test out of Kitchen Management if they already know objectives and big ideas.

Day 5: Praise their achievement and remind them of the room locations and resources. Motivate them in the best way you know to help them get started and then encourage their independent actions. Several students will have trouble with the new freedom while others will right away work in successful ways.

Please, if you have any questions, call me.
APPENDIX E

LEARNING PACKAGE MANAGEMENT SYSTEM

Select a Unit

Preview Content

Select Learning Experiences

Complete Learning Experiences

Evaluate Learning Experiences

Pre-test

70% Accuracy

Less than 70% Accuracy

Complete Market Order and Planning Sheet

Perform Laboratory Experiences

Evaluate Laboratory Experiences

Review Big Ideas and Objectives

Post-test

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APPENDIX F

LEARNING PACKAGE CLASSROOM CENTERS

- Laboratory Center
- Testing Center
- Teaching Center
- Audio-Visual Center
- Printed Materials Center
- Individual Work Center
APPENDIX G

STUDENT CONTRACT

<table>
<thead>
<tr>
<th>Grade</th>
<th>1st Nine Weeks</th>
<th>2nd Nine Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3 units with 80-100% accuracy</td>
<td>6 units with 80-100% accuracy</td>
</tr>
<tr>
<td>B</td>
<td>2 units with 70% accuracy</td>
<td>5 units with 70% accuracy</td>
</tr>
<tr>
<td>C</td>
<td>1 unit with 60% accuracy</td>
<td>4 units with 60% accuracy</td>
</tr>
<tr>
<td>D</td>
<td>1 unit with 50% accuracy</td>
<td>3 units with 50% accuracy</td>
</tr>
<tr>
<td>Failure</td>
<td>0 units</td>
<td>0-2 units with 40% accuracy</td>
</tr>
</tbody>
</table>

Grades are computed by:

1/3 test grades  
1/3 laboratory grades  
1/3 attitude  

average of all three

I__________________________am working toward a ____ grade.

Date__________________________

Student Signature__________________________

Teacher Signature__________________________
For the Month of _______________________

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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</tbody>
</table>


APPENDIX I

PLANNING SHEET AND MARKET ORDER

I______________________________ will be making________________________ in kitchen #_______on___________ day. My seven point plan of action follows:

1. My menu will be: 2. The table will be set like:

3. My recipe can be found in:

4. I will be serving:

5. My serving time is:

6. I will use the following time schedule:

-----------------------------------------------------------------
7. What I need from the supply cupboard as well as the grocery store is:

<table>
<thead>
<tr>
<th></th>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy Products</td>
<td>Item</td>
<td>Amount</td>
</tr>
<tr>
<td>Bread &amp; Cereals</td>
<td>Item</td>
<td>Amount</td>
</tr>
<tr>
<td>Meat</td>
<td>Item</td>
<td>Amount</td>
</tr>
<tr>
<td>Fruit/Veg.</td>
<td>Item</td>
<td>Amount</td>
</tr>
<tr>
<td>Fats/Sugar</td>
<td>Item</td>
<td>Amount</td>
</tr>
<tr>
<td>Other</td>
<td>Item</td>
<td>Amount</td>
</tr>
</tbody>
</table>
APPENDIX J

LABORATORY EVALUATION

__________________________ student in kitchen #_______ on

______________________ day while making ________________ product.

1 - excellent
2 - above average
3 - average
4 - needs improvement
5 - not attempted

<table>
<thead>
<tr>
<th>Areas of Consideration</th>
<th>Grade Scale</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice of preparation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I follow instructions?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Did I plan my cooking and use my plans?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Techniques used:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I learn the recipe?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I use good work habits?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I use kitchen equipment correctly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I measure liquid and dry ingredients correctly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I wash my dishes?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I clean up spills right away?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Attitude:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was I clean and neat in appearance?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was I friendly, pleasant, and courteous to my classmates?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I take just what I needed from the supply area?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I practice safety rules?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did I try my best?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

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### Areas of Consideration

<table>
<thead>
<tr>
<th>Table setting/manners:</th>
<th>Grade Scale</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did I practice good table manners?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Did I contribute to an interesting conversation at the table?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Was I a good listener?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time management:</th>
<th>Grade Scale</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did I make the best use of my time?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Did I finish my work on time?</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Final product:</th>
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<td>Did I do my part in putting the kitchen in order after the meal?</td>
<td>1 2 3 4 5</td>
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<tr>
<td>Did I keep my kitchen clean?</td>
<td>1 2 3 4 5</td>
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After reviewing my participation in lab, I hope to improve:

My grade for this lab should be:__________________________.
APPENDIX K

SAMPLE LEARNING PACKAGE
This unit includes the following sections:

1. Ground beef
2. Eggs

If you would like to take the pre-test for this unit please ask your teacher.
OBJECTIVES:
1. I will be able to define moist heat cookery and dry heat cookery and tell which to use with tender cuts of beef and less tender cuts.
2. Given six methods of cooking beef, I will be able to give directions for each method.
3. I know the cooking principles and procedures to use with ground beef cookery.
4. I know the advantages of using ground beef.

BIG IDEAS:
1. Moist heat cookery methods are braising and cooking in a liquid. Dry heat cookery methods are broiling, panbroiling, roasting, and frying. Moist heat cookery is used with less tender cuts of beef and dry heat cookery is used with tender cuts of beef.
2. There are 6 basic cooking methods of beef cookery: broil, panbroil, panfry, roast, braise, and cook in a liquid.
3. Excess heat and or prolonged cooking causes protein to toughen and dry products result.
4. Ground beef is usually less expensive and highly versatile.
LEARNING EXPERIENCES:

A. Read "Look and See on Ground Beef" and answer the "See and Do on Ground Beef". ..........................1-2

B. Using a textbook, complete the "See and Do on Beef Cookery Methods" and "See and Do on Definitions" in this packet. ..........................3-4

C. Examine "Look and See on Beef Cuts", answer "see and Do" on ditto. ...............................5

D. Read "look and See on Bone Shapes". Answer "See and Do" on ditto. ..............................6

E. View filmstrip, "Beef from store to table" and follow along in the filmstrip commentary--OR--view any other filmstrip on beef or ground beef.

F. Obtain the meat cookery charts (Beef Council) from your materials center and read them carefully. Make a self quiz and write the answers to it, then turn it in to your teacher.

G. From the magazines for cutting, find an example of the six methods of meat cookery. Explain how to cook each method. Display methods in class.

H. Read the pamphlet "Facts About Beef".

I. Make a chart or poster illustrating moist heat and dry heat cookery. Be sure and identify the six methods of meat cookery. Which types of cookery would you use for tender cuts of meat? Display poster in class.

J. View filmstrip "Ground Beef...Passport for Far Away Eating". Read filmstrip commentary.
Hamburger is cooked ground beef while ground beef is uncooked. This is an important difference.

Ground beef is a popular food for many reasons. It is satisfying, less expensive, and easy to prepare. It provides complete protein and substantial amounts of iron and B vitamins.

Actually it is quite low in calories - a 3 oz. patty contains 185 calories (if the fat is poured off). In the freezer this product will last for 2 to 3 months before or after cooking. Ground beef is versatile, it can be dressed up and provides a wealth of tastes and textures. The reason why ground beef is as tasty and economical is that it has been ground. Grinding or chopping breaks down the connective tissues or less tender cuts which makes the meat easy to chew and quick to cook. Ground beef comes from any part of the whole beef carcass with flank, shank, plate, and heel of the round predominating. Regular ground beef usually combines about 20-25% fat and is generally lowest in cost. If ground beef is labeled "ground chuck" only meat from the chuck may be used. Ground chuck contains 10-20% fat and is generally medium priced. "Ground round" has meat from the round only. It is usually less than 10% fat. Generally ground round is higher in price than chuck. "Ground sirloin" is meat from the sirloin only and has very little fat. Ground sirloin is high in price compared to other ground beef.

Use the kind of ground beef that provides the right amount of fat for the dish you are making. Allow four servings per pound of uncooked ground beef. Avoid unnecessary handling of ground beef - overhandling makes cheaper products. You can "stretch" ground beef by adding 1/2 cup of bread crumbs or cereal per pound of meat. Using an extender such as bread crumbs or cereal helps keep the juices in the meat and allows the meat to go farther. Since ground beef is a protein food use medium heat. Do not pat or press burgers during cooking; this squeezes out juices.

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From what part of the cattle can ground beef come? 

What part of the animal does ground sirloin come from? 

What part of the animal does ground chuck come from? 

What part of the animal does ground round come from? 

How does one determine the type of ground beef to purchase? 

If 30 people are to be served how much ground beef should be purchased for one hamburger per guest? 

If your hamburger patties come out dry, what is it you are doing wrong? 

What nutrients is ground beef high in? 

What is the purpose of an extender? 

What is the difference between ground beef and hamburger? 

List ten ways ground beef may be served (look in recipe books for specific recipes): 

1. 

2. 

3. 

4. 

5. 

6. 

7. 

8. 

9. 

10. 

What makes ground beef so tender? 

Why is ground beef so popular? 

At what temperature is meat cooked? 

What temperature is used for all protein foods? 

Plan a meal using ground beef. Use the reverse side of this sheet if necessary: 

MENU:
1. To brown meat in a small amount of fat, then to add a small amount of liquid and cook slowly in covered utensil is
   a. broiling
   b. braising
   c. roasting
   d. frying

2. To cook meat over or under direct heat is
   a. braising
   b. roasting
   c. frying
   d. broiling

3. To cook meat in a small amount of hot fat is
   a. pan broiling
   b. frying
   c. braising
   d. roasting

4. To cook meat uncovered in a hot skillet without fat, pouring off any fat or juices as it accumulates is
   a. braising
   b. pan broiling
   c. frying
   d. pressure cooking

5. To cook uncovered in an oven without liquid is
   a. frying
   b. roasting
   c. braising
   d. stewing

6. To cook in enough liquid to cover is
   a. frying
   b. braising
   c. cooking in a liquid
   d. braising
Using a pamphlet or textbook, write a definition for each of the following 6 basic cooking methods:

1. BROIL

2. PAN BROIL

3. ROAST

4. BRAISE

5. COOK IN LIQUID

6. PAN FRY

????? How would you cook???????
   a ground beef pattie?
   seven bone roast?
   beef tongue?
Areas less used such as near the backbone of the animal are more tender than areas of frequent use where more connective tissue is present.

Moist heat is used with less tender cuts of meat (braise and cook in liquid).

Dry heat is used with tender cuts of meat (roast, pan-fry, panbroil, and broil).

**How would you cook the following beef cuts?**

1. chuck roast
2. T-bone steak
3. ground beef pattie
4. flank steak
5. round steak

a. moist heat method
b. dry heat method
Bone shape is an indicator of tenderness. There are five basic bones. When you can identify the bone and its characteristics you will be better able to make intelligent meat purchasing and preparation choices!

Which two bones are indicators of less tender beef cuts?

For each cut of beef on the left tell: the type of bone, whether it is tender or less tender and whether to use moist or dry heat cookery.

1. chuck roast  a. round bone
2. chuck steak  b. t-bone
3. rib roast  c. blade bone
d. wedge bone
e. rib bone
4. round steak  f. less tender meat
g. tender meat
5. flank steak  h. mdst heat cookery
6. ground beef pattie  i. dry heat cookery
SUGGESTED RECIPE: BEEF TACOS

Taco shell

Use 2 corn tortillas per person
1/4 inch melted shortening in skillet

1. Place one corn tortilla in hot shortening (medium heat) then fold one side of the taco loosely over the other using tongs. Hold in that position until tortilla is slightly crisp, not hard.
2. Then turn with tongs to the other side and repeat until tortilla is slightly crisp.
3. Remove from shortening and place on paper toweling to drain.

Taco filling

Use 3 oz. ground beef per person (2 tacos)
Use 1 tablespoon taco sauce per person
Salt and pepper to taste

1. Brown meat in small skillet, then add sauce and salt and pepper to taste.

Stuffing (Prepare the below ingredients:)

1/2 leaf crisphead lettuce per person
1/2 oz. cheese - grated - per person
1/2 tablespoon chopped onion per person

ASSEMBLING THE TACO:

Fill taco shell with meat mixture first.
Add shredded lettuce, grated cheese and chopped onion.
Serve immediately.

Would you like "frijoles" with your taco dish? If yes, follow the directions below and serve with your tacos.

Frijoles

Measure out 1/2 cup out per person.
Heat slowly over low heat until hot.
Season to taste with butter, salt and pepper.
Serve immediately with tacos.
Ground Beef

1. mini meat loaf
2. pizza
3. meatballs
4. hamburgers
5. sloppy joes
6. chili
7. goulash
8. stuffed green peppers
9. Texas hash
10. meat pie
11. tacos
12. other-
OBJECTIVES:
1. I will be able to select eggs according to freshness, size and quality.
2. I will be able to prepare a standard egg product.
3. I am aware of the nutrients that eggs are rich in.

BIG IDEAS:
1. Eggs are graded according to exterior size and interior appearance.
2. Eggs are cooked at low temperature to keep the protein from becoming tough.
3. Eggs contain high amounts of protein and calcium.

LEARNING EXPERIENCES:
A. Complete "Look and See...See and Do on Egg Grades".... 1
B. View "Egg Basics" filmstrip, see "Look and See on Egg Basics"................................. 2
C. Complete "Eggs See and Do" page.................................................. 3
D. Complete "Discovering Egg Cookery"................................. 4
E. Do "Discovering Egg Basics"................................. 5
F. Express the big idea of low heat and accurate cooking time in a bulletin board!
G. Select and prepare an egg recipe. Make a market and planning sheet. See "Recipe Round-up".............. 6,7
Eggs are graded by both the interior and the exterior quality. The best grade egg has a high yolk and little white spread.

Which egg grade would you use for-

1. cake mix
2. scrambled eggs
3. fried eggs

a. grade AA
b. grade A
c. grade B
Some Egg Facts-

Storage: Eggs should be refrigerated at 45 to 55° with the large end up. Cold eggs are more easily separated; egg whites at room temperature beat up faster to a larger volume. Storing leftover egg yolks and whites: Place egg yolks in tight-lidded jar, cover with water and store in refrigerator. They will keep 2 to 3 days. Egg whites can be stored for 1 week to 10 days in a tightly covered jar in the refrigerator or they can be frozen.

4 to 6 whole eggs
8 to 10 egg whites
12 to 14 egg yolks} equal one cup
Use a textbook to help you learn the following information.

1. How many eggs equals as much protein as one serving of meat?
2. What nutrients are eggs high in?
3. What other eggs may we eat other than hen eggs?
4. What nutrient is available just from the egg yolk?
5. How are eggs tested at home for freshness? How are they tested commercially for freshness?
6. Should the egg shell for a fresh egg be dull or glossy?
7. Is a white shelled egg more nutritious than a brown shelled egg?
8. How are eggs graded? List two different ways.
9. Explain two other ways that eggs may be purchased other than fresh, in the shell form.
10. How will just egg whites be stored to keep fresh? How will just egg yolks be stored to keep fresh?

11. Draw and label an egg and list its' parts. See "Look and See on Egg Basics", page 2.

12. How should eggs be stored, large end up or small end up?
OBJECTIVE: to determine the effect of temperature and time of cooking on the texture and flavor of eggs cooked in the shell

MATERIALS NEEDED: 2 small saucepans with lids
2 eggs
2 custard cups

PROCEDURE:

1. Puncture the large end of one egg with a pin hole. Put one egg in a small saucepan and cover with cold water. Bring this water to a rapid boil. **BOIL FOR TWO MINUTES.** Cover the pan and remove from the heat. Allow to stand for 20 minutes. Run cold water over egg. Break open and put into custard dish.

2. Take another egg and cover it with water. **Boil for 20 minutes rapidly.** Cool naturally. Break open and put into another custard cup.

NOW:.....taste the two eggs.
Select any of the following experiments.

1. Weigh one dozen large eggs, one dozen medium eggs, and one dozen small eggs. Now compare the prices and the weights. Which is the best to buy?

2. Hard cook four eggs of different grades and notice the position in the white of the yolk. Share your discovery with your classmates. Make egg salad with your eggs, spread it on crackers and share your treat with others.

3. Demonstrate how eggs may be tested for freshness while they are still in the shell. A fresh egg will lie on its side on the bottom of a pan of water. An old egg will float in a pan of water.

4. Demonstrate how to identify a hard cooked egg from a fresh egg without peeling each. A hard cooked egg will spin like a top while the fresh egg "woobles" when spun.

CREATE
Write a recipe below for egg salad. Include recipe instructions as well as recipe ingredients.

Egg Salad Recipe:
SUGGESTED RECIPE

1. Chili-Scrambled Eggs

2 eggs
2 T. milk
1 1/2 t. chopped green chili

1 T. margarine
1/2 t. salt

dash pepper

1. Beat eggs slightly with rotary beater.
2. Add milk, chili, and salt and pepper.
3. Place margarine in skillet when sizzling add eggs.
4. Cook over low heat stirring as little as possible.
5. Serve as soon as eggs are set.
*(If bacon drippings are available use instead of margarine, use just enough to keep eggs from sticking.)*

2. Lonesome Egg Omelet

2 eggs
3/4 t. salt
dash pepper
dash paprika

3 drops tabasco sauce
dash garlic powder
1 T. oil
dash celery salt

1. Break the egg into a bowl, add salt, pepper, celery salt, and paprika.
2. Add tabasco sauce, garlic powder, and blend.
3. Pour into a greasy frying pan on medium heat.
4. Set let until eggs are no longer runny.
5. Turn off heat, sprinkle with cheese (optional).
6. Roll from one side to the other. Serve.
1. a la golden rod
2. omelet
3. baked
4. scrambled
5. creamed
6. deviled
7. fried
8. poached
9. hard cooked
10. soft cooked
APPENDIX L

MEAT GROUP PRE-TEST

Name: ________________________________

Period: ______________________________

1. Define moist and dry heat cookery.

2. List the six basic methods of cooking beef and explain how each method is done.

3. Why is ground beef so widely used?

4. At what temperature and for what length of time should meat be cooked?

5. What nutrients are meat and eggs rich in?

6. How can you tell the freshness of an egg before cracking? After breaking?

7. Tell how to prepare a standard fried egg and tell what it looks like when cooked.

8. Explain how eggs are graded.
APPENDIX M

MEAT GROUP POST-TEST

Name: ________________________________

Date: ________________________________

Please select the one best answer for each of the following. Make all your marks on notebook paper, not on this test.

1. An essential nutrient found in meat is:
   ___a. protein.
   ___b. calcium.
   ___c. carbohydrates.
   ___d. minerals.

2. Moist methods of meat cookery are used for:
   ___a. T-bone steaks.
   ___b. flank steak.
   ___c. sirloin steak.
   ___d. rib steak.

3. When ground beef has been over-cooked, it will:
   ___a. be dry.
   ___b. become flaky.
   ___c. be moist.
   ___d. be flavorful.

4. To place meat in a frying pan and not to add fat is to:
   ___a. fry.
   ___b. pan fry.
   ___c. broil.
   ___d. pan broil.
5. Protein is an essential nutrient because it:
   ___a. builds and repairs body tissue.
   ___b. gives us energy.
   ___c. helps to regulate the body.
   ___d. all of the above.

6. Ground beef is made tender by:
   ___a. using moist heat cookery methods.
   ___b. using a short cooking time and low temperature.
   ___c. grinding it.
   ___d. baking it.

7. 30 guests are to be served one hamburger apiece, you will need to purchase
   ___a. 10 pounds of meat.
   ___b. 20 pounds of meat.
   ___c. 15 pounds of meat.
   ___d. 8 pounds of meat.

8. Ground beef is stored successfully for
   ___a. 7 days in the refrigerator.
   ___b. 2 days in the refrigerator.
   ___c. 10 days in the refrigerator.
   ___d. only in the freezer.

9. Ground beef products should be cooked
   ___a. at as high a temperature as possible.
   ___b. at a low to moderate temperature.
   ___c. for a long time, until crispy.
   ___d. by pressing firmly on patties with spatula.

10. Ground beef is classified by
    ___a. fat content.
    ___b. water content.
    ___c. waste content.
    ___d. cereal content.

11. Extra lean ground beef is best purchased and used for
    ___a. ground beef patties.
    ___b. casseroles.
    ___c. hamburgers.
    ___d. barbecueing.
12. The string-like membranes attached to the ends of a yolk in eggs are
   ___a. a sign that the egg is spoiled.
   ___b. a sign that the egg is not edible.
   ___c. a sign of a fertilized egg.
   ___d. called chalaza.

13. The protein source in an egg is found in
   ___a. the yolk
   ___b. the shell.
   ___c. the white.
   ___d. in all of the egg.

14. The vitamin A content in an egg is found in
   ___a. the yolk.
   ___b. the shell.
   ___c. the white.
   ___d. in all of the egg.

15. Brown shelled eggs have
   ___a. more nutrients than white shelled.
   ___b. have been dyed.
   ___c. have the same nutrients as white, except vitamin A.
   ___d. have equal nutrients as white shelled eggs.

16. The dark green ring around a hard cooked egg is caused by
   ___a. lack of freshness.
   ___b. too high of temperature when cooking.
   ___c. too low of temperature when cooking.
   ___d. no special reason; just happens without a cause.

17. A standard fried egg is
   ___a. crispy around the edges.
   ___b. solid throughout with lace on edges.
   ___c. runny yolk and white.
   ___d. firm but not rubbery or lacy.
18. Eggs should be stored
   _____a. in the carton, large end up.
   _____b. large end down, in the refrigerator egg keeper.
   _____c. on their sides so the air bubble won't break.
   _____d. either large end up or small end up.

19. Eggs beat up faster and to a fuller volume when
   _____a. beaten at room temperature.
   _____b. removed directly from the refrigerator.
   _____c. using a whir whip.
   _____d. using an egg beater, rotary type.

20. Eggs are graded by
   _____a. interior and exterior qualities.
   _____b. by the height of the yolk and spread of the white.
   _____c. by the freshness.
   _____d. all of the above.

21. To test the freshness of an egg, place the egg in a bowl of cold water. If it ________ it is fresh.
   _____a. spins
   _____b. rolls over
   _____c. floats
   _____d. sinks

22. Grade AA eggs are best used in
   _____a. poached eggs.
   _____b. baked eggs.
   _____c. cake mixes.
   _____d. scrambled eggs.

23. ________ number of eggs equals one serving from the meat group.
   _____a. 1
   _____b. 2
   _____c. 3
   _____d. 4
24. Poaching an egg is done by

   _____ a. dipping in cold water to stop cooking.
   _____ b. lowering into deep hot fat until done.
   _____ c. breaking egg into individual cups over hot water
   _____ d. a and c.

25. ________ is a process of holding an egg and turning it before a beam of light strong enough to observe the interior.

   _____ a. candling.
   _____ b. poaching.
   _____ c. yolking.
   _____ d. viewing.
APPENDIX N

COMMUNITY CHARACTERISTICS OF SCHOOLS A, B AND C

Community A:
Mean family income $8,539
Percentage of Spanish speaking community members 50%
Percentage of individuals 21 years or over who are high school graduates 44.1%

Community B:
Mean family income $13,629
Percentage of Spanish speaking community members 2%
Percentage of individuals 21 years or over who are high school graduates 62.8%

Community C:
Mean family income $8,800
Percentage of Spanish speaking community members 8%
Percentage of individuals 21 years or over who are high school graduates 57.0%
APPENDIX O

TEACHER INTERVIEW

1. Did you feel all students progressed to your and their satisfaction during the semester course? Why or why not?

2. Did you observe any differences in your students' achievement because of:

   sex
   prior home economics experiences
   general academic ability
   primary language

3. Did your students show any signs of difficulty in adjusting to using learning packages? If so, what were they?

4. Why do you think students generally scored low on the achievement test?

5. How did you feel about your personal skills in administering the learning packages?

6. What would you do differently if you were to participate in the study again?

7. Will you use these or other learning packages again? How or in what ways?
APPENDIX P

DATA SHEET
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<th>General Ability**</th>
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* E = experimental; C = control.

**AB = above average; A = average; B = below average.
APPENDIX Q

FOOD LEARNING PACKAGE ACHIEVEMENT TEST

Name: ____________________________
Date: ___________________________ Pre/Post

Directions: You may answer the question even when you are not entirely sure that your answers are correct, but avoid outright guessing. Do not spend too much time on any one question. Work rapidly but carefully.

You are to make all your answers on a separate sheet of paper, not on the test. There are four answers to each question, but only one correct answer. Select the BEST answer in each case.

1. One important general rule for the placement of kitchen equipment within the kitchen unit is to place it.

   _____ a. where it's first or most frequently used.
   _____ b. near the sink for ease of washing.
   _____ c. in one group anywhere.
   _____ d. off the floor.

2. The pastry blender is used for

   _____ a. cutting fat into flour.
   _____ b. spreading melted butter.
   _____ c. creaming shortening and sugar.
   _____ d. measuring water for pastry.

3. Dishes are washed by hand in a special order (glassware, silver, plates, serving dishes, baking dishes, and pots and pans) because

   _____ a. some dishes are cleaner than others.
   _____ b. etiquette says so.
   _____ c. it keeps the dish water warm.
   _____ d. it gives you time to wipe off counter tops.
4. Which one of the following is a safe and sanitary kitchen practice?

____a. pull electrical cords from the wall with wet hands.
____b. wipe your nose before cooking.
____c. strike matches away from you.
____d. leave spills on the floor until you're finished cooking.

5. When a tossed green salad is used as an appetizer, the salad fork is placed

____a. to the right of the soup spoon.
____b. above the dinner plate.
____c. to the left of the dinner fork.
____d. to the left of the dessert fork.

6. At a formal dinner the signal to begin eating is when the hostess/host

____a. sits down.
____b. lifts her/his fork.
____c. finishes passing the food.
____d. begins table conversation.

7. How many teaspoons equals one tablespoon in the U.S. system?

____a. 2
____b. 16
____c. 3
____d. 5

8. When reading a recipe and it says to "bread" it means to

____a. butter a slice of bread.
____b. tear bread into cubes.
____c. roll something in bread crumbs.
____d. toast bread until golden brown.

9. When measuring ingredients, which two items are always packed into a dry measuring cup?

____a. fat and flour.
____b. butter and brown sugar.
____c. brown sugar and powdered sugar.
____d. flour and granulated sugar.
10. Connie has several types of milk available in the market. If her family tends to be overweight which of the following features should Connie look for in milk?

____ a. low in calories.
____ b. ease in storage.
____ c. most economical source of non-fat milk products.
____ d. high in vitamins A and D.

11. A tested recipe means:

____ a. if directions are followed, a predictable quality product will result.
____ b. many people have tried it and like the product.
____ c. you may test it if you wish.
____ d. the recipe has won a contest.

12. Doris can buy pasteurized whole milk at 56¢ a half gallon or raw whole milk at 45¢ a half gallon. In spite of the higher price, she chooses the pasteurized milk because

____ a. vitamins have been added to the milk during pasteurization.
____ b. the butterfat in the milk is so finely divided that it stays distributed throughout and doesn't rise to the top.
____ c. half of the water has been removed so it will go farther.
____ d. the harmful bacteria have been killed by heating the milk to 160°F for 16 seconds.

13. Meal planning for a family involves

____ a. the likes and dislikes of the family.
____ b. knowing how to prepare the food selected.
____ c. a knowledge of nutritional needs of people.
____ d. all of these.

14. What substance abundantly found in meat is essential for building and repairing body tissue?

____ a. thiamine.
____ b. calcium.
____ c. fat.
____ d. protein.
15. Often reducing diets limit the amount of carbohydrates and fats. When these are limited, what nutrients provide energy for the body?

- a. stored vitamins and minerals.
- b. roughage or bulk in the diet.
- c. enzymes and hormones.
- d. proteins and stored body fat.

16. Mary, a teenager, had 1 cup of cocoa made with whole milk at breakfast, a grilled cheese sandwich and a dish of custard at lunch. Which of the following should she add to meet her recommended minimum daily allowance for milk and milk products?

- a. ice cream cone.
- b. a serving of cottage cheese.
- c. 3 glasses of milk.
- d. no more servings are needed.

17. When storing milk, put the fresh homogenized milk

- a. into an open pitcher and place it in the refrigerator.
- b. away after all other groceries are put away.
- c. in the freezing compartment of the refrigerator.
- d. in its original container in the coldest part of the refrigerator.

18. When storing cheese, put the processed American cheese

- a. in the refrigerator uncovered to prevent spoilage.
- b. in the refrigerator, loosely wrapped to prevent absorption of odors.
- c. in the refrigerator wrapped tightly to prevent it from becoming hard and dry.
- d. on the cupboard shelf covered so it is easily available.

19. Evelyn was making the cheese sauce for cheese souffle. You would suggest she cook it by

- a. heating in a sauce pan and stirring.
- b. heating under a broiler.
- c. heating in a double boiler and stirring.
- d. heating in a sauce pan and not stirring.
20. In making tomato soup, the milk is less likely to curdle if

_____a. the tomatoes and milk are heated together.
_____b. the milk is added all at one time to the heated tomatoes.
_____c. the tomatoes are added all at one time to the heated milk.
_____d. the tomato pulp is added very slowly to the heated milk.

21. Which will most likely prevent scorching and the formation of a film on milk when heating?

_____a. placing over direct heat.
_____b. heating over high heat.
_____c. stirring constantly.
_____d. not stirring at all.

22. Cheese is done cooking when it has

_____a. melted.
_____b. turned brown.
_____c. bubbled and darkened.
_____d. hardened.

23. Kay is going to prepare a fruit salad for a luncheon she is having for some friends. There are many fresh fruits available this time of year. Which of the following combinations would give Kay the most attractive and palatable fruit salad?

_____a. apples, pineapples, grapefruits.
_____b. peaches, oranges, cantalope.
_____c. oranges, apples, seedless grapes.
_____d. seedless grapes, pineapple, grapefruit.

24. Many fruits tend to turn dark when pared or cut surfaces are exposed to the air. The darkening is probably due to

_____a. dehydration.
_____b. oxidation.
_____c. nutrient loss.
_____d. underripe fruits.
25. Some fruits have been found to be excellent sources of
   _____ a. calcium.
   _____ b. phosphorus.
   _____ c. iron.
   _____ d. ascorbic acid.

26. Nancy is going to make a fresh fruit salad for her family for dinner. She has to prepare the salad about two hours before she will serve it because her main dish involves quite a lot of last minute attention before it is served. Which of the following is the best method for Nancy to use to keep her salad from turning brown?
   _____ a. sprinkle water over it and put it covered in the freezer.
   _____ b. sprinkle sugar over it and let it sit covered at room temperature.
   _____ c. sprinkle lemon juice over it and put it covered in the refrigerator.
   _____ d. sprinkle salt over it and put it covered in the refrigerator.

27. "An important thing to remember," Mary's teacher always told her, "as a general precaution against the loss of water soluble nutrients" is that
   _____ a. "cooking time should be as short as possible."
   _____ b. "cooking temperatures should be as high as possible."
   _____ c. "cooking temperature should be as high as possible for a short time."
   _____ d. "cooking temperature should be as low as possible for a short time."

28. The basic advantage of cooking some vegetables for less time in a covered kettle
   _____ a. less time available for water soluble vitamin loss or oxidation loss.
   _____ b. vegetables retain their natural shape and color.
   _____ c. tougher vegetables can be softened before vitamin loss occurs.
   _____ d. after cooking vegetables can be easily skinned without loss of vitamins.
29. Why have baking, steaming under pressure (pressure cooking) and cooking in the skins been called, "conservation methods" of cooking vegetables?

   ____a. they allow food to serve larger numbers of people.
   ____b. they may retain food values more completely.
   ____c. they are all methods of preserving vegetables.
   ____d. they result in vegetables with natural taste and form retained.

30. A chef salad with hard cooked eggs, slices of ham and cheese is an example of a

   ____a. main dish salad.
   ____b. appetizer salad.
   ____c. dessert salad.
   ____d. refreshment salad.

31. Which of the following is NOT a salad "green"?

   ____a. eggplant.
   ____b. bib lettuce.
   ____c. spinach.
   ____d. crisp head lettuce.

32. When preparing salad greens one should

   ____a. wash thoroughly.
   ____b. chill a head of serving time.
   ____c. remove bruised leaves.
   ____d. all of the above.

33. Susie buys fresh produce "in season." "In season" means that

   ____a. the fruit is plentiful.
   ____b. it is grown locally.
   ____c. it is fresh.
   ____d. it is available.

34. 16-year-old Sally needs four or more servings daily from the bread-cereal group to provide her with

   ____a. sufficient complete protein.
   ____b. sufficient water-soluble vitamins.
   ____c. sufficient fat-soluble vitamins.
   ____d. part of her daily requirement of B-vitamins and protein.
35. Which of the following is the best method to use when preparing a cooked whole grain cereal?

_____ a. slowly add 1 c. quick cooking oatmeal to 2 c. rapidly boiling water and stir carefully until thickened.

_____ b. mix a flour, oatmeal and cold water paste and then add to rapidly boiling water and cook until thickened.

_____ c. add 1 c. polished rice to 4 c. cold water and cook, stirring constantly until soft.

_____ d. slowly add 1 c. quick cooking oatmeal to 4 c. cold water and cook until thickened.

36. Baked flour mixtures may contain just flour and liquid. Other ingredients may be added such as eggs, fat, sugar, flavorings, salt, baking powder or yeast. Choose the best statement describing baked flour mixtures.

_____ a. browning of the baked flour mixture is increased by the addition of fat and sugar.

_____ b. baked flour mixtures will be lighter if air, steam or carbon dioxide are incorporated into the mix.

_____ c. the structure of the baked flour mixture will vary with the type and amount of protein present.

_____ d. all of these.

37. A standard quality two egg cake has a light, porous structure. This structure is achieved by the

_____ a. action of baking powder.

_____ b. tenderizing effect of fat and sugar.

_____ c. combination of protein in milk, eggs and flour.

_____ d. air trapped by beating the eggs.

38. Many factors are to be considered in making a quick-bread with specified characteristics. Check the one you consider unimportant.

_____ a. accurate measurements.

_____ b. proper procedure for mixing.

_____ c. correct temperature and time for baking.

_____ d. correct use of an aluminum mixing bowl.
39. Basic ingredients in all quickbreads are
   _____a. liquid, flour, fat, leavener.
   _____b. liquid, starch, fat, leavener.
   _____c. liquid, egg, flour.
   _____d. flour, fat, leavener.

40. Chocolate chip cookies are an example of a
   _____a. bar cookie.
   _____b. filled cookie.
   _____c. drop cookie.
   _____d. rolled cookie.

41. The basic difference between cookies and buttercakes batter is
   _____a. the proportion of liquid to dry ingredients.
   _____b. the type of ingredients in each.
   _____c. the manner in which the ingredients are measured.
   _____d. the temperature at which they are baked.

42. When using a cooling rack for baked products this allows
   _____a. the oven to cool.
   _____b. air to circulate evenly around the product.
   _____c. ease of removal from the baking pan.
   _____d. a convenient clean up.

43. Dry and heavy quick breads are usually the result of
   _____a. not using enough leavening.
   _____b. over mixing before baking.
   _____c. under cooking.
   _____d. improper pan size.

44. When preparing a cooked cereal you will
   _____a. boil the water first, then add cereal.
   _____b. bring cereal and water to a boil all at once.
   _____c. stir only once in a while.
   _____d. use as high a temperature as possible to insure even cooking.
45. When meat is cooked with a low temperature the result is

_____ a. tough meat.
_____ b. little shrinkage or loss of weight.
_____ c. considerable loss of nutrients and moisture.
_____ d. fewer microorganisms destroyed.

46. When preparing hard cooked eggs, put cold, fresh eggs in

_____ a. water in the top of double boiler and cook 10 minutes.
_____ b. boil water, turn off the fire and leave for 2 hours.
_____ c. cold water to minimize breakage, then bring to boil and simmer 10 minutes.
_____ d. hot water to hasten cooking, then bring to boil and simmer 30 minutes.

47. In order to store ground beef after it is purchased, without freezing, it should be

_____ a. placed in a refrigerator dish, in shelves on the door, and used within 10 days.
_____ b. wrapped tightly, placed in the coldest part of the refrigerator and used within 1-2 days.
_____ c. unwrapped, placed in lowest part of the refrigerator, and used within one week.
_____ d. wrapped loosely, placed in the vegetable drawer with lettuce and used within 4 to 5 days.

48. Cooking in a liquid

_____ a. tenderizes tougher cuts of meat.
_____ b. removes large amounts of water soluble nutrients.
_____ c. toughens tender cuts of meat.
_____ d. reduces nutritive value of meat.

49. Nora had the following ingredients to put into a casserole: 1 lb. ground beef, 2 cups cooked spaghetti, seasonings, and 2 cups tomato sauce. You would suggest she brown

_____ a. the ground beef in a hot skillet over high heat.
_____ b. the ground beef in a medium skillet over medium heat.
c. the ground beef over low heat, adding 1/2 cup fat.
d. the ground beef and cooked spaghetti at high temperature until dry and crisp.

50. The highest grade (best) for eggs judged by interior quality is

a. B
b. fancy
c. AA
d. extra large
REFERENCES


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