

CONTRIBUTIONS OF THE VOCATIONAL HOMEMAKING
AND SCHOOL LUNCH PROGRAMS TO NUTRITION
EDUCATION IN AN OKLAHOMA SCHOOL

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PREFACE

This thesis is concerned with a study which was made to learn the food habits of students in the Howe School system, and the resulting inadequacies which could be overcome through nutrition education. Information obtained in a survey was analyzed to define objectives for nutrition education. A three month unit in nutrition education was planned in which students, teachers, parents and other community members were involved. A second survey was made and data was analyzed for evidence of improvement.

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CHAPTER I

PLANS FOR THE STUDY

Introduction

Recent legislation and current literature have publicized the fact that the task of nutrition education is vital for the world in which we live today and for the welfare of future generations. For some time now, home economics educators and nutritionists have realized the necessity of teaching significant ideas concerning foods and presenting information to students which can be related to recommended food practices. This is evidenced by the nationwide interest in identification of concepts and generalizations which are related to nutrition education.

A very significant contribution to the field of nutrition education has been the effort of a group of leading nutrition educators in Oklahoma. The State Board of Education authorized the School Lunch Division in cooperation with the Vocational Home Economics Division and the Department of Public Health to conduct a study of the food habits of a number of Oklahoma Students. Data was gathered in various sections of the State in order to insure as accurate and authentic a survey as possible.

The writer, as a Vocational Homemaking teacher, learned of some findings from this survey and as a result became more interested in nutrition education in Howe School. This interest led to research into the "Contributions of the Vocational Homemaking and School Lunch

Programs to Nutrition Education in an Oklahoma School."

Improvement in the nutrition of children can be made only after it has been determined what they eat and the good and bad points in their usual food pattern are determined. For this reason, it seemed expedient to investigate the food habits of students, then provide an educational program that would encourage change.

Statement of the Problem

My problem was to see if food habits leading to poor nutrition of school children could be influenced through presentation of a nutrition education program involving the total school and community.

Objectives of the Study

The main purpose of this investigation and study was to identify and recommend a network for communication that can be used to promote successful nutrition education programs and experiences.

Objectives were:

1. To determine nutritional inadequacies that are evidenced in the food habits of school children at Howe, Oklahoma.
2. To plan a nutrition education program that would help overcome inadequacies.
3. To involve the total school and community in a nutrition education program.
4. To evaluate the nutrition education program.

Procedure

Literature was reviewed in the fields of home economics, education,

psychology, and nutrition which gave objectives to the study. A survey form was selected which would determine the food habits of a group of students. A group of students from grades 2, 3, 5, 7, 8, 9, 10, 11 of Howe School was selected. Before the survey was administered, the approval and cooperation needed from administrators to conduct the study, the cooperation of the school personnel, and the cooperation of the student body through the Future Homemakers of America and the Student Council was accomplished. An advisory committee of community leaders was formed to gain the cooperation of the public. After the survey form was administered, the data was analyzed to determine nutritional adequacies evident in the food habits of the group. A nutrition education program was planned which involved the total student body and community. Repeating the survey to determine whether any changes had occurred as a result of the nutrition education program led to the crux of the study. Data was analyzed and a summary, conclusions, and recommendations were made.

Definition of Terms

Food Habits - are the sum of our attitudes and ideas, our likes and dislikes, and our experiences and practices of choosing and eating food. (4)

School Lunch Program - A Type A lunch prepared and served to school students under provisions of a contract with the Oklahoma School Lunch Division of the State Department of Education. (20)

Recommended Daily Dietary Allowances - An outline designed by the National Research Council for the maintenance of good nutrition of practically all healthy persons in the United States. (33)

Limitations

1. This study was confined to one school, Howe. Approximately 260 students attend this small southeastern Oklahoma school.
2. The sample is limited to students in grades 2, 3, 5, 7, 8, 9, 10, 11.
3. The writer was assisted in the survey by students enrolled in Homemaking II.
4. A Recall Survey of kinds and amounts of each food eaten on the day previous to the survey were listed.
5. No attempt was made to determine the exact amounts of nutrients consumed.
6. The amount of food nutrients that is reported as consumed by students is based on reports of foods eaten and estimates of sizes of servings by the students.
7. Daily record of the students food intake was coded into food group numbers, adapted from the Basic Seven Food Groups, averaged, then used as a basis for determination of adequacies or inadequacies in relation to the Recommended Daily Dietary Allowance.

Organization of the Report

The report of this study is organized into four chapters. Chapter I presents the problem, objectives, limitations, definitions, procedure, and organization of the study.

Chapter II presents a review of literature that related to the study.

Chapter III presents the results from the survey and supplies an

analysis of the data.

Chapter IV presents a summary of the study and the conclusions reached as a result of the study.

CHAPTER II

REVIEW OF LITERATURE

Introduction

Rapid progress has been made by scientists in the field of nutrition in determining the nutritional needs of the individual. Different methods of education and communication have been used to make known these facts to groups and individuals. This review of literature cites various phases of research concerning nutrition. First, the School Lunch Program and the policies as they affect school children were reviewed. The second phase of this review considered factors influencing food acceptance. Part three of this review of literature was devoted to methods of nutrition education.

School Lunch Program

One of the ways the government of the United States has demonstrated its continuing interest in nutrition education is in the passage of the National School Lunch Act, in June, 1946.

The declaration policy of the School Lunch Act is stated as follows:

1. To safeguard the health and well-being of the nation's children, and
2. To encourage the domestic consumption of nutritious agricultural commodities, and other foods. (32)

In the same act objectives are also stated. These are as follows:

1. To encourage the development of desirable eating habits by children and youth, and indirectly to improve food habits of all members of the family.
2. To acquire functional knowledge of nutrition.
3. To improve the general health of school-going population.
4. To encourage the development of habits and appreciation of cleanliness and knowledge in the matter of selecting, storing, preparing, and serving food.
5. To provide through the eating of food, a learning situation by which the child gains education and social experiences.
6. To provide for the child, such school lunch facilities as are necessary to create and develop an appreciation for a quiet, clean, happy, and peaceful environment while eating. (32)

Some progressive educators have also come to recognize the Lunch Program as educational and are conscious of the fact that the lunch-room is a place to teach, a place to develop personality and character. Influences on a child's food habits are the foods served in his home, the foods served at school, teachers attitudes toward foods, his nationality or the region of the country in which he lives, and the psychological meanings attached to food and eating.

Since malnutrition and underfeeding occur among children from every economic group, the School Lunch is essential in improving this state of nutrition, and it should be remembered that the program is designed primarily for the children. Educators have said it is a waste of time and money to try to educate children who are hungry. Many have said a good lunch solves behavior problems. There is abundant evidence that malnutrition or slow starvation can cause, or prepare the way for, every germ and every derangement: physical, mental or spiritual. (28)

In schools taking part in the Lunch Program, children who cannot afford to pay are eligible to receive the meal free or at reduced cost. Nationwide, about ten percent pay little or nothing because of need. The average in Oklahoma is also approximately ten percent; however, this figure will increase very soon since emphasis has been placed on Special Assistance in the poverty areas. In 1964, special emphasis was given to "pockets of need" in President Johnson's attack on poverty. The National School Lunch Program was called one of the weapons in the war against poverty. (28)

The National School Lunch Act stated that schools shall meet minimum nutritional requirements prescribed by the Secretary of Agriculture on the basis of tested nutritional research. The Type A Lunch Pattern was developed to serve as a guide to well balanced, nutritious lunches that will supply the kind and amounts of food children need at noon. Quantities are almost as important as quality to supply the child's needs and to qualify for the reimbursement by the government. This pattern is related to the National Research Council's Recommended Daily Dietary Allowance for 9 - 12 year olds. It was translated by personnel of the Food Distribution Division, U. S. D. A., Institute of Home Economics. (28, p. 22)

The Type A Lunch must contain as a minimum:

Whole Milk - 1/2 pint of fluid whole milk served as beverage.

Protein Rich Foods - two ounces or an equivalent substitute;
 2 oz. of cooked or canned lean meat, poultry, or fish, or
 2 oz. of cheese, or
 1 egg, or
 1/2 cup of cooked dry beans or peas, or soybeans, or
 4 tablespoons of peanut butter.

Requirements may be met by serving a two-ounce edible portion of a single protein food as meat, fish, or cheese; or by serving a combination of protein foods in the main

dish, and one other source.

Vegetables and/or Fruits - 3/4 cup

May be met by providing two or more vegetables or fruits, or both, in raw or cooked form. A serving of full-strength vegetable or fruit juice may be counted to meet not more than 1/4 cup of this requirement.

It is recommended that -

A vitamin C-rich fruit or vegetable be served daily.

A vitamin A-rich fruit or vegetable be served twice a week.

Bread - 1 portion or more

Whole-grain or enriched bread, cornbread, biscuits, rolls or muffins must be included in each meal. Crackers do not meet the requirement because they are not made with enriched flour.

Butter or Fortified Margarine - 2 teaspoons

This may be used as a spread on bread, as a seasoning, or in the preparation of other foods in the lunch. Do not serve family style. (28, p. 22)

Nationwide, 16 million children participate in this program; in Oklahoma, as many as 245,000 children are served each day. The entire program is geared to making maximum use of national, regional and locally abundant foods. More than half of the schools in the program are in a category in which 100 children or less per day are served. Fifty-four percent of the children served are about equally divided in the 100 - 200 participation groups. The larger school group, which is about 7 percent of the total schools serving Type A Lunch, serves about 29 percent of the total children. Eighty-three percent of the total schools in Oklahoma are serving the Type A Lunch for 25 cents or less, per day. (28)

Adelson (1) wrote recently that despite higher incomes and the opportunity to choose from the greatest abundance of foods in the history of the United States, there has been a somewhat adverse shift in household food consumption, and thus in dietary levels. On the basis

of these findings from the spring, 1965, Nationwide Household Food Consumption Survey, Secretary Freeman has directed an expanded nutrition education program by the United States Department of Agriculture.

The Child Nutrition Act was passed October 11, 1966, by the Congress of the United States. This was an act to strengthen and expand food service programs for children, as a measure to safeguard the health and well-being of the Nation's children. It is designed to encourage domestic consumption of agricultural food surplus in addition to other foods, by States, through grants in aid and other means, to meet more effectively the nutritional needs of our children. It included authorization of funds for special milk programs in non-profit institutions devoted to the care and training of children. A school breakfast program on a pilot basis was authorized and funded. These programs, to the extent practicable, were to give first consideration to those schools drawing attendance from areas in which poor economic conditions exist, and to those schools to which a substantial proportion of children enrolled must travel long distances daily. Breakfast should consist of a combination of food and should meet minimum nutritional requirements. Some of these programs are being tried on a pilot basis in Oklahoma this year. The Act also provided for the authorization for non-food assistance, in the form of grants, aid, or other means, to programs in schools which draw attendance from areas where poor economic conditions exist. These funds could be received by making application to the state agency for equipment, providing there is justification of need and the school is unable to finance the food service equipment needed. There should also be a detailed description of the equipment to be acquired and the plans for the use thereof, in effectively

meeting the nutritional needs of the children in the school. (32)

During the school year 1967-68 dietary studies were made of various age groups of school children in most sections of Oklahoma. Observations were extensive in that approximately 10,000 individuals were included, in every economic section of the State. Indications of this study show that our children in Oklahoma are not eating the foods in kinds and quantities that are recommended by the National Research Council for the maintenance of good nutrition. (28) The author reviewed the results of these studies and proposed to learn where the students of Howe would fit into these observations.

Oklahoma Food Survey

In March of 1966, the Oklahoma School Lunch Division decided to make an extensive Food Habit Survey of school children, ages 5 to 18. 10,000 children in every economic section of the State were surveyed. The schools selected were of varied enrollment sizes. Results were tabulated on 3,000 students from various areas of the state for a preliminary report.

This study was made on the basis of three levels of income; families with less than \$3,000 yearly, those with from \$3,000 to \$7,000, and those over \$7,000.

Comparison of data of the high income level groups with those of the low income level reveal that the need for nutrition education is as great for those in the high income level as it is for those in the low or moderate income groups. Those in the over \$7,000 income bracket have fewer calories than those in the below \$3,000 bracket. Generally this is true of all the nutrients as well. Those in the \$3,000 to

\$7,000 range are in between but are closer to the over \$7,000 group than the below \$3,000.

It is evident that children need to be taught the kinds and quantities of food to eat when one looks at some of the figures taken from the preliminary report. For the four day period, no single student ate foods from all the required food groups. Of those surveyed, it was reported that 23.4% missed meals. Of this group 4% missed two or more meals. From the age 16 and above 13.3% missed breakfast. Of all students surveyed, 9.2% of the girls had no breakfast. Another finding was that 1 out of 4 are eating too many calories, which is a great health problem. Evidence also points out inadequate calcium, iron, Vitamin C, and Vitamin A consumption. Four out of 10 lack calcium, 3 out of 10 lack iron, 4 out of 10 lack Vitamin A, 3 out of 10 lack Vitamin C.

It has been found that children who eat in the school lunch program fare better nutritionally than those who do not. The average school lunch participation decreases as the ages of students increase up through 15. Of the Type A School Lunch participants, 69.4% are 7 to 9 years of age. There are 57.5% of the participants who are 10 to 12 years of age and only 29.2% of the participants are 13 to 15 years of age. Evidences show that the 13 to 15 year age group is our problem, as far as Type A School Lunch participation is concerned. (27)

Factors Influencing Food Acceptance

Before the planning of learning experiences in nutrition education, factors affecting food acceptance need to be considered. Teaching nutrition will be more effective than it now is when we are able to

recognize the many factors that have influenced attitudes toward food and food habits. One of the most frustrating experiences in nutrition education is the extent to which people have allowed preferences for foods to determine what they eat, and their reluctance to modify acceptance of foods in light of their knowledge of nutrition. Our acceptance of food is a complex form of behavior determined by our sense organs, by chemical conditions within our bodies, and by the psyche. Since our present psychological reaction to food resulted from a whole gamut of our life experiences, a simplified explanation of this is impossible; however, we have made certain observations which are helpful. (10)

Eating Behavior

The first step toward development of good food habits is food acceptance. Eating behavior was discussed by Eppright et al (10) from two standpoints--what we have learned from various approaches, and what we know about certain age groups. Studies, conducted by the Biological Sciences discipline, revealed that the taste of food was the most important factor in its acceptance and that there were wide individual differences in the sensitivity of taste.

Eppright (10) continues that eating behavior studies conducted by psychologists revealed that food acquired many meanings other than those related to health because of its importance as a factor in behavior. The symbolism of food is intimacy and it carries feelings of security, protection, and love, but it also represents pain, rejection, deprivation, and the potential terror of starvation. Food also carries the projection of power for the mother who feeds, the teacher who says "clean your plate," or for nations to starve those they perceive as

enemies. Anything new is apt to be looked upon quizzically rather than whole heartedly. Not only food and feelings, but also food and ideas must be tasted with the tongue, examined with the eyes, and studied as to how the protector reacts herself.

Image of Foods

Family eating habits were found to be important in determining the size of a child's appetite. Sometimes overeating was due to ignorance of true nutritional requirements, or to economic circumstances which weighted family diet heavy in carbohydrates rather than protein. Techniques of demand feeding have been blamed for excessive appetities in infancy. As a child develops, he should have properly become interested in ways other than eating to handle his anxieties and frustrations, or to seek status, independence and sociability. (10)

One interesting finding was that foods acquired reputations such as milk was "only for children," or salads were "only for women." Another was that objectionable textures can affect food preferences. Such attitudes toward food items create obstacles and offer challenges for the nutrition educator, who must encourage students to evaluate foods in terms of what they actually are, not what they are reputed to be. "The image of food is a factor to be reckoned with in nutrition education." (10, p. 71)

✓ Variety in the choice of foods has been shown in studies to bear a high correlation to adequacy of diet for all ages. People who are reasonably secure, constructive, and open minded in their outlook on life may be expected to accept a wide range of changes and limitations in eating habits. Those who have deep seated emotional problems which

result in neurotic likes and dislikes of food cannot be treated on the same plane as normal well adjusted people.

We have learned from Sociologists that family situations may influence attitude toward food. They have shown that food preferences of children within the family vary, and that the economic conditions promoted resistance to changes. (10)

Method of Preparation

There was much evidence that the method of preparation had a definite influence on acceptance or rejection of food. The studies showed that the more one did to an item in the way of adding vegetables, cream sauces, and so on, the less well liked the item was. This was true for meats and vegetables. (25)

Some of the data regarding frequency of serving showed that foods which had a high initial preference suffered least from monotony or repetitive consumption. There was a positive relationship in the satiety of food as far as acceptance went. The more filling a food was, the more likely to be eaten it was. This was true, especially where there were no weight problems.

Food Preferences of Children

Research on the eating behavior of different age groups of children revealed some interesting information. The nature of foods liked or disliked from pre-school age to later years shows a surprising similarity. In general, the most acceptable foods were, beginning at an early age, mild flavored and colorless. Some had a textural quality of crispness, but most favorites were soft, perhaps even mushy. Throughout the

age range investigated, the most generally disliked common foods were flavorful, colorful vegetables, including green and leafy varieties. The roots of food dislikes are, therefore, apparently planted at an early age. (10)

A study was made of food preferences among school children in Iowa. The results showed the six most acceptable vegetables were potatoes, carrots, lettuce, peas, tomatoes, and celery. All of these were more acceptable raw, except potatoes and peas. The other well accepted vegetables were corn, string beans, radishes, cucumbers, onions, and sweet potatoes. The chief reason given for not liking a particular vegetable was unfamiliarity. This same study showed that fruit was much more widely accepted than vegetables and that fruit would be eaten, if it was available. Pork, beef, poultry, miscellaneous meats, fresh fish, and canned salmon were eaten by three-fourths of the students. Liver was the most acceptable organ meat. Children liked relatively inexpensive miscellaneous meats. Most of the children drank milk and liked eggs in some form. Breads and cereals were accepted by most of the children. Oatmeal was the only cooked cereal they said they would eat. A large majority liked rice, noodles, macaroni, and spaghetti when served creamed, or with cheese or tomatoes. In the study of acceptance or rejection of foods because of certain flavors or textures results indicated that strongly flavored foods were liked least. All liked sweets. The older the student, the better accepted were strong flavored foods. This was true also of mild flavored foods. (24)

This study leads one to believe that improvement in children's diet could be possible if preferences for certain flavors and textures

were considered. Most foods could be modified in flavor by change in seasoning and by combining with other foods; textures could be modified by processing if raw form was not acceptable. Actually, children prefer raw to cooked vegetables and fruits. Food preferences change with the child's age, so it is not wise to force the acceptance of disliked foods at any one time. It is believed too, that physiological changes which come with age, chemical state of the body and the emotions have a great influence on food acceptance. It is known that the influence of others affects food acceptance. Many would rather follow the group for selection of an adequate diet. Children were inclined to imitate other children in food selection, especially if one child were older or was a best friend. Teachers could work better with children, by getting leaders of the group to try new foods, as others tended to imitate. "It is easier to establish good food habits early than it is to change those once established." (24) The writer made use of these factors concerning food acceptance just reviewed in nutrition education for children in the Howe School.

Teen-Agers and Nutrition

Teen-agers are the most difficult age group to reach with nutrition information, unless they have been exposed to nutrition education throughout their school years.

Spindler (26) found in her study with teen-agers that it could be a wise approach for nutrition educators to make good food habits a fad, since teen-agers are more influenced by their peer group than by adults in food selection. If influential teen-agers were swayed to eat a well-balanced diet, and make it "the thing to do," many others would

follow the example. Adolescents have a need to understand irregularity of growth and maturation and the part played by nutrition in attaining genetic potential.

These elements concerning teenagers' food acceptance offered a challenge to a group of high school students who acted as a board, when planning nutrition education experiences for the group at Howe.

Trends

Lantis (20) stated that the child is the prince of our economy, then cited results of evidence gained from studies she made as a basis for her statement. She relates that there are certain cultural factors influencing the American child's food choices. One of these factors is the conglomeration of convenient vending machines which encourage piecemeal eating. She states further that this kind of eating has become so prevalent it has been recognized as a new eating pattern and that casual eating partially fits into a larger pattern of eating away from home, a tendency which is increasing. One would suppose this trend of away-from-home-eating would broaden one's food experiences, and there is some evidence it does. Counteracting this however, is the impersonal mass feeding via machines which must be confined to a few most generally accepted foods and beverages. Thus the child's timidity in trying strange foods or experimenting with familiar foods prepared in an unfamiliar manner is reinforced. (20)

Lantis (20) conducted a study concerning food likes and dislikes. A difference was found between preference and acceptance, and between preference and convenience as criteria of selection. Normal Americans will accept things they may not prefer, but which are convenient,

effectiveness of their work depends generally on their ability to make use of their great resources in many areas of knowledge. It is important to emphasize that education has been for change—not education in terms of set formulas and patterns to meet specific situations. No list of dietary rules can be tailored perfectly to fit a given individual on a permanent basis, because he is constantly changing. His environment is changing too. Therefore, it is necessary to equip him with knowledge adequate to meet the changes within himself and environment. (10)

Basic Concept Development

A new dynamic theory of learning has emerged during the past century that has important implications for nutrition education as well as for education in general. The author reviewed this theory for a better understanding of ways it could be used in nutrition education classes. Lesson plans utilized this new theory of concept development.

Dalrymple (8) summarizes this theory when she states that the emphasis on concepts is to prompt clear, conscious and directional thinking on the part of the students as well as teachers. As the curriculum is planned one should plan in terms of over arching large "ideas" or "impressions" which we expect students to emerge with and develop. Next, define the nature of the "knowledge," "understandings," "appreciations," or "attitudes" that would support or undergrid the "ideas" or "impressions". Then--plan a possible sequence of learning experiences in terms of specific courses with a goal of having the "ideas" or "impressions" develop in a systematic manner. Team effort in planning is optimal. Finally--develop a means of assessing the

inexpensive and satisfy minimum standards of cleanliness and palatability. These factors may have a definite influence on some of the things which are happening today.

A report from the Wheat Institute stated that iron deficiency has been found to be a problem of increasing importance in this country, particularly among young women. An important step has been taken to combat dietary iron deficiency through the enrichment of certain foods such as flour, bread, cereals, rice and macaroni products.

A recent report from the United States Department of Agriculture states that instant potatoes and pineapple juice manufactured by some companies are now recognized as enriched with Vitamin C. This should be of some help in erasing the problems related to the Vitamin C deficiency. If this kind of enrichment can be done in these foods, it can surely be done in other foods. This does not suggest that food additives or enrichment can replace all foods rich in Vitamin C, but will help alleviate some nutritional problems caused by poor food habits.

Methods of Nutrition Education

History

A glance back to the beginnings of our national concern for nutrition education demonstrates the pioneering role of home economists and dietitians, and their increasing responsibility for nutrition education through the years. The primary teaching load was placed upon these specialists, along with the public health nutritionists, but nutrition educators generally have the advantage of expanded research and information accumulated by many specialists, in other fields. The

degree to which the behavior or competences, the desired concepts and generalizations are emerging or developing.

Nutrition education programs as a whole which were reviewed appear to have a close application of sound principles of teaching and learning. These applications include in particular the two basic assumptions that underlie the concepts of learning:

1. Learning is a process of changing behavior, and
2. Learning is more likely to occur when there are problems to solve which are real to pupils and within their range of interest or goals.

The writer applied this theory and principles to nutrition education classes which were taught to students during this study.

Conferences on Nutrition Education

"There is a great deal of concern about Nutrition Education in the United States," states Pattison. (10)

Four times in about two decades the government of the United States has demonstrated its continuing interest in nutrition education by sponsoring national conferences in Washington, D. C. The first of these four conferences, in 1941, pioneered in giving national recognition to the need for nutrition education. Much of what we are doing today is a continuation of recommendations from that conference, modified by progress in research through the years and further influenced by recommendations from the three succeeding conferences.

The evolution of our nutrition problems may be traced through these conferences as well as the efforts to solve them. Emphasis has changed over the years from the problems of under nutrition, in 1941,

to the dilemma of overweight and overeating, in 1960, states Pattison.

The "affluent society" in which we live stresses the amazing fact that our land of plenty does not automatically guarantee good nutrition. One of the goals of nutrition education is to enable the individual to take intelligent advantage of his ever expanding opportunity for choice in the realm of food, and to help create conditions where people everywhere will have enough of the essentials of an adequate diet for their health and well being. (10, p. 237)

The fifth of these Nutrition Education Conferences was held in February of 1967 at Washington, D. C. Considerable concern on the part of participants over the following areas was revealed:

1. Content or subject matter in nutrition
2. Need for nutrition education in schools
3. Coordination of subject matter
4. Improved motivation techniques
5. Better communication
6. Research
7. Identification of health problems

Discussions were held on some means of improving nutrition practices. Some of the suggestions were:

1. Include nutrition in preservice and inservice education of teachers and community workers.
2. Conduct sequential programs of nutrition education in grades Kindergarten through 12, using School Lunch as a tool at all grade levels.
3. Coordinate nutrition education efforts of all participating groups in the community.
4. Use all possible information and techniques in reaching and working with people. (34, p. 50)

Secretary of Agriculture, Freeman, recommended substantial improvement in nutrition education as one step, both to bring more of the "hard to reach persons" into the good programs and to encourage greater

awareness of the concepts of good nutrition. (24) Home economists are already involved in such projects in many communities.

Considerations for Emphases

In learning good judgment about food selection consideration must be given to the fact that nutrition needs and goals of individuals change with age. Therefore, nutrition education needs to be a continuing process from infancy throughout life.

Eppright (10) pointed out the fact that food habits are formed early in life. One is born with hunger, which causes man to seek food, but one is not born with the knowledge of what food does for him. Good judgment in food selection has to be learned, and eating becomes a learning experience around which many cultural forces play a part. Feelings about food and its preparation, concerns and anxieties about how others feel, fear of rejection or ridicule, all must receive particular attention.

It is important that feelings and customs be used as a part of a total pattern on which to build food habits. Deliberate attempts to change food habits are often met with strong resistance. A teacher in nutrition, therefore, is more likely to improve diets in a community if she knows, not only what modifications are desirable, but also those which are acceptable and possible. It is also desirable that the emphasis in nutrition education which is aimed at changing food habits alters as the needs and goals of individuals change.

Stitt (29) expresses a pediatric viewpoint of the usefulness of growth and development expectancies as "feeding guides." She states that there are recognized "seasons" of childhood and each season makes

different demands on the child. She believes that when these ideas are applied to nutrition education we can give the benefits of anticipatory guidance in meeting the needs of children. Professional education of those who will serve children, should lead to an awareness of outstanding characteristics of various ages of childhood, so that services may be brought into sharp focus at crucial times. All children need nutrition, but all children also have certain differences at specific age periods.

It is believed, states Stitt (29), that in the preschool period, the concern about nutrition should be on quality not quantity. Nutrition guidance at this level is good preparation for the school years. Desirable feeding for groups of school children, or for individuals, needs to be examined against the realities of their daily activities. There is much room for research in readiness for child feeding and such research can prove helpful to nutrition education.

The more experienced child observers know that if given a chance, children work and rest in an alteration of exercise and repose. Both the activity and inactivity are necessary to their well being. The child in the "latent period" age group may be having a quiet time emotionally, but from the nutritional standpoint he is busy meeting demands on all body resources, especially their nutritional resources.

Cultural Factors

Nutrition educators need to understand the food culture of the people with whom they become involved. They should try to bring about changes that are in keeping with established food habits of people and which are acceptable within the framework of their value system.

Criticism of nutritionally inadequate foods is likely to arouse stubborn opposition based on deep rooted sentiments associated with such foods, which will compound the difficulty of introducing change. The aim should be to set up a situation in which people will pleasantly and easily eat the right foods. Lunch may be a more opportune time to introduce dietary improvements than dinner, especially in urban areas, since this meal probably is not the focus of deep family sentiments so much as breakfast or dinner. Trying to help people for their own good may sometimes be a frustrating business because they may oppose efforts made for their benefit. Change is possible, but it is frequently not accomplished easily. (11)

Wise food therapists will explore the food habits of the subculture in a community by careful observation before making recommendations. Our objective is to use the culture and values in ways that will bring out assets, and develop the person's food interests and capacities while diminishing self destructive trends that are expressed through inhibition or competitive displacement. (11)

Lantis (20) states that because of cultural factors present in America which influence the child's food choices and the trends not in evidence which will likely affect child nutrition, educators need to give emphasis to the following: Give less sweets which contain empty calories, and substitute some dried fruits for candy. Sell lower calorie cookies and sweets, to the child. Teach him to deal with the multitude of inducements to buy food and drink with practical knowledge instead of on a feeling basis. Teach him to know how to get the better and reject the worse. Regarding food habits, attitudes and values, the child should get demonstrations of the value of eclectic tastes, so he

can travel comfortably and be economically mobile with less strain.

Motivation

Babcock (2) expressed the opinion that in teaching about food, we can help one to see there is more to learn than that which is evident in childhood experiences. We can show that food usage becomes more meaningful when one sees it as a substance of great range, flexibility and choice. This meaningfulness develops and expands when one learns that a diet is made up of certain essential nutrients, not specific foods. We can teach the concept that foods have various values, but all are valuable in accordance with the nutrient content, are useful, and can be applied advantageously.

People are different, and differences are to be respected, not exploited. It is important not to confuse people by non-specific generalities. Find out the likes of a group or individual, and start at his level. Keep in mind that human beings learn slowly, and need repeated opportunities to learn. Introduce changes about food information and food programs slowly. It is easier to establish good food habits early than it is to change those once established.

Babcock (2) adds that one needs to be secure in the knowledge that while food is not magic, it is vital. The values of food are tremendous and life giving. We can exercise curiosity about the puzzling behavior of people in relation to food. We can use ingenuity within the content of practice. We can observe and learn by exercising knowledge and understanding. We can meet disinterest and resistance to change with data and illustrations just beyond the point of resistance and within the stream of positives of the group or individual. We can

indicate the positive factors in foods they are already using, and relate how new knowledge can affect changes in their present food habits. "Scientists believe if we are to change food habits and preferences of adults, it will require a very active and vigorous approach over a period of time, and not the short "nutritional campaign" type of approach." (2)

Communication

Babcock (2) continues that communication is a problem in attitudes and the use of food. In order to establish good food habits, people must be able to learn and we must be able to teach. People must talk about food--what they know about it and what they feel about it. The nutrition educator must talk about her knowledge and attitudes that bear on the use of food. Both facts and attitudes are essential for health. "Communication needs to flow in both directions." (2, p. 547)

Babcock (2) adds that the health educator needs to possess not only intellectual understanding, but a genuine emotional insight regarding the meaning of food. One must know and feel that food is, from the day of birth, associated with intimacy. It carries not only feelings of love, security, protection and developing strength, but also a sense of pain, rejection, deprivation, and potential terror of starvation. Anything new is inclined to be looked on quizzically rather than with whole hearted interest. Not only food and feelings, but also food and ideas must be explored with the sense of taste and sight and studied as to how the protector reacts to food. The learner must explore whether the food offers common ground for warmth and growth, or for rebellion, fear, and competition. Therefore, the nutrition educator must permit

exploration in order to establish communication.

One should expect and anticipate objections to this method of exploring new learning and evaluating new material to see if it is worth learning. Nutrition educators should show a relaxed, confident air about knowledge and learning, in order to keep the doors to communication open. The teacher should also make every effort to practice what is taught, thus acting as an example of knowing and practicing good food habits. (2)

Galdston (15, p. 745) stated, "education always occurs in the individual as he is stimulated to develop his potentialities and increase his understanding."

It follows therefore that the best kind of teaching is that based on immediate situations and which through analysis of problems and the provision of appropriate corrective measures, leads one to greater knowledge, broader understanding, more effective skills, and more rewarding attitudes. (15)

Stitt (29) reiterates that, whoever provides good nutrition for an adolescent girl may unwittingly influence multitudes, not only through the care and replenishment of the girl's own physical resources, but through awakening her to good nutrition, so that at a later time she may guide and protect those who come into her life.

Hill (18) stated that the public gets its information from many sources, some authoritative, some misleading, though unintentionally so, and some is designed to take advantage of the layman. Because of the explosion of knowledge in many areas of nutritional science there is little likelihood, that in the years ahead, information will be coming from fewer sources or that those sources which are intentionally

confusing will be eradicated.

Nutritionists representing reliable sources are doing excellent work in broad community health programs. They are teaching that food is selected to meet nutritional and energy needs. They are teaching sufficient information to help the public make wise judgments when faced with the eloquent claims of the faddist.

Information alone seldom makes a difference in the behavior of individuals. The competency of several disciplines is required to motivate behavioral changes where they are needed. The first step in achieving a coordinated effort is to formulate some basic concepts of nutrition expressed in nontechnical language. (18)

Basic Concepts and Generalizations

The following are basic concepts for nutrition education, as established by the 1967 Interagency Conference on Nutrition Education at Washington, D. C.: (20, p. 3)

1. Nutrition is a study of the food you eat and the ways in which the body uses it.
We eat food to live, to grow, to keep healthy and well, and to get energy for work and play.
2. Food is made up of different nutrients needed for growth and health.
All nutrients needed by the body are available through food. Many kinds and combinations of food can lead to a well-balanced diet. No food, by itself, has all the nutrients needed for full growth and health. Each nutrient has specific uses in the body. Most nutrients do their best work in the body when teamed with other nutrients.
3. All persons, throughout life, have need for the same nutrients, but in varying amounts.
The amounts of nutrients needed are influenced by age, sex, size, activity and state of health. Suggestions for the kinds and amounts of food needed are made by trained scientists.

4. The way food is handled influences the amount of nutrients in food, its safety, appearance and taste.
Handling means everything that happens to food while it is being grown, processed, stored and prepared for eating.

A Suggested Lesson Plan Outline

A suggested outline of lesson plans for a two week unit in nutrition education which the writer found helpful with her nutrition education classes is as follows:

1. Identify the group you expect to teach and outline their developmental tasks as a basis for understanding them enough to make use of "teachable moments."
2. State objectives in terms of desirable behaviors of learners.
3. Identify key concepts basic to your unit.
4. Develop a more complete understanding by formulating facts, principles and generalizations related to the key concepts.
5. Select methods of teaching to be used in each of the ten classes of a certain specified time.
6. Identify the student experiences which will help students to understand the generalizations, principles and facts important to their learning.
7. Plan for evaluation of the success of your teaching in terms of changed behavior of the students.

Summary

The literature reviewed was concerned with that which would assist the writer in conducting a survey and planning and presenting a nutrition education program in which the total community was involved. It

is hoped that nutrition educators can teach nutrition information in such a way that students may be convinced of the importance of wise food selection to the extent that good food habits will become a regular practice.

Included in this chapter is a review of literature which cites various phases of research concerning food habits. The School Lunch Program and the policies as they affect children were reviewed. The second phase of this chapter considered factors influencing food acceptance. Part three of this chapter was devoted to methods of nutrition education.

An analysis of data, conclusions and recommendations for further study follow.

CHAPTER III

PRESENTATION AND ANALYSIS OF DATA

Introduction

The presentation and analysis of data is divided into five parts, (1) the description of the students studied, the school and community in which the study was made, (2) the survey used and the data it provided concerning the students studied, (3) comparison with the state survey, (4) the nutrition education program in which the total school and community were involved, and (5) the data from the second survey, compared to that of the first survey.

Description of Students Studied, School and Community

The selection of the Howe School was made for this study since this was where the writer held the position of Vocational Homemaking Teacher. She was able to undertake the nutrition education program in a scheduled period for Nutrition Education. Some nutrition education had been done but nothing so comprehensive as a program with community involvement.

The Howe School of Leflore County with an enrollment of 260 students is located in a small southeastern Oklahoma town of 350 people. Students attending the Howe School live on livestock farms within the 17½ square mile school district or within the small rural town. Howe is located 12 miles southwest from Poteau; the county seat town has a

bank, several small industries and numerous businesses, which provide employment for some parents of the students attending the school in Howe. Many families live on welfare. The income level of the families in the Howe area might be considered to be low, judging by the occupations of the heads of households.

Description and Data of Students

Description of Group

Students enrolled in grades 2, 3, 5, 7, 8, 9, 10, 11 were selected for the study. Grade 12 was not selected since the students would be away from school on a trip when the second survey would be made. It seemed necessary to use elementary, junior high, and high school students in the study, to determine food habits of different age groups. Time did not allow one to obtain data from all classes on the same day, so the decision was made to skip some grades in the elementary school. There were 157 students out of the 260 enrolled who participated in this study. Students were grouped by grade level for this study and asked to fill out the survey forms when all in one grade were assembled in the same room. Table I shows the number and sex by grade level of students participating in the study. The number of males and females is shown by grade, as well as the total number of each sex used in the study. The division of grades as shown in Table I was made for the preparation and presentation of nutrition education materials. For this study we referred to elementary as grades 2 and 3, intermediate grade was 5, junior high was grades 7 and 8, and high school was grades 9, 10 and 11. Grade 9 was placed in high school since this is the administrative division for the Howe School.

TABLE I
NUMBER AND SEX BY GRADE OF STUDENTS PARTICIPATING IN THE STUDY

Grade in School	Male	Female	Total
Elementary			
2 and 3	10	10	20
Intermediate			
5	12	12	24
Junior High			
7	12	11	23
8	11	11	22
High School			
9	14	14	28
10	13	12	25
11	7	8	15
Total	79	78	157

Similarly to the previous table, Table II shows the number of students by age who were used in this study. The greatest proportion of the students were in the 13-17 age group.

Occupation of Head of Household

Students were asked to indicate the occupation of fathers. This information, as reported, was coded into numbers to designate an occupation category. Appendix B. In Table III the major occupation

TABLE II
NUMBER OF STUDENTS BY AGE

Age	7	8	9	10	11	12	13	14	15	16	17	Total
Number	6	12	2	14	7	14	20	27	27	20	8	157

TABLE III
NUMBERS OF FATHERS EMPLOYED IN VARYING OCCUPATION
CATEGORIES AS REPORTED BY STUDENTS

Occupation Category	Number of Students Reporting
1. Professional, technical, and kindred	10
2. Farmers and farm managers	13
3. Managers, officials, and proprietors, except farm	6
4. Clerical and kindred workers	2
5. Sales workers	3
6. Craftmen, foremen, and kindred workers	11
7. Operatives and kindred workers	17
8. Service workers, except private household	20
9. Laborers, except farm and mine	39
10. Private household workers, other specified, and unknown	36
Total	157

categories are listed and are numbered with those numbers used in coding. The numbers on the right indicate totals students reported concerning fathers occupation. Most of the students whose parents are employed in category 1 are children of the teachers. Most of those whose parents are reported as employed in category 2, own their own property and raise cattle. Most of those reported as employed in categories 3-10 work in some other town. Those receiving welfare were considered to be in category 10. The majority (95) are occupied in what might be considered a low income group. The next largest group (28) is made up of categories 6 and 7 which might also be considered low income groups.

Selection of an Instrument

Many survey forms were studied in a search for a suitable one to obtain information on food habits. After careful consideration, it was decided to use the same survey form, Appendix A, page 71, as was recently used in an Oklahoma Survey by the State Board of Education, School Lunch Division in cooperation with the Vocational Home Economics Division and the Department of Public Health. Permission was granted for the use of this form as well as the code sheets. The code sheets were used to transfer information obtained from the survey form into a form for data processing. The State nutrition coordinator, provided the survey forms used in the study, the code sheets for preparation of information for the computer, and the instructions for the administration of the survey.

The survey form was one page, on which students reported the foods they had eaten for the entire preceding day, including breakfast,

mid-morning snack, noon meal, afternoon snack, evening meal, and evening snack. Students also reported an estimated amount of each food eaten. Dishes of varying sizes were used in an effort to make this estimate as accurate as possible. Students were asked to indicate other information which was, grade, room number, sex, parents occupation, and the number of people living in the home. There was also space provided for students to indicate whether or not they were taking vitamin or mineral supplements, and where they ate their noon meal. The form also provided space to number foods in a column labeled "Item Number." The item number referred to specific foods within each food group used. The food groups were numbered, using the "Basic Seven" as a pattern for division of foods. Two other food groups were added, making a total of nine.

Cooperation of Students, School and Community

School Personnel

The approval and cooperation of administrators to conduct the survey of classes was sought. The survey form and the information which was hoped to be gained was explained and noted. The efforts to be made toward community involvement through a school program were outlined.

A teachers meeting was scheduled at which an explanation of the survey form and the proposed study were discussed. Teachers were asked to fill out a survey form so the exact content could be learned and to gain some familiarity with the information to be obtained. Goals to be achieved in the proposed study were noted and discussed. The help of teachers was requested for guidance of learning experiences at the

elementary and junior high levels and in the selection of materials for use in nutrition education. The teacher's cooperation, patience and assistance were gained. Elementary teachers expressed a desire for an "in service" class at some date in the near future.

Students

The next step was to gain the cooperation of the student body through the Future Homemakers of America and the Student Council. First, there was a planning meeting with the executive officers of the Future Homemakers of America, at which the proposed study was reviewed and explained. As a result it was agreed to make plans for the year's program which emphasized nutrition education. We used the Plan of Work from the state and national FHA offices as a guide. We selected objective 1: "To help each family member to recognize his abilities and strive for their full development" with the project - "Good Health a Valuable Asset" as a basis for development of program plans.

A group made up of both boys and girls seemed advisable for closer communication with the student body. A ready made organization, the Student Council could fulfill the requirements. It was felt that leaders in the high school, which made up this organization, could make valuable contributions and give assistance to the nutrition education efforts through a so called Student Board. This group was very helpful, in taking suggestions from the student body, assisting with menu planning for School Lunch and acting as a "spring board" for motivation ideas and plans.

Community

An Advisory Committee, made up of community leaders was formed, in order to gain the cooperation of the public. Five community members were contacted who agreed to serve in an advisory capacity. These included two ministers, the president of the school board and two mothers. At the first meeting, goals and objectives of the proposed study were noted and discussed. The survey form was explained so exact content could be learned and some familiarity with information obtained. The cooperation of these people was made a reality through their action as intermediaries between the home and the school.

Administration of the Survey Form

The first survey was taken to determine food intake of subjects so food habits could be determined. All grades, used in this survey, were asked to fill out the forms on the same day. One survey was taken on Monday, for information on food eaten in the home the day before. The remaining days were selected so that they would not be consecutive and would fit in the schedule of administrators. Students did not know when to expect surveys. If a student happened to be absent on a day a survey was made, he filled out his questionnaire on the first day he was back in school. Each student used in the study filled in four survey forms. Students were grouped by grade level to fill out the survey forms, with all in the same grade assembled in the same room. Home-making II students filled out the survey forms for elementary students with the answers provided by the children. The writer took the survey in the upper grades. Dishes of varying sizes were used which had been provided for the purpose of an accurate estimation of the size of

servings. The code sheets were used to fill in an item number for each food consumed, provided a sufficient quantity was reported.

The item numbers were then totaled, averaged, and measured by the National Research Council Recommended Daily Dietary Allowance to determine adequacies or inadequacies. The numbers used were also an indication of nutrients.

Arrangements were made through the College of Home Economics at Oklahoma State University for use of the computer service. A program was planned with assistance from a programmer. Data sheets were obtained for recording information from the food survey in a form usable by the computer service, and the objectives of the study were provided by the writer for use by the person who compiles and reads data by use of the computer.

Two of the students transferred the numbers to the IBM Data Sheets, under the supervision of the writer. These sheets were transferred to the computer laboratory to be computerized. The data provided by the computer is listed below:

1. Number and percentage of students participating in School Lunch
2. Occupation of head of household
3. Sex, age, grade
4. Numbers and percentage of students receiving Recommended Daily Dietary Allowances.
 - (a) 0 - 33%
 - (b) 33-66%
 - (c) 66-100%
 - (d) Over 100%

5. For each student the percentage of the following Recommended Daily Dietary Allowances.
 - (a) Protein and Iron
 - (b) Calcium
 - (c) Vitamin A
 - (d) Vitamin C
 - (e) Thiamin, Niacin, Riboflavin
6. Number and percentage of students having servings of all the food groups during the survey.
7. (a) Number and percentage of students participating in school lunch receiving at least 1/3 of Recommended Daily Dietary Allowances.
 - (b) Number and percentage of students eating lunch elsewhere receiving at least 1/3 of Recommended Daily Dietary Allowances.
8. Number and percentage of students reported missed breakfast.

Data from the First Survey

Breakfast Report

Students were asked to list kinds and amounts of foods eaten at meals, between meals and before bed time. If they failed to eat a meal, they were to leave the space provided for such listing, blank. The data obtained on breakfasts eaten is shown in Table IV. Almost one-fourth of the students surveyed reported they ate no breakfast. Fewer students reported they ate breakfast on Day 3 than any other day. The majority of the students reported eating breakfast on Day 1 however; this number was not consistent. It may have been that students felt this information was unimportant, particularly on Day 3 since 65 made

no effort to answer the question.

TABLE IV
REPORT OF STUDENTS BREAKFAST CONSUMPTION

Breakfast Report of Students	Day 1 No. of Students	Day 2 No. of Students	Day 3 No. of Students	Day 4 No. of Students
As eating breakfast	127	116	82	110
As not eating breakfast	30	41	10	47
No data secured	0	0	65	0
Total	157	157	157	157

Basic Seven Food Groups

Foods eaten were placed in food groups when they were coded for the computer. Data obtained on servings of food groups is recorded in Table V. The information showed a surprising number of children who reported having servings in all of the Basic Seven Food Groups. There were 104 who reported foods consumed from each of the food groups. This is approximately 2/3 of the total group. Thus, approximately 2/3 of the total group reported that they ate a sufficient variety of foods to provide a nutritionally adequate diet.

TABLE V

NUMBER AND PERCENTAGE OF STUDENTS WHOSE SURVEY FORMS INDICATED
FOODS WERE CONSUMED FROM EACH OF THE BASIC SEVEN FOOD GROUPS

Students	Number of Students	Percentage of Students
Consuming Foods from each of the Basic Seven Food Groups	104	66.4
Not Consuming Foods from each of the Basic Seven Food Groups	53	33.1
Total	157	99.5

Recommended Daily Dietary Allowance

Amounts and foods eaten as reported by students were placed in food groups, numbered, averaged, and then were compared to the Recommended Daily Dietary Allowances to determine adequacies or inadequacies in their diets. This information was compiled into groups indicating percentage of Recommended Daily Dietary Allowance which was met. This information on the students involved in this study is reported in Table VI. The indication is that 128 out of 157 students failed to receive at least 2/3 of the Recommended Daily Dietary Allowance. Only 29 could be considered to be in the upper third as far as meeting the recommended nutritional requirements was concerned. This would indicate that even though they ate a sufficient variety of food as was reported in Table V, they failed to get a sufficient quantity of nutrients.

Nutrients

Table VII indicates clearly the deficiency of students in specific

TABLE VI
PERCENT OF RECOMMENDED DAILY DIETARY ALLOWANCE RECEIVED BY
STUDENTS IN SURVEY ONE

Percentage of Recommended Daily Dietary Allowance	Number of Students	Percentage of Students
0 - 33	37	23.8
33 - 66	91	57.1
66 - 100	29	18.7
Total	157	99.6

TABLE VII
AVERAGE NUMBER OF STUDENTS WHO RECEIVED VARYING PERCENTAGES
OF RECOMMENDED DAILY DIETARY ALLOWANCES OF
SPECIFIC FOOD NUTRIENTS

Food Nutrients	None	25% or Below	% 26-49	% 50-74	% 75-99	% 100	Over 100%	Totals
Protein and Iron*	50	0	0	33	0	28	46	157
Vitamin C	92	0	0	0	0	39	26	157
Thiamine, Niacin and Riboflavin	41	30	0	41	29	13	3	157
Calcium	57	0	0	26	0	54	20	157
Vitamin A	24	0	0	56	0	77	0	157

*Protein and Iron are grouped together for this study as the list of foods for iron includes protein-rich foods that supply at least one milligram for serving.

nutrients. There was a marked failure on the part of the students to include in daily food consumed, citrus fruits, and foods rich in Vitamin C, milk and milk products, meats, and breads and cereals. The lack of food nutrients reported indicates need for improvement in food habits. The Recommended Daily Dietary Allowance was designed for the maintenance of good nutrition of practically all healthy persons in the United States. (33)

Types of Lunches

The survey form asked that an indication be made of where lunch was consumed. There were five different choices for answers. The student was asked to indicate the choice nearest that which he did if the exact description was not listed. Table VIII indicates that a slight majority of the students ate Type A School Lunch; however, almost as many (53) brought lunch from home. Thirty six students bought lunch elsewhere. More students reported having a Type A School Lunch every single day of the four days surveyed than reported any other type of lunch. More of the students reported having eaten the Type A Lunch every single day of the four days surveyed than reported any other type of lunch. The largest number (70) ate in the lunchroom on Day 4 than on any other single day. More of the students (54) reported having eaten lunch brought from home on Day 4 than on any other day. More bought lunch elsewhere on Day 3 than on any other day. The average of students reporting on types of lunches consumed indicates that 58 ate Type A School lunch daily, 53 brought lunch from home, 36 bought lunch elsewhere, 10 went home for lunch and none skipped lunch.

TABLE VIII
NUMBER AND AVERAGE OF STUDENTS WHO REPORTED TYPES OF LUNCHES
CONSUMED BY DAYS

Types of Lunches	Numbers by Day				Average for 4 Days
	Day 1	Day 2	Day 3	Day 4	
Had Type A School Lunch	61	54	49	70	58
Brought lunch from home	53	50	53	54	53
Bought lunch elsewhere	31	40	48	26	36
Went home for lunch	12	13	7	7	10
Totals	157	157	157	157	157

Participants and Non-Participants of Type A School Lunch Receiving
1/3 Recommended Daily Dietary Allowances

When the meals not eaten in the School Lunch Room were analyzed, it was found that students who participate in the Type A School Lunch are better off nutritionally than those who do not. The lunch room is recognized as a place where the foods served may help overcome nutritional inadequacies. A Type A Lunch Program is required to meet 1/3 of the National Research Council Recommended Daily Dietary Allowance both in quantity and quality with each meal served. A comparison of the students who received 1/3 of the Recommended Daily Dietary Allowance who participated in the Type A School Lunch with those who did not participate in a Type A School Lunch is shown in Table IX. Indications were that more students who did participate received 1/3 of the Recommended Daily Dietary Allowance (62.4%) than who did not participate (37.6%).

TABLE IX

COMPARISON OF STUDENTS RECEIVING 1/3 OF THE RECOMMENDED DAILY
DIETARY ALLOWANCES WHO WERE PARTICIPANTS AND
NON-PARTICIPANTS IN TYPE A SCHOOL LUNCH

	Number of Students	Percentage of Students
Participants in Type A School Lunch	98	62.4%
Non-participants in Type A School Lunch	59	37.6%
Totals	157	100.0%

Comparison with Data from the State Survey

Table VII indicates clearly the deficiencies of students in certain nutrients when the foods reported eaten were analyzed for nutrients they contained. These nutrients were protein and iron, Vitamin C, Vitamin A, and Calcium. The State Food Habit Survey as reported in Chapter II, page 11 also shows students were found to be lacking in the same nutrients which were protein and iron, Vitamin C, Vitamin A and calcium. This information strengthened the Food Habit Survey results at Howe. There was now a real indication of need for nutrition education.

Nutrition Education

The second objective of the study was to plan a nutrition education program that would help overcome inadequacies. The third objective was to involve the total school and community in the nutrition education.

program. The next step then was to plan a concentrated nutrition education program which would involve as many community members, teachers, and students as possible. The length of time allotted for this effort was three months. Program plans were made and carried out for the specified period of time and efforts were made to involve as many persons as possible.

In nutrition education, material was included on breakfasts and breakfast patterns. The contributions of a well balanced noon meal such as the Type A Lunch were included. Other lunch patterns were also discussed. The selection of better quality of foods every day was emphasized particularly those rich in protein, iron, calcium, Vitamin A and Vitamin C. These materials were included because in the Howe and the State Survey, showed the need for this emphasis.

Future Homemakers of America

The Future Homemakers of America made plans to emphasize nutrition education in their programs for the year. The programs were planned and rehearsed in class and presented to all the girls in high school at the FHA meetings. We then presented the same program on Fridays in assembly, which the student body, teachers and parents attended.

An example of one FHA program which was effective in the chapter and assembly was a panel discussion. Three FHA mothers and three Junior FHA girls used the topic: "The homemakers problem - good nutrition, limited budget, likes, and dislikes." One mother and a student focused on good nutrition; another mother and student worked primarily with limited budget; the third mother and student elaborated on likes and dislikes. A short skit involving other members of the Junior Class

was used to emphasize the main points brought out in the discussion.

Student Council

The Student Council was involved directly with all the student body since members took suggestions for planning nutrition education experiences from students in both the elementary grades and the high school. They talked over the ideas and plans together, then if it was felt the idea was worthwhile, it was suggested to the writer. One of the ways this group helped the most was by planning menus, using student suggestions, when possible. This made the Student Council feel very important. They did have a responsible job and did it well. This group was instrumental in getting the pop and candy machines to remain closed until after lunch. The participation of this group in the School Lunch Program helped to encourage other students to eat the Type A Lunch. Another factor to be considered when we think of increased School Lunch participation was guided student help with menu planning. One girl remarked, "This is like planning what you want to eat at home, then not having to bother to cook it or clean up the kitchen later."

A Nutrition Education Unit Taught by Student

The Homemaking II Class was more directly involved than the other home economics classes as they were studying foods during the period of time allotted for nutrition education. The class studied nutrition; then each girl did a home experience in the area of foods and a special project in nutrition education for the elementary and junior high school students. The girls were asked to volunteer for the grade in

which they wished to teach nutrition education, then each one worked individually on the lesson plans for that class. They started preparation by a study of developmental tasks for the age group they were to work with in class. Then they set up objectives and goals and learning experiences for the writer's approval. More discussion was held before the final plan was ready to be evaluated and presented to class members. After the material was evaluated in class, the student made corrections, if needed, then went to the group for which she had made preparation and actually taught the class a lesson or unit. In some instances the same lesson plans were used for two or three different grades. Some very fine things came out of this class experience, since students were really doing two things, learning nutrition, and getting some basic information on childrens' development. The students enjoyed every minute of this nutrition education program.

One girl expressed the thrill she had received as a result of this experience when she was down town and saw a little girl whom she had taught the day before. The child waved to her and said, "Hello teacher," then turned to her mother and told her that was her nutrition teacher. More important than this, was the fact that children thought about food and talked about food as they came to know that nutrition makes a difference in growth, fitness, endurance, prevention and recovery from disease, appearance, body performance and even length of life.

Classes taught focused on positive approaches and ways and means of achieving dietary adequacy, by building on good food habits which already exist. Students emphasized the broad picture of good nutrition and ways of attaining good food habits. An example of a unit taught by a sophomore girl to grades 7-8-9 follows:

- Goal - To develop understanding that certain foods have special importance.
- To learn that choosing a combination of such foods in meals regularly is the basis of good food habits.
- Day 1 - An acceptable breakfast pattern, Fruit, Main Dish, Milk, Bread, includes foods from different groups.
- Foods were listed in each of these food groups.
 - A breakfast was planned by the class using foods from each group.
 - Each child planned a breakfast using suggested foods.
- This paper was handed to the student teacher.
- Day 2 - An acceptable lunch pattern, Main Dish, Fruit-Vegetable, Bread, Butter, Milk, includes foods from different groups.
- Foods were listed in each of the food groups.
 - The Type A Lunch Pattern was taught as a good one for boys and girls to follow in quality and quantity.
 - A Type A Lunch was planned by the class using foods from each group.
 - Each child was given the assignment to plan a Type A Lunch.
- Day 3 - Papers assigned were collected.
- Children were asked to write down what they had eaten for breakfast and lunch that day.
 - Breakfast and luncheon patterns taught were reviewed.
 - Each student rated himself on foods eaten with "good", "fair", or "poor".
 - Papers were collected for teacher evaluation.

- Day 4 - Breakfast and Luncheon Patterns taught were reviewed.
- Each student planned a breakfast and lunch following the patterns.
 - Papers were collected for evaluation.
 - Each listed foods eaten that day then exchanged papers with a classmate for rating "good", "fair", "poor".
- Day 5 - Students were asked to write down the breakfast pattern and lunch pattern taught then to plan a breakfast and a lunch using these patterns as a guide.
- Papers were collected for final evaluation.

The student who taught this unit said she had learned more about nutrition during preparation and teaching these students in junior high than she had ever learned before and that she felt that her learning would stay with her since it related so closely to basic every day food choices. This is typical of all lessons taught.

Vocational Agriculture Boys Classes

High school boys meet Vocational Agriculture at the same time girls of the same grade meet Vocational Homemaking. The boys were reached through the homemaking classes by meeting with the girls for two weeks for a "short course" on nutrition education. This group was taught by the writer. The boys enjoyed this class and so did the girls and they developed a better understanding of home economics and nutrition.

Community Members

The community members became involved indirectly by the

participation of their children in nutrition education classes, home-work assignments and attendance at assembly programs. The members of the Advisory Committee became involved directly since the writer met with them weekly to talk over any problems, and to report on progress. They in turn, told parents and other community members about the program. They gave suggestions and guidance to the writer. The Advisory Committee helped to let parents know that our interest was in strengthening and reinforcing good food habits the children had developed at home, and in the substitution of good habits for any poor ones they might have developed.

Advisory Committee

The members of the Advisory Committee said that they felt they were a real part of a school program and as a result became vitally interested and concerned in the nutrition of children. The school board member remarked to the writer one day that he had never known that what you ate was so important. He had always thought that the most important thing was to have enough to eat, and now he had learned that was not as important as the kind of food eaten.

Comparison of Results of First and Second Surveys

The results of the two food habit surveys and the nutrition education program which was conducted between the two surveys revealed that some changes on the part of the students were evident.

Breakfast Report

Comparison of the totals of students not eating breakfast and

students eating breakfast indicate there were more students eating breakfast during the second survey. Twenty percent of the students reported they ate no breakfast in the first survey and 17 percent reported no breakfast was eaten during the second survey. Sixty-nine percent reported eating breakfast in the first survey and 83 percent in the second survey. This is a gain of 14 percent.

TABLE X
COMPARISON OF BREAKFAST CONSUMPTION OF STUDENTS
DURING THE FIRST AND SECOND SURVEYS

Breakfast Report	Reports of Surveys			
	First Survey		Second Survey	
	Students		Students	
	No.	%	No.	%
<u>Day 1</u>				
As eating breakfast	127	80	129	82
As not eating breakfast	30	19	28	18
No data secured	0	0	0	0
<u>Day 2</u>				
As eating breakfast	116	74	133	85
As not eating breakfast	41	26	24	15
No data secured	0	0	0	0
<u>Day 3</u>				
As eating breakfast	82	53	131	83
As not eating breakfast	10	7	26	17
No data secured	65	40	0	0
<u>Day 4</u>				
As eating breakfast	110	70	128	82
As not eating breakfast	47	30	29	17
No data secured	0	0	0	0

Basic Seven Food Groups

A comparison of the average number and percentage of students whose survey forms indicated foods were consumed from each of the Basic Seven Food Groups during both surveys indicates there was a slight improvement. There were 12.2 percent more who reported eating foods from each of the Basic Seven Food Groups in the second survey than in the first survey. (Table XI)

TABLE XI

COMPARISON OF STUDENTS CONSUMING FOODS FROM EACH OF THE BASIC SEVEN FOOD GROUPS FOR THE FIRST SURVEY AND SECOND SURVEY

Students	Comparisons of Number and Percentage of Students			
	First Survey		Second Survey	
	Number	Percent	Number	Percent
Consuming foods from each of the Basic Seven Food Groups	104	66.3	123	78.5
Not consuming foods from each of the Basic Seven Food Groups	53	33.1	34	21.1
Totals	157	99.4	157	99.6

Recommended Daily Dietary Allowance

A comparison by number and percentage of students receiving the Recommended Daily Dietary Allowance by varying amounts, according to foods reported consumed, revealed only a very slight difference between

the results of the two surveys. The second survey showed 4.6 percent more received 1/3 of the Recommended Daily Dietary Allowance than in the first survey. The second survey showed 2.04 percent more received 2/3 of the Recommended Daily Dietary Allowance than in the first survey.

The Second survey showed 6.5 percent less who received 2/3 to 3/3 of the Recommended Daily Dietary Allowance than in the first survey. Although the number of students who had the poorest diets showed some improvement, those with the more adequate diets tended to decrease in number. (Table XII)

TABLE XII

COMPARISON OF STUDENTS CONSUMING RECOMMENDED DAILY DIETARY ALLOWANCE BY VARYING AMOUNTS IN SURVEYS I AND II

Percentage of Recommended Daily Dietary Allowance	Number of Students First Survey		Percentage of Students Second Survey	
	Number	Percentage	Number	Percentage
0 - 33	37	23.8	44	28.4
33 - 66	91	57.1	94	59.1
66 - 100	29	18.7	19	12.1
Totals	157	99.6	157	99.6

Nutrients

Averages of students involved in each of the total surveys who

received varying percentages of Recommended Daily Dietary Allowances of specific food nutrients indicates some students reported "None" in both surveys. Ten less reported that they had eaten foods rich in Vitamin A in the second survey, in the 50 percent to 74 percent category. There was, however, 1 more in the 100 percent category and 9 more in the over 100 percent category reporting more Vitamin A rich foods consumed in the second survey than the first survey. The reported consumption of Vitamin C indicates some improvement. There were 2 less reported in the "None" category, 8 less in the 25 percent or below category, 8 more in the 50 percent to 74 percent category, who reported foods consumed rich in Vitamin C during the second survey when compared with the first survey. There were 8 less in the 75 percent to 99 percent category during the second survey when compared with the first survey. Five more were in the 100 percent category and 5 more were in the "Over 100 percent" category, during the second survey than was reported in the first survey. The consumption of protein and iron showed a definite trend toward improvement during the second survey. Four more in the 25 percent or below category reported eating food rich in protein and iron. Forty one less in the 26 percent to 49 percent category reported foods consumed rich in iron and protein. Only 2 more in the 50 percent to 74 percent category reported more iron and protein consumption. Twenty three more in the 75 percent to 99 percent category reported eating foods rich in iron and protein during the second survey. Sixteen more in the 100 percent category and 6 less in the over 100 percent category reported iron and protein consumption during the second survey. (Table XIII)

TABLE XIII

COMPARISON OF AVERAGE NUMBER OF STUDENTS WHO RECEIVED VARYING PERCENTAGES OF RECOMMENDED
DAILY DIETARY ALLOWANCES OF SPECIFIC FOOD NUTRIENTS

Food Nutrients	Students Receiving													
	None		25% or Below		26% to 49%		50% to 74%		75% to 99%		100%		Over 100%	
	Survey		Survey		Survey		Survey		Survey		Survey		Survey	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Vitamin A	19	19	0	0	0	0	38	28	0	0	42	43	58	67
Vitamin C	19	17	40	32	0	0	40	48	29	21	14	19	15	20
Protein, Iron*	0	0	13	19	52	11	20	22	28	51	14	30	30	24
Calcium	7	5	51	57	56	50	39	37	2	8	2	0	0	0
Thiamine, Niacin, Riboflavin	0	0	39	4	62	58	52	52	4	41	0	2	0	0

* Protein and Iron are grouped together for this study as the list of foods for iron includes protein-rich foods that supply at least one milligram per serving.

Types of Lunches

When an average of the total number of students for each of the four days surveyed was made there were certain indications concerning the types of lunches reported eaten. Eighteen more reported eating Type A School Lunch in the second survey than in the first survey. There were 31 less who brought lunches from home than was reported by students during the first survey. There were 12 less who bought lunch elsewhere than was reported in the first survey. Twenty one more during the second survey went home for lunch than during the first survey. (Table XIV)

TABLE XIV
COMPARISON OF AVERAGE NUMBER OF STUDENTS WHO
REPORTED TYPES OF LUNCHES CONSUMED

Types of Lunches	Number and Percentage of Students			
	First Survey		Second Survey	
	Number	Percent	Number	Percent
Had Type A Lunch	58	37.2	76	48.8
Brought lunch from home	53	33.0	22	13.9
Bought lunch elsewhere	36	23.1	24	15.0
Went home for lunch	10	6.2	31	19.7
Had no lunch	0	0	4	2.0
Totals	157	99.5	157	99.4

Participants and Non-Participants of Type A School Lunch
Receiving 1/3 of Recommended Daily Dietary Allowances

A comparison of the results of the two surveys concerning students receiving 1/3 of the Recommended Daily Dietary Allowance who participated in Type A School Lunch and who did not participate, (Table XV), revealed an increase of 12.6 percent. This shows some evidence that more students were receiving the needed nutrients who participated in Type A School Lunch than those who did not participate.

TABLE XV

COMPARISON OF STUDENTS RECEIVING ONE THIRD OF THE RECOMMENDED
 DAILY DIETARY ALLOWANCE WHO WERE PARTICIPANTS AND
 NON-PARTICIPANTS IN TYPE A SCHOOL LUNCHES

Students	First Survey		Second Survey	
	Number	Percent	Number	Percent
Participants in Type A School Lunch	80	50.1	98	62.7
Non-Participants in Type A School Lunch	77	49.7	59	37.9

Summary

The food habits of the Howe school children were surveyed on four separate days. The survey revealed that almost 1/4 of the children were not eating breakfast. Two thirds reported they ate a sufficient variety of foods to provide a nutritionally adequate diet; however,

when foods reported eaten were placed in food groups by numbers, averaged, and compared to the Recommended Daily Dietary Allowances to determine adequacies or inadequacies in their diets, they failed to receive a sufficient quantity of nutrients. Students were found to be lacking in the specific nutrients--protein, iron, Vitamin A, Vitamin C, and calcium. A report on the types of lunches consumed revealed that more students reported having eaten the Type A School Lunch every single day of the four days surveyed, than reported any other type of lunch. Participants and non-participants of the Type A School Lunch, meeting 1/3 of the Recommended Daily Dietary Allowances, were compared. Indications were that more students who did participate in Type A School Lunch received 1/3 of the Recommended Daily Dietary Allowances.

This compared closely to findings reported from an identical survey made by the State of Oklahoma.

A nutrition education program was planned which would involve the total school and community. A period of three months was devoted to a concentrated nutrition education program in which the students in elementary, junior high, and senior high school, as well as teachers, administrators, parents, and other community members at Howe were involved.

A second survey, following the nutrition education program showed some slight improvements in the food habits of students. The survey revealed that over one half of the students reported eating breakfast. Two thirds reported they ate a sufficient variety of foods to provide a nutritionally adequate diet. Foods reported eaten were placed in food groups by numbers, averaged, and compared to the Recommended Daily Dietary Allowances to determine adequacies or inadequacies in the diets.

Indications were that a very small number more received a sufficient quantity of nutrients. Students were still lacking in the nutrients--protein, iron, Vitamin A, Vitamin C, and calcium. A slight increase in participation of Type A School Lunch was found. Participants and non-participants of the Type A School Lunch, meeting 1/3 of the Recommended Daily Dietary Allowances, were compared. Indications were that more students were receiving the needed nutrients who were participants in Type A School Lunch than were the non-participants.

CHAPTER IV

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

This chapter contains three parts: (1) A summary of the study, (2) Conclusions arrived at as a result of this study, and (3) Recommendations for further study.

Summary

One hundred fifty seven students in elementary, junior high and senior high school were selected from the school in Howe, Oklahoma, for a food habit study. This study was made to see if food habits leading to poor nutrition of school children could be influenced through presentation of a nutrition education program involving the total school and community.

The objectives of this study and steps taken to reach them follow:

1. To determine nutritional inadequacies that were evidenced in the food habits of school children at Howe, Oklahoma.

In order to reach this objective, a food habit survey form was selected which would determine nutritional inadequacies that were evidenced in the food habits of school children. The survey was administered, data collected, and analyzed to determine specific objectives for a nutrition education unit. Data from this survey was compared with that from a recent state survey.

2. To plan a nutrition education program that would help overcome

inadequacies.

A nutrition education program was planned based on individual needs. On the basis of inadequacies determined from the surveys, a nutrition education program was planned with the students in Home-making II Class. The length of the unit was three months.

3. To involve the total school and community in a nutrition education program.

The total school and community were involved in a three month "concentrated" nutrition education program. The administrators, teachers and the entire student body were included in the plans. School organizations were also included. In addition, community leaders acted as liaisons between the school and community.

4. To evaluate the nutrition education program.

A second survey was administered, data collected and analyzed to determine food habit changes that may have occurred.

Conclusions

The conclusions based on the results of this study follow:

The data revealed that students lacked certain specific nutrients as a result of food habits. The nutrients lacking were protein and iron, Vitamin C, Vitamin A, and calcium. This evidence showed a need for improvement in food habits.

A short nutrition education program involving students, teachers, and community members was found to be effective in producing a slight improvement in food habits, which was noted following a short nutrition education unit. Perhaps a concentrated effort over a longer period of time would have produced a greater change.

Interest was developed and a better understanding of nutrition resulted. School personnel and community members were enthusiastic and cooperative in the surveys and the learning experiences concerned with the nutrition education program. Appreciation was developed for the Vocational Homemaking and School Lunch Programs.

The reporting done by students on the survey showed some inconsistencies. Students needed to have more detailed instructions to understand the importance of accuracy. When students are asked to fill in survey forms for elementary students, they need careful instructions.

The computer service is a great time saver. The use of the computer enables the researcher to get more accurate analysis of large numbers of surveys.

Recommendations for Further Study

Some recommendations for further study, based on the analysis of this data are:

1. A longer and more continuous nutrition education program with a long time plan to help overcome inadequacies in food habits is needed. Some slight improvement was noted in food habits after a short term nutrition program. Perhaps a longer period of time would bring changes which would produce improvement to the extent that inadequacies would be overcome.

2. Include the cooperation of medical personnel to determine children who show physical evidence of nutritional inadequacies. A professional person would be qualified to give an accurate account of physical evidence of nutritional inadequacies and perhaps the enlistment of qualified professional personnel would help emphasize the

importance of nutrition to students.

3. A case study of children who show evidences of extremely poor food habits would prove helpful. Such studies could produce much valuable information concerning food habits.

4. Some effort should be made to determine foods and quantities of food actually eaten. A fairly reliable way to determine food habits of students in a situation such as this group at Howe would be by making spot checks at the grocery stores. Another way would be that of cross checking reports with those of parents and brothers and sisters. Plate waste in the School Lunch room could be checked for food consumption there.

5. One should have some knowledge of the use of the computer service, if data is to be obtained from the computer. A clear understanding of the kind and amount of information that the computer can reveal should precede the planning of the study.

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APPENDIX A

FOOD SURVEY FORM

FOOD HABIT SURVEY FORM

Student Name _____	Date _____
1. County Number _____	8. Student Age _____
2. City Number _____	9. Parent's Occupation _____
3. School Number _____	10. Family Income Level _____
4. Grade _____	11. Appearance _____
5. Room Number _____	12. How many people _____
6. Student Number _____	live in your home? _____
7. Sex _____	

RECORD OF FOOD EATEN

Taking Vitamins or Mineral Supplements (yes or no) _____

<u>BREAKFAST</u>	<u>Item Number</u>	<u>Amount</u>
1. _____		
2. _____		
3. _____		
4. _____		
5. _____		
6. _____		
<u>MID-MORNING SNACK</u>		
1. _____		
2. _____		
3. _____		
<u>NOON MEAL</u> <input type="checkbox"/>		
1. _____		
2. _____		
3. _____		
4. _____		
5. _____		
6. _____		
<u>AFTERNOON SNACK</u>		
1. _____		
2. _____		
3. _____		
<u>EVENING MEAL</u>		
1. _____		
2. _____		
3. _____		
4. _____		
5. _____		
6. _____		
<u>EVENING SNACK</u>		
1. _____		
2. _____		
3. _____		

APPENDIX B

CODE SHEET FOR FOODS LISTED

ON STUDENT SURVEY FORMS

FOOD GROUP	FOOD NO.	FOOD	SERVING
1	01	Asparagus, canned	1 Cup
	02	Broccoli	1 Cup
	03	Carrots, raw	1 Carrot
		cooked	1 Cup
	04	Beans, green, canned	1 Cup
	05	Leafy Green Vegetables, cooked	1 Cup
	06	Peas, canned	1 Cup
	07	Sweet Potato, Fresh - cooked	1 Potato
			or 1 Cup
	08	Pineapple	1 Cup
	09	Strawberries	1 Cup
	10	Citrus Fruit - Orange	1 medium
2		Juice	1 Cup
		Grapefruit	1/2
		Lemon	1 medium
	11	Cabbage, raw	1 Cup
	12	Green Pepper, raw	1 medium
	13	Tomatoes - canned	1 Cup
		fresh	1 Small
		juice	1 Cup
		Catsup	1 Tbsp.
	14	Blackberries	1 Cup
	15	Watermelon	4 x 8 inch wedge
3	16	Potatoes, Irish - Boiled	1 Potato
		Baked	1 Potato
		French Fried	10 Pieces
		Potato Chips	10 Chips
	17	Bananna	1 Small
	18	Cantaloupe	1/2 x 5 in., diameter
	19	Yellow fruits - Peach, fresh	1 medium
		Apricots, fresh	3 medium
		Plums, fresh	3 medium
		fruits, canned (add 1/2 serving of sweet)	
	20	Other dried fruits, Dates	1 Cup
		Raisins	1 Cup
	21	Other fruits, fresh canned	1 Cup
	22	Cherries	1 Cup
	24	Cabbage, cooked	1 Cup
		Sauerkraut	1 Cup
	25	Cauliflower, cooked	1 Cup
	26	Corn, canned	1 Cup
	27	Other vegetables, cooked	1 Cup
	28	Other vegetables, raw - celery	1 Stalk
		cucumbers	6 Slices
		lettuce	1 Head
	29	Lima Beans	1 Cup
	30	Blackeyed or Cow Peas	1 Cup

FOOD GROUP	FOOD NO.	FOOD	SERVING
4	31	Buttermilk, cultured, skim	1 Cup
	32	Milk, whole	1 Cup
		Chocolate milk	1 Cup
	33	Custard	1 Cup
	34	Puddings, cream filling	1 Cup
	35	White sauces	1 Cup
		Gravy made with milk	1 Cup
	36	Cheese, cheddar type	1 cu. in.
	37	Cheese, cottage, skim	1 Cup
	38	Cream, light	1 Tbsp.
	39	Ice Cream	1 Cup
5	42	Cod, Haddock, cooked	3 ounces
	43	Hallibut, herring, tuna, whitefish, cooked	3 ounces
	44	Salmon, canned	3 ounces
	45	Beef, lamb, veal	3 ounces
	46	Fowl	3 ounces
	47	Liver	2 ounces
	48	Luncheon meats - Franks	2 ounces
	49	Pork Ham - cooked	3 ounces
	50	Eggs	1 whole
	51	Legumes, Dry Beans, cooked	1 Cup
	52	Nuts - Peanut Butter	1 Tbsp.
		Pecan Halves	1 Cup
		Walnut Halves	1 Cup
		Peanuts	1 Cup
		Almonds	1 Cup
6	55	Whole Grain Enriched Cereal	
		Bread	1 Slice
		Crackers, graham	2 medium
		Cooked cereal	1 Cup
		Prepared cereal	1 Cup
		Spaghetti - Macaroni	1 Cup
		Cornbread	1 muffin
	56	Wheat germ	1 Cup
7	58	Butter or Margarine	1 tsp
8	61	Refined cereals - Soda Crackers	2 crackers
		Pancake	1 4" in dia.
		Popcorn	1 Cup
	62	Sugar-Jam-Jelly-Honey-Syrup	1 Tbsp.
		Soft Drink	8 oz bottle
		Plain Jello	1 Cup
	63	Candy bar	1 Bar
	64	Molasses, blackstrap	1 Tbsp.

FOOD GROUP	FOOD NO.	FOOD	SERVING
9	67	Cake (1 serving added if iced)	2½ cu. in.
	68	Cookies	1 Cookie
	69	Pie Crust	Shell
	72	Bacon	2 Slices
		Salt Pork	1 cu. in.
		Mayonaise	1 Tbsp.
		French Dressing	2 Tbsp.
	73	Gravy, no milk	¼ Cup

CODES FOR COMBINATION FOODS

Potato Chips (5¢ package) 16 - ½; 72 - 1
 Fried Potatoes (1 serving) 16 - 1; 72 - 1
 Fritos (5¢ package) 26 - ½; 72 - 1
 Coke or soft drink Small 62 - 1
 Large 62 - 2
 Doughnuts 67 - 1; 72 - 1
 Chocolate milk (½ Pint) 32 - 1; 62 - ½
 Cocoa (½ Pint) 32 - 1; 62 - ½
 Fried Egg 50 - 1; 72 - ½
 Pecan Pie 69 - 1; ½ - 52; 1 - 34; ½ - 72
 Chili (½ Cup) 51 - 1/3; 45 - 1/4; 13 - 1/4
 Tamales (½ Cup) 61 - 1; 13 - 1/4; 49 - 1/4; 72 - 1/4
 Sugared Cereal 62 - 1/2; 55 - 1

Soups will be coded under kind as:

Tomato--13
 Potato--16
 Beef/Vegetable--49 (homemade)
 61 (purchased)

Pies - Include Pastry 69
 Banana 17 - 1; 1/6 - 69
 Apple

Cereals - Add cream and sugar

Breads - Add butter, jelly, etc.

Salads - Use main base and one other ingredient if two
 or three are mixed; add salad dressing

Cakes - Add Icing

Information below the line on the form

8. Snacks
 - 0 - No snacks between meals
 - 1 - Supplementary milk
 - 2 - Other snacks
9. Missed meals (1 col.)
 - 0 - No missed meals
 - 1 - Breakfast only
 - 2 - Lunch only
 - 3 - Dinner only
 - 4 - More than 1 meal
10. Occupation of person who is the principal source of income (1 col.)
 - 0 - Professional, technical, and kindred
 - 1 - Farmers and farm managers, farm laborers and foremen
 - 2 - Managers, officials, and proprietors, except farm
 - 3 - Clerical and kindred workers
 - 4 - Sales workers
 - 5 - Craftsmen, foremen, and kindred workers
 - 6 - Operatives and kindred workers
 - 7 - Service workers, except private household
 - 8 - Laborers, except farm and mine
 - 9 - Private household workers, other specified, unknown
11. Income level
 - 1 - Less than 3,000
 - 2 - 3,000 - 7,000
 - 3 - 7,000 and Over
12. Sex and Age (1 col.)
13. Number in family

VITA

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Pollyanna Rogers

Candidate for the Degree of

Master of Science

Thesis: CONTRIBUTIONS OF VOCATIONAL HOMEMAKING AND SCHOOL LUNCH
PROGRAMS TO NUTRITION EDUCATION IN AN OKLAHOMA SCHOOL

Major Field: Home Economics Education

Biographical:

Personal Data: Born in Mansfield, Arkansas, August 2, 1921, the daughter of Mr. and Mrs. Allen C. Stringer. Was married September 20, 1941, to Donal E. Rogers.

Education: Graduated from Heavener High School, Heavener, Oklahoma, in May, 1939. Attended Eastern Oklahoma College, 1939-40; East Central State College, 1940-41, Texas Technological College, from January 1955-1957, graduating with a Bachelor of Science degree in Home Economics Education. Completed requirements for Master of Science degree at Oklahoma State University in May, 1969.

Professional Experience: 1957-58, Sixth grade teacher in Monument Public Schools, Monument Colorado. Vocational Home Economics teacher at Howe, Oklahoma, for seven years, 1958-65, taught the Gainful Employment Vocational Home Economics Class in C. E. Donart High School, Stillwater, Oklahoma, in the first semester 1965. Social Studies in Heavener High School second semester 1966. Vocational Homemaking at Howe High School, 1966-68. Area Consultant for School Lunch, State Department of Education, 1969.

Organizations: National and Oklahoma Education Association, American and Oklahoma Vocational Association, American and Oklahoma Home Economics Association, American and Oklahoma School Food Service.