

The Woman's College of
The University of North Carolina
LIBRARY



CA
no. 160

COLLEGE COLLECTION

Gift of
Rebecca McCulloch Smith

THE DEVELOPMENT OF A HOME MAKING UNIT
ON METHODS OF WORK SIMPLIFICATION
AS APPLIED TO HOME TASKS

by

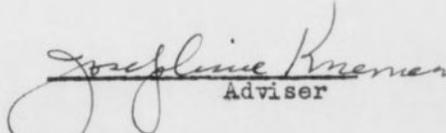
REBECCA McCULLOCH SMITH

A thesis submitted to
the Faculty of
The Consolidated University of North Carolina
in partial fulfillment
of the requirements for the degree
Master of Science

Greensboro

1952

Approved by


Adviser

ACKNOWLEDGEMENTS

It is with sincere appreciation that this writer wishes to acknowledge Dr. Josephine Kremer, director of the thesis, for her skillful guidance and inspiration, and Mrs. Madeleine B. Street and Mrs. Cathryne B. Kehoe, for their interest and encouragement in the developing of this thesis.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION AND REVIEW OF LITERATURE	1
II. METHOD OF TEACHING UNIT	6
Teacher and Pupil Demonstrations on Posture	8
Teacher and Pupil Demonstrations on Simplifying Home Tasks	9
Dressing	10
Studying	13
Cleaning House	13
Preparing Food	16
Laundering	17
Sewing and Mending	19
III. APPLICATION OF WORK SIMPLIFICATION AT SCHOOL AND AT HOME	21
Application to the Homemaking Department and Foods Unit. .	21
Application to the Home	23
Spontaneous Uses of Work Simplification	24
Planned Home Experiences	26
IV. EVALUATION OF THE UNIT BY THE PUPILS, MOTHERS AND THE TEACHER	35
V. SUMMARY AND RECOMMENDATIONS	37
Method of Teaching Unit and Findings	37
Recommendations to Teachers	39
Recommendations for Further Study	47
BIBLIOGRAPHY	48
APPENDIX	50

LIST OF TABLES

TABLE	PAGE
I. Home Activities Found Tiring by the High School Girl	7
II. Observations by Pupils of Methods Which Made Tasks Difficult or Easy	25
III. Tasks Improved Spontaneously at Home During the Class Unit . .	26
IV. Tasks Improved Through Planned Home Experiences	29
V. Evaluation of the Whole Unit	36
VI. Summary of Pupil's Activity at Various Stages of the Unit . .	40

CHAPTER I

INTRODUCTION AND REVIEW OF LITERATURE

With the velocity at which the activities of the nation are increasing, the people who are trying to keep up with them are finding themselves in a state of nervous tension. Fewer households have servants and more homemakers are working outside the home, causing the family to have added duty. This being true, more and more stress is being placed on work simplification in order to reduce the time and energy used, thus giving more leisure time and reducing these tensions.

One reason that the increase in activities has affected people is that "there is evidence that the little known of easier procedures for definite jobs in the home is not widespread."¹

In the commercial field and in the education field, steps have been taken to apply principles of work simplification. Only in recent years, though, have homemakers begun to apply the various industrial methods of work simplification to their own home tasks, the reason being stated by Gross and Crandall.

The problem of controlling output of the homemaker is more complex than that of industry, for she must see the day as a whole, not as an eight hour workday; her work includes many varied tasks instead of one specialized one, the wage incentive is lacking, and her work involves close personal relations with other people.²

¹ Irma H. Gross and E. W. Crandall. *Home Management in Theory and Practice*. New York: Appleton-Century-Crofts, Inc., 1947. p. 222.

² Ibid., p. 164.

To be able to help the homemakers make their tasks easier they not only must learn new ways of performing tasks but they must become so interested in work simplification that they are able to apply one principle to many tasks. Gross and Crandall said it in this way:

For the average person, work simplification can be of help in two ways. First, a worker may actually use the results of laboratory studies, that is, learn easier methods on a particular task. . . . The second kind of help is more far-reaching and more challenging. When interest is aroused in the subject anyone may become "motion-minded." What is motion-mindedness? Nothing more than the constant application of some general principles of work simplification to one's own jobs. It is a point of view that adds interest to routine tasks and makes those tasks less of a burden.³

Very little formal instruction has been presented to the public of methods of work simplification and "up to the present time, research studies in relation to work simplification in the home are very limited."⁴ Findings of the Purdue Conference on Work Simplification held in August, 1943, were probably the first made available to those actively engaged in household tasks.

The best known research in the field of work simplification has been done by Frederick Taylor in The Principles of Scientific Management, 1911, and Frank Gilbreth in Applied Motion Study, 1917, but their work pertained to industry. Mrs. Christine Frederick in The New Housekeeping, 1914, and Mrs. Lillian Gilbreth in The Homemaker and Her Job, 1927, applied the principles of work simplification to household tasks. Later research in industry was made by Dr. Marvin Mundel in Systematic Time and Motion Study, 1947, when he classed the changes in motions into five levels. Gross and

³ Ibid., p. 222.

⁴ Ibid., pp. 201-202.

Crandall adapted these changes to household tasks in this way:

- Class 1 (lowest) Change in body position and number and type of motions, everything remaining the same. Examples: putting away dishes with two hands instead of one; sitting instead of standing; eliminating unnecessary motions such as useless pats while making a bed; using rhythmic motions in sweeping.
- Class 2 Change in tools and equipment. Examples: a tray to carry dishes, a long-handled dusting tool, an electric mixer, a working surface of the right height, the electrolytic method of cleaning silver.
- Class 3 Change in production sequence. Examples: method of bed making mentioned above in which all covers are tucked in on one side before worker goes to opposite side; mixing cake by putting all ingredients into bowl at once.
- Class 4 Change in finished product. Examples: square biscuits instead of round ones cut with a biscuit cutter; leaving sheets unironed; closing a piano between usages to avoid dust; putting away bric-a-brac.
- Class 5 (highest) Change in raw material. Examples: self-polishing wax; dirt repellent finishes on textiles; plastic place mats instead of linen; Swiss chard instead of spinach (larger leaves take less handling).⁵

Mary K. Heiner and N. M. Vedder made a study on dishwashing in 1930, "Studies in Dishwashing Methods: An Attempt to Apply Methods of Job Analysis to a Household Process," and Heiner, in later research (1943), studied the type of tools and working conditions in the home. Marianne Muse made another study in 1934 on Kitchen Equipment and Arrangement. The most scientific research ever conducted in the application of methods of work simplification to home tasks was made by Elaine Knowles in ironing a shirt (1944).

Relatively little research has been done on the subject of teaching

⁵ Ibid. pp. 222-223.

a unit on work simplification to high school pupils. Closely related research was done by Kathleen McDonald in her thesis, "Home Management Teaching on the Secondary Level."⁶ In this study, she interviewed home economics teachers in Alabama about the preferred method of teaching home management. It was found that there is a definite trend toward summarizing management in a short unit after integrating methods of work simplification in each unit. The teaching techniques used were participation in the classroom, demonstrations and discussions, supervised study, home projects and lecture. About half of the teachers have found home project work an effective means of teaching management.

Since high school girls feel many pressures for their use of time, it seems important to help them with this problem. The teaching of methods of work simplification as one separate unit is not a custom in the homemaking classes in North Carolina as it is included in all units throughout the Guide to the Teaching of Homemaking in North Carolina Schools.⁷ The writer preferred to develop a unit on the subject.

With this in mind, a unit on methods of work simplification consisting of pupil demonstrations and home experiences as applied to home tasks was developed and was taught to a third year homemaking class of 19 pupils at Randleman High School in Randolph County, North Carolina.

⁶ McDonald, Kathleen, Home Management Teaching on the Secondary Level in Alabama Polytechnic Institute. Master's thesis. Alabama. Alabama Polytechnic Institute, 1947, 81 pp.

⁷ Dennis, Catherine T., Lacey, Mabel L., and Lowe, Louise. A Guide to the Teaching of Homemaking in North Carolina Schools. Raleigh, North Carolina, State Superintendent of Public Instruction.

The purpose of the study was to develop the pupils' ability to apply the principles of work simplification to various tasks at home. A questionnaire was used as a means of obtaining information about which tasks the pupils felt were tiring before they had been formally subjected to methods of work simplification.

An application of the knowledge gained was made through a change in the homemaking department and home experiences, both spontaneous and planned. Reports by the pupil and home visits by the teacher were means of checking the application to the home.

CHAPTER II

METHOD OF TEACHING THE UNIT

A work simplification unit was planned and taught to a third year homemaking class and was evaluated. The objectives were to gain:

1. An awareness of the factors contributing to fatigue and an ability to recognize those things that homemakers do which cause unnecessary fatigue in household tasks.
2. An understanding of the effect of posture, arrangement of furniture and equipment, sequence of work, and type of tools on lessening fatigue.
3. An ability and a desire to correct factors causing fatigue in household tasks.

In order to find the kind and number of household tasks that high school pupils found most tiring, a questionnaire was used. Fifteen of those tasks often performed by boys and girls¹ were included in the questionnaire; none were added by the pupils. Most of the pupils found ironing, studying and dish washing tiring before having been subjected to methods of work simplification (Table I). Mending and washing clothes were checked only once each but it is felt that this may be due to the small amount of it that high school pupils do.

¹ The tasks included were found by Elizabeth Winston to be frequently performed in Home Activities, Motives, and Attitudes of Seventh and Eighth Grade Pupils in the Different Types of Public Schools in North Carolina. Master's Thesis. North Carolina, Woman's College of the University of North Carolina, 1951.

TABLE I

HOME ACTIVITIES FOUND TIRING BY THE HIGH SCHOOL GIRL

(19 pupils in a third year homemaking class at Randleman High School, Randolph County, North Carolina)

Activities	Number of pupils checking tasks as tiring
Ironing	15
Studying	8
Washing dishes	7
Dressing	6
Cutting pattern	5
Making beds	5
Preparing a meal	5
Cleaning a room	4
Hanging out and bringing in clothes	4
Sewing	4
Cleaning windows	3
Preparing one food in particular	3
Setting the table	3
Mending	1
Washing <i>clothes</i>	1

Three parts of varying length were planned to show the relationship of posture, sequence of work, arrangement of furniture and equipment, and type of tools to ease in homemaking.

Part one (one lesson) attempted to gain interest in the elimination of fatigue in the performance of household tasks, by the use of the motion picture, "USDA Step-Saving Kitchen."

Part two (five lessons) attempted: (a) to gain pupil understanding of the relation of posture to fatigue, (b) to develop knowledge of the types of posture which require the most energy, (c) to develop pupil ability to use correct posture for doing tasks when standing, sitting, walking, bending, stooping and reaching, and (d) to gain pupil knowledge of relaxing exercises.

Part three (ten lessons) was planned to continue the study of factors contributing to fatigue by bringing out the elements other than posture - sequence of work, arrangement of furniture and equipment, and type of tools.

Teacher and Pupil Demonstrations on Posture

One poster of photographs showing good and poor posture for doing work while standing, sitting, walking, and stooping, and another poster comparing the energy required in lying down, sitting, standing, stooping, and reaching were discussed. Determination of good posture by means of a plumb line was also included in this lesson. The teacher demonstrated best posture to maintain while completing a task requiring standing and walking postures; for instance, beating or mixing, ironing, washing dishes and the like. To develop pupil knowledge of correct sitting, stooping, reaching, and bending postures in doing tasks, the class of 19 pupils was divided into five groups; each group to study and to demonstrate a part of the tasks requiring these postures.

The first group studied and demonstrated correct posture while sewing, cleaning walls, getting items from high shelves, and dusting.

The second group studied and demonstrated correct walking posture for mowing the lawn, moving furniture and using the vacuum cleaner and its attachments.

Demonstrations showing correct posture when carrying heavy objects, sitting while working in the kitchen, and looking into ovens or low places were presented by the third group.

The fourth group studied and demonstrated correct posture for

lifting heavy articles, picking up smaller articles and opening windows.

Relaxing exercises were studied and demonstrated by the last group.

Teacher and Pupil Demonstrations
on Simplifying Home Tasks

In preparation for studying the factors affecting the time and energy used in carrying out various tasks, a mimeographed list, which grew out of the first questionnaire, was prepared to show the tasks which were tiring for these pupils and to break them down into small units:

Dressing

- Arrangement of dresser drawers
- Clothes storage
- Bathroom arrangement

Studying

- Desk and storage of books

Cleaning house

- Order of cleaning a room
- Using vacuum cleaner and its attachments
- Cleaning windows
- Furniture arrangement
- Making beds
- Garden tool and hardware storage
- Washing dishes
- Cleaning silver (not chosen for study later)
- Other storage problems (not chosen for study later)

Preparing food

- Cake baking (or other food)
- Quick meals
- Table setting
- Kitchen arrangement and equipment

Laundry

- Storage of soiled and clean laundry
- Hanging out and bringing clothes
- Ironing

Sewing and mending

- Cutting of pattern
- Placement of machine
- Storage of notions

The teacher chose one small unit and demonstrated to the class ways in which this element of the task could be done more easily, applying the principle of change in arrangement of equipment. To be able to gain and hold pupil interest by actual participation and to enable all units to be covered, each pupil chose one unit, studied the factors affecting fatigue, and presented her findings to the class in demonstration form. The teacher had prepared a bibliography of books, pamphlets, and clippings, separated according to task and placed in folders accessible to the pupils. The teacher had also prepared a mimeographed sheet to help the pupils organize their demonstrations, which provided for listing the factors which made this activity tiring, time-consuming, or inconvenient, and the reasons; as well as the changes made which improved the way of doing the activity, listing references and making drawings when possible (page 11). A description of demonstrations by the teacher and pupils follows:

Dressing

Dresser drawer arrangement. Two similar drawers from a dresser were placed on exhibit by the teacher, the contents of each arranged very neatly. Only one, showed the correct way, as was pointed out by a poster above the exhibit. The correct drawer was far better because of a sectioned utility drawer and other small boxes to hold hairpins, combs, hairnets, lipstick, and the like, thus keeping everything in place even with the movement of pulling out and pushing in the drawer, and taking out and putting in articles. There were no jars, tubes, and boxes of any cream or powder duplicated nor

DEMONSTRATION OF MAKING TASKS EASIER

1. NAME OF ACTIVITY
2. LIST FACTORS WHICH MAKE THIS ACTIVITY TIRING OR TAKE TOO MUCH TIME OR INCONVENIENT.
 - a. WHY?
 - b. WHY?
 - c. WHY?
 - d. WHY?
3. LIST CHANGES MADE WHICH IMPROVED ACTIVITY SO THAT IT IS LESS TIRESOME OR TAKES LESS TIME OR IS INCONVENIENT.
 - a. WHY?
 - b. WHY?
 - c. WHY?
 - d. WHY?
4. Bibliography
5. Drawings, if possible

were there any jars with only a small portion in them. The poorer drawer, though arranged well was holding duplicate cosmetics, hairpins lying in a neat pile, lipsticks lined side by side and such other things that would become jumbled instantly should the drawer be moved.

This caused much comment as many persons said, "That's my drawer," pointing to the poor one. Many spontaneous home experiences grew from this. Two teachers who saw the exhibit said that they went home and rearranged their dresser drawers.

Clothes closets. In this demonstration, the ordinary way of making use of clothes closets was shown by a drawing on the blackboard, with only hooks and a very high shelf. Ways to change a closet by adding low shelves along one side, shoe racks or shoe bags, belt hooks, and putting up a rod were demonstrated.

For those whose problem was the lack of a clothes closet, ways of making a closet from a refrigerator shipping box, from apple boxes placed in two stacks with a board and rod connecting the two stacks and another from a rod attached to two upright boards similar to a bench.

Bathroom storage. Three conventional small bathrooms were drawn on the blackboard to show storage ideas. One consisted of shelves in the walls, and/or extending out into the room wherever they did not obstruct walking space, as above the flush tank of the commode. A larger bathroom was also drawn to show the added convenience of more storage space since towels, soap, toilet supplies, soiled clothes and sometimes underwear are often used there first.

For bathrooms which lack built-in storage, a movable set of drawers, shelves or table were suggested as added storage space. The importance of having places for children's articles was also brought out.

Studying

Desk and storage for books. A table used in the demonstration was proved to be the quickest way to provide a desk, but one which would be more convenient and induce more pride could be made from an old bureau or apple boxes or orange crates with plywood connecting them for a top. This would give excellent storage for books, and a divided shelf would provide space for vertical filing. Many pupils felt that they would do more studying if they had a desk and a place to store their books and supplies.

Cleaning House

Order of cleaning a room. No one of the class knew that the way in which one went about cleaning a room could change the ease of cleaning until it was demonstrated. Then it became one of the most popular of home experiences. The dining room was previously set up to resemble a den with papers, shoes, ash trays and books for this demonstration. The room was first cleaned by sweeping, picking up things as they were reached and carrying them to their proper room or place, one at a time.

Afterward, this same room, in its original clutter was cleaned by clearing tables, carrying out articles all at one time and emptying ash trays into a paper bag ready for discarding. To make house cleaning easier, the suggestion was made that some work be done every day instead of leaving

if for a weekly task.

Using the vacuum cleaner and attachments. Using the den set up in the dining room again, it was shown how dust is merely rearranged when the dust cloth and broom are used. It was also shown that regular use of the vacuum cleaner and attachments makes furniture last longer as dust is drawn out into a bag for discarding.

Cleaning blinds regularly with extension attachments proved easy and keeps them cleaner longer. Since attachments are not used extensively by homemakers through lack of convenient storage places, an apron-like holder with pockets was made and shown to the class. The pupil taught that this holder should be kept near the storage place of the vacuum cleaner.

Cleaning windows. As one window was cleaned, the demonstrator stressed the more difficult way by use of soap and water, not washing woodwork first, and by standing on a chair with a bucket of water on the floor. Another window was cleaned with a sprayed on window cleaner and a soft cloth and use of a step ladder for higher panes. The woodwork was cleaned with a soapless cleaner before the windows were washed.

Before the demonstration, some comments indicated the feeling that soap and water was cleaner, but after the demonstration, the thought was changed because of the smaller amount of work required as well as the cleaner, less streaked windows.

Furniture arrangement. By the use of a large doll house and doll furniture, it was shown that ill-arranged furniture hampered house cleaning. Bookshelves over a wide piece of furniture, no clear passageway, furniture

which has to be moved and a bed against two walls were the main faults brought out in the demonstration as causing too much energy to be expended in housecleaning. The furniture was rearranged in the same room showing how it looked better as well as was easier to clean.

Making beds. When a person has never been shown the easy way to make beds, it is hard for them to grasp it by reading the directions, so the teacher showed the pupil how to demonstrate bed making the old way and the new way, counting time and motions and steps. The height of the bed was brought out as a factor in wasting energy. Using this information from the teacher, the demonstration was started by showing the old way of putting each cover on and arranging it on both sides before putting on the next cover. Immediately, this bed was remade by using the method of completing one side and then the other, saving numerous steps. This demonstration also caused many spontaneous home experiences.

Garden tool and hardware storage. In this exhibit of garden tool and hardware storage, glass jars were on display holding different sizes of nails, nuts, bolts and the like. A large board indicating the back of a door or a wall was used in the demonstration to show how to hang such tools as pliers, hammers, saws, and screw drivers, in preference to their being all jumbled up in a tool box. Pictures were shown on how to store garden tools.

Washing dishes. This demonstration was shown in the homemaking department kitchen where the only sink is too low for any pupil enrolled in homemaking. There is no cabinet near the sink. The demonstrator used this

to advantage by showing how to use a tray for carrying dishes to and from the sink, and by raising the dish pan with another pan turned upside down under her dish pan. The convenience of having the dish pan, soap, and all the dishwashing apparatus at the sink was also shown. Proper sequence of work was shown by taking dirty dishes, stacked at the right, to the dish pan, to the drainer at the left and into an improvised dish cabinet, since no cabinet was near the sink in this department.

Preparing Food

Cake baking. Three points were brought out by the demonstrator; the difference in number of utensils necessary for making a cake by a recipe rather than a cake mix, the use of the electric mixer rather than hand beating, and collection of all utensils first rather than starting cake and getting ingredients and utensils as needed.

To make these points, a table was set up with utensils necessary for making cakes with a recipe on one side and with a cake mix on the other side. Then two small cakes, from cake mix were made: the pupil (1) collecting utensils and ingredients as needed, using a great many steps and (2) using a tray to collect everything at once and make the cake without moving many steps.

By using an assistant, the difference in energy was shown by mixing two small cakes, one by hand, and one by the mixer. The placement of the mixer and the storage of other tools were discussed. It proved the point well.

Preparation of a quick meal. A breakfast was used in this demon-

stration to show points leading up to time required in preparation of a meal. After a short talk on planning ahead, buying groceries in quantity, placement of equipment, and knowing recipes, a breakfast of juice, bacon, eggs, and toast, and coffee was prepared in a matter of minutes, by the pupil.

Setting the table. The dining room in this homemaking department is 20 feet away from the nearest unit kitchen. In the demonstration, a tray was used to collect dishes to take to and from the table. There were hints on cupboard arrangement, stacking dishes of like sizes together and having only the number of plates, silver, saucers and the like, usually used at the family meal.

Arrangement of large equipment and placement of tools in the kitchen. This demonstration followed others on food preparation as a summary of points brought in the first three, as well as adding a few more suggestions for work simplification. Pictures of shapes of kitchens and arrangement of large equipment for better sequence of work were used to start the demonstration. Then it was shown how old kitchens could be rearranged to permit easier work. After this, each work area was discussed as to what should be stored there and in which position. A picture showing how to make vertical files for storing lids, trays and the like was passed around for all to see.

Laundering

Storage of soiled and clean laundry. Pictures and discussion made up most of the demonstration. The pupil made the suggestion that every person

should have his own soiled clothes bag in his own room as a means of keeping one box or basket from overflowing with the family's laundry. The pictures showed ways to put shelves in a linen closet and how to make a dirty clothes bin that pulls out from the wall.

Hanging out and bringing in clothes. Two of each type of article in the family was brought to this demonstration. A line was stretched across the room at the height of one's upstretched arms. The demonstrator first hung up the clothes which were in a basket placed on the floor. A great amount of energy was wasted in the motions of having to lean over to get the clothes and pins and then hang them up at far above shoulder level.

The line was then lowered to shoulder level, the basket of clothes was placed on a table with rollers and the clothes were hung up in such a way as to make ironing easier. All points were brought out by the pupil as she worked. A clothes pin apron was used as an aid to easier hanging out clothes. After the clothes were hung up they were taken from the line, most of them being folded for no further ironing. The others were folded so that ironing would be easier. These dry clean clothes were placed in the basket on the roller table to be carried into the house.

The duplicate basket of clothes, in a disorderly pile, was then compared with the folded ones to show the difference in ironing hours.

Ironing. The same day the ironing demonstration was shown. An ironing board and a stool in the center, a chair with a basket of sprinkled clothes and folded dry clothes to the left and a chair for flat work and a rack for hanging shirts on the right were on exhibit. The demonstrator

ironed one garment showing how to iron using slow strokes as well as sequence of work.

After this, an article of clothing was obtained from a table on far side of the room, ironed while standing with many quick strokes and much handling of the garment, then carried to a closet in another room to hang; proving waste of energy in such a method.

Sewing and Mending

Cutting of pattern. The three places generally used by the home-maker when cutting a pattern - the floor, the bed, and a table - were all used in the demonstration by the pupil. After showing that it was easier every time the height was raised, she pointed out that even a standard height of 36 inches was not correct for most people. A height slightly below the elbow proved to be less straining on the back. To reach this height the table was raised by putting blocks under the legs. The same pupil also gave the following demonstration; she was the only pupil who gave two demonstrations.

Placement of machine. A picture of a U-shaped sewing center with the ironing board on the left, machine in the center, and a cabinet holding notions and patterns on the right was shown to the class. A talk on placing the machine in good light, on a hard floor, and in an easily accessible place, followed the showing of the picture.

Storage of notions. A 1' x 1' pasteboard box, sectioned off by cardboard was shown to be a convenient place to store patterns, separating suit,

dress, and pajama patterns in different sections. Another box fitted with small boxes side by side was shown. Each small box was filled with thread, needles, pins, tape measures, scissors and everything necessary for sewing.

A machine drawer or other drawer that could be set aside for a notions drawer, and outfitted with dividing boxes was brought out as another idea of convenience.

CHAPTER III

APPLICATION OF WORK SIMPLIFICATION

AT SCHOOL AND AT HOME

After the class unit had been taught, the pupils applied the principles of work simplification to real situations. They applied their knowledge to the homemaking department by changing it for more convenience. In the foods unit following this unit, there was evidence of methods of work simplification being used. At home, the pupils spontaneously made some changes in their tasks and they each planned and carried out at least one improvement in their home tasks.

Application to the Homemaking Department and Foods Unit

There was a class problem in the application of the principles of work simplification to the homemaking department. The department has three rooms - a sewing laboratory, a foods laboratory, and a dining room, as well as two large closets. The class was divided, placing a group in each of the five areas of the department. At first a survey was taken of the inconvenience and needs. A class discussion after this brought forth many suggestions for improvements in the five areas. The pupils noted these. Individual group discussions followed through which tentative changes were planned. The teacher having approved them, the pupils proceeded to work.

In the foods laboratory there are three stoves, one sink, one refrigerator, and four laboratory type cabinet tables. A change had previously been made by the teacher in which the tables were placed in the

shape of a cross to make four L-shaped kitchens. This point was brought out in the discussion of suggestions for change. There were twenty desks in the kitchen, as well as a teacher's desk and a book case. More space was the problem, for two breakfast tables and eight chairs were needed. The teacher's desk was moved to the dining room and the two tables were brought in.

The dining room originally had a four piece dining room suite and after desks from the kitchen and clothing laboratory were brought in, the room was overcrowded. This made the problem in this room. The group decided to combine the buffet and serving table into one large piece of furniture. The base of the china closet was made into a serving table, which being low fitted under a window. This gave room for the two desks.

In the sewing laboratory the six cutting tables had previously been made into one large table. Changes made by the group were to put the eight sewing machines back to back in four units, instead of having them in one long row. Bookcases, filing cabinet, and lockers for the home room were placed side by side saving more space. The desk, originally in this room, was put in the dining room.

In the clothing laboratory closet, the lockers which had been parallel to the wall were placed back to back in the center so that they were perpendicular to the walls making two compartments in the small room sized closet. This gave a good dividing line between the teacher's material and the pupils' sewing boxes. This had been a problem as the things very often got mixed. The teaching material was filed in alphabetical order in the lockers, and the small articles were put in labeled boxes.

One of the greatest changes came in the kitchen closet, for it had been crowded with unnecessary items. Obsolete and superfluous cooking utensils were discarded, a spice shelf was made, the most used articles were put on a shelf at elbow level.

The unit following this one was in foods. In no other unit can so much knowledge of work simplification be used. Before any meal was prepared the pupils not only planned the menu, market order and simple work sheet used in second year home economics, but they listed all possible points for saving time and steps. Only one girl at a time prepared a meal in each of the four unit kitchens. This made her see the meal as a whole and made her realize that she alone was responsible for preparing and serving the meal in the allotted time. Points found to be the greatest time and step savers were the memorizing of the recipes, the use of a tray, the collection of articles needed before working, knowing where all the equipment is kept, serving Russian or Buffet style, and rinsing but not drying the dishes.

Application to the Home

Upon completion of the pupil demonstrations of methods of work simplification, the pupils were asked to observe methods used by others in carrying out tasks at home. During their observations, they were requested to help others make their tasks easier by step-saving or time-saving features which they might suggest. Any comments or reactions from those persons observed were to be noted by the pupils. Observations made by the pupils of the way tasks were carried out at home and their suggestions for improvement

involved all of the methods studied during the unit. (Table II, p. 25)

Twenty-three pupils observed that people in the community were making home tasks more difficult by the way they were doing it or by the equipment they were using - meal preparation having the greatest mention and cutting patterns the least. In contrast, only twelve pupils noticed tasks being done by a time or energy saving method - meal preparation and ironing having the greatest mention and cleaning a room the least. Suggestions to improve the tasks being made more difficult were made by sixteen pupils. The women to whom the suggestions for improvement were made accepted the suggestions by commenting favorably to eleven pupils to the effect that they also considered it a good suggestion and would carry it out. Four were reluctant to change and even commented that it was just as easy the way they were doing it.

When the lessons on task demonstration had begun the pupils were asked to plan a home experience that would improve the method of doing some task. They were reminded of the tasks that they had thought tiresome in the first questionnaire and were told to watch the demonstrations closely for suggestions for making the task less tiresome or to discover how to change a task they had not realized was tiresome.

Spontaneous Uses of Work Simplification

Several days after the task demonstrations had been made in class and home experiences had been planned, the pupils wrote down any methods of work simplification they had used in their own home tasks over and above those planned as home experiences. More people changed their method of

TABLE II

OBSERVATIONS BY PUPILS OF METHODS WHICH
MADE TASKS DIFFICULT OR EASY(19 pupils in a third year homemaking class at Randleman High
School, Randolph County, North Carolina)

Tasks Made Difficult By Method Or Equipment Used	Number of pupils
	24
Meal preparation	6
Hanging out clothes	4
Making beds	4
Cleaning a room	3
Ironing	3
Working at sink	3
Cutting pattern	1
Tasks Made Easy By Step and Time Saving Features	12
Ironing	4
Meal preparation	4
Making beds	3
Cleaning a room	1
Suggestions Made To Improve Tasks	16
Make bed completely on one side at a time	5
Plan room cleaning	3
Fold instead of ironing clothes	2
Collect ingredients and utensils before working	1
Lower clothes line	1
Raise sink height	1
Section dresser drawers	1
Sit while ironing	1
Use wheeled cart	1
Comments Upon Suggestions	15
Just as easy the way I was doing it	4
Easier this way	4
Glad you showed me	3
Saves time and steps	3
Will do it this way from now on	1

making beds and their conveniences for dressing than any other tasks. Four changes were made in ironing and four were made in washing dishes. Three

changes were made in the order of cleaning a room and one person began using the vacuum cleaner. In meal preparation, and washing hair one change was made in each, making a total of 27 tasks being improved.

TABLE III

TASKS IMPROVED SPONTANEOUSLY AT HOME
DURING THE CLASS UNIT

(19 pupils in a third year homemaking class at Randleman
High School, Randolph County, North Carolina)

Tasks	Number of tasks
	27
Making beds	7
Dressing	6
Ironing	4
Washing dishes	4
Cleaning house	
Cleaning a room, order of	3
Using vacuum cleaner	1
Meal preparation (improved work centers)	1
Washing hair (raised sink height)	1

Planned Home Experiences

Home experiences were planned by means of a conference with each girl. Reports were written on a form prepared by the teacher (p. 27). To help the pupils realize what changes really needed to be made in their tasks, the second question on the home experience report blank asked what made the task tiring or inconvenient. To illustrate, should ironing be found a tiring task, some points making it tiring would be: have to stand up so long; have to walk so much in getting unironed clothes and hanging up ironed clothes; the large number of clothes to be ironed; and the time it takes to do a family's ironing.

With these statements clearly in mind, the pupil was able to make

HOME EXPERIENCE IN MAKING TASKS AT HOME LESS TIRING

Name _____ Date _____

School _____ Class _____

What task or tasks do you find tiring at home?

What makes it or them tiring or inconvenient?

What changes did you follow to make the task less tiresome?

Where did you get your information or help in making the changes?

Mother's evaluation (state the value of this experience to your daughter.)

(signature)

Teacher's evaluation:

the necessary changes to eliminate a great deal of fatigue. To correspond to the points in need of change, a stool or chair of the correct height was provided, unironed clothes were placed on a chair beside the worker with a rack or chair on the other side on which to place ironed clothes, and more clothes were folded instead of ironed, thus cutting the time of ironing to a minimum.

The fourth question requesting a bibliography was completed by the pupil listing books, pamphlets, clippings, and teacher or pupils of the class from whom she had received her information.

When the experience had been carried out at home and the blank had been filled in, the mother stated the value of the experience to her daughter. Most of the comments were similar to this, "This experience has helped my daughter learn how to save time and steps." Some stated that, "It has helped me to learn new ways of doing my tasks," and others said, "It will help her when she has a home of her own."

Some of the pupils chose to improve more than one task and most of them made more than one improvement in each task (Table IV, p. 29). Five pupils chose to make improvements in cleaning house, while five pupils chose to make improvements in laundering. Four pupils chose to make improvements in preparing food and three improved dressing, while three pupils planned to make an improvement in studying facilities and one planned an improvement in sewing facilities. Twenty-one tasks in all were improved as all the plans were carried out.

To illustrate how the home experiences were carried out, the work of each girl is described below. They follow in the same order as the task

TABLE IV

TASKS IMPROVED THROUGH PLANNED HOME EXPERIENCES

(19 pupils in third year homemaking class at Randleman High School, Randolph County, North Carolina)

Tasks	Number of Pupils	Improvements	Number of Pupils
Cleaning house	5	Changed order of cleaning a room	4
		Used vacuum cleaner and its attachments	3
		Used a cleanser instead of water for cleaning windows	3
		Made bed on one side before going to other	1
		Rearranged furniture	1
Laundering	5	Placed chairs nearby to hold unironed and ironed clothes	5
		Sat to iron	5
		Used wheeled cart under clothes line	4
		Folded instead of ironed clothes	4
Preparing and serving food	4	Collected all articles before cooking food	2
		Rearranged cabinets	2
		Placed utensils and ingredients in correct work area	1
		Rearranged kitchen	1
Dressing	3	Bathroom storage improved	1
		Improvise a closet	1
		Rearranged wardrobe	1
		Made a shoe bag	1
		Sectioned dresser drawers	1
Studying	3	Prepared a desk and storage for books	3
Sewing	1	Stored notions in sectioned machine drawers	1
		Made U-shaped sewing center	1

demonstrations.

I. Sewing was the task needing improvement for this pupil. Her problem was having to move about so much when sewing and having to hunt for the notions every time she wanted to sew. The sewing machine was in the bedroom in which there was a very high bed. She moved the ironing board into the bedroom and put it beside the machine, used the bed nearby to cut her patterns, and sectioned the machine drawers to hold the sewing notions. With this arrangement she had a convenient step-saving U-shaped sewing center.

II. For this pupil's home experience, she chose to improve her studying facilities. She had a desk but it was not in the proper use. After cleaning out the drawers and rearranging the top, she had a place for studying only.

III. This pupil chose to change her method of cleaning a room and cleaning windows. Her problem was the time and energy used in cleaning a room and cleaning windows. She made a practice of removing all superfluous articles from the room before sweeping. By carrying all the articles together that belonged in the same place, she saved much time and many steps. Her use of the vacuum cleaner and its attachments proved to be more of an aid to cleaning than she had realized before. She changed her method of washing the windows with soap and water to the use of a window cleaner.

IV. Improvising a wheeled cart from a wagon and clothes basket and changing her procedure for ironing was the home experience for this pupil. She placed her unironed clothes on a chair to the left of where she sat to iron and hung the ironed clothes on a rack on the door to the right. Flat

work was placed on a chair to her right. She now folds many of the garments she used to iron.

V. The order of cleaning a room, cleaning windows, and the use of the vacuum cleaner and its attachments were chosen as a home experience by this pupil. She used the same order of cleaning a room as the other pupil in III had done. She found that she really likes to use her vacuum cleaner now that it is stored closer to the living room. She now cleans her windows with a cleaner that can be wiped on and off in a matter of minutes.

VI. This pupil chose to improve hanging out clothes and ironing as her home experience. She used a wagon and a bushel basket to raise the height of the clothes basket and to make moving the basket easier. She could not sit to iron as her ironing board would not permit it. To the left of the ironing board she had her unironed clothes while at the right she had a chair for ironed flat work and coat hangers for shirts. Many of her clothes were folded from the line.

VII. For this planned experience, the pupil chose planning the rearrangement of the family kitchen. They were remodeling the house at the time and welcomed her interest in planning the kitchen. She had some difficulty in her plan because of a wood stove in the corner of the room best suited for counter space. Her final plan provided for more localized work centers and a rolling cart.

VIII. Making beds and cleaning a room were in need of improvement for this pupil. Her upstairs bedroom was unheated in the winter and time was her problem. She began making the bed first on the side from which she arose and then on the other as she left the room. A practice of hanging up

her clothes as soon as they were removed was most helpful as well as carrying everything possible at one time which needed to be taken downstairs. A broom was provided for upstairs use only, thus saving many steps.

IX. This pupil wanted to improve her facilities for studying as she had no storage place for her books and no desk. The desk she provided for this purpose was too small but served the purpose for book storage. The teacher felt when she visited this pupil that her real improvement should have come in sewing. Her sister made the statement during the visit that you never could find anything when you wanted to sew.

X. As this pupil has few home duties, it was difficult for her to choose a home experience. After some thought she decided to improve laundering facilities. She used a baby bassinette under the clothes line to avoid stooping when hanging out and bringing in clothes. This same bassinette was used to hold the unironed clothes when she ironed. Many of the clothes were folded at the line, cutting ironing time. She sat to iron and had a rack nearby on which to hang her ironed clothes.

XI. This girl does quite a bit of cooking and had found that each food was taking too long to prepare. To save some time and energy she rearranged her dish cabinets and made a habit of collecting all the needed articles before beginning her work.

XII. This pupil also found preparing food to be tiresome. It was noticed in the teacher's visit that the kitchen included a stove, sink, refrigerator, kitchen cabinet, and a breakfast table. Each of these was in a different corner of the room except the table which was in the middle of the room. This was the main difficulty in preparing food but since she felt

she should not make changes in moving furniture she rearranged the cabinet so she could set the table easier and so she could get the cooking utensils better. By collecting all of her ingredients and utensils before cooking, she made her work easier.

XIII. In this pupil's planned experience, she rearranged the living room furniture and improved the storage in the bathroom. The main thing hindering good arrangement in the living room heretofore was a desk used for office work. She replaced this with a drop leaf table and made the other furniture more balanced and easier to clean around. In the bathroom she placed towels, men's underwear and soap at a convenient level, while rearranging the other shelves to better use.

XIV. This pupil was more interested in methods of work simplification than any of the others. She had applied so many of the methods before that it was difficult for her to make a decision about a home experience. She finally decided that her ironing facilities could be improved so she set up her ironing board and a place to hold unironed and ironed clothes near by. She also organized the supplies and utensils in the various work areas of the kitchen.

XV. The improvements in this girl's home experience were in cleaning a room and cleaning windows. She made a habit of picking up papers, and other articles before cleaning with the vacuum cleaner. She also began dusting with the cleaner and leaving the cleaner conveniently near the living room so she would clean it more regularly, thus making house cleaning easier. She cleaned the windows with a preparation that wiped off quickly and cleaned at the same time. It was felt that the change really needed was

in the area of sewing.

XVI. A shipping box, about $2\frac{1}{2}'$ x $2\frac{1}{2}'$ x $5'$, was converted into a closet by adding a rod at the top and putting a curtain over the front for a door by this pupil. She had asked about how to make more storage space in her bedroom before the unit was even mentioned. Therefore she was most pleased with her improvement.

XVII. This pupil planned to improve her ironing and facilities for hanging out clothes. The improvements were not seen as she would not set a date for a visit. She had never invited the teacher inside the house in her previous visits. She reported having carried out the improvements planned.

XVIII. As she works after school, this pupil's home duties are few. She needed a space to study and store her books so she could study easily in her short time at home. She prepared a desk and a bookcase for her books in the den.

XIX. Self grooming and care of the house are the main home interests of this pupil. For her home experience she cleaned out all of the dresser drawers and her wardrobe, discarded outgrown garments and sectioned her dresser drawers. By cleaning her shoes out from the bottom of the wardrobe, a space was made for hand bags. Her shoes were stored in a shoe bag. These changes gave her greater pride in dressing than ever before as well as helping her keep her room neater than ever.

CHAPTER IV

EVALUATION OF THE UNIT BY PUPILS,

MOTHERS, AND TEACHER

This was the first time the methods of pupil demonstrations had been used with these pupils and the teacher was interested in knowing how they felt about it. A questionnaire was made out to see how well they liked it and from which part of the unit they had derived the most knowledge.

From tabulated results it was found that more pupils gained information from demonstrations of other pupils and fewer gained information from their own or the teacher's demonstrations (Table V, p. 36). At first this seemed strange. However, there were 1/8 demonstrations by other people to every one by a given pupil. The pupils said the reason for this was that other's demonstrations were watched carefully to see how well they were being presented, thus absorbing what they had to say.

Most of the pupils liked the way in which the unit was taught and felt it had caused them to take a greater interest in work simplification.

Most of the mothers themselves approved of the ideas learned in this unit as was evidenced by the 16 "yeses" and the comments on the home experience reports. Over half of them or some adult approved so much that they changed their methods of doing home tasks.

TABLE V

EVALUATION OF THE WHOLE UNIT

(19 pupils in a third year homemaking class at Randleman High School,
Randolph County, North Carolina)

Questions	Yes	No	Comment
1. From what part of the class work did you gain most?			
a. Other pupil's posture demonstration	10		
b. Teacher's posture demonstration	7		
c. Your own posture demonstration	2		
d. Other pupil's task demonstration	12		
e. Teacher's task demonstration	6		
f. Your own task demonstration	1		
2. Did you like the method in which the unit was taught, that is, pupil participation in giving demonstrations?	18		Fair
3. Did the unit help you notice ways that other people take unnecessary time and energy in doing their work?	19		
4. Did the unit make you stop and think whether you were doing your tasks with a loss of time and energy?	19		
5. Did you go home and make any spontaneous changes in the way you had been carrying out your home tasks?	18	1	
6. Would you have made any changes at home had it not been suggested as a home experience?	10	8	Yes, but would have been less interested
7. Were you enthusiastic enough to tell others what you were studying?	13	6	
8. Did you approve of the changes made in the homemaking department?	17	1	Not all of them
9. Did your mother approve of ideas learned in this unit?	16		(Not filled in by 3)
10. Did she (or some adult) make some changes at your suggestion?	11	8	

CHAPTER V

SUMMARY AND RECOMMENDATIONS

To develop the pupils' ability to apply the principles of work simplification to various tasks at home, a unit on methods of work simplification was planned and taught to 19 third year homemaking pupils at Randleman High School in Randolph County, North Carolina.

Method of Teaching Unit and Findings

To inquire about the pupils' feelings as to which tasks were more difficult before any formal instruction was given in methods of work simplification, a questionnaire was filled out by the pupils. It was found that ironing, studying, washing dishes, and dressing were the most difficult and time consuming of tasks usually performed by high school pupils.

The unit was set up in three parts of varying numbers of lessons. The first part attempted to gain interest in the elimination of fatigue in the performance of household tasks by the use of a film. Part two attempted to gain pupil understanding of the relation of posture to fatigue and knowledge of good posture. Part three was planned to continue the study of factors contributing to fatigue by bringing out the elements other than posture - sequence of work, arrangement of furniture and equipment, and type of tools.

To make the unit more interesting and to cover as many phases of household tasks as possible, the teacher and each pupil demonstrated the application of methods of work simplification to the various tasks.

After the demonstrations were finished, the class applied the principles of work simplification to the homemaking department and to the foods unit. Several changes were made to give more room in an overcrowded department as well as creating means of saving steps, finding things with ease, separating teacher's and pupils' materials, and making for easier cleaning. In the foods unit the pupils used such methods of work simplification as using trays, collecting articles before cooking, and allowing dishes to drain dry.

To see how conscious the pupils were of methods of work simplification in the homes, a mimeographed form was filled out by them. Twenty-three tasks were observed as being made more difficult while 12 were observed as being made easy. Upon seeing tasks being made more difficult, they were asked to give suggestions for improving the method. Comments were noted when a suggestion for improvement was made. Sixteen pupils made suggestions for improvements, receiving 11 favorable comments, 4 unfavorable comments, and one, no comment.

As the unit progressed and the pupils saw new methods for doing household tasks, they spontaneously applied this knowledge to some of their own home tasks. More changes were made in bedmaking and dressing than in others, but 27 spontaneous changes were made in all.

As a part of the unit, each pupil was requested to plan and carry out a home experience in the application of methods of work simplification to home tasks. These home experiences were checked by means of reports by the pupils and visits by the teacher. Some of the pupils applied their ability to more than one task, making a total of 21 tasks being improved.

Usually several improvements were made in each task.

For the teacher to gain insight into the thoughts of the pupils on the method used to teach the unit, a questionnaire was filled out by each pupil. It was found that most of them gained more information from the demonstrations of other pupils than any other part of the unit. They liked the method of pupil participation and felt they were motion-minded as a result of the unit. More than half were enthusiastic enough to want to carry out home experiences and help others improve their own home tasks without encouragement from the teacher. Sixteen of the mothers approved of ideas learned in this unit; eight made some changes in their methods of work at the pupils' suggestions.

To compare the various stages of the unit for each pupil, a chart was prepared showing tasks they felt tiring in the first questionnaire, the task they demonstrated, their spontaneous application of methods of work simplification in the home, and their own planned home experience. As a result of this chart (Table VI, p. 40) it was found nine of the spontaneous improvements and 22 of the improvements made in the planned home experiences related to the task they had checked as tiring in the first questionnaire. Twenty-six spontaneous experiences resulted from seeing the demonstrations of other pupils and one resulted from her own demonstration. Eight of the improvements made in the planned experiences related to the pupil's individual task demonstration, and 38 resulted from seeing the demonstrations of other pupils.

Recommendations to Teachers

Since the pupils responded by applying the demonstrated methods of

TABLE VI

SUMMARY OF PUPIL'S ACTIVITY AT VARIOUS STAGES OF THE UNIT

(19 pupils in a third year homemaking class at Randleman High School, Randolph County, North Carolina)

Pupil	Tasks Tiring at the Beginning of the Unit	Task Demonstration	Spontaneous Uses of Methods at Home	Improvements in Planned Experiences at Home
I	Dressing Ironing Cutting patterns	Clothes closets	Inverted pan under wash-pan to raise it for washing hair Making beds	Stored notions in sectioned machine drawers Made U-shaped sewing center
II	Dressing Washing clothes Ironing	Bathroom storage	Sectioned dresser drawers	Prepared desk and storage for books
III	Studying Preparing a meal Ironing	Preparation of a desk and storage of books	Placed ingredients and utensils in collect work area	Changed method of cleaning a room and cleaning windows Used vacuum cleaner and attachments

TABLE VI (Continued)

SUMMARY OF PUPIL'S ACTIVITY AT VARIOUS STAGES OF THE UNIT

Pupil	Tasks Tiring at the Beginning of the Unit	Task Demonstration	Spontaneous Uses of Methods at Home	Improvements in Planned Experiences at Home
IV	Cleaning a room Preparation of a meal Ironing	Cleaning a room	Made beds on one side at a time	Sat to iron Folded instead of ironed clothes Placed chairs nearby to hold unironed and ironed clothes Used wheeled cart under clothes line
V	Studying Cleaning a room Washing dishes Preparation of a meal	Use of vacuum cleaner and attachments	Sat to iron Made beds on one side at a time	Changed order of cleaning a room Used vacuum cleaner and attachments Cleaned windows with cleaner instead of water
VI	Making beds Washing dishes Preparing food		Made beds on one side at a time	

TABLE VI (Continued)

SUMMARY OF PUPIL'S ACTIVITY AT VARIOUS STAGES OF THE UNIT

Pupil	Tasks Tiring at the Beginning of the Unit	Task Demonstration	Spontaneous Uses of Methods at Home	Improvements in Planned Experiences at Home
VI (Continued)	Hanging out and bringing clothes			Sat to iron Folded instead of ironed clothes Placed chairs nearby to hold unironed and ironed clothes Used wheeled cart under clothes line
		Cleaning windows		
VII	Studying Making beds Washing dishes Cutting pattern		Made beds on one side at a time Inverted pan under dishpan	Rearranged kitchen
		Furniture arrangement	Sat to iron Picked up things before cleaning room Sectioned dresser drawers	
VIII	Making beds Cleaning a room Cleaning windows Ironing Cutting a pattern	Making beds		Made beds on one side at a time Changed order of cleaning a room

TABLE VI (CONTINUED)

SUMMARY OF PUPIL'S ACTIVITY AT VARIOUS STAGES OF THE UNIT

Pupil	Tasks Tiring at the Beginning of the Unit	Task Demonstration	Spontaneous Uses of Methods at Home	Improvements in Planned Experiences at Home
IX	Ironing Sewing	Tool and Hardware storage		Prepared desk and storage for books
X	Preparing one food Preparing a meal Hanging out and bringing in clothes Ironing Sewing Mending Cutting pattern	Washing dishes	Made beds one side at a time Picked up things before sweeping	Used wheeled cart under clothes line Sat to iron Folded instead of ironed clothes Placed chairs nearby to hold unironed and ironed clothes
XI	Washing dishes Preparing food	Cake baking		Improved cake baking by collecting articles before cooking

TABLE VI (Continued)

SUMMARY OF PUPIL'S ACTIVITY AT VARIOUS STAGES OF THE UNIT

Pupil	Tasks Tiring at the Beginning of the Unit	Task Demonstration	Spontaneous Uses of Methods at Home	Improvements in Planned Experiences at Home
XI (Continued)	Ironing		Sat to iron Sectioned dresser drawers Used vacuum cleaner	Rearranged dish cabinet to help in setting table
XII	Studying Cleaning windows Making beds Preparing a meal Setting table	Preparing a meal	Sectioned dresser drawers Sat to iron Improved room cleaning	Rearranged dish cabinet for ease in setting table Improved cake baking by collecting articles before cooking
XIII	Dressing Making beds Washing dishes Ironing	Setting table	Sectioned dresser drawers Made beds on one side at a time	Improved bathroom storage Rearranged furniture

TABLE VI (Continued)

SUMMARY OF PUPIL'S ACTIVITY AT VARIOUS STAGES OF THE UNIT

Pupil	Tasks Tiring at the Beginning of the Unit	Task Demonstration	Spontaneous Uses of Methods at Home	Improvements in Planned Experiences at Home
XIV	Setting table Ironing	Arrangement of equipment in kitchens	 Inverted pan under dishpan	Placed utensils in correct work area in kitchen Sat to iron Placed chairs nearby on which to place ironed and unironed clothes
XV	Studying Ironing Sewing Cutting pattern	Storage of soiled and clean laundry		Used vacuum cleaner and attachments Improved room cleaning method Improved method for cleaning windows
XVI	Dressing Studying Hanging out and bringing in clothes	Hanging out and bringing in clothes	Sectioned dresser drawers Washed dishes on counter to raise dishpan	Improvised clothes closet

TABLE VI (Continued)

SUMMARY OF PUPIL'S ACTIVITY AT VARIOUS STAGES OF THE UNIT

Pupil	Tasks Tiring at the Beginning of the Unit	Task Demonstration	Spontaneous Uses of Methods at Home	Improvements in Planned Experiences at Home
XVII	Studying Ironing	Ironing		Sat to iron Folded instead of ironed clothes Placed chairs nearby on which to place ironed and unironed clothes
	Sewing			
XVIII	Dressing Studying Washing dishes Ironing	Placement of machine and cutting pattern		Prepared desk and storage for books
XIX	Dressing Cleaning windows Ironing	Storage of notions	Inverted pan under dishpan	Rearranged wardrobe Sectioned dresser drawers Put up shoe rack

work simplification so well spontaneously, it seems that the planned experience should be an entirely new idea worked out by the pupil in applying methods of work simplification to a home task. This change is recommended as it causes the pupils to think through a new situation rather than copying one already demonstrated.

The teaching of this unit to third year girls should precede any teaching of foods work as the principles of work simplification are so sorely needed in the foods laboratories.

A teacher summary or demonstration on certain phases of work simplification should be taught to first and second year girls.

Recommendations for Further Study

1. It is recommended that a unit on work simplification be taught at the first of the year and that the application of methods to other home-making units during the year be checked.

2. A class in methods of work simplification might be taught to an adult class, studying the application to the home.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Cushman, Ella M., Management in Homes. New York: The Macmillan Company, 1945. 285 pp.
- Frederick, Christine, The New Housekeeping. New York: Doubleday, Page and Co., 1914.
- Gilbreth, Lillian, The Homemaker and Her Job. New York: D. Appleton-Century Co., 1927. 154 pp.
- Gross, Irma H. and Crandall, E. W., Home Management in Theory and Practice. New York: F. S. Crofts, 1947. 322 pp.
- Heiner, Mary K., "Simplifying Home Preparation of Potatoes," Journal of Home Economics, 35:646-52, December, 1943.
- Heiner, Mary K., and Vedder, N. M., "Studies in Dishwashing Methods: An Attempt to Apply Methods of Job Analysis to a Household Process," Journal of Home Economics, 22:393-407, May, 1930.
- Knowles, Elaine E., Posture and Other Physiological Responses of the Worker in Relation to the Height of Working Surfaces Used in Household Ironing, Doctor's thesis, Cornell University, Ithaca, New York, 1944. 441 pp.
- McDonald, Kathleen, Home Management Teaching on the Secondary Level in Alabama, Master's Thesis, Alabama Polytechnic Institute, Auburn, Alabama, 1947. 73 pp.
- Mundel, Marvin E., Systemic Time and Motion Study. New York: Prentice Hall, Inc., 1947. 232 pp.
- Muse, Marianne, Kitchen Equipment and Arrangement. Bulletin no. 375, Vermont Agricultural Station, Burlington, Vermont, 1934.
- Taylor, Frederick W., The Principles of Scientific Management. New York: Harper and Bros., 1911. 77 pp.
- Winston, Elizabeth, Home Activities, Motives, and Attitudes of Seventh and Eighth Grade Pupils in the Different Types of Public Schools in North Carolina. Master's Thesis, Woman's College of the University of North Carolina, Greensboro, North Carolina, 1951. 201 pp.

APPENDIX

REFERENCE LIST FOR TEACHERS AND PUPILS

- Adams, Joan, "Speedy Breakfast Preparation." The Kitchen Reporter, Kelvinator Kitchen, Detroit, Michigan.
- Ahern, Eleanor, The Way We Wash Our Clothes. New York: M. Barrows and Company, Inc., 1945.
- "Any Closet Will Hold It," American Home, October, 1951.
- Arrangement of the 4-H Girl's Bedroom, Extension Pamphlet No. 56, North Carolina State College, Raleigh, North Carolina, 1949.
- Autrey, Mary, "Now You Can Have a Step-Saving Kitchen," The Progressive Farmer, June, 1948.
- Bratton, Esther C., "Let Your Body Work For You," The Kitchen Reporter, Kelvinator Kitchen, Detroit, Michigan.
- Burket, Harriet, "How Big Is A Closet?" Woman's Home Companion, January, 1950.
- Cook, Lois, "Streamlined House Cleaning," Practical Home Economics, March, 1951.
- Cushman, Ella M., Management in Homes. New York: The Macmillan Company, 1945. 285 pp.
- Easier Homemaking, Engineering Experiment Station, Purdue University, Lafayette, Indiana.
- Good Housekeeping Institute, The Good Housekeeping Housekeeping Book. Philadelphia: David McKay Co., 1947. 491 pp.
- Gordon, Pauline E., and Williams, Elizabeth, No Space to Waste, Pamphlet No. 87, North Carolina State Department of Agriculture, Raleigh, November, 1945.
- Grady, Ethyl R., Illustrative Material for Correct Working Arrangements and Good Postural Practices, Master's Thesis, Kansas State College, Manhattan, Kansas, 1950. 132 pp.
- Gross, Irma H., and Crandall, E. W., Home Management in Theory and Practice, New York: F. S. Crofts, 1947. 322 pp.
- Homemaking Improved and Simplified, Bureau of Educational Services, New York, 1945.
- Hovey, Johnnie, "A Sew-Help-Her," Farm and Ranch, January, 1951.

How to Save Time, Money, Energy in Housekeeping, Westinghouse Electric Corporation, Electric Division, Mansfield, Ohio.

"How to Use a Vacuum Cleaner," What's New in Home Economics, March, 1951.

Jamison, Ruth, Housekeeping Manual, Bulletin 155, Virginia Agricultural Extension Service, Blacksburg, Virginia, March, 1945.

Keller, Lillian L. and Lovelace, Inez, You and Your Work, Agricultural Extension Service, Publication 278, University of Tennessee, Knoxville, Tennessee, March, 1946.

Molzen, Hazel M., Certain Storage Requirements for Grooming Activities of Teen Age Rural Youth in Harvey County, Kansas, Master's Thesis, Kansas State College, Manhattan, Kansas, 1948. 196 pp.

Roman, Nancy M., Homemade Bookshelves and Desks, Handyman Series, New York State College of Home Economics, Cornell, Ithaca, New York.

Roman, Nancy M., New Desks from Old, Handyman Series, New York State College of Home Economics, Cornell, New York.

Places for Keeping Clothing, C-72, Extension Service of A. and M. College of Texas, College Station, Texas, 1947.

Sewing Cabinet, Plan SC-285, Extension Service, University of Tennessee, Knoxville, Tennessee.

Storage in the 4-H Bedroom, Club Series No. 65, North Carolina Department of Agriculture, Raleigh, North Carolina, March, 1951.

Tolg, Myrtle R., Homemaking Can Be Easy, New York: F. Watts, 1949. 94 pp.

U.S.D.A. Step-Saving Kitchen, Movie, U. S. Department of Agriculture, Washington, D. C.

Waltz, George W., Jr., "How to Make A Backache Go Away," Better Homes and Gardens, April, 1949.

Wilson, Maud and Dodge, J. R., Closets and Storage Spaces, Farmer's Bulletin No. 1865, U. S. Department of Agriculture, Washington, D. C., 1940.

Within Your Reach, Movie, New York State College of Home Economics, Ithaca, New York.

"You Can Save Labor In Your Home Too," Farm and Ranch, December, 1951.

Your Farmhouse. . .Planning the Bathroom, Bulletin No. 391, Extension Service, State College of Washington, Pullman, Washington, June 1949.

McDermott, Irene E., and Nicholas, Florence W., Homemaking for Teenagers.
Illinois: Chas. A. Bennett Co., Inc., 1951. 492 pp.