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GODLEY, LOU WATSON. Homemakers' Reactions to Planning, Developing, and Using Coordinated Food Mixing Centers in Their Kitchens. (1969) Directed by: Dr. Clara Ridder. pp. 139

The purposes of this study were to determine reactions of homemakers to coordinated food mixing centers in their kitchens during the planning, developing, and after use stages, and to suggest ways in which educators might work more effectively with homemakers in developing efficient kitchen storage.

Contacts were made in Pittsylvania County, Virginia, to locate ten women willing to develop a mix center. Reactions were noted following eight visits. Family information, and reactions after the use period were gained through questionnaires. Photographs taken before and after development of mix center showed space utilization. Mix centers were developed according to the principles of good storage.

The homemakers were unaware of inefficient kitchen arrangements or storage. Storage patterns were developed with little thought when families moved into a dwelling. The homemakers could not visualize a mix center until they saw one evolve. They offered varying degrees of resistance to change. Some women, as their understanding and interest grew, were able to apply principles of storage in other areas of the home.

It was suggested that "before" and "after" photographs showing use of space in storage cabinets could be used to develop interest in efficient storage. Model cabinets, slides, and/or tours could be employed to demonstrate how to plan and develop a storage plan. Adult leaders could be trained to assist in communities. This study suggested the need for trained personnel to offer the service of planning functional storage in homes.

1

The women thought of their kitchens as a whole. They did not want to reorganize one section only. The homemakers reacted differently to similar storage suggestions. They continued to use old storage patterns when they could not envision advantages resulting from well organized storage spaces.

Women must see what is meant by efficient storage before they can plan, develop, and carry out a storage plan. They find it difficult to be objective about applying the principles of storage because personal feelings are involved. It is necessary to awaken most women to the need for better organization in kitchen storage and to help them realize that efficiency in the kitchen means a lighter work load.

HOMEMAKERS' REACTIONS TO PLANNING, DEVELOPING
AND USING COORDINATED FOOD MIXING CENTERS
IN THEIR KITCHENS

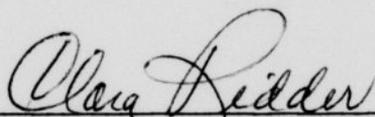
by

Lou Watson Godley

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the Faculty of the Graduate School at
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Approved by


Thesis Adviser

APPROVAL SHEET

This thesis has been approved by the following committee of the
Faculty of the Graduate School at The University of North Carolina at Greensboro.

Thesis Adviser

Clara Ridder

Oral Examination
Committee Members

Pauline E. Keeney

Jane N. Crow

Kudon Smith

July 8, 1968
Date of Examination

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CHAPTER I

INTRODUCTION AND PURPOSE

INTRODUCTION

Women spend more working hours in the kitchen than in any other room of the house. Few homemakers use space efficiently in their kitchens, and yet home economists in extension indicate that women show little interest in educational programs on kitchen planning. Homemakers are frequently unaware that their kitchens are inconvenient but commonly associate their feelings of fatigue with the work carried on in the kitchen (1:109).

Research on kitchen storage has been conducted by universities, government agencies, and industry for over thirty years, but most homemakers continue to use many unnecessary motions when carrying out processes involved with meal preparation and clean-up. Why do homemakers fail to apply the principles of good storage that have been available for so many years?

On the whole, research on kitchen storage has been conducted under laboratory conditions rather than in homes. There is a need for more information on how homemakers work in realistic situations where family interruptions, pressing time schedules, and poor kitchen plans are prevalent. As more and more demands are placed on the homemaker's time and energy, it becomes increasingly important for educators to learn how they can better assist

homemakers in the management of kitchen activities.

PURPOSES

It was felt that studies regarding the reactions of homemakers to working with organized spaces in home situations might provide educators with suggestions that would lead to better application of the principles of kitchen storage. Therefore, the specific objectives of this study were:

- I. To determine reactions of homemakers to coordinated food mixing centers with related storage in their kitchens during the following stages:
 - A. During the planning of a coordinated food mixing center. This planning encompassed activities, the related food and equipment items, and the location of this center in the kitchen.
 - B. During the development of the best possible physical layout of the coordinated food mixing center within the financial and physical limitations of each situation.
 - C. After use of the coordinated food mixing center in the preparation of food for the family.
- II. To suggest ways in which educators might work more effectively with homemakers in developing efficient kitchen storage.

CHAPTER II

REVIEW OF LITERATURE

Many women find meal preparation a satisfying and creative activity; yet some fail to receive the greatest possible pleasure from kitchen work because of needless walking, stooping, reaching, and handling of supplies. Kitchen storage research (1:105) has shown that many unnecessary motions can be eliminated by planning the location of the inventory and designing better storage space.

Cowles, Steele, and Kishler (2:169) stated that good general arrangement in kitchens is important but that real efficiency is dependent upon the homemaker's ability to organize and use space. They found that certain components, such as household size, the period of the family cycle, and the method of work employed by the worker, play an important part in determining the number of hours spent in completing household activities.

Mize, Heiner, and Warren (1:105) concluded that design and management concepts converge when objects used in daily living are related to their functional purpose and the means for adjusting storage space to fit these needs are provided.

WORK CENTER CONCEPT

Maud Wilson (3:3), a pioneer in the field of kitchen storage, concluded it is easy to keep a kitchen neat when supplies and equipment can be stored

where they are most often used. She stated that it is most important to group the various uses of the kitchen into units or centers.

In a study to disclose fundamentals for planning convenience into kitchens, Ridder (4:6) concluded:

All kitchen activities are more easily performed when identified according to appliance function. In turn, activities determine the food and equipment used near each appliance, and therefore, work and storage space must be provided near all three - - - refrigerator, range, and sink. Therefore an appliance, plus food and equipment, constitutes a logical work unit.

Heiner and Steidl (5:6) stated that, while it is important to locate closely related areas together in the kitchen, it is essential that each work area have ample storage and counter space. The work center concept has evolved from research studies (6:9) of processes concerned with household activities. It is based on the principle of storing items at the place of first use for each process.

A large percentage of the research on kitchen storage supports the importance of storing items at the place of first use for reducing wasted motion of the worker. Heiner and McCullough (7:5), however, believed that shallow depths of shelves and cabinets were the greatest contribution to body economy. They (7:66) stated that it takes more than continuous counters and overhead cabinets with a multiplicity of doors, drawers, and shelves to make a kitchen functional. They indicated that the work curves of women show the need of a new concept of cabinet design; that principles of work simplification point to the use of more functional shelf-depths and shelf-heights and more readily accessible arrangements within cabinets.

Heiner and Steidl (8) acknowledged the principle of storing items at the place of first use but advocated placing closely together centers, between which frequent trips are made. On the other hand, they recommended the use of a storage wall for storing the majority of the items used in the kitchen. This approach results in supplies and equipment being located together in one storage area instead of in the centers where activities are carried out. Heiner and Steidl (8:13) expressed the following points in reference to the use of the storage wall recommended in their study:

1. The concentration of kitchen supplies and equipment can be seen at a glance when using a storage wall. It is necessary to carry the items needed for each activity to and from the place of use. The need to reduce the amount of carrying and walking determines whether this is a serious disadvantage or not.
2. The storage wall reduces to a great extent the need for additional storage space in the kitchen. Thus wall cabinets could be eliminated and an open type kitchen could be planned.
3. Kitchen supplies are easier to remove and replace in the storage wall because there is no stationary work space to reach over. This allows shelves to be the width suitable for the items stored since the conventional 24-inch deep counter is not used.

McCullough (9:12), in her article, "Kitchens to Date," stated that the use of a storage wall violated the principle of storage at the place of first use and increased the distance traveled in a kitchen. She suggested that the storage wall offered a good solution in the case of established kitchens lacking in wall

cabinets, and that it served as a functional divider between kitchen and dining areas.

Time spent in kitchen activities, as well as distance traveled, has been studied in relation to the principles of storage at the place of first use. Steidl (10:21) found that when the kitchen is well-organized the removal and replacement of items at storage areas accounted for a comparatively small amount of time, in the preparation of meals. She stated that inefficient storage areas are inconvenient and often cause additional handling of items which results in a waste of time. Steidl (10:22) stated that storage areas are used often, and at intervals, throughout the entire job of meal preparation. She concluded that it is important to have storage areas near work surfaces and appliances of first use, if the costs of time and movement in obtaining and replacing items are to be kept at a minimum.

In a study of fifty-six kitchens to measure possible distances saved through relocation and reorganization of kitchen supplies and equipment to the point of first use, Cowles, Steele, and Kishler (2:174) found the percentage of savings in distances walked after kitchen reorganization averaged 27.9%; but that time spent in the preparation of the meal was reduced only 10.5%. They suggested, as a reason for this, that manipulative or productive actions require a great amount of time during meal preparation but do not always require movement from one center to another.

THE MIX CENTER

Kitchen research workers have generally agreed that a mix center is a combination of counter and storage space used for the preparation of foods in which several ingredients need to be combined, and that it includes storage space for all items needed for food processes carried out there. In the majority of studies reviewed, the minimum size recommended for the mix center varied from thirty-six inches in length by twenty-four inches in depth to forty-two inches in length by twenty-four inches in depth. McCullough (9:42) stated that forty-eight inches is a desirable length unless the mix center serves an adjacent appliance. If the latter is the case, fifty-four inches in length by twenty-four inches in depth is preferred.

A variation in distances recommended as comfortable body reaches in the use of kitchen storage by the average woman (5 feet 4 inches) was also found. Heiner and McCullough (7:9), after a study of the work curves of fifteen women, suggested that the functional limits of storage areas fall between twenty-four inches and seventy-two inches from the floor. They believed that a side-to-side reach of forty-eight inches should also be considered when designing storage units. Mize, Heiner, and Warren (1:106) stated that spaces relatively easy for the average woman to reach lie between twenty-seven inches and sixty-three inches from the floor. They found that, when the worker is using both hands simultaneously, the effective reach is reduced to sixty-one inches. It was noted that excessive strain resulted when using storage space closer than twenty inches to the floor.

The phrase, "Store where the item is first used," has been found frequently in the research reviewed; however, many research workers disagree on where items should be used first. As a result, the location of the mix center within the kitchen plan has been a source of debate. In some studies, the mix center has been identified with a specific appliance, while in others recommendations have been given for locating the mix center between certain appliances. McCullough (9:41) stated that the women in her study felt that location of the mix center between the refrigerator and sink was just as convenient as the mix center placed between the sink and range, but noted that in the latter placement the women traveled a greater distance. McCullough believed that the most satisfactory arrangement of centers was, from right to left, "refrigerator, mix, sink, range, serve, and oven." She concluded that it was more important to have each center complete in itself than to place the centers in a specific sequence.

Ridder (4:8) made a detailed comparison of the appliance units in relation to how often food and equipment was used near each of the three appliances during the preparation of eighty-four meals. This study indicated that, of the total times all foods were used, they were logically used 83.4% of the time from or near the refrigerator unit. Of the total times equipment was used, 50.3% of the equipment usage occurred near the refrigerator unit. Ridder concluded that it is of primary importance to allocate storage space, as well as work space, near the refrigerator. She (4:12) also found that more trips were made between the range and refrigerator units than any other combination of

units, and recommended that these two units be planned closely together. According to this study, therefore, it is more convenient to mix most foods between the refrigerator and the range units.

Heiner and Steidl (5:29) tested nine L-shaped kitchen layouts in which the principle of storage at place of first use was applied for all items except dishes. After the preparation and clean-up of three types of dinner menus in each kitchen layout, they found that the most frequently used area was the sink, then the range, mix, and refrigerator in that order. In the two layouts recommended for cutting down on travel cost in the kitchen, the mix center was located next to the sink. (5:50)

Heiner and McCullough (11:15) suggested that the whole idea of kitchen storage is to save needless walking to get things when you cook. They stated that the sink and mix center items were located in one storage cabinet in their study because these items are so often used together.

What should be stored in the mix center? The lists of foods, supplies, and equipment suggested for storage in the mix center by research workers varies according to their ideas on what activities should be carried out at the mix center and whether the mix center was identified with a major appliance unit or not. Specific lists can be found in the following studies: Wilson (12:22), McCullough (13:3), Ridder (4:17), and Mize, Bland, Hood, and Simmons (14:9).

GUIDES FOR PLANNING KITCHEN STORAGE

Kitchen storage that makes supplies easy to see, grasp, and replace does not happen accidentally. Whether items are placed in a storage wall or in cabinets at each work center, a great deal of planning is necessary to design efficient storage facilities. No two homemakers have identical kitchen inventories that need to be stored, nor do they have the same family needs and preferences; therefore, there is no perfect pattern for a kitchen storage unit that will suit every family. Research has provided flexible guide lines to assist kitchen planners in the design of storage units for specific situations.

The major considerations in planning storage, according to Wilson (12:12), are:

(1) convenience of the worker, (2) care of the article stored, (3) space economy, (4) flexibility in use, (5) appearance of the room, (6) ease of keeping clean and in order, (7) cost. These considerations determine the form of storage for each type of article (as to drawers or shelves) and the utilization of the space within the drawer or shelf.

Wilson's (15:6-8) plan for storage is outlined below:

1. Sketch the kitchen to scale showing placement of doors, windows, and other immovable objects. Use pieces of paper, cut to scale, to represent the major appliances planned for the room. Determine the amount of wall space available for storage.
2. Review inventory, and relocate all items that do not have an important function in the kitchen. Separate items that are frequently used from ones seldom used. Allow for equipment you expect to buy and supplies normally stocked throughout the year.

3. Make an activity chart showing food processes, the activities that make up the job, and the resulting food, supplies, and equipment needed.
4. Group items according to the work surfaces where they are used first.
5. Group articles for each work center according to size. Figure dimensions for each group of articles, including margins for hand action.
6. Assign each group to a specific part of the storage space according to frequency of use, weight, shape and fragility. Determine areas of comfortable reach, and place the most frequently used items within these limits. Estimate the total space required for each group of articles.
7. Make a storage chart that shows each storage section, items to be stored there, and any storage devices needed.
8. Complete detail plans showing dimensions for depth, height, and length of each cabinet section.

Basic Storage Methods

The kitchen planner can hang or file articles or simply place them flat on the shelf. He can choose between bins, drawers, turntables, files, pull-out shelves, racks, and multilevel devices to store the inventory in the most efficient manner. Some storage items can be purchased commercially, others must be designed and built. It is essential for the kitchen planner to know how to calculate space requirements if the storage unit is to be functional. Wilson (12:13-14) offered detailed instructions on how to group stored articles. She (12:15-17) also indicated how to calculate storage space for different storage

methods and the clearances involved. Cooper (16:3-16) provided suggestions on the use of a wide variety of portable storage devices that can be built. She has developed instructions on how to design the storage devices illustrated and offered several styles and construction techniques from which to choose. Strawn (17:2-15) cited by illustration many of the portable storage devices that are available in stores as well as devices that can be built. Heiner and Steidl (8:4-5) gave instructions, general measurements, and illustrations helpful when designing a storage wall.

Research workers agreed that adjustable shelving is most important in wall cabinets to cut down on wasted space, to help eliminate the stacking of unlike objects, and to allow for rearrangement of shelves as the family cycle and kitchen inventory change.

McCullough (9:13) stated that drawers of proper depth with good hardware allow for the functional arrangement for a large number of items normally stored in base cabinets. She suggested that pull-out shelves rate second to drawers in base cabinets, and that turntables make hard to reach areas much more accessible. McCullough (13:4) found that when judging by size alone practically all items of a liberal inventory can be stored in wall cabinets. She indicated, however, that it is advisable to maintain a fairly even distribution in the frontage measurements of wall and base units; that items should be assigned to the wall or base storage according to size, shape, weight, and fragility.

Heiner and McCullough (11:16) strongly favored keeping shelves shallow

so that unlike items can be stored one row deep. They (11:9) designed storage units using swing sections and storage on the doors, to allow for storage one row deep without increasing the need for wall space. Heiner and McCullough concluded that items of the same size and shape could be stored two rows deep on narrow shelves, but that only items of identical size, in large number, should be stored three rows deep.

Storage in Established Kitchens

Many kitchen cabinets have shelves that are too far apart. They tend to waste space at the easy-to-reach heights, causing homemakers to feel that they do not have enough storage space. Steidl (10:21), in a detailed study of two established kitchens before and after the addition of storage devices, found that the cost in time for planning efficient kitchen storage through the use of storage devices was greater than the cost of materials. (In both kitchens all storage devices were constructed by family members, no commercial devices were used.) Homemakers (10:22) involved in the studies indicated feelings of better organization and greater ease of work after the addition of functional storage devices. They expressed these feelings more consistently than listing such advantages as savings in time or distance traveled.

Steidl (10:22) indicated that there is a need for further study to help homemakers find it easier to put into practice the principles of functional storage. She felt that it is important to identify the problems that people have in carrying out these principles. Steidl suggested that simplified ways for correcting and improving existing storage need to be determined, along with

comparative time and money costs for different procedures for altering storage, to serve as a sound basis for decision making.

While many studies have been conducted on kitchens and the use of space within kitchens, the literature indicates a need for in-depth reactions of homemakers to some of the kitchen theories that have been developed. Therefore, this study was designed to obtain reactions in depth from homemakers while being helped to plan and develop a coordinated food mixing center, as well as after use of the organized storage.

CHAPTER III

PROCEDURE

It was the intention of this study to gain more information on how homemakers utilize storage facilities within their kitchens. Frequent visits were made with ten homemakers to obtain reactions in depth to planning, developing, and using a coordinated food mixing center.

The plan of procedure is enumerated:

1. Contact homemaker.
2. Sketch kitchen, collect background information on family, and clarify study to homemaker.
3. Decide on location of mix center, and plan activities and related storage items for mix center.
4. Take "before" photographs of storage in mix center.
5. Develop storage plan for mix center.
6. Install storage devices in mix center, finish placing items in mix center, and record location of items in mix center.
7. Take "after" photographs of storage in mix center.
8. Obtain homemaker's verbal reactions after using the mix center for a minimum of four weeks.
9. Check location of items in mix center against list previously recorded.

The Subjects

Contacts were made in Pittsylvania County, Virginia, to locate ten homemakers willing to participate in this study. Full cooperation on the part of the homemakers in the development of a coordinated food mixing center in their kitchens was of prime importance in obtaining participants. All information collected on each of the homemakers was treated as a case study.

The Kitchens

The kitchens used in this study varied in size, convenience of arrangement, and age. In working with the homemakers, emphasis was placed on developing a coordinated food mixing center in the kitchens through the efficient use of existing storage facilities and work space in relation to the needs and preferences of the family. Remodeling of the kitchens was not contemplated.

A drawing board covered with graph paper was used with tracing paper to sketch the kitchen plans to a 1/2 inch = 1 foot scale. The sketches were made to help clarify the situation.

The Coordinated Food Mixing Center

The location of the coordinated food mixing center within the kitchen was discussed with the homemaker. Decisions were based on the nature of the storage and work space available in relation to the location of the refrigerator and range. The work habits of the homemaker and the stage of the family cycle were also considered.

A chart (Appendix B) was designed to assist the homemaker in planning

the activities to be carried out in the mix center. Activities were grouped on the chart according to processes normally performed during food mixing jobs. The food, supplies, and equipment commonly used to carry out these processes were listed. The homemaker marked out the activities she did not wish to carry out at her mix center as well as the items that she did not own or would not need. As a result, the items remaining on the chart provided the homemaker with a list of the food, supplies, and equipment that needed to be collected and stored in the mix center.

In order to speed up the development of the storage plan, all participants were requested to prepare their kitchens by relocating nonfunctional items, and cleaning the shelves of the proposed mix center prior to nine a.m. of the day scheduled for this work.

Following the completion of the storage plan, the types of items located in each section of the mix center were recorded. The homemaker was not aware that the location of the items in the mix center would be checked against the storage list after the use period. The final visit was not scheduled because it was felt that some of the participants would straighten their cabinets if this visit was planned ahead of time.

"Before" and "After" Photographs of the Mix Center

Photographs were made of the storage facilities at the mix centers, to show how the homemakers used their cabinets before and after participating in this study. The homemakers were requested to leave the cabinets as they were, rather than straighten them up for the photographs, in order that a normal

situation could be presented.

Procedure During Developing Stage of Mix Center

1. Collect items listed on the activity chart and locate them on work surfaces near the mix center.
2. Group items according to frequency of use.
3. Assign heavy and fragile items frequently used to the lowest shelf of the wall cabinet or the highest shelf of the cabinet.
4. Decide which storage devices could be used in making efficient use of existing storage space.
5. Group remaining items according to size and storage requirements.
6. Locate most frequently used items in the easy-to-reach areas so that they are easy to see, grasp, and replace.
7. Design storage devices that have to be built.

The succeeding steps were taken to complete the storage plan developed for each kitchen studied:

1. Order commercial storage devices needed.
2. Plan with the carpenter storage devices to be built.
3. Install storage devices and complete placement of items.
4. Record the types of items located in each section of the mix center.

Homemakers' Reactions

It is assumed that the homemakers' reactions were freely given because they were unaware at the time that comments and actions pertinent to the study

were being recorded following each visit. Permission was obtained to incorporate the above information into the findings of this study. A questionnaire (Appendix A) sought basic information which would give a better understanding of the demands on the homemakers' time. The age, education, and occupation of family members were recorded, along with information on the number of meals prepared daily, special diets, packed lunches, and which members of the family prepared foods. The homemaker was asked why she had organized her kitchen the way it was before participating in the study and whether she had received any instruction on kitchen storage.

An interview schedule (Appendix C) was designed for recording homemakers' reactions after using the mix center for a minimum of four weeks. Open-end questions were used to obtain information concerning ease of work, changes in work patterns, difficulty in locating items, reactions of other members of the family, and whether or not the kitchen was considered as a new place to work.

CHAPTER IV

FINDINGS

This study sought to probe into the lives of homemakers to see how they function in their kitchens with the hope of procuring ideas that might be helpful in communicating with other homemakers. Therefore, rather detailed case studies of the ten women involved are reported here.

SITUATION A

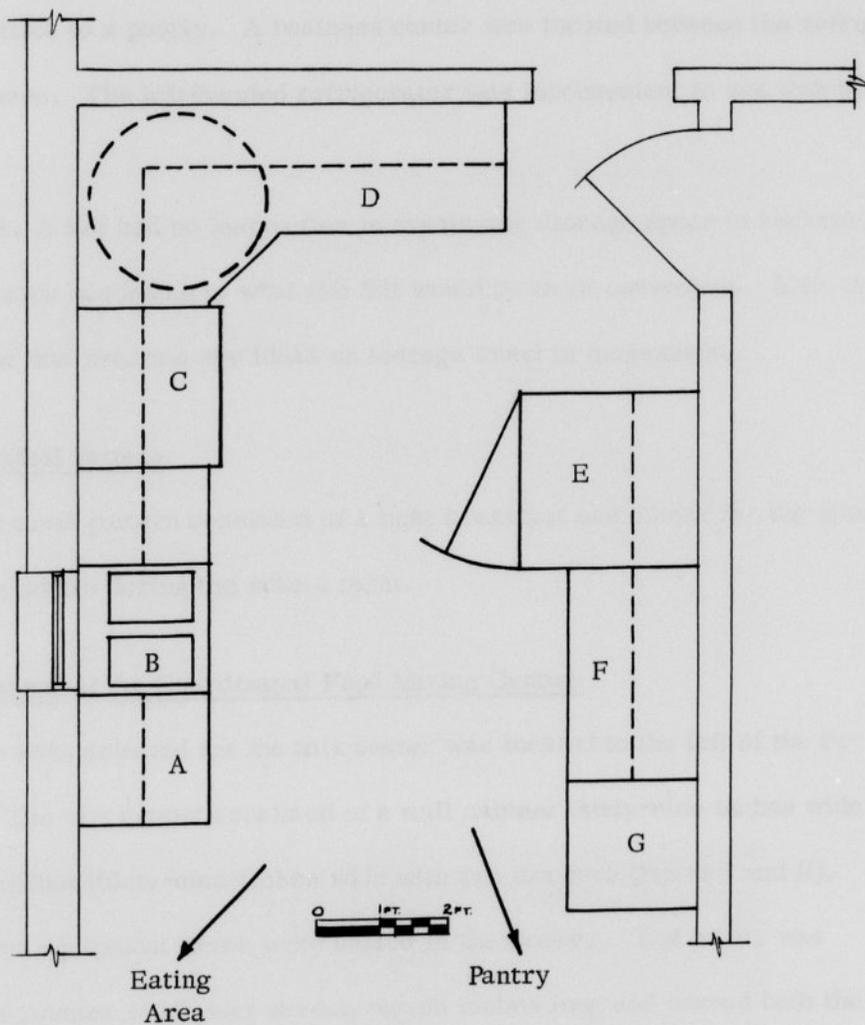
The Family

Mr. and Mrs. A, ages forty-three and thirty-eight respectively, lived in a rural community. They moved into their house two months before agreeing to participate in this study. A daughter, fourteen, and a son, twelve, completed the family.

Mr. A, a high school graduate, attended a local technical school. He sold and serviced radios, record players, television sets, and appliances. Mrs. A, a college graduate, served as bookkeeper and clerk in the store. She was working part time at the beginning of this study but started full time work later.

The Kitchen

The kitchen (Figure 1.) was a broken U-shaped and had liberal storage



The Key

- A - Dishwasher
- B - Sink
- C - Range Top
- D - Mix Center
- E - Refrigerator
- F - Business Center
- G - Wall Oven

FIGURE 1. KITCHEN PLAN - SITUATION A

space in addition to a pantry. A business center was located between the refrigerator and the oven. The left-handed refrigerator was inconvenient to use with the mix center.

Mrs. A had had no instruction in organizing storage space in kitchens. She placed items according to what she felt would be most convenient. Mrs. A had never put into practice any ideas on storage found in magazines.

The Family Meal Pattern

The meal pattern consisted of a light breakfast and dinner for the family, and lunch for adults during the school term.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located to the left of the refrigerator. The mix center consisted of a wall cabinet thirty-nine inches wide and a base cabinet thirty-nine inches wide with two drawers (Plates I and II). Small food and equipment items were stored in the drawer. The mixer was stored on the counter which was seventy-seven inches long and served both the range and mix centers.

The Homemaker-Kitchen Relationship

Observations of Mrs. A in her kitchen revealed that she appeared to lack confidence in herself concerning storage patterns. The juicer attachment was stored on the mixer, even though seldom used. Mrs. A was aware that this made it awkward to use the mixer for other purposes but had not thought of storing the attachment in the cabinet. She explained that the lazy Susan storage

PLATE I

MRS. A - WALL CABINET STORAGE



Storage Prior to Study



Storage After Study

PLATE II

MRS. A - BASE CABINET STORAGE



Storage Prior to Study



Storage After Study

device in the range area had not been used because she had a pantry for food supplies. Mrs. A was uncertain whether she was using the kitchen storage facilities properly and welcomed the opportunity to make improvements. The principle of storing items at the place of first use was a new idea to her.

Reactions During the Planning Stage

Mrs. A was polite and gracious during the first meeting. After learning that plans for the study called for concentrated work in only one section of the kitchen, she expressed disappointment and requested assistance in developing a storage plan for the entire kitchen. Keen interest was shown in the work. Suggestions for moving food and related supplies from the pantry to the work centers were accepted without resistance. Some concern over the expense of developing a mix center was shown. Mrs. A studied the activity chart carefully and frequently asked for advice. She noted the lack of some equipment suggested for mixing and stated that she hoped this would not make her look bad as a housewife and mother. Mrs. A realized the need for a canister set but could not find one that suited her needs. This problem was solved by purchasing individual plastic containers large enough to hold the quantity of ingredients normally stocked. She was more interested in the appearance of her kitchen than the convenience of storing the canister set on the counter.

Reactions During the Developing Stage

The storage plan was developed in five and one-half hours because the kitchen had been prepared as requested, and ample storage space was available

in relation to the quantity of supplies to be stored. Mrs. A was interested in the suggestion for duplicating items used frequently at more than one work center. She decided that the placement of shortening and oil at two centers would be helpful to her; however, the height of the container prevented storage of the oil in any cabinet. Mrs. A was willing to purchase another brand of oil or change the size of the container to solve this problem. She expressed her satisfaction with the storage plan and mentioned that she had not realized how much walking she had been doing when using the pantry. Excitement was shown over the appearance of the base cabinet as the vertical divider was installed several weeks later.

Reactions After Using the Storage Plan

Mrs. A was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- The mix center made food preparation easier; it saved time because everything was stored where needed. The convenience of the vertical divider was pointed out. The cabinets were neat and stayed that way.

Relocation of Food and Equipment. -- Changes in the location of some food and equipment helped in meal planning, as well as grocery shopping, because each item could be seen. Nothing became lost on the shelf. Mrs. A commented that she would never have purchased a spin-a-bin on her own because she was not aware of the convenience offered.

Adjustment to Changes in Work Patterns. -- At first, the location of a

few items was a problem; this was not a maddening experience. Mrs. A would stand and think about the location of the needed items. This was no longer a problem.

Difference in Attitude Toward Kitchen as a Work Place. -- Not enough changes were made to consider the kitchen as a new place to work. Mrs. A had formed the habit of working at the same counter space prior to study.

Reactions of Other Family Members to the Mix Center. -- The daughter showed a keen interest in the mix center. Desserts and simple meals had been prepared frequently. No problems had developed because she had watched as the items were placed and learned why changes were made.

Changes Made in the Storage Plan of the Mix Center. -- No changes were noted in the storage plan of the mix center. Mrs. A explained that she liked the arrangement, and did less baking since working full time.

SITUATION B

The Family

Mr. and Mrs. B, ages fifty and forty-four respectively, lived on a farm formerly owned by Mrs. B's parents. Mr. B personally installed central heating, two bathrooms and remodeled the kitchen. They had two daughters, fifteen and seventeen years of age, and a son six.

Mr. B completed high school and one year of mortuary training. He commuted eighteen miles to work as an embalmer. Mrs. B had a B.S. degree in home economics education. She, along with the girls' help, made most of the

family clothing. The family raised and preserved a large portion of their food.

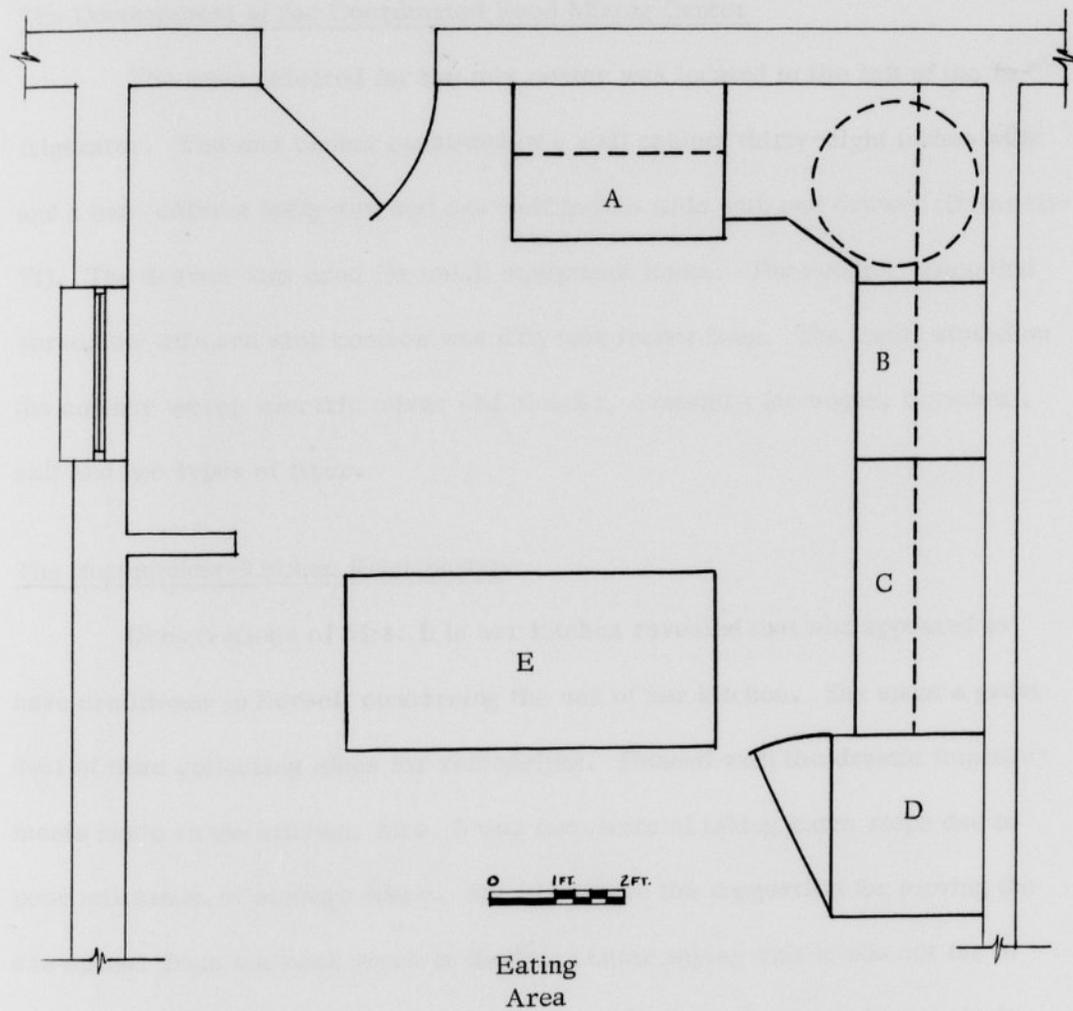
The Kitchen

When Mrs. B decided to remodel her kitchen, ideas on kitchen arrangement and storage devices were collected from: The Farm Journal, Popular Home, extension bulletins, and leaflets from the United States Gypsum Company. Home economists with the extension service and the power company were consulted. Mr. and Mrs. B worked on this project in their spare time over a period of years. Walls were removed, floors leveled, and the old sink and wood range discarded. The L-shaped kitchen (Figure 2.) had wall and base storage adjacent to each major appliance. A large base cabinet placed across from the refrigerator was lower in height and served for many activities. Storage in this cabinet was available from both sides and one end.

Mrs. B had received instruction on kitchen planning but no instruction on organizing storage in kitchens. She applied ideas for built in storage devices by installing three pull-out wooden shelves in the mix center and a wooden lazy Susan in the range unit. The use of space in the base cabinets of the mix center showed some planning; however, items were placed in the wall cabinets without much thought.

The Family Meal Pattern

The meal pattern included breakfast and dinner for all members of the family. Mrs. B had a light lunch alone during school months.



The Key

- A - Range
- B - Sink
- C - Mix Center
- D - Refrigerator
- E - Base Cabinet

FIGURE 2. KITCHEN PLAN - SITUATION B

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located to the left of the refrigerator. The mix center consisted of a wall cabinet thirty-eight inches wide and a base cabinet forty-two and one-half inches wide with one drawer (Plates III-VI). The drawer was used for small equipment items. The counter space that served the mix and sink centers was fifty-one inches long. The items stored on the counter were: electric mixer and blender, canisters for sugar, cornmeal, salt and two types of flour.

The Homemaker-Kitchen Relationship

Observations of Mrs. B in her kitchen revealed that she appeared to have confidence in herself concerning the use of her kitchen. She spent a great deal of time collecting ideas for remodeling. Pleased with the drastic improvements made in the kitchen, Mrs. B was not aware of taking extra steps due to poor utilization of storage space. She dismissed the suggestion for moving the can opener from the back porch to the mix center saying that it was not far to walk. Home canned goods meant that the can opener was not used extensively. Uncertainty of the location of studs in the wall was another reason given.

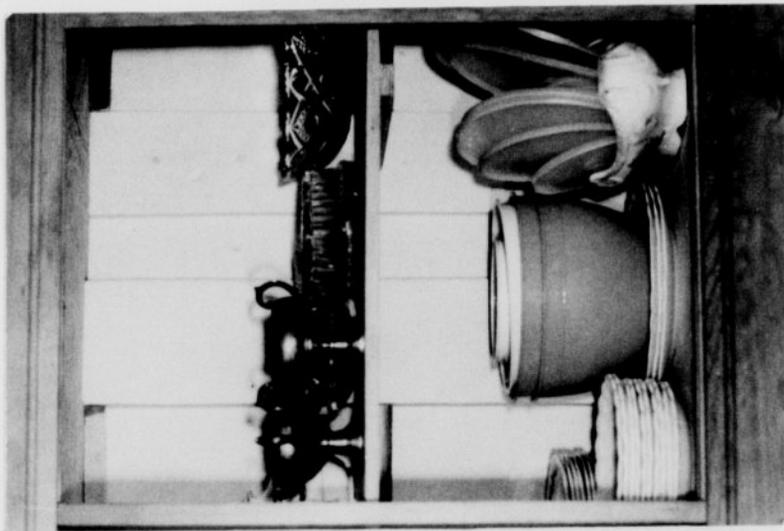
Reactions During the Planning Stage

Mrs. B showed moderate interest in the study when she agreed to participate. Interest grew as she visualized a mix center in her kitchen. At the end of the second visit Mrs. B remarked that she might benefit from this study, too.

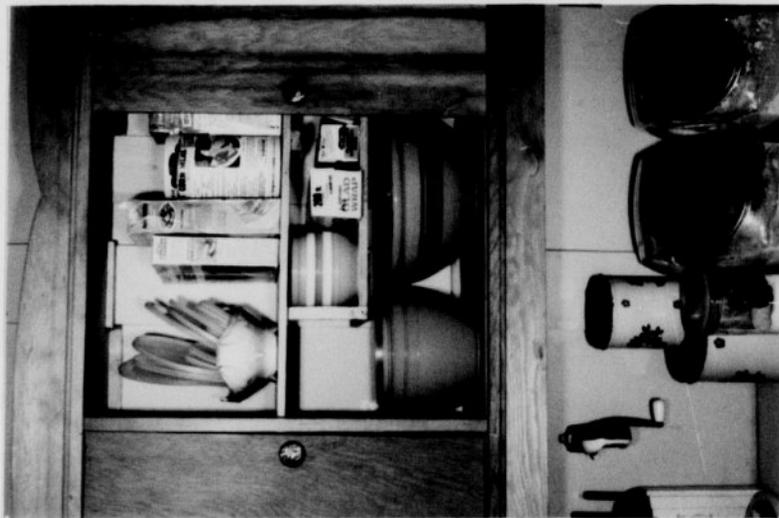
During the discussion of the activity chart Mrs. B responded by explaining

PLATE III

MRS. B - WALL CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE IV

MRS. B - WALL CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

PLATE V

MRS. B - BASE CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

where each item was located if it was not stored in the area she designed for the mix center. She saw the advantages of duplicating items used frequently in more than one center and stated that this principle of storage might be applied. Mrs. B volunteered to remove items from the mix center that were not used often. She remarked that items had been placed hurriedly in the cabinets after remodeling the kitchen and the family had become accustomed to this arrangement. Mrs. B was pleased to have the chance to work on this last phase in developing a more efficient kitchen.

The plans for the mix center were explained to Mr. B along with illustrations of the storage devices needed. He made sketches and stated that he would assist with the carpentry work.

Reactions During the Developing Stage

Mrs. B misunderstood the instructions and prepared only the base cabinets for the developing stage. She had not eliminated the items seldom used. Mrs. B worked quietly and made good suggestions on ways to solve the storage problems. She did not wait for guidance or assistance in taking care of the details. Mrs. B commented that the other storage areas in the kitchen could be reorganized at a later date; however, she later decided to work in all storage areas in the kitchen during the developing stage since the other cabinets had become overcrowded. Mrs. B thought it would be best to design the storage devices needed for the entire kitchen at one time so Mr. B could make them without delay.

The possibility of purchasing a can opener that could be installed on a

wall without studs was discussed with Mr. B. He agreed to investigate the matter.

Mrs. B was willing to duplicate utensils at the various work centers; however, she hesitated to purchase additional food for this purpose. The matter was not pursued. The storage plan for the entire kitchen was completed in one work day.

When completing the placement of items in the mix center, after the storage devices had been made, it was noticed that Mrs. B had purchased a second turntable for the mix center. The old can opener was installed in the mix center. Mrs. B commented that a stud had been found so it was not necessary to purchase another can opener. She admitted that she did not realize what a step saver this minor change would prove to be. Mrs. B changed her mind concerning the duplication of food items and purchased shortening and oil for the mix center.

Reactions After Using the Storage Plan

Mrs. B expressed great satisfaction with the reorganization of storage in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- The mix center made food preparation easier because supplies were not scattered over the kitchen. It was convenient to have small food items at eye level. The turntables were helpful.

Relocation of Food and Equipment. -- Items were easy to replace because they were used at the counter right beneath the storage area. The vertical divider was good for keeping the base storage neat.

Adjustment to Changes in Work Patterns. -- Remembering which items

belonged in the drawer was a problem. Mrs. B often stood with an item in her hand and wondered where it belonged. Supplies seldom used presented more headaches than others. The worst part occurred when the girls decided to prepare desserts because they did not watch as the supplies were relocated. The family had adjusted to the changes.

Difference in Attitude Toward Kitchen as a Work Place. -- Not enough changes were made during the reorganization of storage space to consider this kitchen as a new place to work.

Reactions of Other Family Members to the Mix Center. -- The girls prepared desserts, and were good about returning supplies to the new storage places. Mr. B showed keen interest in the work and took pride in assisting with the project.

Changes Made in the Storage Plan at the Mix Center. -- All storage items, except one, were located as planned. A measuring cup was moved from a shelf to a drawer with similar equipment. A small step shelf was added to raise the storage height of seldom used seasonings.

SITUATION C

The Family

Mr. and Mrs. C, ages fifty-three and forty-three respectively, lived in a rural community of Virginia. They drew up the plans for their new house and landscaped the yard. Their son, fourteen and a daughter, ten, completed the family.

Mr. C completed high school and worked as a clerk before going into the furniture business with a partner. Mrs. C completed high school and cosmetology training. She was employed as sales representative for a small radio station located ten miles away. In this part time job she wrote and sold advertising material, and worked occasionally as an announcer.

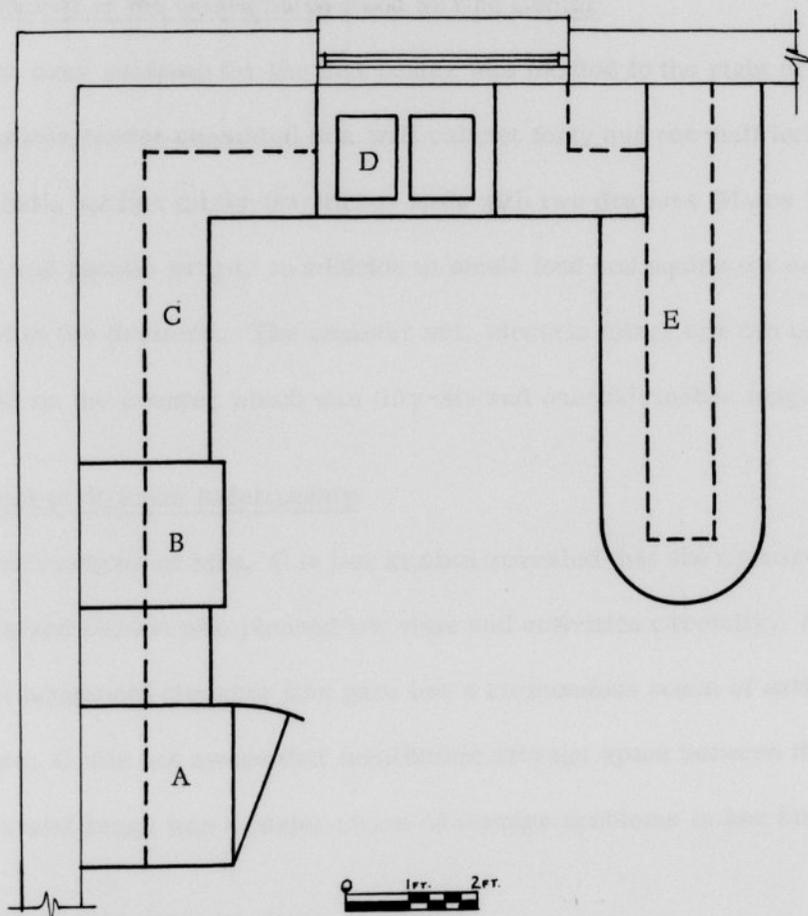
The Kitchen

Mr. and Mrs. C planned their L-shaped kitchen (Figure 3.) without assistance. They collected many ideas from magazines but only applied the idea of dropping the height of a base cabinet five inches to form an eating area. Suspended wall cabinets over the eating area provided storage for dishes. The storage and counter space between the range and refrigerator was not adequate for a mix or range center. A portable dishwasher was stored across the room from the sink since the original plans did not include this appliance.

Mrs. C had had no instruction on storage in kitchens. She had given some thought to the placement of supplies according to use within the kitchen; however, the items were not easy to see, grasp and replace. Occasionally Mrs. C changed items around within each cabinet trying to find a better way to arrange them.

The Family Meal Pattern

The meal pattern consisted of: breakfast and dinner for the family, light lunch for adults, and a packed lunch for the daughter during the school term.



The Key

- A - Refrigerator
- B - Range
- C - Mix Center
- D - Sink
- E - Eating Bar (Suspended Wall Storage)

FIGURE 3. KITCHEN PLAN - SITUATION C

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located to the right of the range. The mix center consisted of a wall cabinet forty and one-half inches wide and a base cabinet thirty-two inches wide with two drawers (Plates VII-VIII). Foil and plastic wraps, in addition to small food and equipment supplies were stored in the drawers. The canister set, electric mixer and can opener were located on the counter which was fifty-six and one-half inches long.

The Homemaker-Kitchen Relationship

Observations of Mrs. C in her kitchen revealed that she appeared to be a well organized person who planned her time and activities carefully. She remarked that household cleaning jobs gave her a tremendous sense of satisfaction.

Mrs. C was not aware that insufficient storage space between the refrigerator and range was a major cause of storage problems in her kitchen.

Reactions During the Planning Stage

Mrs. C was hesitant concerning participation in this study for financial reasons. After learning that she would control the amount spent she agreed to take part.

Keen interest was shown in the plans for the mix center. Mrs. C was business-like when discussing the activity chart, and gave her complete attention to the matter at hand. She expressed an eagerness to make the best possible use of the available storage space and requested help with storage in all areas of the kitchen. Mrs. C did not resist change but did want to know the reasons

PLATE VII

MRS. C - WALL CABINET STORAGE



Storage Prior to Study



Storage After Study

PLATE VIII

MRS. C - BASE CABINET STORAGE



Storage Prior to Study



Storage After Study

behind some of the suggestions made. She had ideas of her own and did not wait for decisions to be made for her.

Reactions During the Developing Stage

In the process of preparing the kitchen for the developing stage Mrs. C removed three boxes of nonfunctional items. She made decisions quickly concerning the use of supplies and equipment during the work period, and assisted wherever possible. Therefore, the work moved smoothly and the storage plan for the entire kitchen was completed in one work day. As the mix center evolved Mrs. C realized that the storage space had not been used efficiently prior to the study. She remarked that she felt lucky to have been a participant. Mrs. C explained that she would not have been concerned about the expense of the storage devices if she had known how small the total bill would be; the lack of an estimate had left her with a feeling of uneasiness.

Mr. C made all of the wooden storage devices needed for the kitchen; however, the design recommended for a portable shelf in the base cabinet was not carried out due to the dimensions of the cabinet opening. This situation was not made known in time to correct the problem. Therefore, the location of items in the base cabinet did not follow the original storage plan.

Reactions After Using the Storage Plan

Mrs. C was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Food preparation was definitely

easier. Everything had a specific storage place so no time or patience was wasted looking for needed supplies.

Relocation of Food and Equipment. -- The mix center made work easier because items could be replaced after use with little or no effort. This meant a neat counter while working. One could see what was on hand since supplies did not get lost as easily.

Adjustment to Changes in Work Patterns. -- Mrs. C did reach for supplies in the old storage places for a while, but this was not a major problem. She grew accustomed to the change.

Difference in Attitude Toward Kitchen. -- Not enough changes were made to consider the kitchen as a new place to work.

Reactions of Other Family Members to the Mix Center. -- Mr. C showed keen interest in the project and was proud to have taken part in the work. He requested assistance in planning a storage cabinet for cleaning equipment and supplies. A neighbor asked if the mix center really worked. Mrs. C told her that the mix center was quite convenient to use and was well worth the time, effort, and expense involved.

Changes Made in the Storage Plan of the Mix Center. -- Basically the storage plan remained the same. The quantity of canned goods had been increased causing a crowded condition with some supplies not clearly visible. A twin turntable was added to the storage area over the range for canned goods used there to relieve this condition.

SITUATION D

The Family

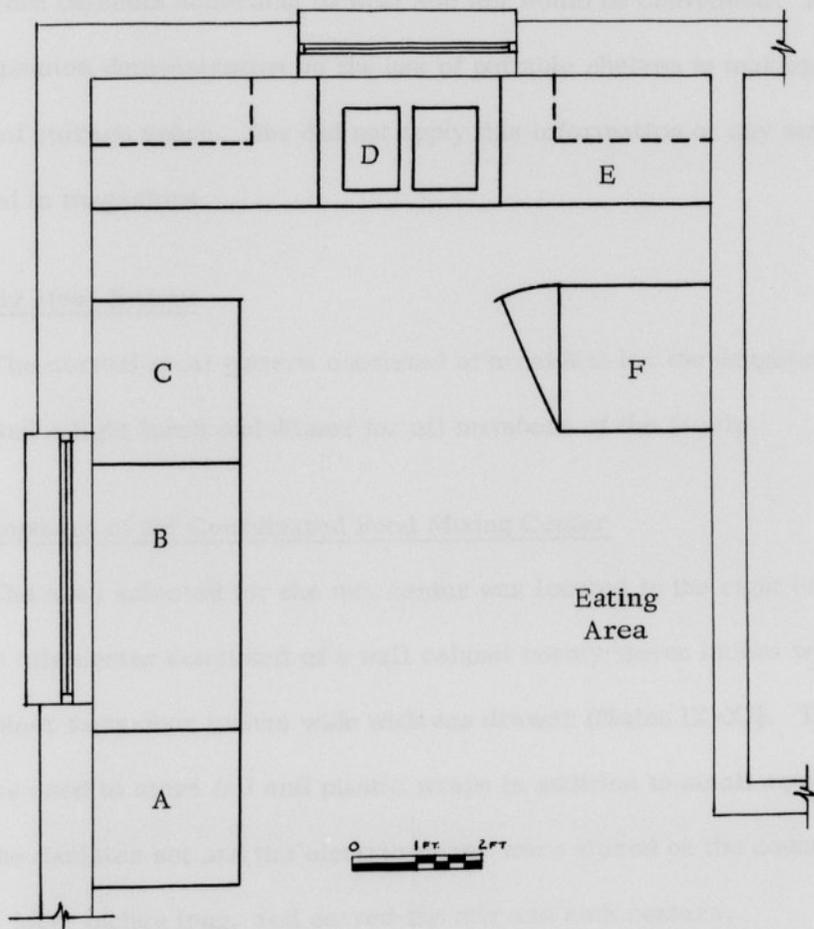
Mr. and Mrs. D, ages thirty-five and twenty-six respectively, lived in a faculty apartment within a large house. Their fifteen month old daughter completed the family.

Mr. D had a B.S. degree and was employed by a local military school as a teacher and assistant guidance director. His family remained at home during the one and one-half years he attended graduate school. Mr. D was present during the use period of the study, only. Mrs. D completed high school and one year of business school. An avid reader, she subscribed to ten magazines a month and read three to four library books a week.

The Kitchen

The U-shaped kitchen (Figure 4.) had wall and base cabinets on both sides of the sink but no storage elsewhere in the kitchen. It was noted that not enough storage space was available to place items according to principles of good storage. Mrs. D explained that a school carpenter would build a base cabinet to be placed between the washing machine and range. The refrigerator was located at a right angle to the mix center. Only twenty-two inches of floor space between the base cabinets and the refrigerator was available for work at the mix center, making it difficult to use the base cabinet. The standard measurement for this type of situation is thirty-six inches.

When Mrs. D moved into the apartment, items were placed hurriedly



The Key

- A - Washing Machine
- B - New Base Cabinet
- C - Range
- D - Sink
- E - Mix Center
- F - Refrigerator

FIGURE 4. KITCHEN PLAN - SITUATION D

in the kitchen cabinets according to what she felt would be convenient. Mrs. D saw an extension demonstration on the use of portable shelves in making efficient use of storage space. She did not apply this information or any storage ideas found in magazines.

The Family Meal Pattern

The normal meal pattern consisted of breakfast for the daughter and Mrs. D, and a light lunch and dinner for all members of the family.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located to the right of the sink. The mix center consisted of a wall cabinet twenty-seven inches wide, and a base cabinet forty-four inches wide with one drawer (Plates IX-XI). The drawer was used to store foil and plastic wraps in addition to small equipment items. The canister set and the electric mixer were stored on the counter which was forty inches long, and served the mix and sink centers.

The Homemaker-Kitchen Relationship

Observations of Mrs. D in her kitchen revealed that she appeared to place more value on being with her family and having time to relax each day than keeping an immaculate apartment.

The counter and table surfaces were cluttered with odds and ends each visit. Potted plants and empty flower containers covered the counter of the new fifty inch cabinet. The interior of the cabinets was crowded with objects that were used in other parts of the house or for gardening. When preparing meals,

PLATE IX

MRS. D - WALL CABINET STORAGE



Storage Prior to Study



Storage After Study

PLATE X

MRS. D - BASE CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XI

MRS. D - BASE CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

Mrs. D worked at the counter least crowded at the time.

Reactions During the Planning Stage

Mrs. D learned of this project through friends and requested the opportunity to become a participant. She was aware that the storage areas in her kitchen were used inefficiently and requested help in developing a storage plan for the entire kitchen. Mrs. D pointed to the new cabinet and remarked that she did not realize how cluttered the kitchen counters had become. She stated that one becomes accustomed to seeing objects in a house and then does not see them any more. Mrs. D asked for a cost estimate and commented that twelve books of trading stamps were available to help cut expenses. She took the initiative in having a base cabinet built and expressed an eagerness to move ahead with the reorganization of her kitchen. Mrs. D questioned the necessity of moving almost every item in the kitchen in order to have the mix center located four steps closer to the refrigerator.

Reactions During the Developing Stage

Mrs. D announced that she had made no preparations for the development of the mix center because there was no door or gate that could be used to keep the baby from getting into the items after they were removed from the cabinets. Outside help was obtained to take care of the baby and assist in the kitchen. Two work days were required to complete the developing stage due to the lack of preparation and unavoidable interruptions with the baby.

Mrs. D was willing to try new ideas but reserved the privilege of

changing things around later if she was not pleased with the storage plan. The telephone was not relocated, as suggested, because Mrs. D felt that the few inches gained between the cabinets and refrigerator would not warrant the expense. The removal of many items placed on the floor and wall between the cabinets and the refrigerator did improve the situation.

When asked why the information on portable shelves given at the extension program had not been applied, Mrs. D explained that at the time she was twenty years old, inexperienced in the kitchen, and did not see the importance of a good storage plan. She did not feel that she knew enough to go ahead on her own and did not realize what a difference storage devices could make in her kitchen.

Reactions After Using the Storage Plan

Mrs. D was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Food preparation was easier because everything needed was stored in one place, and it was not necessary to walk all over the kitchen when collecting supplies.

Relocation of Food and Equipment. -- The kitchen was easier to keep neat because every item had a definite place of storage. Seasonings could be used and relocated easily during the mixing process. Mrs. D felt that the reorganization of kitchen storage helped to improve her work patterns.

Adjustment to Changes in Work Patterns. -- The adjustment period did not last long because everything was stored in a logical manner.

Difference in Attitude Toward Kitchen as a Work Place. -- Mrs. D thought of her kitchen as a new place to work since recent changes included a new base cabinet, a double drain sink, and new counter tops in addition to the re-organization of storage areas. She did not know how she would have felt if the only change had been the formation of a mix center.

Reactions of Other Family Members to the Mix Center. -- Mr. D was pleased that most of the potted plants were removed from the kitchen. He also liked the idea of storing items at the place of first use.

Changes Made in the Storage Plan of the Mix Center. -- On the whole the mix center was as planned. A grater was moved to a higher level to make room for a more frequently used measuring cup. A cranberry server and a serving tray were repositioned for better visibility. Some fresh fruit and cookies were hidden in the mix center to avoid snacking by the baby.

SITUATION E

The Family

Mr. and Mrs. E, ages fifty and forty-six respectively, were both college graduates. They lived in a two story home in a small town. The family included daughters, nineteen, and seventeen, and a son, five years of age. One daughter was present for part of the use period only, the other daughter was away during the developing stage.

Mr. E owned and operated an automobile agency. Mrs. E, a housewife, was quite active in church and community affairs.

The Kitchen

This L-shaped kitchen (Figure 5.) was handicapped by inadequate storage space and a refrigerator that opened in the wrong direction. Food preparation activities were frequently interrupted by traffic from three doors. All wall cabinets had adjustable shelves.

Mrs. E had had no instruction on kitchen storage, nor had she put into practice any ideas on storage found in magazines. Mrs. E commented that she deliberately placed crackers and cereal over the range to keep them crisp, but stored other items where she could find an empty spot in a cabinet.

The Family Meal Pattern

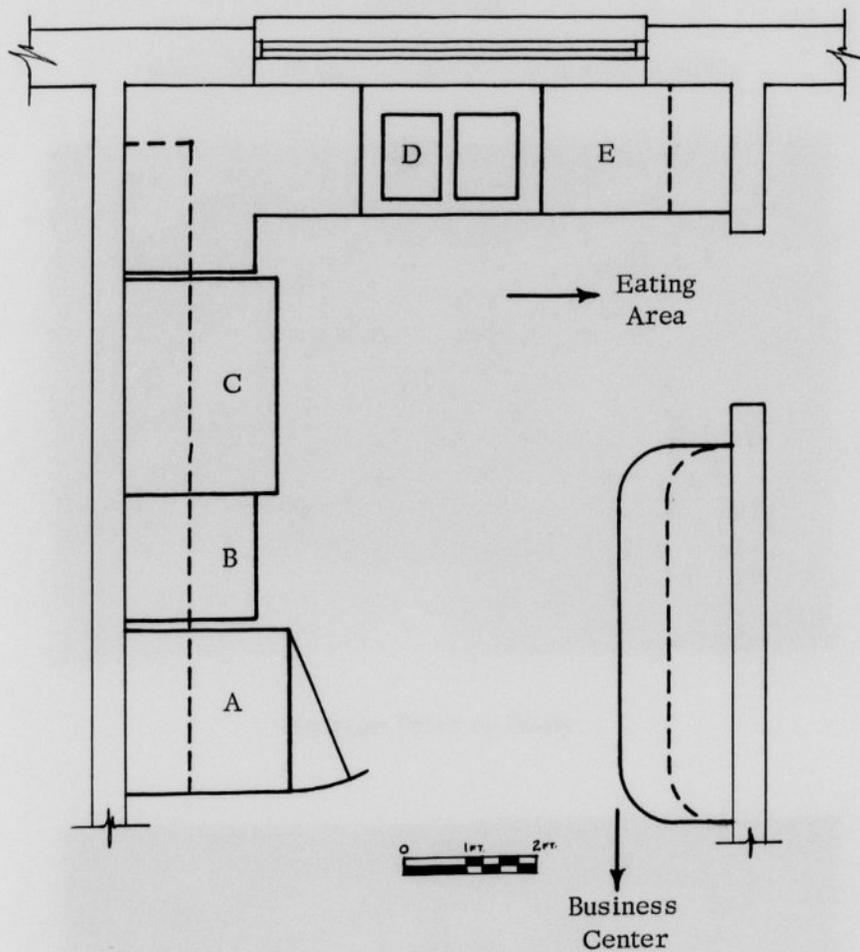
The meal pattern consisted of breakfast and dinner for members of the family present, and a light lunch for adults and the son during the school term.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located between the refrigerator and the range. The mix center consisted of: a wall cabinet thirty-two and one-half inches wide, a wall cabinet twenty-one inches wide, and a base cabinet twenty-one inches wide with one drawer (Plates XII-XIV). The drawer was used to store foil and plastic wraps in addition to small equipment items. The electric mixer and canister set were stored on the counter which was twenty-three and one-half inches long.

The Homemaker-Kitchen Relationship

Observations of Mrs. E in her kitchen revealed that she appeared to be



The Key

- A - Refrigerator
- B - Mix Center
- C - Range
- D - Sink
- E - Dishwasher

FIGURE 5. KITCHEN PLAN - SITUATION E

PLATE XII

MRS. E - WALL CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XIII

MRS. E - WALL CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

PLATE XIV

MRS. E - BASE CABINET STORAGE



Storage Prior to Study



Storage After Study

aware that she was inefficient in her kitchen but did not know why. She frequently belittled herself concerning her inefficiency and commented that Mr. E often complained that the kitchen was unorganized.

In addition to her own supplies, all of the equipment inherited from her mother was stored in the kitchen. Mrs. E had been given many electrical appliances which were stored on the counters, but rarely used. The surfaces in the kitchen were cluttered with a wide variety of items from toys to plastic bread bags. The cabinets were crowded with duplicates of opened food items. Mrs. E remarked that when the ingredient needed could not be found she opened another container. Therefore, as many as five opened containers of one food item were located on the shelves.

Reactions During the Planning Stage

Mrs. E agreed to participate in this study without hesitation. She remarked that her kitchen was difficult to work in and that she would appreciate any help given.

Mrs. E was surprised at the suggestion to use the storage and counter space across from the range for developing the mix center. She questioned relocating the dishes stored there, and pointed out that all base storage was made up of shallow drawers. Mrs. E explained that she carried out almost all food preparation activities on the right side of the range and the small amount of counter space next to it because the other counters were usually too crowded to work on.

The planning of activities for the mix center moved quite slowly. Mrs. E

was outwardly cooperative, but could not adapt to the idea of working at the proposed mix center and resisted, in a nice way, the majority of suggestions made. She did not request a change in plans but it was obvious that this was necessary. After checking with Mrs. E for comfortable body reaches, the mix center was located in the storage space between the range and refrigerator, using the storage area over the refrigerator to supplement the lack of cabinet space. Mrs. E stated that this plan was much better and that she was accustomed to working in a small place.

Mrs. E gave serious thought to the activity chart in relation to the new location of the mix center. She showed keen interest in the plans but was not willing to make drastic changes to accomplish the goal of increased efficiency. It was understood that storage in the entire kitchen would have to be reorganized in order to develop a mix center.

Reactions During the Developing Stage

Cabinets were cleared in preparation for the developing stage but non-functional and duplicate items were not eliminated. Before any supplies could be placed it was necessary to assist Mrs. E in deciding which pieces of equipment were duplicates and which ones were essential to food preparation for her family. The work moved slowly because of constant interruptions by the son, telephone calls, and visitors, and by resistance to change. Mrs. E hesitated over equipment that was discussed as well as suggestions to store items according to use.

After six hours of work, the storage plan for the mix center was completed as well as possible, and another wall cabinet was almost completed when

Mrs. E decided that the plan would have to be changed. She made suggestions for changes and it was pointed out that she would not have a functional mix center if items were not stored according to use. It was then suggested that all items be placed according to Mrs. E's wishes and another kitchen located for the study. Mrs. E did not want this to happen. Changes were made in one cabinet so that snacks were easily available to the son, the kitchen cleared enough for the preparation of dinner, and arrangements made for the work to continue the next day. The mix center was left for the night, without change.

During the next work session two suggestions were made: arrange the mix center according to good storage principles, as much as possible, and place items in the other sections of the kitchen in whatever manner Mrs. E desired. Mrs. E stated that the project should be carried through to the finish. She described how convenient it was to use the mix center when preparing cornbread. The work moved smoothly thereafter. Mrs. E made storage suggestions that she had rejected the day before.

Mr. and Mrs. E pointed out that space was wasted when one and one-half inches of space between twin turntables was not used in the horizontal direction. They had not been aware of the wasted space above items on the shelves prior to the study.

Reactions After Using the Storage Plan

Mrs. E was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Food mixing was easier because

everything needed was on hand for each job. The mix center had been a great improvement over the former arrangement. The vertical dividers were convenient to use since equipment could be seen and used easily.

Relocation of Food and Equipment. -- The reorganization of food supplies made it easier to plan the grocery list because one could easily see what was on hand and control the quantity of supplies stored. Mrs. E liked having a special turntable for surplus food.

Adjustment to Changes in Work Patterns. -- Mrs. E did forget the location of supplies often, however, she did not find this to be a frustrating experience. She had become accustomed to the change.

Difference in Attitude Toward Kitchen as a Work Place. -- Mrs. E did not think of her kitchen as a new place to work.

Reactions of Other Family Members to the Mix Center. -- Mrs. E had problems with too many people unloading the dishwasher and putting equipment back in the old storage places. Mr. E was quite interested in the work accomplished in the kitchen. He assisted with the installation of wooden storage devices.

Changes Made in the Storage Plan of the Mix Center. -- On the whole the mix center was as planned. A small mixing bowl was placed in a larger bowl in the mix center because it was used often.

SITUATION F

The Family

Mr. and Mrs. F, ages forty-six and forty-two respectively, lived in a modern home within a small town. A son, seventeen, and a daughter, thirteen completed the family.

Mr. F had completed all requirements for a M.S. degree except a thesis. A consulting geologist, he traveled a great deal in his work. Mr. F hired a farm manager to take care of his farm, but supervised the work himself. Mrs. F, a housewife, was a registered nurse. She preserved a large portion of the family food. Outside help was available once a week to assist with household cleaning.

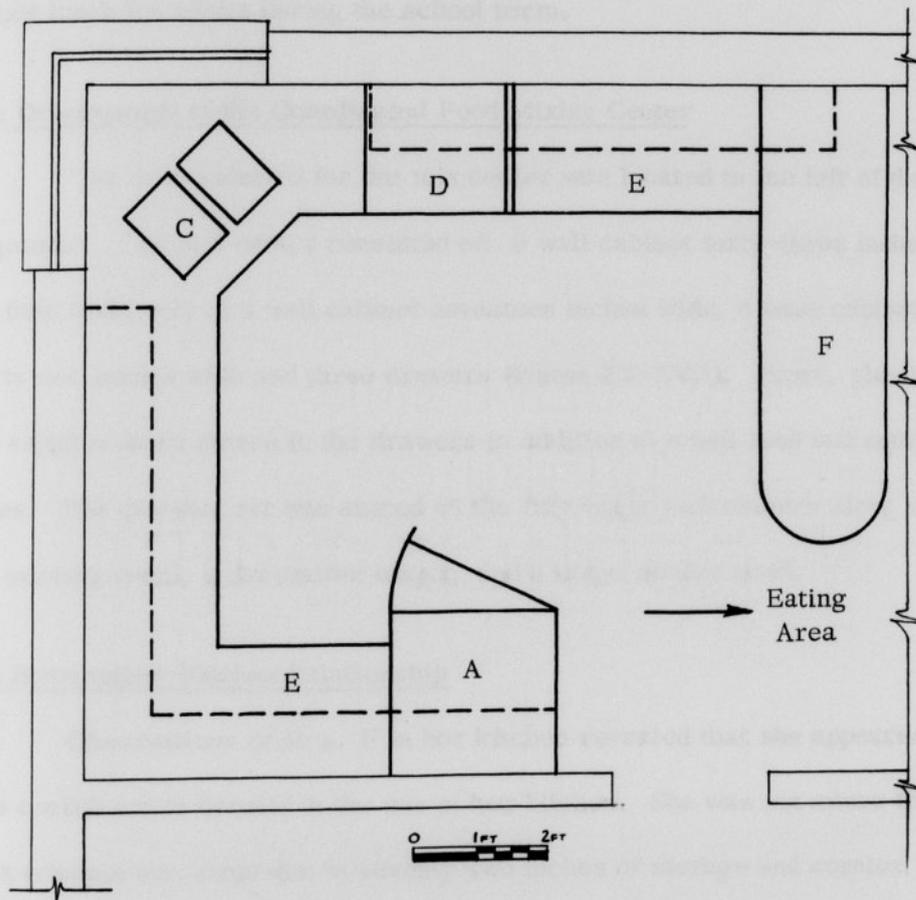
The Kitchen

The U-shaped kitchen (Figure 6.) had liberal storage facilities adjacent to all major appliances. Sixteen pull-out drawers indicated the spaciousness of the kitchen. No shelves were available in the base cabinets of the kitchen.

Mrs. F had had no instruction on kitchen storage, nor had she put into practice any ideas on kitchen storage found in magazines. Items were placed in the cabinets hurriedly when Mrs. F moved; she located supplies where she thought they would be the most convenient but did not give it much thought. Mrs. F requested advice on the placement of a dishwasher in the kitchen.

The Family Meal Pattern

The meal pattern consisted of breakfast and dinner for the family, and



The Key

- A - Refrigerator
- B - Mix Center
- C - Sink
- D - Wall Oven
- E - Range Top
- F - Serving Counter

FIGURE 6. KITCHEN PLAN - SITUATION F

a light lunch for adults during the school term.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located to the left of the refrigerator. The mix center consisted of: a wall cabinet forty-three inches wide, the first level only of a wall cabinet seventeen inches wide, a base cabinet thirty-one inches wide and three drawers (Plates XV-XVII). Paper, plastic, and foil supplies were stored in the drawers in addition to small food and equipment items. The canister set was stored on the fifty-eight inch counter along with two serving trays, a decorative teapot, and a large wooden bowl.

The Homemaker-Kitchen Relationship

Observations of Mrs. F in her kitchen revealed that she appeared to have confidence in herself in the use of her kitchen. She was not aware that the work triangle was large due to seventy-two inches of storage and counter space between the mix and sink centers.

Mrs. F showed interest in making her kitchen attractive as well as functional. She had molding added to all of the portable shelves to give a finished look and stained them to match the cabinets. When it was suggested that some of the items stored on the counter of the mix center could be relocated, Mrs. F explained that they were placed there to give color and interest, and she did not mind moving them when working on the counter.

Reactions During the Planning Stage

Mrs. F agreed to participate in this project without hesitation. She

PLATE XV

MRS. F - WALL CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XVI

MRS. F - WALL CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

PLATE XVII

MRS. F - BASE CABINET STORAGE



Storage Prior to Study



Storage After Study

showed keen interest in the plans for the mix center and requested help in re-organizing storage in the entire kitchen. The principle of storing items at the place of first use was new to her. She was impressed with the idea of using portable shelves since no adjustable shelves were installed in her kitchen. Mrs. F showed a special interest in this storage device and reasoned that it would be helpful in organizing the closet storage space in the eating area.

When discussing the activity chart Mrs. F noticed that she did not have a lot of electrical equipment mentioned on the chart but remarked that she seemed to manage all right. Mrs. F volunteered to clean out the cabinets prior to the developing stage and commented that she was anxious to complete the project.

Reactions During the Developing Stage

The kitchen was prepared as suggested for the development of the storage plan. Mrs. F proudly showed the portable shelves that she had a carpenter build for the storage of china. She explained that help was not requested in designing the shelves because she thought she understood the principles involved. Mrs. F recognized the mistakes that had been made in measuring for the shelves and showed that the storage devices had been used effectively in other areas of the kitchen.

Mrs. F started asking where articles should be placed but soon learned to ask herself where the item was used. She was not concerned about bending low to obtain items since she had become accustomed to the lack of shelves in the base cabinets. Mrs. F welcomed the idea of duplicating items used

frequently in more than one center.

Mrs. F participated in the work with enthusiasm. She showed interest in obtaining an efficient kitchen by making suggestions and questioning ideas that she did not agree with. Due to ample storage facilities in relation to the quantity of supplies to be stored and advance preparations, the storage plan for the entire kitchen was developed in six hours.

Reactions After Using the Storage Plan

Mrs. F was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Food preparation was easier because the supplies were stored where needed and time was not lost collecting them. The cabinets stayed neat and the sink area did not get cluttered during the mixing process. This study made Mrs. F aware of organized storage space to the extent that she had dividers installed in the bathroom drawer.

Relocation of Food and Equipment. -- Grocery and meal planning was much easier because everything could be seen at a glance. The mix center and adjacent counter space were good for preparing food for the freezer.

Adjustment to Changes in Work Patterns. -- Mrs. F found that it did take time to get accustomed to the changes in storage location of supplies. She would walk over to get something and then realize that it was not there. The adjustment period was not a maddening experience. She was no longer bothered by this change.

Difference in Attitude Toward Kitchen as a Work Place. -- The kitchen

did not seem like a new place to work.

Reactions of Other Family Members to the Mix Center. -- The daughter had just started using the kitchen for the preparation of simple desserts and snacks. She liked the mix center. Mr. F showed interest in the project and assisted in assembling some of the commercial storage devices.

Changes Made in the Storage Plan of the Mix Center. -- On the whole the storage plan remained the same. Two serving trays were removed from the counter and placed between the wall and pull-out drawers in the base cabinet to give more work space on the counter. Surplus jars of home canned food were placed behind the vertical divider in the base cabinet because of the lack of shelf space.

SITUATION G

The Family

Commander and Mrs. G, ages forty-eight and forty-six respectively, moved to Virginia following his retirement from the Navy. They purchased a large old house with fifteen acres of land within the city limits of a rural town. Mr. and Mrs. G spent a great deal of time and money in repairing, remodeling, and landscaping their property.

Commander G, who had a M.A. degree, taught at the local military school for three years. He then became the first Executive Secretary of the Virginia State Air Pollution Board with his office in Richmond, Virginia. Mrs. G, also a college graduate, decided not to follow her husband because she was tired

of moving and wanted to stay in their first permanent home. Commander G came home on weekends. The family included three sons, twenty-four, twenty-one, and twenty, and a daughter, eighteen. She was present during the planning stage only, and one son was present during the developing stage. Full time help was employed to assist Mrs. G in keeping the house and grounds in order.

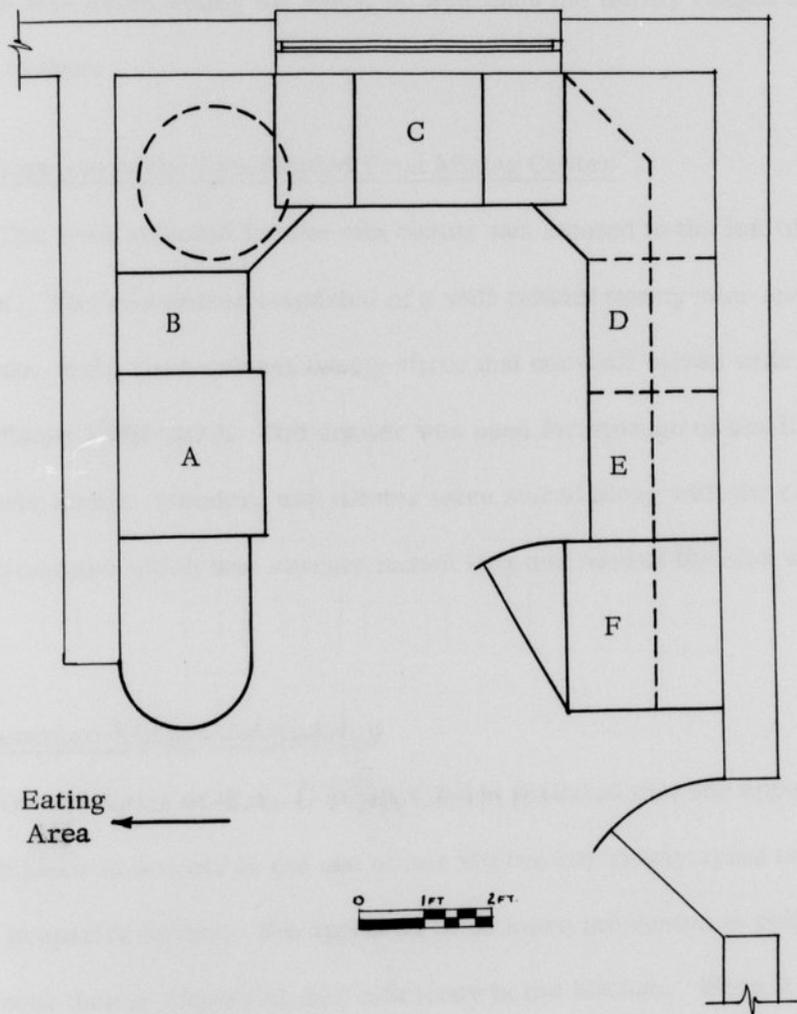
The Kitchen

Mrs. G, dissatisfied with the antiquated kitchen in the house, designed a new kitchen with the help of an architect. The kitchen (Figure 7.) was installed on the old sun porch leaving storage cabinets in the former kitchen for seldom used items. Some base storage was adjacent to all major appliances in the U-shaped kitchen. Wall cabinet storage was provided on the right wall only. Additional base storage was not provided to replace the space taken by the dishwasher. Therefore, the refrigerator unit had insufficient base storage and the range unit had no wall storage. Storage cabinets thirty-eight inches long, with sliding doors, were located underneath the windows in the eating area. Adjustable shelves were available in the wall cabinets.

Mrs. G had had no instruction on efficient use of kitchen storage, nor had she applied any ideas on kitchen storage from magazines. Supplies were placed hurriedly when moving into the new kitchen and were not changed.

The Family Meal Pattern

Due to the transitory family situation Mrs. G prepared meals according to the situation, not according to any set pattern. During the use



The Key

- A - Range
- B - Chopping Block
- C - Sink
- D - Dishwasher
- E - Mix Center
- F - Refrigerator

FIGURE 7. KITCHEN PLAN - SITUATION G

period she was alone during the week; on weekends the family ranged in number from two to five.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located to the left of the refrigerator. The mix center consisted of a wall cabinet twenty-nine and one-half inches wide, and a base cabinet twenty-three and one-half inches wide with one drawer (Plates XVIII-XIX). The drawer was used for storage of small equipment. The electric mixer, blender, and toaster were stored along with the canister set on the counter which was seventy inches long and served the sink and mix centers.

The Homemaker-Kitchen Relationship

Observations of Mrs. G in her kitchen revealed that she appeared to have confidence in herself in the use of her kitchen but rarely spent much time or effort preparing meals. She appeared to be more interested in getting her cabinets neat than in improving her efficiency in the kitchen. When it was pointed out that she was doing a lot of unnecessary walking to and from the table, she commented that it was not far and she did not mind. Mrs. G did not share a concern over the lack of storage where needed. She stated that she did most of the planning for the kitchen, and tried to incorporate the best points from the different kitchens she had used when her husband was in the Navy.

Reactions During the Planning Stage

Mrs. G learned of this research project through friends and requested

PLATE XVIII

MRS. G - WALL CABINET STORAGE



Storage Prior to Study



Storage After Study

PLATE XIX

MRS. G - BASE CABINET STORAGE



Storage Prior to Study



Storage After Study

the opportunity to become a participant. She learned that her husband would change his position soon after this but insisted that it would not affect the project since she did not plan to move. She appeared to lose interest after her family scattered and she started using more prepared foods.

It was suggested that the spices be located according to use. Mrs. G placed some of the spices in a drawer next to the range between the first and second visits and commented that she had tried this arrangement for a few days but did not like it. It was understood that storage space in the entire kitchen would have to be reorganized in order to obtain enough space for a mix center. Mrs. G made decisions quickly concerning the activity chart but did not give the matter serious thought. She did not appear to be interested in saving time or energy.

Reactions During the Developing Stage

Mrs. G did remove supplies from the base cabinet of the mix center as requested; however, it was necessary to assist her in removing items from the wall cabinet and eliminating items before developing the storage plan. Stored in the kitchen were: unusual kitchen gadgets, several sets of china and crystal, and odds and ends of china and equipment inherited from her mother. Two sets of china, used daily, limited the amount of wall space available to the mix center. Mrs. G agreed to try suggestions for the most part, but expected decisions to be made for her concerning storage problems. She participated in the work and did not hesitate over relocating equipment; however, she ignored suggestions to place food and supplies used in the eating area within the cabinet next

to the table. The matter was not pursued.

It was suggested that a vertical divider could be used to eliminate stacking of equipment. Mrs. G was not interested and dismissed the idea until a friend, who dropped in for a visit, remarked how much she liked her divider for trays. After Mrs. G agreed to the use of a vertical divider, the problem of location arose. It was found that a permanent vertical divider would fit in the base cabinet to the left of the range, three steps behind the mix center. Later Mrs. G stated that the carpenter did not approve plans for the permanent vertical divider. He convinced her that it would be best to build a portable divider and place it under the sink with the trash can. This device, located five steps from the mix center, was not large enough to store all the equipment listed in the storage plan.

Reactions After Using the Storage Plan

Mrs. G was indifferent over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Mrs. G could not see that the mix center made much difference in her kitchen. She commented that she would probably find it more convenient if it was used more.

Relocation of Food and Equipment. -- Work moved more quickly since time was not spent looking for supplies.

Adjustment to Changes in Work Patterns. -- Mrs. G kept going back to the chopping board to work since she had formed the habit of working there prior to the study. She did not feel that this was a better place to work than the mix

center. The changes slowed her down but were not frustrating.

Difference in Attitude Toward Kitchen as a Work Place. -- Mrs. G did not think of her kitchen as a new place to work.

Reactions of Other Family Members to the Mix Center. -- Everyone complained, mildly, about not being able to find what they needed.

Changes Made in the Storage Plan of the Mix Center. -- On the whole the storage plan remained the same. The beaters for the hand electric mixer had been moved from the drawer and placed in the wall cabinet in a small dish to prevent bending.

SITUATION H

The Family

Dr. and Mrs. H, ages forty-two and thirty-eight respectively, lived in a ranch style home in southern Virginia. They had two sons, fourteen and eleven years of age.

Dr. H, who had a B.A. and a Th.D., served as chaplain, teacher, and coach for the local military school. He was also pastor of a small church twenty miles from home. Mrs. H, who had completed three years of college and two years of training in religious education, was a housewife when she agreed to participate in this study. She later accepted the position of probation officer for the Juvenile Court.

The Kitchen

Dr. and Mrs. H worked with the building contractor in developing plans

for their house. In the kitchen (Figure 8.) liberal wall and base storage was adjacent to all major appliances. However, the storage area adjacent to the refrigerator was a floor to ceiling cabinet for cleaning supplies. Dr. H installed a dishwasher prior to the developing stage.

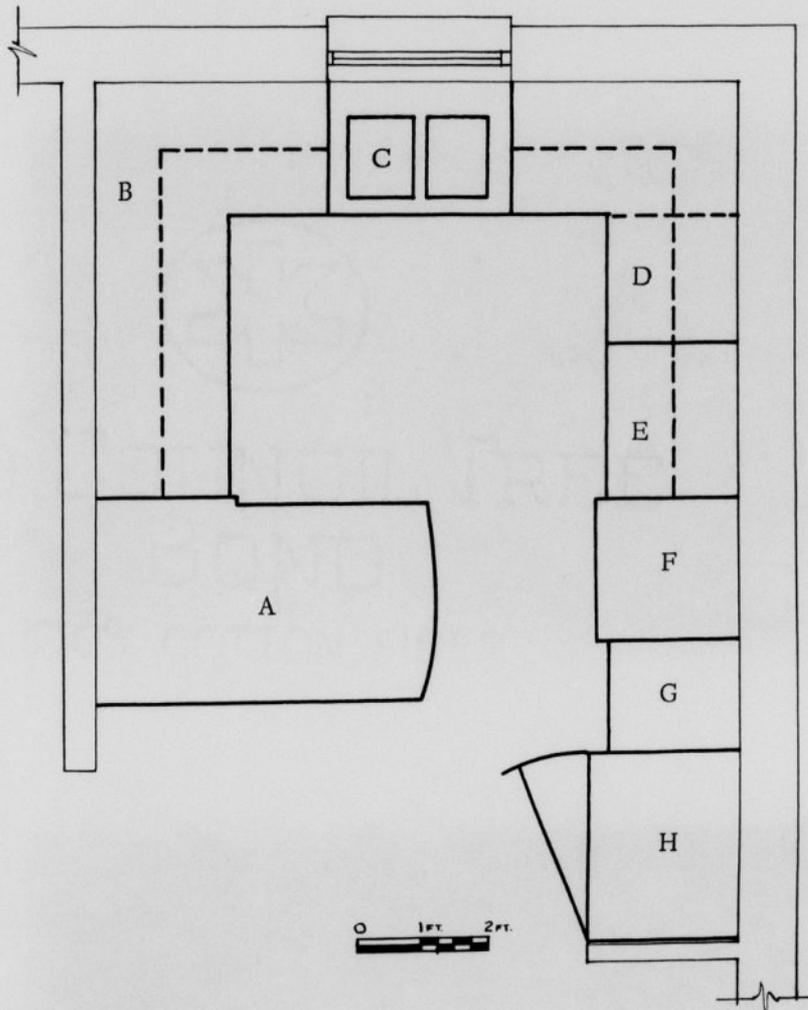
Mrs. H had had no instruction in organizing kitchen storage, nor had she put into practice any ideas on storage found in magazines. Mrs. H placed items in the kitchen along the pattern of arrangement her mother used.

The Family Meal Pattern

The meal pattern consisted of: breakfast and dinner for the family, packing lunch for one son, and a light lunch for the rest of the family.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located to the left of the sink. The mix center consisted of: two wall cabinets twenty-three inches wide, a base cabinet forty-three and one-half inches wide with three drawers, and a base cabinet fifteen inches wide (Plates XX-XXIII). The "before" photographs of the left base cabinet was taken with two doors opened, but the "after" photograph was taken with three doors opened due to the size of the vertical divider. The drawers were used for plastic and foil wraps in addition to small food and equipment supplies. The electric mixers and the canister set were stored on the counter which was seventy-five inches long and served the mix, sink, and eating areas.



The Key

- A - Eating Bar
- B - Mix Center
- C - Sink
- D - Dishwasher
- E - Range Top
- F - Wall Oven
- G - Floor to Ceiling Cabinet
- H - Refrigerator

FIGURE 8. KITCHEN PLAN - SITUATION H

PLATE XX

MRS. H - WALL CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XXI

MRS. H - WALL CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

PLATE XXII

MRS. H - BASE CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XXIII

MRS. H - BASE CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

The Homemaker-Kitchen Relationship

Observations of Mrs. H in her kitchen revealed that she appeared to have confidence in her use of the kitchen. She was quite conscious of using time efficiently and commented that she was more interested in developing a time and energy saving kitchen than in economizing on storage devices. She stated that every minute was precious to her. Mrs. H requested help in reorganizing all storage areas in the kitchen and explained that it did not make sense to have part of the kitchen organized and the remainder unorganized. She was willing to try all suggestions for improving the storage plan. However, she quickly changed the arrangement if she found it inconvenient.

Reactions During the Planning Stage

Mrs. H hesitated over participating in this study. She remarked that she had plenty of cabinets and was happy with her kitchen. Mrs. H showed more interest in the project as she began to understand the benefits that normally result from developing a mix center. She did not appear to be concerned over the expenses involved in the study but with the amount of time she would have to spend. She wanted to know exactly what would be done each visit, how long each visit would last, and what questions would be asked. Mrs. H requested the opportunity to discuss the matter with her husband before making a decision.

Mrs. H reported that her husband was interested in the project and encouraged her to participate. From this point on, Mrs. H was enthusiastic about the plans for the mix center and commented that she could not wait to get started. She was quite cooperative during the planning meeting. Mrs. H gave

careful consideration to the activity chart and made decisions quickly. She was sure of herself and conscious of the work patterns that had been formed. Mrs. H did not share the concern for locating the mix center so far from the refrigerator.

The proposed storage plan was explained to Dr. H. After reviewing the bulletin illustrating the devices he agreed to help in any way he could. Advice was sought on the location of a dishwasher.

Reactions During the Developing Stage

The kitchen was prepared as requested. Mrs. H was enthusiastic over the portable shelves her husband had made and installed for organizing the china and crystal. She explained that Dr. H had made storage devices for several other areas of the home, too. Mrs. H stated that they wanted their cabinets to look nice in addition to having an efficient place to work.

The work moved quickly due to advance preparations. Mrs. H removed duplicate and nonfunctional items from the kitchen without hesitation. The main problem was placing items within comfortable body reach for Mrs. H. Dr. H offered to take all measurements for designing the storage devices in the mix center. He worked quietly and had two portable shelves placed before the developing session was completed.

Reactions After Using the Storage Plan

Mrs. H was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Food preparation was easier. Mrs. H

did not appreciate the mix center until she made a baked product. She found it convenient to be able to stand in one area and work. When using the mix center, the only supplies that had to be collected were those stored in the refrigerator.

Relocation of Food and Equipment. -- By duplicating inexpensive supplies, time and energy was saved. Mrs. H purchased additional food supplies to carry out this idea even further. The mix center saved money on the grocery bill since items could be seen at a glance and the surplus could be controlled better.

Adjustment to Changes in the Work Patterns. -- Mrs. H did have problems remembering the location of items, particularly when in a hurry. It was not a frustrating experience because she always found the needed item. Dr. H had less trouble because he was slow and methodical in his actions.

Difference in Attitude Toward Kitchen as a Work Place. -- The kitchen did not seem like a new place to work.

Reactions of Other Family Members to the Mix Center. -- Dr. H frequently prepared simple meals when his wife had to be away. He liked the mix center and often corrected family members when items were not placed according to the storage plan. To Mrs. H's surprise Dr. H took the drawer that was removed for the placement of the dishwasher and installed it under the range top, dividing the drawer according to the shape of the articles he stored there.

The sons were pleased that they were considered in the planning stage and that snacks and sandwich making supplies were within their reach.

Changes Made in the Storage Plan of the Mix Center. -- Three changes

were made in the storage plan. Custard cups were moved to a higher level since they were seldom used. The electric can opener was returned to the mix center; some of the canned goods used at the range were returned to the mix center because they were easier to reach.

SITUATION I

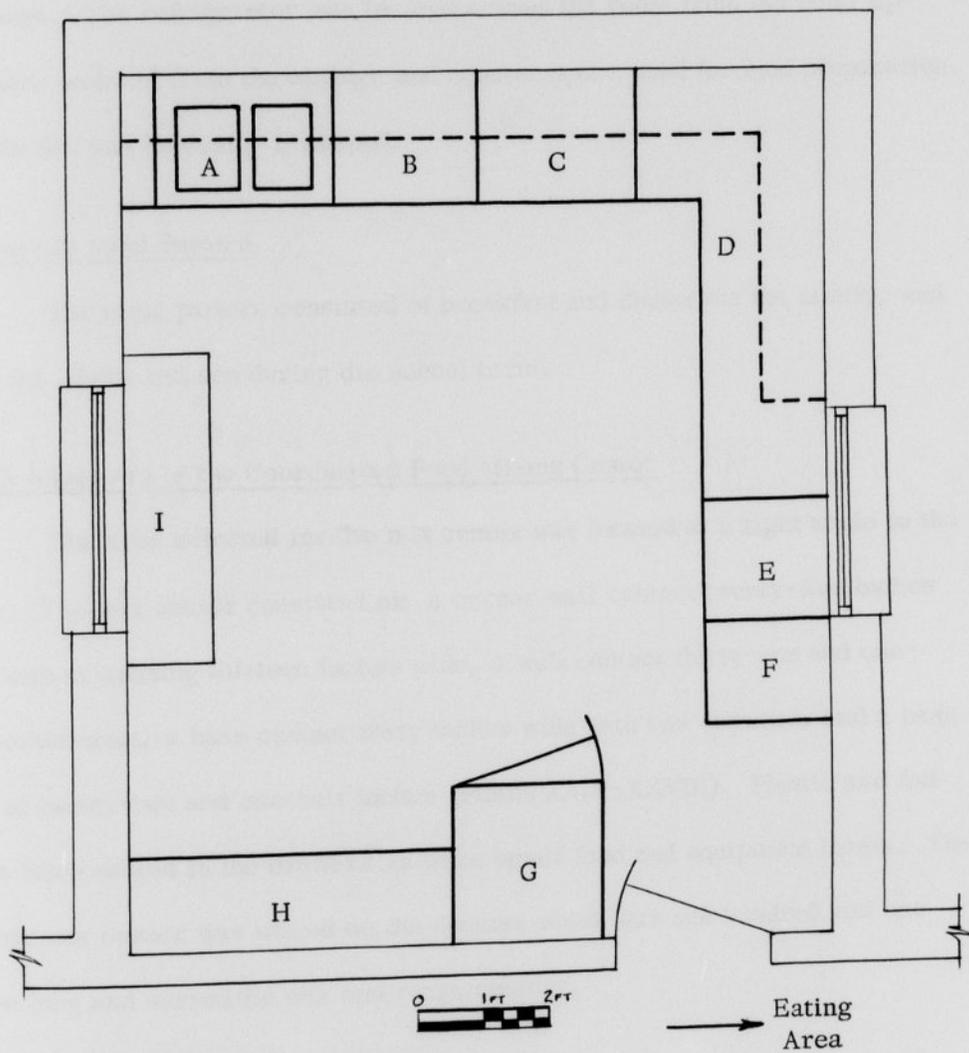
The Family

Mr. and Mrs. I, ages thirty-five and thirty-three respectively, lived in a large old house formerly owned by Mrs. I's parents. Mr. and Mrs. I had personally redecorated four rooms of their home. A daughter, fifteen, and a son, three, completed the family.

Mr. I, who had a B.S. degree, was manager of an automobile agency. Mrs. I, a housewife, completed high school. Outside help was available one day a week for household cleaning.

The Kitchen

The kitchen (Figure 9.) was originally separated from the main part of the house by a narrow porch. The porch was later enclosed, decorated and used for the informal eating area. Mr. and Mrs. I installed a demonstration kitchen in the old kitchen without remodeling. The wiring system was not adequate for the appliances owned by the family, and extension cords were used freely. The location of a large radiator and an old cabinet prevented the placement of the table and chairs in the kitchen. Wall cabinets were available for the sink and range areas, however, little base storage was convenient for use with



The Key

- A - Sink
- B - Dishwasher
- C - Range
- D - Mix Center
- E - Chopping Block
- F - Tall Cabinet
- G - Refrigerator
- H - Old Cabinet
- I - Radiator

FIGURE 9. KITCHEN PLAN - SITUATION I

the range. The refrigerator was located across the room from the other appliances, isolated from the storage and counter space used for food preparation. The kitchen was basically L-shaped.

The Family Meal Pattern

The meal pattern consisted of breakfast and dinner for the family, and lunch for adults and son during the school term.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located at a right angle to the range. The mix center consisted of: a corner wall cabinet twenty-five inches wide with an opening thirteen inches wide, a wall cabinet thirty-one and one-half inches wide, a base cabinet forty inches wide with two drawers, and a base cabinet twenty-two and one-half inches (Plates XXIV-XXVIII). Plastic and foil wraps were stored in the drawers as were small food and equipment items. The electric can opener was stored on the counter which was one hundred and one inches long and served the mix and range centers.

The Homemaker-Kitchen Relationship

Observations of Mrs. I in her kitchen revealed that she appeared to be interested in obtaining an efficient kitchen but was quite hesitant to make the changes necessary for accomplishing this goal. It was pointed out that she was taking many unnecessary steps due to the location of the refrigerator and informal eating area. Mrs. I was not aware that the arrangement of appliances, storage and eating facilities were quite so inefficient. She resisted change

PLATE XXIV

MRS. I - WALL CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XXV

MRS. I - WALL CABINET STORAGE (RIGHT)



Storage Prior to Study



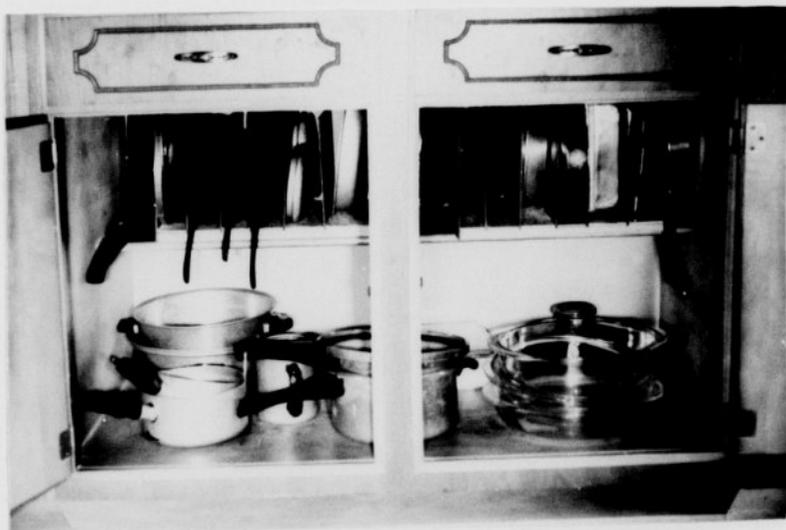
Storage After Study

PLATE XXVI

MRS. I - BASE CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XXVII

MRS. I - BASE CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

saying that she could not see that the kitchen plan was that poor, and that she had a daughter to carry items to and from the eating area. Mrs. I was more concerned over appearance and what she would do with the eating room if changes were made than improving the efficiency in the kitchen. She was not interested enough in the suggestions to allow measurements to be taken to see what improvements were possible.

Mrs. I showed a negative attitude concerning the way she used her kitchen and belittled herself when explaining her work patterns. She remarked that she would use a piece of equipment, a spatula for example, and stop and wash it when needed again rather than soil two spatulas; whereas her daughter would use two spatulas and then wash all equipment at one time.

Reactions During the Planning Stage

Mrs. I learned of this research project through friends and requested the opportunity to be a participant. She stated that she wanted a more efficient kitchen and had done all she knew to do with the cabinets. Frequent interruptions by the child, off the subject chatter, long explanations, and a resistance to change caused the planning meeting to move slowly. At first, Mrs. I showed only a moderate interest in the work. She had to be encouraged to make decisions concerning the activity chart. Mrs. I relaxed, to some degree, and remarked that she did not know what she was getting into and to do whatever seemed best. She wanted to place some heavy appliances on a high shelf because the family members using them were quite tall. Mrs. I suggested that changes could be made for the "after" photograph if this would look bad to the

thesis committee. The planning meeting was more successful after Mrs. I understood the importance of developing a mix center suited to her work patterns and family situation. It was pointed out that it would be necessary to reorganize the storage in all new cabinets in order to form a mix center. Mrs. I was not interested in reorganizing the old cabinet. She showed great hesitation concerning plans for moving items from one cabinet to another. Mrs. I could not visualize the mix center with a combination of food and equipment because she felt that like things should be stored together. When discussing the equipment suggested on the activity chart Mrs. I pointed out that she did not own some items such as mixing bowls, measuring cups or refrigerator containers. She was content with the makeshift equipment used.

Reactions During the Developing Stage

The kitchen was prepared as requested. Mrs. I was cooperative and seemed more willing to relocate supplies. While she questioned many of the suggestions for reorganizing storage space, it was felt that she was now trying to help solve some of the storage problems rather than being argumentative. Three of the major problems were: many shelves too high for comfortable body reach, crowded conditions for storing dishes, and the mix center crowded with items used at the sink and range. Mrs. I requested that food supplies be placed in the wall cabinet of the mix center because she would rather bend down once for a heavy bowl than bend three times for light food supplies. The location of equipment was not changed greatly, mainly food supplies and the arrangement within the cabinets.

Mrs. I remarked that she did not go in for "do-dads" in her kitchen and did not want anything on the counter except the electric can opener. It was suggested that she might find it more convenient to use the canister set stored on the counter. She explained that her canisters were not attractive and she did not mind lifting them down when needed. It appeared that the only available storage for the everyday dishes, which were used for breakfast only, was a section of wall cabinet eighteen inches wide over the range. Mrs. I remarked that the dishes would have to be placed in the proposed mix center since she did not want them stacked on the high shelf. The possibility of building a vertical divider for the dishes was discussed and dismissed while other cabinets were reorganized. Later Mrs. I pulled out an old dish drainer and suggested that if the sides were removed it could be used as a vertical divider for the old dishes. This idea worked nicely and the mix center was developed as originally planned in only one work day. During the placement of the wooden storage devices Mrs. I expressed satisfaction with the reorganization of storage in her kitchen, and wished that she had also agreed to reorganize the space in the old cabinet.

Reactions After Using the Storage Plan

Mrs. I was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Food preparation was easier because Mrs. I could see what was on hand. This helped in grocery shopping and meal planning. Work moved quickly because food and equipment were stored where needed. Shelves were cleaned easily since only a few items had to be moved.

The mix center could be kept orderly with little effort. Mrs. I enjoyed using the turntables.

Relocation of Food and Equipment. -- One result was a change in the pattern of serving and cleaning up after meals. The clutter from food preparation was left at the mix center, leaving the counter between the sink and range clear for serving plates and clearing the table. This eliminated some of the handling of dishes and saved time.

Adjustment to Change in Work Patterns. -- Mrs. I often went to the old location for foods when in a hurry. This was not frustrating but might have been if she had not been able to find the item needed.

Difference in Attitude Toward Kitchen as a Work Place. -- Mrs. I had a feeling of a unit complete in itself, but did not consider the kitchen a new place to work. She was disgusted when the maid stacked bowls on the dishes but was aware that she had been guilty of stacking many items prior to the study.

Reactions of Other Family Members to the Mix Center. -- The daughter was keenly interested in the development of the mix center and watched the process as often as possible. Without knowing of earlier conversations she stated that they really needed to move the eating area into the kitchen. The daughter had prepared desserts and simple meals. No problems arose from two people using the mix center. Mr. I was interested in the project and remarked that he appreciated the efforts to keep the expenses low.

Changes Made in the Storage Plan of the Mix Center. -- On the whole the storage plan remained the same. Small food products had to be removed

from the drawer and placed on a high shelf over the range because the child opened food packages and poured the contents in the drawer.

SITUATION J

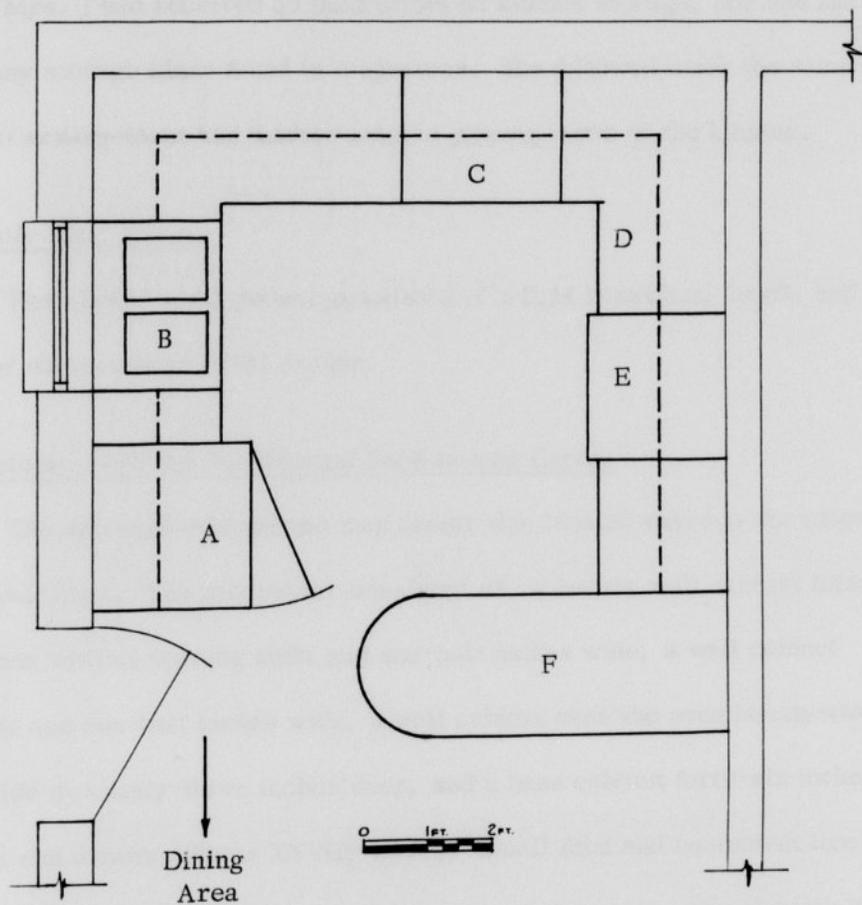
The Family

Mr. and Mrs. J, thirty years of age, purchased their house from a contractor when it was almost completed. Therefore, they had no influence on the house plans. The family included two daughters, five and six, and a son, three.

Mr. J, employed as a teacher and coach by the local military school, had completed all requirements for a M.A. degree except a thesis. He attended summer school and planned to complete his degree in the near future. Mr. J was present during the planning and using stages, but away during the developing stage of this study. Mrs. J and the children remained in their home during his absence. Mrs. J, a housewife, had completed the requirements for a B.S. degree.

The Kitchen

The U-shaped kitchen (Figure 10.) provided some wall and base storage space adjacent to the sink, range top and wall oven, but did not have useable storage space convenient to the refrigerator. No provisions were made to supplement the lack of counter space resulting from the installation of a wall oven. The first level of the wall cabinets was twenty-two inches from the counter compared to the standard of sixteen inches.



The Key

- A - Refrigerator
- B - Sink
- C - Range Top
- D - Mix Center
- E - Wall Over
- F - Eating Bar

FIGURE 10. KITCHEN PLAN - SITUATION J

Mrs. J had received no instruction on kitchen storage, nor had she applied any storage ideas found in magazines. She followed much the same pattern of arrangement her mother used in placing items in the kitchen.

The Family Meal Pattern

The normal meal pattern consisted of a light breakfast, lunch, and dinner for all members of the family.

The Development of the Coordinated Food Mixing Center

The area selected for the mix center was located between the range top and the wall oven. The mix center consisted of: a corner wall cabinet fifteen inches wide with an opening eight and one-half inches wide, a wall cabinet thirty-two and one-half inches wide, a wall cabinet over the oven twenty-two inches wide by twenty-three inches deep, and a base cabinet forty-six inches wide with one drawer (Plates XXVIII-XXXI). Small food and equipment items were stored in the drawer along with plastic and foil wraps. The electric hand mixer was hung on the wall between the counter and the wall cabinets but was hidden from view by the eight inch cabinet facing. The counter was forty-three inches long.

The Homemaker-Kitchen Relationship

Observations of Mrs. J in her kitchen revealed that she appeared to have self-confidence in the use of her kitchen. She had never heard the words, "Store items where they are first used", but had planned the location of supplies to some degree. It was suggested that the area between the sink and range top

PLATE XXVIII

MRS. J - WALL CABINET STORAGE (LEFT)



Storage Prior to Study



Storage After Study

PLATE XXIX

MRS. J - WALL CABINET STORAGE (CENTER)



Storage Prior to Study



Storage After Study

PLATE XXX

MRS. J - WALL CABINET STORAGE (RIGHT)



Storage Prior to Study



Storage After Study

PLATE XXXI

MRS. J - BASE CABINET STORAGE



Storage Prior to Study



Storage After Study

could be used for developing the mix center since counter space was extremely limited elsewhere. Mrs. J objected because the children could get under her feet and hindered movement. She wanted to work in the corner between the range top and the wall oven. When discussing the possibility of removing duplicate and nonfunctional items from the kitchen Mrs. J remarked that this was not entirely possible since it was necessary to have a junk drawer for odds and ends the children leave in the kitchen. Also, the flower arranging equipment could not be removed because of the lack of storage facilities elsewhere in the house. Mrs. J expressed concern over the "before" photographs being taken without cleaning and straightening the cabinets. She was satisfied when it was explained that names would not be used in this study.

Reactions During the Planning Stage

Mrs. J hesitated over participating in this research study for financial reasons. She asked about the expense of the project and how long it would be before the storage devices would be purchased. Mrs. J explained that they could not afford drastic changes in the kitchen as long as her husband was in school. She requested the opportunity to discuss the matter with her husband before making a decision. Mrs. J later reported that her husband encouraged her to participate in the study. It was suggested that the six books of trading stamps on hand might be used to obtain commercial storage devices.

Mrs. J was cooperative during the planning meeting. She showed keen interest in the plans for the mix center and took the work seriously. There was some concern that there might not be enough space in the mix center for all the

supplies listed on the activity chart. It was understood that it would be necessary to reorganize the storage space in the entire kitchen in order to form a mix center. Mrs. J handled interruptions by the children, the telephone, and visitors so that the work moved as smoothly as possible.

Reactions During the Developing Stage

The kitchen was prepared as requested. Mrs. J had removed three large boxes of items from the cabinets. She was pleased with the suggestion to organize the flower supplies through the use of portable shelves in the floor to ceiling cabinet in the eating area. She concluded that it would now be possible to develop an efficient mix center and sought advice on how to make better use of the former junk drawer. Mrs. J was quite cooperative and made suggestions that showed good application of the principles of storage discussed. She did not wait for assistance in solving all problems. Mrs. J enjoyed experimenting with different storage devices in her kitchen and was particularly impressed with the turntables. She was quite interested in the use of portable shelves to make better use of the wasted space above items on the shelf since she was short and the cabinets were located too high on the wall. The storage plan for the entire kitchen was completed in one work day even though the children interrupted the work frequently.

Reactions After Using the Storage Plan

Mrs. J was enthusiastic over the change in her kitchen. Her reactions to the open end questions (Appendix C) follow:

Convenience of the Mix Center. -- Food preparation was much easier. Mrs. J enjoyed cooking more because the needed items could be obtained easily. Making pastry was no longer a chore because she could mix things so quickly. Mrs. J was impressed with the turntables and dividers.

Relocation of Food and Equipment. -- Mrs. J did not realize how convenient the mix center was until she had guests for dinner unexpectedly. She was amazed at how quickly and easily the meal was prepared. The saving in time and energy was quite noticeable.

Adjustment to Changes in Work Patterns. -- Mrs. J did go to the wrong storage places, at first. This was not provoking to her but did cause her to work more slowly for a while. The placement of the beaters to the mixer bothered her more than the relocation of any other item, however, she felt that they were stored in the best place.

Difference in Attitude Toward Kitchen as a Work Place. -- Mrs. J did think of the kitchen as a new place to work because the storage in the entire kitchen was changed. She did not know how she would feel if the only change had been the development of a mix center.

Reactions of Other Family Members to the Mix Center. -- The children liked the sandwich making supplies stored where they could reach them. They enjoyed being able to help put away the groceries.

Changes Made in the Storage Plan of the Mix Center. -- On the whole the storage plan remained the same. A large bottle of oil, placed in the base cabinet because of size and weight, replaced a small bottle originally stored in

the wall cabinet.

REACTION BRIEFS

The more salient findings on each homemaker are listed as reaction briefs.

REACTION BRIEF - MRS. A

Homemaker-Kitchen Relationship

Had ample storage, used it poorly. Showed little confidence in established storage and work patterns. No storage according to use.

Reactions During the Planning Stage

Expressed concern over possible expense. Some anxiety regarding how present supply of utensils affected her status as a housewife or mother. Thought of kitchen as a whole. Most cooperative and keenly interested. Desired clean uncluttered counters.

Reactions During the Developing Stage

Prepared kitchen as requested. Willing to try suggestions. Excited over appearance of cabinets after storage devices were installed. Realized reasons for former inefficiency as storage plan was completed. Work moved quickly.

Reactions After Using the Storage Plan

Enthusiastic. Easier to prepare meals, to plan grocery lists, and to

keep cabinets neat. Mix center saved time and steps. Became aware of convenience of devices.

Adjustment and Changes Made

Had some problems remembering new storage locations, not frustrating. Kitchen not a new place to work. Made one logical change, one improvement.

REACTION BRIEF - MRS. B

Homemaker-Kitchen Relationship

Home economics graduate. Confident of ability in use of kitchen. Planned remodeling of kitchen. Aware cabinets messy, unaware inefficiency in cabinets caused extra steps.

Reactions During the Planning Stage

Interest increased as mix center visualized. Cooperative but slightly defensive of former storage. Offered to eliminate items and asked husband to make storage devices.

Reactions During the Developing Stage

Removed items base cabinet only, did not eliminate items. Felt that minor storage changes were not worth effort. Made good storage suggestions. Let expenses govern extent suggestions followed. Decided to reorganize other cabinets later but changed her mind as they became overcrowded. Saw need for turntable between visits and bought it.

Reactions After Using the Storage Plan

Pleased. Impressed with convenience and less walking. Liked food at eye level and can opener in mix center. Enjoyed storage devices. Completed duplicating suggestions after short use period.

Adjustment and Changes Made

Had problems finding supplies for a while. Kitchen not a new place to work. One logical change, one improvement.

REACTION BRIEF - MRS. C

Homemaker-Kitchen Relationship

Confident of ability in use of kitchen. Assisted with plans for kitchen. Unaware that insufficient storage where needed caused inefficiency in kitchen. Placed items according to use to some degree, did not organize space well. Planned time and activities carefully. Enjoyed housework.

Reactions During the Planning Stage

Hesitated to participate for financial reasons. Keenly interested in organizing entire kitchen storage. Made good storage suggestions, showed no resistance to change. Businesslike, made decisions quickly.

Reactions During the Developing Stage

Prepared kitchen as requested. Efficiency more important than appearance. Cooperative. Work moved quickly. Asked husband to make storage devices.

Reactions After Using the Storage Plan

Enthusiastic. Mix center saved time and patience. Food preparation easier. Kitchen stayed neat.

Adjustment and Changes Made

Did go to old storage places often. Kitchen not a new place to work. Turntable had to be placed over range to relieve crowding in mix center caused by additional cans of food.

REACTION BRIEF - MRS. D

Homemaker-Kitchen Relationship

Insufficient storage space. Counters and cabinets cluttered. Valued time with child and relaxation more than appearance of apartment. Aware of inefficiency.

Reactions During the Planning Stage

Requested participation and had cabinet built to obtain necessary storage space. Expressed concern over possible expenses. Keenly interested in reorganizing storage in entire kitchen. Wanted reasons for change, showed no resistance. Offered to eliminate items and showed eagerness to move ahead.

Reactions During the Developing Stage

No preparation due to baby, obtained baby sitter. Gave serious thought to matter at hand. Convenience preferred to appearance. Expressed interest in improving efficiency, was willing to try suggestions. Work moved slowly.

Reactions After Using the Storage Plan

Enthusiastic. Impressed with ease of preparation and clean-up. Mix center saved time and patience. Cabinets stayed neat. Stated work patterns improved.

Adjustment and Changes Made

Had few problems in locating items. Kitchen was a new place to work. Made six minor changes, all logical.

REACTION BRIEF - MRS. E

Homemaker-Kitchen Relationship

Aware of inefficiency in kitchen but not reasons for it. Belittled herself. Husband complained of poor organization. Overabundance of supplies, limited storage. Counter and cabinets cluttered. Unaware of how poor kitchen plan was.

Reactions During the Planning Stage

Stated willingness to cooperate but resistant to change. Could not visualize mix center. Mix center changed to less desirable location due to resistance.

Reactions During the Developing Stage

Cleared cabinets in preparation. Had difficulty in eliminating items, showed great resistance. Constant interruptions. Work moved slowly. Cooperative only after using mix center for preparation of cornbread. Then

made storage suggestions rejected earlier.

Reactions After Using the Storage Plan

Enthusiastic. Meal preparation and control of food supplies easier. Enjoyed standing in one place to work. Became aware of convenience of storage devices.

Adjustment and Changes Made

Returned to old locations often, not frustrating. Problems with family placing items in old storage places. Kitchen not a new place to work. One logical change.

REACTION BRIEF - MRS. F

Homemaker-Kitchen Relationship

Confident of ability in kitchen. Ample storage in relation to supplies. Handicapped by no shelves in base cabinets. Economy conscious but wanted job done well. Interested in efficiency and appearance.

Reactions During the Planning Stage

Keenly interested in improving entire kitchen storage. Aware of limited equipment. Wanted to learn. Became aware of convenience of storage devices. Designed some storage devices herself. Made decisions quickly. Eager to complete project.

Reactions During the Developing Stage

Prepared kitchen as requested. Eliminated items without hesitation. Willing to try suggestions. Made good storage suggestions. Work moved easily and quickly.

Reactions After Using the Storage Plan

Enthusiastic. Easier to prepare meals and to clean-up. Mix center saved time and helped with planning grocery list. Cabinets and sink area stayed neat.

Adjustment and Changes Made

Did go to old locations often, not frustrating. Kitchen not a new place to work. One improvement. Stored home canned food behind divider, did not hinder use of mix center.

REACTION BRIEF - MRS. G

Homemaker-Kitchen Relationship

Confident of ability in kitchen. Used prepared foods to great extent. Insufficient storage where needed, overabundance of equipment. Planned kitchen with architect. Resented comments on lack of storage.

Reactions During the Planning Stage

Requested participation, lost interest after family scattered. No serious thought to activities. Did not see point of mix center. Unconcerned with efficiency and resisted changes affecting work patterns.

Reactions During the Developing Stage

Cleared base cabinet only. Outwardly cooperative, ignored suggestions not pleased with. Waited for decisions to be made. Entire kitchen storage re-organized to obtain needed space. Influenced by friend and carpenter in use, design, and location of divider.

Reactions After Using the Storage Plan

Did not see difference in convenience. Does not bake. Mix center saved time since items were clearly visible.

Adjustment and Changes Made

Often went to chopping board to work, not a better place to work, just habit. Changes slowed work, not frustrating. Made one minor change.

REACTION BRIEF - MRS. H

Homemaker-Kitchen Relationship

Confident of ability in kitchen. Ample storage. Unaware of inefficient use of cabinets. Helped plan kitchen. Resented suggestion refrigerator placed too far from counter.

Reactions During the Planning Stage

Hesitated in participating, satisfied with kitchen. Husband, keenly interested, encouraged participation. More concerned with efficiency and saving time than economy. Cooperative. Thought of kitchen as a whole. Business-like in making decisions. Quite interested.

Reactions During the Developing Stage

Cleared cabinets. Cooperative. Storing within comfortable body reach posed problem. Made good storage suggestions. Showed excitement over accomplishments. Husband made many storage devices and applied knowledge in other areas.

Reactions After Using the Storage Plan

Enthusiastic. Mix center saved time and grocery money, and was convenient to use. Realized refrigerator poorly placed. Carried out duplicating idea further.

Adjustment and Changes Made

Did return to old locations, not frustrating. Husband strict on family's use of center. Kitchen not a new place to work. One logical change. Returned cans and can opener to mix center.

REACTIONS BRIEF - MRS. I

Homemaker-Kitchen Relationship

Insufficient storage where needed. Belittled herself in the kitchen. Used makeshift equipment. Could not see inefficiency of kitchen arrangement. Appearance important.

Reactions During the Planning Stage

Requested participation. Stated interest, resistant to change. Had to be encouraged, at first, to make decisions. Wanted reasons, then found excuses

for not following suggestions. Not interested in reorganizing more than necessary. Could not visualize mix center, wanted like things together. Many interruptions.

Reactions During the Developing Stage

Cleared cabinets. More cooperative, tried to help solve storage problems. Showed good application of knowledge. Wanted clear counters. Expressed pleasure with plan, disappointed old cabinet was not organized.

Reactions After Using the Storage Plan

Enthusiastic. Food preparation and clean-up easier, cabinets stayed neat. Disgusted when maid stacked dishes, aware she had been guilty of this. Daughter more efficiency minded.

Adjustment and Changes Made

Often went to old storage locations, not maddening. Kitchen not a new place to work. One change because of child.

REACTION BRIEF - MRS. J

Homemaker-Kitchen Relationship

Confident of ability. Wall cabinets placed too high. Limited counter space. Felt junk drawer necessary for children. Wanted kitchen neat.

Reactions During the Planning Stage

Hesitated to participate due to expense. Keenly interested in improving

efficiency in whole kitchen. Wanted mix center in corner due to children. Cooperative and wanted to learn. Many interruptions by children handled smoothly.

Reactions During the Developing Stage

Kitchen prepared as requested. Made good storage suggestions. Happy flower supplies removed from kitchen area. Decided to give up junk drawer. Became aware of convenience of devices. No resistance.

Reactions After Using the Storage Plan

Enthusiastic. Enjoyed cooking more. Preparation and clean-up easier. Mix center saved time, energy, and patience. More aware of convenience after having unexpected guests.

Adjustment and Changes Made

Did go to wrong places often, not maddening. Thought of kitchen as new place to work. Good application of knowledge in discussing one logical change.

CHAPTER V

SUMMARY AND CONCLUSIONS

SUMMARY

This study was concerned with the in-depth reactions of ten homemakers to planning, developing, and using coordinated food mixing centers in their kitchens. The homemakers lived in Virginia and ranged in age from twenty-six to forty-six. One-half of the participants held college degrees; three were employed. The number of children per family ranged from one to four. Nine families owned their homes. Only one homemaker had received some instruction on the efficient use of storage space.

Eight visits were planned with the homemakers for obtaining data. Reactions were recorded following each visit. After initial contact with the homemakers the kitchens were sketched, family information obtained, and plans completed for the mix center. It was possible to locate the mix center within easy access of the refrigerator in six of the kitchens. Most of the storage space in each kitchen was reorganized. Commercial storage devices, in addition to wooden dividers and shelves, were used extensively in organizing storage space. The principle of storing items at the place of first use was followed as closely as possible. Photographs of the cabinets were taken before and after the development of the storage plan. Detailed case studies and reaction briefs for each of

the ten women were reported.

The Homemaker-Kitchen Relationship

When first contacted, the homemakers seemed confident that their kitchen plans, storage, and work habits were fairly efficient. They recognized the lack of neatness but were unaware of inefficient kitchen arrangements or that storage areas were not being used to the best advantage.

The storage patterns used by the homemakers prior to the study were developed according to the placement of supplies when the families moved into a dwelling. Items were located in the kitchen hurriedly with little or no planning according to first use. The homemakers became accustomed to the arrangement and rarely made changes. Therefore, work patterns and habits were formed with little thought of efficiency. The women tended to store everyday dishes more than other items according to use and convenience. In all cases they had stored like objects together.

None of the participants was concerned with special diets when planning meals for their families.

Reactions and Observations During the Planning Stage

The participants could not visualize the mix center during the planning stage. They offered varying degrees of resistance to the idea of storing items according to use, even though all had agreed to the development of a mix center in their kitchens. Seven of the women were cooperative and willing to try suggestions for organizing the storage areas regardless of whether they quite

understood the purpose of the mix center or the procedure to be followed. The women were unable to develop their storage plans without help even after the idea of a coordinated food mixing center had been discussed in some detail.

The homemakers were so accustomed to having wasted space above items on the shelf that they did not see it or think about trying to make better use of this space. Criticism of the kitchen arrangement or storage facilities was often taken as criticism of the women as homemakers. Two of the women were more concerned about the appearance of their kitchen than efficiency of operation.

The women felt uneasy because a cost estimate for the storage devices was not available, but agreed to participate after learning that they would control the amount of money spent. Six of the homemakers had to manage their homes on very tight budgets.

Reactions and Observations During the Developing Stage

The extent to which the participants prepared their kitchens for the development of a storage plan varied greatly. Only three of the women made the effort to clear all their shelves and to eliminate the nonfunctional items prior to the hour set for developing the storage plan. This may be an indication that some of the women were not sufficiently eager to develop a mix center, at this point, to find the extra time needed for carrying out the preparations mentioned above. Speed of the work during the developing stage differed according to the amount of preparation accomplished and the degree of resistance offered by the homemaker. Eight of the storage plans were developed in one day, two required two work days.

The participants were shown illustrations of storage devices available during the discussion of the mix center and principles of good storage; however, it became apparent that the majority of the homemakers did not visualize the mix center until the developing stage when the work was being carried out. In three cases the mix center was not developed as efficiently as possible due to the homemakers' resistance to change.

Most of the women were not aware of the variety of storage devices available until the developing stage when they had the opportunity to experiment with demonstration equipment in their kitchens. The homemakers showed pleasure and excitement over the appearance of their cabinets as the devices were installed, and expressed amazement over the convenience they offered. Three of the husbands made the wooden storage devices for their wives. One homemaker showed no interest in the use of a vertical divider until influenced by a friend. She later accepted the advice of the carpenter concerning the design and location of the vertical divider contrary to the plans suggested for the kitchen.

The women waited for the developing stage to make proposed changes in other storage areas of the kitchen because they wanted assistance in making the decisions involved. Eight of the homemakers were cooperative during this stage and willing to try suggestions made as the mix center began to evolve. They wanted to know reasons for drastic changes and showed an interest in learning about principles of good storage. Some of the participants, as their understanding grew, were able to apply the principles of storage themselves.

Reactions and Observations After Use of the Storage Plan

On the whole the homemakers were enthusiastic over the change in their kitchens after having used the mix center for a minimum of four weeks. One participant felt indifferent toward the mix center; she did not prepare baked products during the use period of the study.

Although the majority of items in the kitchens were relocated during the development of the mix center, eight of the women did not think of their kitchens as a new place to work. This may be because the major appliances, storage, and work areas were not moved.

One would expect confusion to result from having to relearn storage positions since people tend to remember the former place of storage when working automatically as homemakers normally work in the kitchen. However, none of the women found the adjustment period to be a frustrating experience because they could find the needed items quickly.

The homemakers made relatively few changes in the storage plans as developed. In most cases the changes were minor and logical.

Suggestions for Helping Homemakers Develop Efficient Storage

It is important for women to see what is meant by efficient storage in order to be aware of the need for better organization. Therefore, well planned visual aids are necessary for educational programs on efficient storage. "Before" and "after" photographs of storage cabinets from local kitchens can be placed in newspapers with appropriate articles, or with displays of commercial storage devices in stores to develop interest. Window displays of storage devices can

also be used.

Invite store personnel to educational programs on the use of storage devices in organizing space so they can better advise customers and promote future programs among their customers.

In educational programs for groups, model cabinets can be used to show how to organize storage according to the principles of good storage. Commercial and carpenter made storage devices can be demonstrated and displayed. Instructions on how to calculate space needs and how to design storage devices should be included. Slides can be employed to show groups the steps involved in organizing efficient kitchen storage.

Transfer of learning was shown in some cases, when the homemakers were able to apply the principles of good storage to other areas of the kitchen and home. This suggests the possibility of training adult leaders to assist homemakers in their communities in developing the principles of good storage in all areas of the house.

Organized tours of model kitchens showing the use of storage space is an excellent educational method. A trained hostess is needed to demonstrate the most important points in each kitchen and relate them to the principles of good storage. Prior to this study the extension home economist had found little interest by the homemakers in the county in kitchen planning or storage. Several attempts had been made to hold special interest meetings on storage space but in each case the plans were cancelled due to the lack of interest. As the women in the area learned of this project, interest grew. Numerous homemakers

expressed a desire to see the kitchens involved and others requested to be participants. As a result a kitchen tour was sponsored by the home demonstration club council. Seventy women visited five of the kitchens which were opened to the public.

Due to the publicity given this research many requests have been received for help in organizing kitchen storage in local homes thereby indicating a need for trained personnel to offer the service of planning functional storage in homes.

CONCLUSIONS

While this concentrated study is not representative of the total population of even a section of a county, the time spent with these women does give a greater insight into the difficulty women have in incorporating the results of research into their homes. With this premise the following conclusions are made:

Women think of their kitchens as a whole. They are not interested in reorganizing one section of their kitchen.

Food preparation supplies and equipment are often placed haphazardly in kitchens, with little thought of efficiency, at the time a family moves into a dwelling.

Women are different and react in a variety of ways to similar storage suggestions.

Homemakers are aware of wasted shelf space if objects are placed far apart on the shelf in a horizontal direction, but do not see the lost space above

items.

Homemakers tend to cling to old storage patterns when they can not envision the advantages resulting from well organized storage spaces. Women must see what is meant by efficient storage before they can plan, develop, and carry out a storage plan. Visual aids are necessary for good communication between educator and homemaker.

Much of the information available to educators and the public on kitchen storage is conflicting and confusing. Women need clear, concise instructions regarding how to store for greater efficiency.

Homemakers find it difficult to be objective about applying the principles of work simplification to their kitchens since personal feelings are involved. Educators can help women take a more realistic view of their storage situation and show them how to make better use of available facilities.

It is necessary to awaken most homemakers to the need for better organization in kitchen storage and to help them realize that efficiency in the kitchen means a lighter work load.

BIBLIOGRAPHY

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BIBLIOGRAPHY

1. MIZE, J. J., HEINER, M. K., and WARREN, J. "Design of Kitchen Storage for Farm Homes from Home Management Considerations," Journal of Home Economics, Vol. 45, No. 2, (February 1953), pp. 105-109.
2. COWLES, M. L., STEELE, S. M., and KISHLER, M. B. "Savings in Distance Walked in Kitchens Through Reorganization of Storage and Work Space," Journal of Home Economics, Vol. 50, No. 3, (March 1958), pp. 169-174.
3. WILSON, M. "Planning the Kitchen," Bull. 131, (Corvallis, Oregon: Oregon State College, 1939), pp. 3-32.
4. RIDDER, C. "A New Concept of Planning Modern Gas Kitchens," Home-maker's Institute, Servel, Inc., Evansville, Indiana, (1947), pp. 5-17.
5. HEINER, M. K., and STEIDL, R. E. "Guides for Arrangement of Urban Family Kitchens," Bull. 878, (Ithaca, New York: New York College of Home Economics at Cornell University, 1951), pp. 4-29.
6. "Farmhouse Planning Guides," (A Northeastern Regional Research Publication, Cornell University Agricultural Experiment Station and New York State College of Home Economics, Cornell University, Ithaca, New York, 1959), pp. 9-11.
7. HEINER, M. K., and McCULLOUGH, H. E. "Functional Kitchen Storage," Bull. 846, (Ithaca, New York: New York State College of Home Economics at Cornell University, 1945), pp. 5-66.
8. HEINER, M. K., and STEIDL, R. E. "A Kitchen-Dining Area Storage Wall," Bull. 905, (Ithaca, New York: New York College of Home Economics at Cornell University, 1954), pp. 3-13.
9. McCULLOUGH, H. E. "Kitchens to Date," Illinois Research, Vol. 3, No. 1, (Winter, 1961), Illinois Agricultural Experiment Station, University of Illinois College of Agriculture, Urbana, Illinois, pp. 12-13.
10. STEIDL, R. E. "Work Before and After Addition of Functional Storage Devices in Home Kitchens," (Ithaca, New York: New York State College of Home Economics at Cornell University, 1961), pp. 3-22.

11. HEINER, M. K., and McCULLOUGH, H. E. "Kitchen Cupboards that Simplify Storage," (Ithaca, New York: New York State College of Home Economics at Cornell University, Reprinted March 1956), pp. 3-32.
12. WILSON, M. "Considerations in Planning Kitchen Cabinets," Bull. 445, (Corvallis, Oregon: Oregon State College, 1939), pp. 3-32.
13. McCULLOUGH, H. E. "Cabinet Space for the Kitchen," Bull. 43, Vol. 46, (Urbana, Illinois: University of Illinois College of Agriculture, Small Homes Council C5.31, February 1949), pp. 2-5.
14. MIZE, J. J., BLAND, F. E., HOOD, M. P., and SIMMONS, J. W. "Space Requirements and Designs for Baking Centers," Bull. 23, (Athens, Georgia: University of Georgia College of Agriculture, 1956), pp. 8-28.
15. WILSON, M. "A Guide for the Kitchen Planner," Bull. 482, (Corvallis, Oregon: Oregon State College, 1950), pp. 6-15.
16. COOPER, L. L. "How to Make Cupboard Storage Devices," Bull. 859, (Ithaca, New York: New York State College of Home Economics at Cornell University, Reprinted 1956), pp. 3-16.
17. STRAWN, B. "Better Kitchen Storage," Bull. 47, (A Pacific Northwest Extension Publication, Revised 1966), pp. 2-15.

APPENDIX

FIRST INTERVIEW SCHEDULE

NAME OF SUBJECT	AGE	EDUCATION	OCCUPATION

APPENDIX A

FIRST INTERVIEW SCHEDULE

1. Do you prepare meals for your family?
2. Do you prepare breakfast, lunch, and dinner for your family?
3. Do there any special reasons for organizing the storage space in your kitchen the way it is now?
4. Have you ever had any help or instruction in storage in kitchen?
5. Have you got into practice any ideas on kitchen storage found in a magazine?
6. Do what members of your family prepare meals in your kitchen?

FIRST INTERVIEW SCHEDULE

<u>Members of Family</u>	<u>Age</u>	<u>Education</u>	<u>Occupation</u>

1. Do you prepare a special diet for any member of your family?
2. Do you prepare breakfast, lunch, and dinner for your family?
3. Is there any special reason for organizing the storage space in your kitchen the way it is now?
4. Have you ever had any help or instruction on storage in kitchens?
5. Have you put into practice any ideas on kitchen storage found in a magazine?
6. Do other members of your family prepare foods in your kitchen?

APPENDIX B
ACTIVITY AND STORAGE CHART

ACTIVITY AND STORAGE CHART

Mark out the activities, foods, and equipment you do not wish to include in your mix center.

Supplies requiring storage facilities are listed only once even though they may serve many activities.

Activities	Food types used in batters and doughs	Small Equipment	Large Equipment
Sift	Flour	Kitchen scissors	Mixing bowls, varying sizes
Stir	Cornmeal	Flour sifter	Rolling pin
Blend	Sugar	Pastry blender	Baking sheets
Cream	Milk (dried or canned)	Cake knife	Shallow baking pan
Cut in	Baking soda	French knife	Muffin tin
Knead	Baking powder	Metal spatula	Pie pans
Grease & line pans	Mixes	Biscuit cutter	Egg beater
	Cream of tartar	Measuring spoons	Can opener
Roll out	Corn starch	Wooden spoon	Electric mixer
Cut out	Shortening	Table knife	Roll of wax paper
Drop batter	Oil	Table fork	Service trays
	Salt	Table teaspoons	Cake pans:
	Cocoa	Tablespoons	Tube
	Baking chocolate	Pastry brush	Loaf
	Coconut	Metal measuring cups	Square
	Raisins	(set)	Round
	Nuts	Shortening melting cup	
	Food coloring	Salt shaker	
	Honey	Pepper shaker	
	Molasses	Rubber spatula	
	Spices	1-C glass measuring cup	
	Corn syrup	2-C glass measuring cup	

Activities	Food types used in main dishes, soups and salads	Small equipment	Large equipment
Combine	Mixes	Mallet 1	Casserole 1
Grind	Sauces	Grater 1	Food grinder 1
Crumb	Canned soups	Set of skewers 1	Electric blender 1
Mix	Vinegar	Corer 1	Juicer 1
Grate	Dried seasonings	Shredder 1	Cutting board 1
Slice	Noodles	Cheese slicer 1	Electric knife 1
Cut	Macaroni	Peeler 1	Gelatin mold 1
Dice	Rice	Fruit knife 1	Refuse pan 1
Chop	Spaghetti noodles		Salad bowl 1
Shred	Cracker crumbs		Relish bowl 1
Mold	Bread crumbs		
Toss	Bouillon cubes		
Peel	Olives		
Core	Pickles		
Spread	Maraschino cherries		
Juice	Peanut butter		
Pit	Jelly		
	Preserves		
	Bread		
	Crackers		
	Gelatin		

Activities	Food types used in special desserts	Small equipment	Large equipment
Whip	Mixes: cake toppings puddings frostings fillings	Slotted spoon	1
Fold		Wire whisk	1
Beat			

Activities	Small equipment	Large equipment	
Wrap	Set of bowl covers 1	Refrigerator dishes with lids	4-6
Cover		Roll of plastic wrap	1
Pack		Roll of light weight aluminum	
Transfer		foil	1

FINAL INTERVIEW SCHEDULE

APPENDIX C

FINAL INTERVIEW SCHEDULE

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1. On the whole do you think the food mixing center has made your food preparation easier or more difficult? Why?
2. Did the relocation of some food and equipment make your work easier or more difficult? Explain.
3. Did you find that you automatically looked for items at their old place of storage rather than the new? Does this still bother you?
4. Did you think of your kitchen as a new place to work or did you associate more with your former work patterns?
5. Did other family members find the kitchen easier or harder to use since the development of the mix center?