THE TEACHER'S ROLE IN A COOPERATIVE EDUCATIONAL PROJECT TO IMPROVE EATING HABITS

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DEDICATED

To My Parents

Timothy and Mary Ellen Ryan

and

To the Parents

of

The Girls in the Elgin Homemaking Classes

Who have guided their daughters

in

Seeking true goals in life

PREFACE

Nutritionists are concerned about the poor diets of teen-age girls, both as to the effect on their own health and on their potentialities for motherhood. Personal observations of signs of malnutrition in high school girls led to a desire to help students improve their eating habits. The purpose of the study is to show the guidance role of the teacher in relation to students, parents, professional people, administrative personnel and other members of the community in a cooperative educational project designed to improve the eating habits of ninth grade girls in the Elgin, Oklahoma community.

Indications of the nutritional status were based upon findings in general health examinations and a study of seven-day student dietaries. Emphasis was placed on the importance of adequate breakfasts in meeting the recommended daily dietary allowance. The findings are based on individual records and anecdotal reports from students and parents, and are presented as an example of a stimulating teaching procedure and not as an authentic dietary study.

Indebtedness is acknowledged to the adviser, Miss Rowan Elliff, Associate Professor of Home Economics Education, for her guidance and continual encouragement throughout the study; to Dr. June Cozine, Head of Home Economics Education, Dr. Millie Pearson, Professor of Home Economics Education, and Miss Mary Currier, Associate Professor of Food, Nutrition and Institution Administration, for helpful suggestions for improving the study.

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The cooperation of the school administrators and fellow faculty members is gratefully acknowledged. Special appreciation is expressed to the ninth grade girls and their parents who participated in the study.

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CHAPTER I

THE IMPORTANCE OF A FUNCTIONAL NUTRITIONAL PROGRAM

The goal of homemaking education is to help individuals of all ages and both sexes lead more satisfying personal, home, and community lives. Adequate nutrition plays a very important part in the physical, social and emotional development of the individual; therefore it is of vital concern to the homemaking teacher that the nutritional status of those placed under her guidance is such that it will assist them in achieving a full life.

Selection of Problem

The writer wished to select a subject that would be beneficial to her community as well as increase her own professional competence. Observations of signs of malnutrition in adolescent girls, and a desire to help them improve their diets led to the belief that a local study would help students and their families become aware of dietary deficiencies and thus lead to the improvement of their nutritional status.

The apparent need for organized study of the nutritional problems prevalent in the Elgin community was reflected in several ways. Poor eating habits existed. A high percentage of students and adults were not eating breakfast. As money became scarce, a growing number of students were having only a candy bar and a soft drink for lunch. The desire to be thin influenced many girls to leave off breakfast and to omit foods high in protein. Possible malnutrition was indicated by the

frequent headaches of many of the girls who had acquired the habit of taking tablets for relief. Many students had cavities in their teeth; frequently teeth had been extracted. A few of the girls had pale complexions. Some cases of skin blemishes and acne existed. All of these factors made it evident that the nutritional status of the high school girls in the Elgin community needed to be improved. Therefore, the problem selected for study was How Can a Teacher Initiate and Guide a Cooperative Project to Help Students Recognize Their Nutritional Status, and Work Toward Improvement of Eating Habits?

Direction

Incentive for making the study came as a result of a survey of nutrition research which was part of a course entitled "Newer Trends in Nutrition." Further impetus came through experiences in making a study of breakfast patterns of high school students in a course entitled "Curriculum Workshop in Home Economics Education." This course was designed to give experienced teachers an opportunity to find ways of making their teaching more realistic, meaningful and usable. Advisors encouraged study of the nutritional status of high school students as a means of helping the students formulate and implement plans for the improvement of personal and family nutritional habits.

The ready cooperation of the local school administrators, the local doctor, the county health doctor and nurses, and the parents of the ninth grade girls gave the teacher encouragement to proceed with the study.

Community Background

An understanding of the type of people, their geographic conditions,

their social influences, their methods of making a living, and their sources of food supply is important in making a study concerned with nutritional habits.

The study was made at Elgin, Oklahoma, a small rural community with a population of four hundred twenty-eight. The town is located approximately eighty-five miles southwest of Oklahoma City and eighteen miles northeast of Lawton, the county seat of Comanche county. Part of the school district's south boundary adjoins the Fort Sill Military Reservation and the boundaries extend west to Medicine Park, a resort area. Its close proximity to Lawton and the Military Reservation has had an important effect on the community's economy and social life. Both places furnish employment for many families in the district. The Rural Electrification Administration furnishes electricity to a large majority of the district's rural residents.

The district is primarily agricultural; sixty per cent of the homemaking students come from rural homes. Diversified farming furnishes part of the family food supply as well as being the chief source of income for those families not employed outside the home. Many families, both in the rural and town area, possess home freezers or rent lockers to preserve beef, pork, fish, poultry and products from the gardens. Canning of vegetables and fruits is also commonly practiced. Dairy farmers produce milk for home consumption and for market. It is very important to note that the community produces, or is capable of producing, many of the foods needed in an adequate diet.

Modern farming methods, soil conservation, home improvement, increasing interest in 4-H, Future Homemakers and Future Farmers organizations, and the work of the churches of several denominations have increased the attractiveness of the rural homes. The support of the

members of the Lions Club has done much to further the development of youth organizations. The strong interest of the patrons in their school is shown by unaminous support for continued improvements and by the large attendance at school activities.

The home economics department is housed in a separate native-rock cottage and is equipped for teaching all units in the high school homemaking curriculum as well as adult classes in home improvement, family living, food, clothing, home nursing, and crafts.

Four years of homemaking are offered in high school. It is a required subject in the ninth grade and elective in the other three years. Seventy of the seventy-three high school girls were enrolled in the homemaking courses during the school year, 1953-54. There was an active chapter of the Future Homemakers of America with a local membership of fifty-five.

Philosophy of Education

A teacher's philosophy of life, her conception of the purposes of education, and her beliefs about the way an individual learns must be well formulated in her own mind before she attempts to guide others in learning.

The terms "Philosophy" and "Education" are used today with various connotations. Philosophy may be defined as the sum total of the principles that governs one's thoughts and actions. Philosophy is developed throughout life and is not confined to the wisdom of age, however, knowledge and experience may alter the philosophy as maturity advances. Education is defined by Webster as the disciplining of mind or character through study or instruction. Early in life the child is guided by "parental" or "social" discipline which should be replaced by a discipline

which is self-imposed as the child grows and develops.

Philosophic principles guide one in forming basic beliefs regarding the purpose of life and personal obligations. A critical examination and interpretation of facts and ideas is necessary in developing a workable philosophy. Science furnishes the factual knowledge, but only philosophy can give us the wisdom to interpret facts in terms of desires and purposes.[1] A philosophical technique of rationalization, good thinking and sound logic must be used in determining ultimate goals and values. Therefore, the total philosophic principles, which are in agreement with scientific facts, will ultimately determine the person's goal in a given branch of learning and the means he will use to attain that goal.

Knowledge, physical health and material possessions can do much to assist in producing happiness, but they alone will not satisfy man's nature. The happy, mature individual is one who has peace of mind, who has a feeling of responsibility for the welfare of others, who is able to get along with others, who feels needed, who has a personal feeling of accomplishment, and who has some preparation for making a living.

The purpose of the educator is to guide the development of the individual and to direct the use of all his abilities in a manner beneficial to himself and to the society in which he lives. To educate is to bring forth the fullness of man's personality; therefore the educator deals with every aspect of a person's life. Physical, social and spiritual development should accompany the mental development of youth. Education embraces the development of the person, as an individual and

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[1]Will Durant, The Story of Philosophy, New York; Garden City Publishing Co. Inc., 1943, 3.

as a member of society; hence the goals set must include the development of the whole person.

An awareness of the status of the learner is of assistance to a teacher in guiding people in making changes. Some of the pitfalls of present-day thinking are given below to indicate a need to change some of the behavior patterns of students. There is a growing tendency to use as a criterion for judging right in terms of the actions of the majority. The sense of values is often influenced by the material possessions of others; many people fail to grow up emotionally; often students lack background experience for new learning; people feel as if they are being continually rushed, and find difficulty in concentrating on one particular phase of learning. Young people need to be guided in setting true goals for themselves which will help them avoid superficial thinking.

The teacher needs to have a thorough understanding of and the ability to apply the principles of psychology if he is to guide the child efficiently. Individuals grow by their experiences; as new situations are encountered a person draws on past experiences to help solve new problems. The total experiences of an individual have much to do with the type of a person he grows to be.

Learning is also a cooperative experience. An individual does not live to himself alone, neither does he learn alone. Much has been said of a variety of individual learning experiences in the school, home and community.[2] A variety of learnings take place, directly and concomitantly, when a group of people work together on one experience.

Learning must have a motivating force and the ability to recognize

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[2]U.S. Department of Health, Education, and Welfare, Vocational Division Bulletin No. 252, Home Economics Education Series No. 29, Home, School and Community Experiences in the Homemaking Program, (1954), 2.

growth is one of the strongest of these forces. Personal and social competence give the individual a satisfying feeling. He needs to see how a particular situation will help him face realistically his own problems. Finally, the learner must have sufficient background exprience so that he will be able to meet new experiences without becoming discouraged, and yet be challenged to think through a situation, choose a course of action and evaluate its effectiveness.

The schools can assist the individual in learning by providing learning situations that will tie up with actual conditions. The background for learning should be set with proper equipment and qualified teachers to guide the individual in new learning. The variety of experiences of each child will be different; the school will need to begin with the child's present status in order to aid him in achieving his goals more intelligently and more successfully.

If a knowledge of background experience is necessary in guiding any learning, it is of vital importance that the teacher of homemaking have a knowledge of the family background of each of her students. Visiting in the homes gives the teacher a better understanding of the individual's personal and home experiences and associations. The teacher is better prepared to begin class experiences on a basis of knowledge concerning the student's home and family.

Correct equipment and necessary materials including clean, orderly and pleasant surroundings, help set the stage for learning in homemaking. The good teacher then guides the students to recognize the need for learning; thereby relating new interests, abilities, values and skills to the background experiences of the student. She does this by presenting practical, problem-solving situations and guiding the individual in finding

his own solutions. Thus creative thinking is encouraged in good teaching.

The educational philosophy presented in this chapter may be applied to the teaching of nutrition as well as to any other branch of learning. If changed behavior in dietary habits is to be accomplished, the individual must recognize his deficiencies, have the knowledge necessary for a new course of action, be aware of a necessity to change, and be willing to change. The teacher will be more effective in bringing about these changes if she has the cooperation of all people concerned.

The problem of the study, that of finding ways to gain group participation and promoting a nutritional project to improve food habits of ninth grade girls, has been presented in this chapter.

A review of literature related to the study of food habits is presented in Chapter II.

CHAPTER II

REVIEW OF LITERATURE RELATED TO THE STUDY OF FOOD HABITS

The problem relating to the teacher's role in initiating and guiding a cooperative project to help students improve eating habits, including the direction for the study, was introduced in Chapter I. A description of the community was given for the purpose of developing a better understanding of the background of the ninth grade girls and their families who were the subjects of the study. The chapter concluded with the teacher's philosophy and concepts of education. A review of literature related to the study of food habits and the procedures used is presented here.

The Need for Improving the Nutritional Status

A review of related literature indicates there is a need to arouse people to do something about the fact that even though America has more food than any other country in the world, its people have many nutritional deficiencies. Many authorities have expressed concern about the situation.

Bain[1] writes concerning the nutritional picture:

> The food consumption picture was never better. Compared with the rest of the world, however, we have reached a level where we can be less

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[1]Katerine Bain, "Personality, Growth and Nutrition," Journal of the American Dietetic Association, 28 (1952), 520.

concerned with filling empty stomachs and more concerned with nutrition as it contributes to the healthy personality . . . . During school years it is possible that inadequate nutrition affects a child's school progress. The opposite is equally true . . . . In the long run the kinds of people we have will determine the kind of world we have.

Eppright[2] stresses the importance of nutrition in the adolescent years and points to the inadequacy in the diets of teen-age girls:

Of the entire life span the second decade is perhaps the most eventful. Physical transformation, biological maturation, possibly mating and reproduction, all happen in these years. No wonder the teenagers are "hungry" for security, guidance, and food.

Everyone is aware of the spurts in physical growth during the teens but more important are increases in chemical substances which form the body. Large margins of safety must be allowed for losses which may come with emotional stress and strain of this period.

Much has been said about the poor diets of teenagers. During the last ten years, a number of studies have been conducted which seem to show that, according to our standards of adequacy, diets of teen-age girls are among the poorest to be found. Diets of boys are considerably better.

The significant role that nutrition of teen-age girls plays in the preparation for motherhood is noted by Macy[3] in a recent article:

An ultimate goal of the science of nutrition is to provide for women a standard of dietary intake that will allow the propagation of infants with the maximum potentials for development and for maintaining best possible physical status throughout life.

The recent tendency toward early marriage and parenthood and the rapidly increasing birth rate gives new significance to the importance of dietary habits for teen-agers.

A recent report of the Metropolitan Life Insurance Company points out that about one third of our brides and one fourth of the mothers bearing a first child are less than twenty years old. Almost six per cent of the deaths among eighteen and nineteen-year-old girls were due to pregnancy and child-birth.

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[2]Ercel S. Eppright, "Nutrition in the Second Decade of Life," Nutrition News, Vol. 19, No. 4, April, 1956, p. 1.

[3]Icie G. Macy, "Nutrition of Teen-Age Girls and Motherhood," Nutrition News, Vol. 18, No. 4, April, 1955, p. 1.

Review of Various Studies

A review of some of the nutritional studies of teen-agers will give a teacher a more adequate background for guiding students. An understanding of the procedures used in gathering information, the criteria used, methods of tabulating and the results and use made of the information is of worth to teachers since it helps them to understand relationships and factors involved. For this purpose, reports of various studies made within the last ten years in different sections of the United States are given.

Nebraska Study

A study of food choices, as an indication of the nutritive value of the customary food intake was made by Leverton and Coggs.[4] They believed that this study would be of value because food preference is one of the fundamental influences on the nutritional status.

A questionnaire listing forty-five different foods was presented to 1,883 boys and girls who were members of 4-H clubs, Future Homemakers of America and Girls' State. Subjects checked the foods as "willing to eat often," "unwilling to eat," and "have never tasted."

The most popular foods were white potatoes, apples, oranges, and whole wheat bread. The study indicates that there are many foods rich in essential nutrients which a great number of these children did not check as "willing to eat often." The absence of milk from the list of highly acceptable foods is particularly serious. The study further indicated that if children selected food by preference alone there would

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[4]Ruth M. Leverton and Maud O. Coggs, "Food Choices of Nebraska Children," Journal of Home Economics, 43 (1951), 176-178.

be danger of serious nutritional deficiencies. The results further substantiate the recognized need for widening food preferences and decreasing food prejudices as a basis for improving the nutritional value of customary food intakes.

Northeastern Region Study

The Northeastern study reported by Steele[5] included three state experiment stations; Maine, New York and Rhode Island.

Seven-day records were kept by 316 junior and senior high school students for the purpose of determining the contribution of breakfast and snacks to the total daily nutrient intake.

It was found that breakfast contributed one-fifth of the daily intake and snacks contributed one-tenth. Boys and girls who always ate breakfast more nearly met recommended daily dietary allowances than those who skipped the meal even once a week. Deficiencies in ascorbic acid, calories, calcium and phosphorus were not overcome by the other meals.

Iowa Studies

Informal studies and casual observations suggest that many children in Iowa, as elsewhere, have poor breakfasts. Sidwell and Eppright[6] made a study to ascertain the breakfast habits of Iowa children throughout the state and to estimate the quality of this meal as well as its relationship to the quality of the full day's diet. They chose 1,188 children

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[5]Betty Steele, Mary Clayton, Ruth Tucker, "Roll of Breakfast and of Between-Meal Foods in Adolescents' Nutrient Intake," Journal of American Dietetic Association, 28 (1952), 1054.

[6]Virginia D. Sidwell and Ercel S. Eppright, "Foods Habits of Iowa Children - Breakfast," Journal of Home Economics, 45 (1953), 401-405.

from 61 schools, with ages ranging from six to twenty years. Four age groups were used: 6-7-8 year-olds, 9-10-11 year-olds, 12-13-14 year-olds, and 15 years and older. Particular emphasis is placed on the last group in this report of the study.

A seven-day dietary record was obtained from each child participating in the study. Foods were recorded according to the number of servings or estimated household measures. Both written and oral instructions were given to the children and parents, and the dietaries were checked by a nutritionist. The data for the study were collected between the fall of 1948 and spring of 1951.

The breakfast menus of the Iowa school children did not follow a pattern. In most cases, whatever was easily available was served for breakfast. Girls tended to miss breakfast more often than boys, rural children missed breakfast more often than city children, and the frequency of omissions increased with age. A meal was skipped most often during week-ends.

The daily dietary records were tabulated to show the average number of servings of each food per week. The breakfasts usually contained bread and breakfast cereals. Inadequate amounts of milk were used by both sexes and all age groups, eggs and meat were not regularly used and the breakfasts included little fruit.

Scores were assigned to foods commonly used at breakfast as follows: citrus fruits or juice 2; other fruit 1; milk to drink 2; cocoa 1; egg or any other protein-rich food 1; cereal with milk and sugar 1; and bread or potatoes 1. Because of their important contribution to the adequacy of breakfasts, milk, and citrus fruits were rated higher than were the other foods. Validity of the score was checked by comparing the

calculated nutrient content of sample breakfasts with one fourth to one third of the National Research Council Recommended Allowances (page 46) The score for a Class I, or good breakfast, was 7-5.5; a Class II, or fair breakfast, scored 5.4-3.5; and a Class III, or a poor breakfast, scored 3.4-0. From one-half to two-thirds of the breakfasts of the children studied were predominately poor, indicating the need of continued emphasis on the improvement of this meal.

To determine whether a poor breakfast meant poor meals for the day, three-day dietary records of five hundred children from the rural area were tabulated to show the comparison of daily diet ratings with breakfast classifications. Eighty-two per cent of the children whose breakfasts were of the Class I type had good daily ratings, and none of this group had poor daily ratings. Slightly more than one half of the children with fair breakfasts had good daily diets. Among the children with poor breakfasts only one out of five made up the deficit in the other two meals. The nature of the menus and the fact that more meals were missed on week-ends than on school days emphasized the need for more effective education of homemakers in the area of meal management as well as actual meal planning.

Further study of this same group was made by Eppright and Swanson[7] to analyze the nutrient content of the meals and snacks which were classified according to their dietary adequacy.

Breakfast furnished 15 per cent of the caloric value of the adolescent girl's diet. A slightly smaller proportion of the day's protein was obtained at breakfast (10 to 30 per cent). Breakfast furnished more of

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[7]Ercel S. Eppright and Pearl P. Swanson, "Distribution of Nutrients Among Meals and Snacks of Iowa Children," Journal of American Dietetic Association, 31 (1955), 256-260.

the calcium, riboflavin and ascorbic acid than of the day's food energy but less of vitamin A and niacin. Breakfast provided a relatively low proportion of the day's total calories, approximately one fifth. It was suggested that the greater use of eggs at this meal would contribute to the total calories consumed and particularly to the total consumption of vitamin A and protein.

Snacks, which provided almost as many calories as breakfast, were proportionately high in carbohydrates and low in all other nutrients, except ascorbic acid for certain age groups.

It was recommended that a liberal intake of food at all meals would be a safeguard against diets of poor nutritive quality.

California Preliminary Survey

In a preliminary survey of meal patterns, Spurling and others[8] worked with one hundred home economics teachers in studying the food habits of 10,144 junior and senior high school students in California.

The nutritional criteria used for determining a good breakfast were that it (1) made a significant contribution to the total daily intake and (2) was relatively high in protein.

The group often missed both breakfast and supper. The authors questioned whether there should be conventional breakfast patterns, and if mid-morning and evening snacks might not help compensate for small breakfasts.

Montana Study

As a part of the nutritional status studies of population groups in

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[8]Dorothy Spurling, Marguerite Krause, Nuna Callaghan and Ruth T. Huenemann, "Poor Food Habits are Everybody's Concern," Journal of Home Economics, 46 (1954), 713-715.

Montana, seven-day dietary records were obtained from 418 students ranging in age from 15 to 28 years.[9] Two nutritionists worked with fifteen-year-olds and their parents to record a dietary history which included foods generally consumed over a year's time. The histories were used as checks for omissions or discrepancies in the seven-day dietary record.

The nutrient content of the diets was estimated on the edible portion, using food values in published tables (Table of Food Composition in Terms of Eleven Nutrients and Agriculture Handbook No. 8, 1950) Supplements in the diets of the subjects were not considered.

The food habits of these students showed a fairly distinctive pattern. They consumed relatively large amounts of meat, fish and poultry and of other fruits and vegetables. Relatively small amounts of leafy, green and yellow vegetables, and of tomatoes, citrus fruits, eggs, potatoes and sweet potatoes were consumed.

The mean daily intake of calories and nine nutrients was calculated from the seven-day dietaries. Seventy-eight percent of the females were consuming diets providing less than two-thirds of the recommended daily dietary allowance in one or more nutrients. Deficiencies were found in iron, calcium, ascorbic acid, thiamine, and riboflavin.

Forty per cent of the breakfasts eaten by the males and 30 per cent of the breakfasts eaten by the females included a fruit, a cereal, and an animal-protein food such as milk, eggs or meat. There was a direct relationship between the number of breakfasts containing these foods and the number of subjects for whom the mean daily nutrient intake provided at

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[9]Lura M. Odland, Louise Page and Louise P. Guild, "Nutrient Intakes and Food Habits of Montana Students," Journal of American Dietetic Association, 31 (1955), 1134-1142.

least two-thirds of the recommended allowances of any nutrient or increasing number of nutrients.

Idaho Study

Warnick[10] gives a report of the Idaho phase of the Western Regional Nutritional Status study. Three communities were used, two in the semi-arid sowthwest and one in the northern part of the state. School children--150 girls and 124 boys between the ages of 15 and 16 years--were used as subjects. In the spring of 1951 the subjects were interviewed on food habits and customary diets, and were given instructions on keeping dietary records for seven days, the records to be mailed in when completed. The records were tabulated in terms of portions of food per week. Then the term nutrient content was calculated using values in Table III of the Agricultural Handbook No. 8.

The following results were obtained: (1) The intakes were similar for the subjects in each area, regardless of geographical location, occupation and environment; (2) The differences in intakes by sex was definite; the averages for boys was 45 per cent higher for all nutrients except for vitamin A, which was 26 per cent higher, and ascorbic acid which was 16 per cent higher than the diet of girls; (3) In comparison with the recommended daily dietary requirements, the girls' diets were found to be low in calories, protein, thiamine, calcium, ascorbic acid and niacin.

Briefly, the group averaged 90 per cent or more of the recommended daily dietary allowances set up in 1948, with the exception of iron, calories, and thiamine for the girls and calories and ascorbic acid for the

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[10]Kathleen Porter Warnick, "Nutritional Status of Adosescent Idaho Children," Journal of American Dietetic Association, 31 (1955), 486.

boys. One-fourth of the diets supplied less than one-half of one or more nutrients. Ascorbic acid and vitamin A were found in less than one-half of the recommended allowance for the majority of the subjects.

In the second part of Warnick's[11] report, food consumption and meal patterns were evaluated in terms of food groups. The Basic Seven food groups were well represented in the average amounts eaten per person except for citrus fruit and tomatoes and leafy, green and yellow vegetables.

The subjects recorded their daily intake in common household measures for seven days, records were tabulated to give the total amount of each food. The nutrient intake was determined by multiplying the number of portions of a food by the nutrient content of one portion of that particular food. The data were then summarized by food groups to determine the percentage of the total nutrient intake contributed by each group.

The milk, cereals, and protein foods together furnished over 70 per cent of all nutrients studied except vitamin A and ascorbic acid. Fruits and vegetables contributed over 80 per cent of the ascorbic acid, nearly one-half of the vitamin A, and approximately one-fifth of the iron, thiamine, and niacin.

The percentage of records reporting servings of each of the food groups was lower on week-ends than on school days. The value of snacks did not compensate for the meals missed.

It should be noted that the findings of the Idaho and California studies are not in complete agreement as to whether breakfast should follow a conventional pattern, and as to the nutritional value of snacks.

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[11]Kathleen Porter Warnick, Shirley V. Bring, and Ella Woods, "Nutritional Status of Adolescent Idaho Children - Part II Food Habits," Journal of American Dietetic Association, 31 (1955), 1143-1147.

Studies Showing Relationship of Health and Efficiency and Low Nutritional Status

Tuttle, Daum and Co-workers[12] conducted experiments at the State University, Iowa City, Iowa, on six healthy young women. First, the subjects were given an 800-calorie breakfast for several weeks. Next, breakfasts were entirely omitted. Third, breakfasts of coffee alone were given. In both the second and third periods there was a decrease in the maximum work output and an increase in reaction time accompanied by increased tremor magnitude. Lastly, a 400-calorie diet was substituted for the coffee meal. There was an increase in performance level; reaction time improved significantly and there was a decrease in tremor magnitude.

Results of a study by Tuttle[13] of seven 12-14 year-old boys in Iowa gave evidence that eating breakfast affected behavior:

> It was the consensus of the school authorities that the omission of breakfast exerted a significant, detrimental effect both on the attitudes and scholastic attainment of the boys.

Teachers reported that the subjects were careless and listless during the late morning hours when breakfast was omitted.

In other studies it was found that a high protein meal raised the blood sugar level more slowly than a high-carbohydrate meal but that the level stayed high longer and therefore did not result in a mid-morning slump and a craving for a between-meal snack.

Leverton[14] places great emphasis on the importance of eating a good

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[12] W. W. Tuttle, M. Wilson, and K. Daum, "Effect of Altered Breakfast Habits on Physiologic Response," Journal of Applied Physiology, I (1949), 545-559.

[13] W. W. Tuttle, "Effect on School Boys of Omitting Breakfast," Journal of American Dietetic Association, 30 (1954), 674-677.

[14] Ruth Leverton, Food Becomes You, (Lincoln, Nebraska, 1952), 136-137.

breakfast, emphasizing the fact that it is difficult to eat all the necessary foods if one skips breakfast. She states that research studies show that people are more alert, efficient, and resistant to fatigue when they eat breakfast than when they do not. She contends that we need at least one animal source of food such as meat, milk, or egg in each meal and that research workers have found that the body uses the protein from all kinds of food best when there is some food from animal sources in each of the three meals.

Methods Used in Dietary Studies

More information was sought concerning accuracy of various methods of obtaining dietary information as to number of days records should be kept, size of sample and standard for determining adequate diets.

Trulson[15] conducted a survey in Chicago for the purpose of studying methodology of conducting dietary surveys. Two schools were used, the Laboratory School of the University of Chicago and the Haines Public School, however the report is limited to data from an initial survey of pupils ranging in age between ten and twelve years and a re-survey in 1951 of seventy pupils of the Laboratory School. Booklets were distributed through the classroom teachers. Directions were given by the teacher and were also included in the booklet. One food, milk, and two nutrients, total protein and vitamin A, are discussed.

The size of the samples suitable for comparison depended on the nutrient of the food being studied. Intakes of 18 children were selected

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[15]Martha F. Trulson, "Assessment of Dietary Study Methods: II Variability of Eating Practices and Determination of Sample Size and Duration of Dietary Surveys," Journal of American Dietetic Association, 31 (1955), 797-802.

at random from the first Laboratory School study. The coefficient of variations showing the differences from day to day for the individual child were smallest in protein and highest in vitamin A.

Dietary records for one day, three days (Tuesday, Wednesday, and Thursday) and seven days were examined. The value of a 3-day study was shown by a reduction in the standard deviation. Further reduction was shown in the seven-day study. The extend to which this was reduced depended on the nutrient under investigation; there was less deviation in protein and more in vitamin A.

Babcock[16] suggests that the value of the daily diet be determined by calculating the number of standard servings per week of each food, multiplying the percentages of daily requirement for each nutrient, then dividing the total sum by seven.

The recommended daily dietary allowances established by the Food and Nutrition Board of the National Research Council[17] was used as the criterion for determining adequate diets in the majority of the studies reviewed.

Two nutritional criteria for the quality of a good breakfast were used:[18] (1) Does it make a significant contribution of nutrients to the total day's intake? (2) Is it relatively high in protein, in order to maintain high blood sugar level?

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[16]M. J. Babcock, "Simplification of the 'Long Method' for Calculating The Nutritional Value of Diets," New Jersey Agricultural Experiment Station Bulletin 751, June 1950, 79.

[17]National Academy of Sciences, National Research Council, Publication 302 (Washington, D. C., 1953) 22.

[18]Spurling, 713.

Methods of Approach in Teaching Nutrition

Nutrition education includes movitation for changing food habits where deficiencies are found, as well as a recognition of nutritional status. Therefore, the last part of the report of related studies deals with methods of approach in securing changed behavior in nutritional habits.

A preliminary study by Bennett and Swartz[19] of 1,500 students in Flushing High School in New York City, showed that 17 per cent of the students were not eating breakfast. An intensive campaign was carried on to popularize the eating of breakfast. Pictures of an outstanding high school boy and girl were used in a store window display to highlight a "Five Star Breakfast." The breakfast included fruit, whole grain cereal, egg, whole wheat bread, and milk. School bulletin boards, radio programs and exhibits throughout the year emphasized the importance of eating breakfast. The campaign culminated with an all-high school breakfast party. Seven per cent of the students reported they had started eating breakfast as a result of this project.

Eppright[20] gives suggestions for a starting point in a nutrition program:

> A functional nutrition program must begin with a knowledge of the way people eat. We must know the actual habits, and if possible, the nutritional status of the people with whom we are concerned.

Pilot studies, histories of food habits, and seven-day dietaries can form the basis for calculating this information.

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[19]Iva B. Bennett and Julian Swartz, "Breakfast Habits Can be Improved," Journal of Health and Physical Education, 16 (1945), 437-439.

[20]Ercel S. Eppright, "Vitalizing Nutrition Teaching," Journal of Home Economics, 43 (1951), 90.

Wilson,[21] who worked with ten families in the state of Washington for the purpose of studying the effect of nutrition education on their food habits, says that education should be chiefly individual. She suggests frequent home visits, a series of group meetings, films, demonstrations, use of bulletins, pamphlets, and check sheets as a means of educating. There was consistant improvement shown in the records of these experimental groups, both in the over-all food patterns and individual improvement in specific nutrients. A slight improvement was shown in the adolescent food habits.

Spurling[22] says that poor food practices, wherever they exist, should be a matter of concern to home economists and to their co-workers, that it is the concern of everybody. She found indications as to why people do not eat breakfast by the use of the following questionnaire:

Reason

1. Not enough time
2. Breakfast not prepared
3. Do not like the food served
4. No food I could eat
5. No one to eat with
6. Other reasons
   a. Not hungry
   b. Do not feel like eating
   c. Makes me sick
   d. Miscellaneous

Summary of Research Findings and Implications for Teaching Nutrition

A review of selected nutritional studies was made to provide a more adequate background for the teacher in guiding students to improve food habits.

The procedures used in the various studies to determine the nutrition-

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[21]Ollie Mae Wilson and Nettie C. Esselbaugh, "Nutritional Status of Family Groups," Journal of American Dietetic Association, 28, (1952), 1133-1137.

[22]Dorothy Spurling and Marguerite Krause and Others, "Poor Food Habits are Everybody's Concern," Journal of Home Economics, 46 (1954), 713-715.

al status followed a fairly definite pattern.

Preliminary or pilot studies were used to give the general direction for some of the studies. Histories of food habits were used as checks against the accuracy of seven-day dietaries. The standard for a good diet was that it meet or exceed two-thirds of the recommended daily dietery requirement.

The quality of seasonal foods caused some variation in certain localities, however, the results of the studies throughout the country generally indicated:

(1) A poor breakfast indicated low daily intake of at least some essential foods. Snacks and the other meals did not make up the deficit.

(2) The foods most often lacking in the daily diet were milk, citrus fruits and tomatoes, green and yellow vegetables, and in some cases protein foods.

(3) Nutrients most often lacking in the diets were iron, calcium, ascorbic acid, thiamine, and niacin.

(4) Results of the various levels studied were:

(a) Diets of rural students were generally higher than those of city people.

(b) Boys' diets were generally higher than girls.

(c) The deterioration of the diets of girls increased with age.

(5) Geographic location, occupational differences, and economic levels did not greatly affect the diets.

The marked prevalence of food intake below commonly accepted standards pointed to the need for further research to determine the effect of these deficiencies on the general health and well-being of individuals.

The studies gave several indications that the eating of breakfast

improved the general health of the subjects. There was an increased performance level in reaction time, and there was a decrease in tremor magnitude. A high protein meal retains the blood sugar level, making the subjects more alert, efficient and resistant to fatigue.

The methods for teaching nutrition education, as indicated in related literature, included:

(1) Gaining the interest of all concerned so that they will work together to improve nutritional habits.

(2) Beginning with a knowledge of the way people eat.

(a) know the actual food habits;

(b) know the nutritional status, as accurately as possible;

(c) know why people do not eat the recommended foods and meals.

(3) Working individually and collectively with subjects.

(4) Making subjects aware of a need to change.

(5) Accepting definite standards for determining adequate food habits.

(6) Guiding individuals in developing a desire to change food habits.

(7) Recognizing signs of improvement.

An awareness of overall nutritional conditions and the attempts that have been made to improve food habits can be a guide in planning cooperative local projects. The background of information should make the teacher more competent in determining the procedures that will be applicable to her local community.

Summary

Chapter II has presented a review of literature available that showed evidence concerning the present nutritional status of people in America, a review of procedures used in various food studies, the relationship of health and efficiency and nutritional status, methods used in dietary studies, and suggested educational methods for teaching nutrition. The following chapter concerns the purpose and cooperative plan for improving the eating habits of ninth grade girls in the Elgin, Oklahoma community.

CHAPTER III

PLAN FOR THE STUDY OF THE NUTRITIONAL HABITS OF STUDENTS

The preceding review of literature includes studies from the various sections of the United States. All studies indicate that there are deficiencies in the American diet. There was no reason to believe that the conditions in the Elgin, Oklahoma community were any different than those of other communities. The hypothesis upon which the study was based is that, through the teacher's guidance and the cooperation of parents and community personnel, ninth grade girls can determine to some degree the adequacy of their diets, be willing to change, and apply what they have learned in improving their eating habits.

The following basic assumptions served to guide the study:

1. Many high school girls do not eat a balanced diet.
2. A successful project in nutrition requires the cooperative planning of all people concerned.
    A. Professional people who are charged with the health of the community can be interested in a project designed to improve eating habits and they will lend their professional skill and time to such a project.
    B. Parents, who are clearly informed regarding the importance of nutrition, will want to know the nutritional status of their children and will want to help improve eating habits.

C. Students will be interested and willing to keep personal records showing improvement in eating habits.

3. A knowledge of nutrition, a desire to change poor food habits, and an effort on the part of the individual to change, will bring about improved eating habits.

Purpose and Plan of the Study

The purpose of the study, in light of the above assumptions, was to guide ninth grade girls, through knowledge and understanding of the value of adequate nutrition, to make an effort to improve food habits.

Since a project in nutrition requires the cooperative planning and working of all people concerned, school administrators, parents and medical personnel were contacted for suggestions and possible assistance.

The student's first need was to understand the importance of good nutrition and be able to determine to some extent the adequacy of her own diet. It was the responsibility of the teacher to help them gain this knowledge and understanding. Source materials consisting of reference books, charts, posters, and recommended food charts were secured and used by students and teachers.

One important problem in teaching is that of motivating students to change behavior. They need direction in knowing how to act. An understanding of why people eat as they do was developed through discussions of customs and traditional food habits, of present meal patterns, and of reasons for these patterns. Interest approaches were made by keeping records of personal diets, attractive bulletin boards, food models, and actual preparation of nutritious meals. The effect of poor diets in relation to their own personal needs for group acceptance, self-respect and

personal health was emphasized. They were guided to realize that they had a personal and group responsibility for having good health.

Achievement and recognition are basic needs that must be acknowledged if the individual is to be expected to change behavior. Provision was made for practice in food preparation of breakfasts and progress in food habits was shown by group charts and individual graphs of breakfast scores. Continual group evaluation was supplemented by comparison of the results of final health examinations and final food habits records with the initial ones.

The plan for the study may be summarized to include: (1) conference with local school administrators and local doctor as to the advisability of using the proposed plan in the local community; (2) discussion with the county doctor and nurse of the possibility of health examinations to determine existing deficiencies; (3) visiting in the homes of the students to discuss local diets and purposes of the proposed health examinations; (4) meeting with the mothers to discuss ways they could assist; (5) providing for physical examinations to be given to students; (6) keeping a seven-day student dietary record to be checked against the Basic Seven Food Chart to determine deficiencies; (7) keeping a record of individual breakfast scores for a period of time; (8) planning, preparing and eating meals at school and at home which include foods found to be low in the individual diet; (9) providing for a final health examination to determine changes in physical status; and (10) anecdotal evidence of changes in food habits of the individual. Generalizations and recommendations are given in light of the significance for teachers of homemaking.

Limitations of the Study

The study was limited to a study of the methods used and interpre-

tations of results in teaching nutrition to ninth grade girls and to its effect on their families in the Elgin, Oklahoma community. No attempt was made to make a scientific dietary study. The procedures used were selected for the purpose of helping students and their families become aware of inadequacies in diets and of improving them where deficiencies were found. The freshman class was used for the study because it was a larger group and might be expected to give a more authentic test. Another important belief motivated the selection of the freshman students; namely, that nutritional habits are more easily formed while young and therefore the sooner desirable habits are formed the better it will be for the individual. The time for the study was planned for one school year, 1953-54.

Summary

An attempt was made to (1) determine the nutritional status of the ninth grade girls in one Oklahoma community; (2) show that the nutritional status of the high school girl is a problem of the student, the parents, the teacher and the community; (3) increase the knowledge of facts and use of skills through problem-solving techniques and (4) evaluate and make personal teaching more functional. It is hoped that the results would be interpreted in terms meaningful to teachers and others interested in improving health of young people, and that the study would be a small contribution to curriculum development in Oklahoma.

The following chapter gives the procedures used in carrying out the plan of study, the results obtained and implications for teachers of homemaking.

CHAPTER IV

STEPS AND FINDINGS IN THE STUDY OF FOOD HABITS OF NINTH GRADE GIRLS

A plan for assisting ninth grade girls and their families in determining deficiencies in the diet and improving them where deficiencies were found was outlined in the preceding chapter. The plan provided for enlisting the help of others in a nutritional project, for arousing personal and family interest in nutrition, for assisting others in determining nutritional status and for guiding students in making an effort to improve diets.

Indications of the nutritional status were based upon (1) findings in general physical examinations and (2) a study of seven-day student dietaries. Emphasis was placed on adequate breakfasts as a means of meeting the recommended daily dietary allowances.

The steps used in carrying out the plan in the Elgin school and community are given in this chapter. The findings are summarized in the light of their application to the teaching of homemaking.

Planning With Others

The possibilities for carrying out a nutritional project during the school year of 1953-1954 were discussed in a pre-school conference with the superintendent. Local food habits of high school girls were discussed in the light of nutritional research findings concerning food habits of

adolescent girls. A brief summary of a proposed study was presented. The teacher was encouraged to go ahead with her plans since she felt there was a need for such teachings in the school. Plans were approved for giving school time for a general health examination for each ninth grade girl as an introduction to the proposed nutritional project.

The local doctor, who was also the President of the Board of Education, examined the teacher's plans for determining physical deficiencies and advised her concerning the methods that would be practical with the limited facilities available. He recommended a general health examination designed to give indications of malnutrition if such existed.

The county health doctor and nurses were contacted to see if they would be interested in assisting with health examinations at the beginning and close of the nutritional project, the purpose of the examinations being to determine nutritional deficiencies. They all agreed it was a worthwhile project and were anxious to assist with it. They suggested that a tuberculin patch test be included and that a dentist be contacted, also. It was agreed that if the families concerned and the members of the community in general were interested in the project, a definite date would be set for the examinations.

Making Arrangements for a Nutritional Project

Health authorities in the community were definitely willing to offer their time and service for a nutrition project at Elgin. The next step was to gain the interest and cooperation of the parents and the students. Plans were made to visit the home of each ninth grade girl. A list of all prospective homemaking students was compiled from the list of eighth grade graduates in the school district, and from the list of transfers

in the local and county superintendents' offices. Cards were mailed to each family, stating the approximate time the teacher would call at the home to get acquainted and to discuss the vocational homemaking program.

A varied approach to the diet problem was used during home visits, the approach used depending upon the apparent background and needs of the families. With some parents it was approached by discussing what the girls would be studying in their high school courses while with others the introduction was from the standpoint of animal nutrition, particularly when the father was a stock grower. In other cases they discussed the health examinations that are frequently required in other schools, leading up to the question of whether it would be good for the home community. In all cases, the angle of approach was determined by the particular needs and interests of each family. The parents showed a great deal of interest and the girls knew that parents and teacher were in agreement as to the importance of good nutrition. The discussions during home visits gave indications that families are interested in improving nutritional habits. There were no parental objections and, in fact, much approval of the plan for the girls to take the health examinations as a basis for determining their individual nutritional needs. Each mother expressed her willingness to come to the home economics cottage to help with the planning and development of the study of family food habits.

The feeling of security based on parental approval and cooperation of the school administration assisted the teacher in deciding to make definite arrangements with the county health personnel. It was decided that the ninth grade girls might go to the Health Center at Lawton, Oklahoma for the examinations on the second Monday of the school term. Students would be taken to the Center eighteen miles away, rather than to

have the examinations made at school for two reasons: (1) more adequate facilities were available to give a thorough examination and (2) the students would have the educational experience of visiting the health center. The date was placed on the school calendar, on the approval of the superintendent. Teachers were informed as to the time the students would be absent from their classes in order to have the health examinations.

A survey was made of usable educational materials available at school. Bulletins helpful in food selection and menu-planning were obtained in sufficient quantities for distribution from the office of the County Home Demonstration Agent. A variety of forms for possible records to be kept was thoroughly studied by the teacher during the summer school work-shop and prior to the opening of school, after the nutritional project was definitely under way.

Securing Cooperation of Students and Parents

Cooperation of the parents was encouraged through an invitation to participate in the planning. A majority of the mothers attended an informal Coffee (see appendix A) in the home economics department and discussed ways they could help in the development of the nutritional project. They reviewed dietary requirements, received literature to assist them in checking family diets and promised to keep a record of food served to their families. They planned to keep a list of foods served to the family for one week to determine availability of food in the home as a check on the validity of student dietary records. They also agreed to keep an expense record of food used as a check on the relationship of cost to adequate diets.

The mothers met a second time and checked diets to see if they were

preparing well-balanced meals. They were given pamphlets to aid in meal planning and budgeting. Most of the records were completed and returned. The findings were used as checks for the students and the parents, and not as authentic dietary information to be quoted in the study.

The General Health Examination

Two general health examinations were given by the county health doctor to thirty-two ninth grade girls. Both examinations included a dental check which is reported separately. The purpose of the first examination was to help students become aware of existing physical irregulatities. The complete examination included the following types of checking: nutrition, orthopedic, skin and scalp, head and neck, eyes, ears, nose, throat, oral hygiene, heart, lungs, abdomen, height, weight, hearing and vision. A sample of the health record is given in appendix B.

There is a variation in the number of students reported in different phases of the study. The variation was caused by fluctuating enrollment. Thirty-three girls enrolled at the beginning of the term; one dropped out within a few days and two more girls entered school while the study was in progress.

The majority of the girls were found to be in good physical condition. Minor irregularities disclosed in the September first examination included six girls with mild cases of acne of the skin, one case with ear scarring, two with nose defects, five with enlarged tonsils and other throat conditions, three with minor heart irregularities, one with a hearing defect, and seven with defective vision without glasses. Two of the seven with defective vision had corrective glasses at the time

of the examination. An attempt was made to correct all irregularities, however those that might be affected by nutrition are given special consideration in the study.

The height and weight records were compared with "Normal Height for Weight Table" published by Life Extension Institute Inc., New York City.[1] A range of ten per cent of normal weight below and above normal was allowed for variations in bone structure.[2] These comparisons were made to give indications of overweight and underweight conditions. According to the table, nine girls were found to be overweight and four were underweight. Since height and weight tables are merely guides for determining normal status, the table showing the comparison of the height and weight of the thirty-two girls is not included in the study.

The health examination records were filed in the homemaking department and were available to the student, the parents, and other teachers who might need the information in working with individual students.

The examination made all students more "health conscious" and was a focal point for a constructive nutritional project. Parents expressed appreciation for the effort that was made to determine and improve the health of their children and asked that the ninth grade girls be given the health examination every year.

A second health examination was given in May to see if there were indications of physical improvement. Some improvement was indicated in all irregularities, with the exception of the cases of ear scarrings and defective hearing. Four of the five cases indicating defects had

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[1]Ruth M. Leverton, Food Becomes You, (Lincoln, Nebraska, 1952), p. 30.

[2]Ibid., p. 31

been corrected, two of the three that had minor heart conditions showed no trace of irregularity, one of the two cases of nose defects was corrected while two of the six cases of acne conditions still showed traces. All students with defective vision were fitted with glasses. One had brought vision back to normal without glasses.

Apparently there was a conscious effort to bring the body weight to normal. Only three of the nine girls who were overweight, according to standard tables, showed no improvement in weight reduction. Two of the four girls that were underweight brought their weight up slightly but not in proportion to the expected gain for increase in age; the weight of the other two girls was brought up to normal.

Many factors may have been responsible for changes in the physical condition such as variation in emotional strain, seasonal changes or variation in standards of personal hygiene. However, research indicates that diet is one factor affecting general health; therefore, it was assumed that improved nutritional habits may have been, at least, a partial cause of the general indications of improved health. Procedures used in relating results of health examinations to teaching nutrition are given later in the study.

In addition to the general physical examination, the girls were given the tuberculin patch test and a thorough dental examination. The results of the tuberculin test showed all students negative. The steps and findings in the dental test follow.

The Dental Examination

The examination of the teeth and gums was done by a dentist in private practice. This was done in the afternoon of the same day that

the general physical examination was given. The findings and results reported in the study are limited to aids in guiding students to eat foods that are recommended by authorities for improving teeth and malocclusion.

The reports of the dental check-up disclosed twelve cases of malocclusion, ranging from mild to severe.

Health suggestions given by the dentist and nurse included practicing good nutritional food habits. The use of a natural bristle tooth brush was recommended as an aid in preserving tooth enamel. The local doctor advised the girls to eat foods high in calcium and iron for building teeth and to include vitamins D and E for proper assimilation.

The condition of teeth and gums in September and the repairs made during the year is recorded for each girl in the table on the following page.

Dental findings (see Table I on the following page) indicated that most of the girls had dental caries, ranging from only two girls with no extractions or caries to one girl with fourteen teeth in need of repair. Each girl was given a card to be taken home to her parents which indicated the number and placement of the teeth decayed. Where indicated, students were encouraged to have dental work done. The teeth of three girls required no dental work, twelve girls made appointments with their dentists and had the necessary repairs made, but seventeen girls did not have corrections made during the school year. Many of the last group made plans to see a dentist during the summer months.

Students were encouraged to include in their diets the foods and nutrients especially recommended by the medical and nutritional authorities for building strong bones and teeth.

TABLE I

RECORD OF DENTAL FINDINGS AND REPAIRS MADE[a]

Girl's Number	Condition of teeth and gums in September: Teeth missing	Teeth decayed -not filled	Number of fillings	(Malocclusion)	Repairs made during year
1	0	2	0	None	None
2	0	4	0	None	None
3	0	3	0	Mild	None
4	0	0	6	None	None
5	2	3	2	None	9 filled
6	0	0	0	None	None
7	0	5	0	None	5 filled
8	1	10	0	Mild	None
9	0	2	0	None	None
10	0	8	0	Moderate	None
11	0	2	0	None	None
12	0	7	0	Moderate	4 filled 1 pulled
13	0	4	0	Mild	None
14	0	4	4	Mild	None
15	1	3	0	None	3 filled 1 pulled
16	0	1	0	Severe	None
17	0	0	0	None	None
18	2	2	0	Moderate	3 fillings
19	0	7	0	Mild	None
20	0	7	0	Mild	None
21	0	8	0	None	8 filled
22	0	14	0	Moderate	None
23	1	2	12	None	2 filled
24	0	2	0	None	None
25	0	0	0	None	None
26	0	11	0	None	4 filled 4 pulled
27	0	7	0	Moderate	7 filled
28	0	3	0	Moderate	None
29	0	1	0	None	None
30	1	8	0	None	None
31	1	9	0	None	7 filled 1 pulled
32	0	4	0	Mild	4 filled

a. Record of findings of dental examinations of thirty-two ninth grade girls at Elgin, Oklahoma.

Relating Results of Health Examination to Teaching

The health examinations were used to indicate physical irregularities that may be related to malnutrition. In relating the results of the health examinations to teaching, emphasis was placed on the importance of eating breakfast as a means of meeting the total recommended daily food requirement. The general outline for the procedures used is as follows: (1) gaining an understanding of the need for good nutrition, (2) determining individual nutritional status, (3) effectiveness of eating breakfast as a means of meeting the total recommended daily food requirement, (4) stimulating group and individual interest in eating breakfast and (5) providing laboratory experience in preparing and eating adequate breakfasts.

Gaining an Understanding of the Need for Good Nutrition

A knowledge of present status is one of the first steps in bringing about change in behavior. The types of foods that the families in the Elgin community eat for breakfast were suggested by the students and listed on the blackboard. Students discussed food habits of other countries that they had learned from library readings and from the people in the community who were not native-born. The influence of occupation, health, age and family customs on food habits was discussed. It was emphasized that all people do not have to eat a heavy breakfast in order to have a good one. Students studied the nutritional needs of

the body, the Basic Seven Food Chart, (see appendix C) and the amounts needed for the day, including one-fourth to one-third of the daily requirement for breakfast. The class drew conclusions as to what was an adequate breakfast and listed several sample menus on the blackboard.

Class discussions were supplemented by exhibits and individual servings of some of the foods suitable for breakfast. A bulletin board was prepared by the students illustrating effect of nutrition on personality with appropriate captions under illustrations.

After the students became aware of the qualities of a good breakfast they analyzed the excuses they had given for eating poor breakfasts. Being up too late the night before, having to cook own breakfast, eating alone, being upset from quarreling, getting up too late and not having time before the bus came, and not being hungry were the most common causes given. Various ways of remedying the situations were discussed and evaluated in the light of the student's ability to remove the obstacles.

Determining Individual and Group Nutritional Status

Students showed much interest in the study of an adequate diet and seemed eager to analyze their own diets. Research authorities recommend an average of the seven-day dietary as the most accurate method of determining the daily nutritional status. A simplified form was used in the local study so that it would be less difficult for ninth grade girls to take part in the record-keeping. Each girl kept a seven-day dietary listing the groups of the Basic Seven Foods eaten and the number of servings (see appendix C). The records of foods served to the family

for the same week, which were kept by the mothers, served as a check for the accuracy of the girls' records.

The average of the daily dietaries was recorded at the beginning and the close of the project. The table following shows a comparison of the percentage of students including each of the "Basic Seven" foods in their first and last dietary recorded in class.

TABLE II

COMPARISON OF THE NUMBER OF STUDENTS INCLUDING BASIC SEVEN FOOD GROUPS IN DIETARIES AT THE BEGINNING AND CLOSE OF A NUTRITION STUDY*

Food	Percent of Students Including Food Group in Diet		
	First Dietary	Last Dietary	Increase or Decrease
1. Leafy, green and yellow vegetables	64	79	+ 15
2. Citrus fruits, tomatoes, raw cabbage	48	59	+ 11
3. Potatoes and other vegetables and fruits	76	97	+ 21
4. Milk, cheese, ice cream	76	94	+ 18
5. Meat, poultry, fish, eggs, dried peas, beans	94	100	+ 6
6. Bread, flour, cereals, whole-grained or enriched	100	100	--
7. Butter and fortified margarine	76	85	+ 9

*Tabulations were made from daily dietaries of thirty-four ninth grade girls at Elgin, Oklahoma.

The initial dietaries were highest in the bread (100 per cent) and the meat (96 per cent) groups. Potatoes and other vegetables and fruits and butter or oleo were found in the diets of 76 per cent of the students.

Leafy, green and yellow vegetables and ascorbic acid foods were less common.

Improvement was made in the use of foods from all groups with the exception of the bread group which was already 100 per cent. The greatest improvement was in the use of milk (18 per cent). Leafy green and yellow vegetables ranked next with a gain of 15 per cent, and citrus fruits ranked third with an 11 per cent gain.

The evaluation of student dietaries in terms of the "Basic Seven" food groups gave the students an indication of individual and group dietary deficiencies. The students then planned menus for the day, including those foods which were definitely lacking in their personal diets. The menus were later used in planning breakfasts for class and home experiences.

Effectiveness of Breakfast in Meeting the Total Daily Food Requirements

Students next studied the effectiveness of an adequate breakfast in meeting their total daily food requirements. Three of the student dietaries were selected for comparison; one with no breakfast, one with a poor breakfast, and one with an adequate breakfast. An adequate breakfast was regarded as one that furnished one-fourth to one-third of the recommended daily dietary allowance, was relatively high in protein, and included a variety of foods.

The lists of the foods eaten by each girl were written on the blackboard for class comparison. The menus are given as follows:

SAMPLE DIETARY "A"

Breakfast	Lunch	Supper	Snacks
Orange Juice Bacon and Eggs Bread and Oleo Raisin Bran with Milk and Sugar	Barbecued Beef Cabbage Peach Pie Frosted Coke	Hamburger Meat Green Beans Tomato, Spinach Pudding	Cookies Onions

SAMPLE DIETARY "B"

Breakfast	Lunch	Supper	Snacks
Egg Toast and Oleo	Fish Jello Salad Bread, Milk Banana Pudding	Hamburger Meat Bread Tomato, Lettuce	---

SAMPLE DIETARY "C"

Breakfast	Lunch	Supper	Snacks
None	Pinto Beans Spinach Bread, Milk Apple Pie	Hamburger Potatoes Bread Tea with Sugar	None

Students estimated the number of calories in the two breakfasts and compared them with the recommended number of calories for the day (see page 46). The first breakfast contained 705 calories or 28 per cent of the day's requirement. The "poor breakfast" contained 190 calories or 7.6 per cent of the daily requirement. The percentage of protein contained in the two breakfasts was calculated by the teacher and presented to the class for comparison. The adequate breakfast contained 26.1 grams of protein or 33 per cent of the daily requirement, while the poor breakfast contained eight grams or 10 per cent. Eight different groups of food were suggested for breakfasts; the good breakfast contained items from seven of the groups, while the poor breakfast contained items from three groups. Figure 1 gives a graphic illustration of the percentage

of the recommended calories, protein and variety of foods included in sample "A" and sample "B" breakfasts.

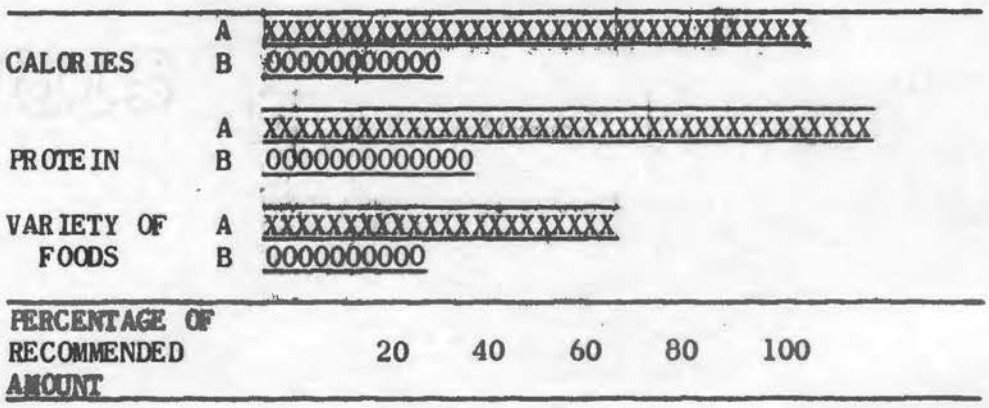

Fig. 1. Comparison of Adequacy of Two Sample Breakfasts

Students concluded that Sample "A" was an adequate breakfast because it furnished more than the recommended one-fourth of the daily caloric requirement, was high in protein (one-third of the daily requirement) and contained a variety of foods. Sample "B" met none of the requirements and was considered a poor breakfast.

Bar graphs (Fig. 2, page 47) were used to show the relationship of an adequate breakfast and an adequate daily diet. The daily nutrient intake of the three sample student dietaries, previously mentioned in the study, was calculated in terms of the food energy in calories and of the eight nutrients. These calculations were made by the teacher to illustrate the vital part that breakfast plays in meeting the recommended daily food requirements. Students assisted with part of the calculations.

Totals were calculated for calories and eight nutrients. Fats and carbohydrates were omitted on the form because of their close association with the caloric intake; the figures for phosphorus were not included

in the recommended daily requirements since it is assumed that the diet which contains enough calcium and protein will also furnish plenty of phosphorus;[1] the figures for vitamin D were not included because of the inaccuracy in estimating the amount received from sunshine and non-fortified foods.

The teacher's next step was to compare these totals with authentic recommended daily requirements. In 1953 the National Council published a revised list of the "Reccommended Daily Dietary Allowances."[2] This list was used for comparison because of the simplicity and ease of calculation, even though no allowances were made in variations in body weight. The table used is given below.

TABLE III

Recommended Daily Dietary Allowances, Revised, 1953

Girls: Ages 13-15	Weight: 108 pounds	Height: 64 inches
Calories	2500.0	
Protein	80.0	grams
Calcium	1.3	grams
Iron	15.0	milligrams
Vitamin A	5000.0	International Units
Thiamine	1.3	milligrams
Riboflavin	2.0	milligrams
Niacin	13.0	milligrams
Ascorbic Acid	80.0	milligrams

The totals of each of the nutrients in the recommended amount and in the three sample diets; (1) the diet with a good breakfast, (2) the diet with a poor breakfast, and (3) the diet with no breakfast were translated into percentages. The percentages were then presented to the class in the form of colored bar graphs. Fig. 2, page 47, shows

[1]Margaret S. Chaney, Nutrition, (New York, 1954), 431-463.

[2]National Academy of Sciences-National Research Council, Publication 302 (Washington, D. C., 1953), 22.

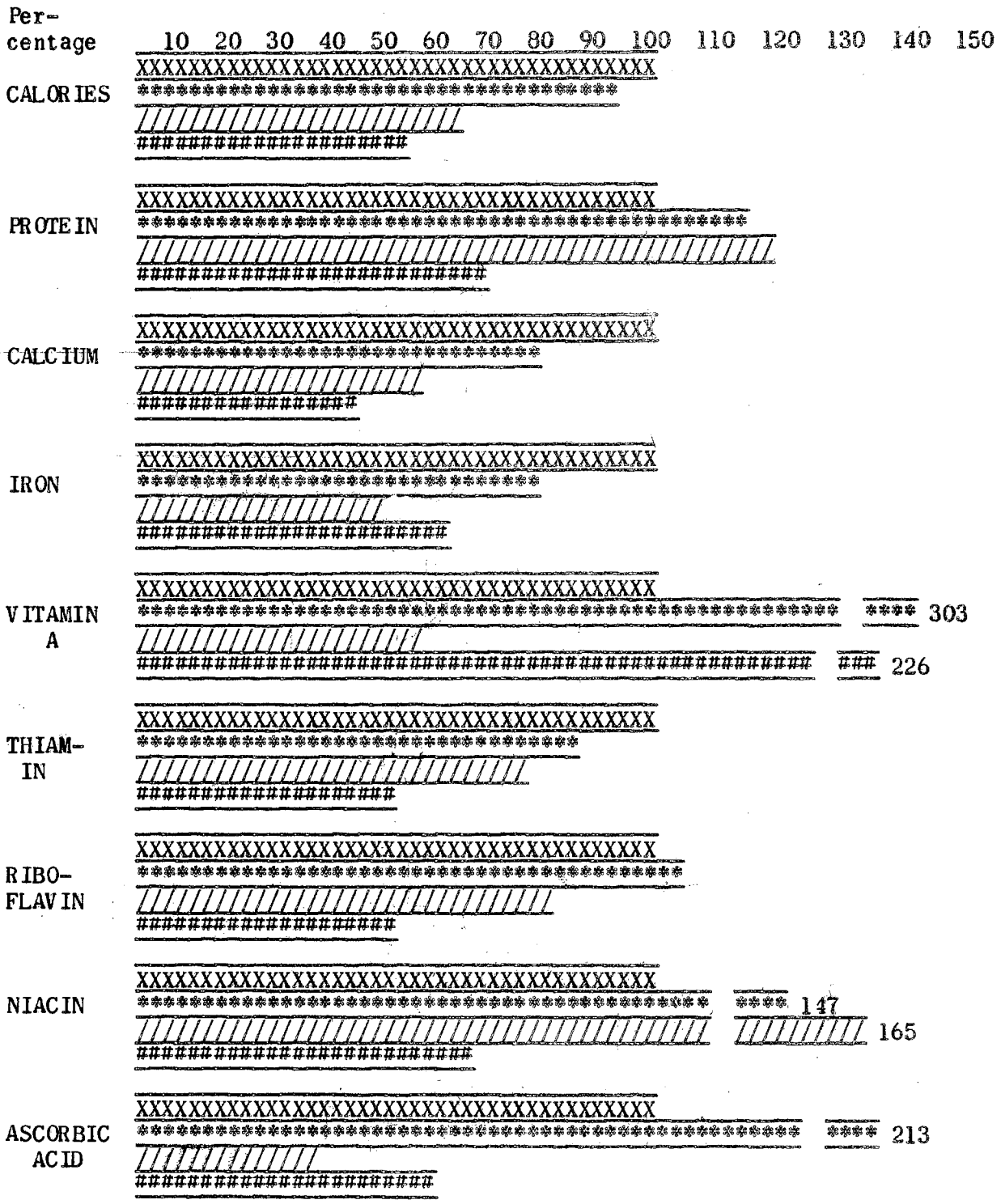

Fig. 2. Comparison of three daily dietaries of ninth grade girls at Elgin, Oklahoma with the Recommended Daily Dietary Requirements, showing the importance of eating breakfast.

Legend: Recommended xxxx Diet with poor breakfast ////
Diet with good breakfast **** Diet with no breakfast ####

the type of graph used.

Analysis of the dietaries revealed that the dietary with the good or adequate breakfast more nearly met the daily caloric requirement, lacking only 47 calories. The diet of the girl with the poor breakfast was 866 calories low; while the girl with no breakfast lacked 1093 calories of meeting the requirement for her age group.

In analyzing the total daily nutrient intake of the three sample dietaries, it was found that the diet with the adequate breakfast was higher in all nutrients, with the exception of protein and niacin. In the two cases, both the diet with the good breakfast and the diet with the poor breakfast exceeded the recommended amount. The first diet was slightly deficient in calcium and thiamine. The diet with no breakfast did not meet the recommended allowance in any nutrient except vitamin A.

The graphic comparison of the three types of diets with the recommended amounts, illustrated in bright colors, attracted the attention of the girls and seemed to convince them that breakfast was important in helping to meet the daily food requirements.

Stimulating Individual and Group Interest In Eating Breakfast

When the students realized the importance of breakfast in meeting the daily nutritional requirements, they made attenpts to encourage the practice of eating breakfast by keeping records of individual scores on one breakfast a week for a period of one semester. The form used is an adaptation of the score used by Sidwell and Eppright in their study of the food habits of Iowa children.[3] The validity of their scoring was

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[3]Virginia D. Sidwell and Ercel S. Eppright, "Food Habits of Iowa Children-Breakfasts," Journal of Home Economics, 45 (1953), 403.

based on the assumption that a good breakfast met or exceeded one-fourth to one-third of the recommended daily nutritional requirements. The following scores were assigned to the various types of breakfasts: total score, 9 points; good to excellent breakfast, 5.5 to 7 points, fair breakfast, 3.5 to 5.4, and a poor breakfast, 0 to 3.4 points. The adapted form for scoring breakfasts used in the study is as follows:

TABLE IV

SCORECARD FOR BREAKFASTS

Food	Points
Milk	2
Citrus fruit or tomato juice	2
Eggs	1
Meat	1
Bread	1
Cereal	1
Butter or fortified margarine	1
Other fruit	1
Total	10

Because of their important contribution to the adequacy of breakfasts, milk and citrus fruits are rated higher than are the other foods.

Meat and eggs are scored separately in the adaptation, thus placing more emphasis on high protein foods. Milk and cocoa are placed in the same class. The total breakfast score is the same as that of the Iowa Study.

The days on which the scores were collected varied and were not announced previous to the day the score would be taken. In this way, it was hoped that the girls would make an effort to eat a good breakfast every morning and not just on the particular morning on which scores were taken. No mention was made of grades, so that the desire would be to improve food habits and not to make a good grade. On the days when

scores were taken, the students listed on a small sheet of paper what they had for breakfast. Each student scored her own breakfast and recorded the score on a line graph. The student could tell at a glance at the graph whether her breakfast habits were improving. One illustration of a student's individual record is shown on the following page. (Fig. 3). The gradual incline of the breakfast scores from 5 to 7.1 was encouraging to both the student and the teacher.

Group interest was stimulated by the use of two large thermometers placed on cardboard, recording the total daily score for each section of the class. The method of daily evaluation appealed to the ninth grade girls who helped average the scores and mark up the total for their section on the large thermometer. Group feeling, no doubt, had much influence on those who had a tendency to bring down the class score.

Records of breakfast scores for the entire class for each of the eight foods included on the breakfast score card are shown on pages 52 and 53 as Tables V and VI. Table V is a record of the scores for the first semester taken one day a week for twelve weeks. It indicates that some improvement was made in the nutritional habits of the group in that the average score of the group increased from 3.5 to 3.95 which was probably a fair breakfast.

Breakfast scores were taken daily for a fifteen-day period during the second semester to see if daily reminders would bring about a greater improvement, (Table VI, page 53). Both the initial score (4.0) and the average score (4.25)were higher the second semester. Parents commented that students made more effort to eat breakfast when they were checked daily.

Averages were presented to the class merely as an interest approach to recognize individual and group improvement in diets. It was not

Homemaking I Section I Jetty Toylene Ogle

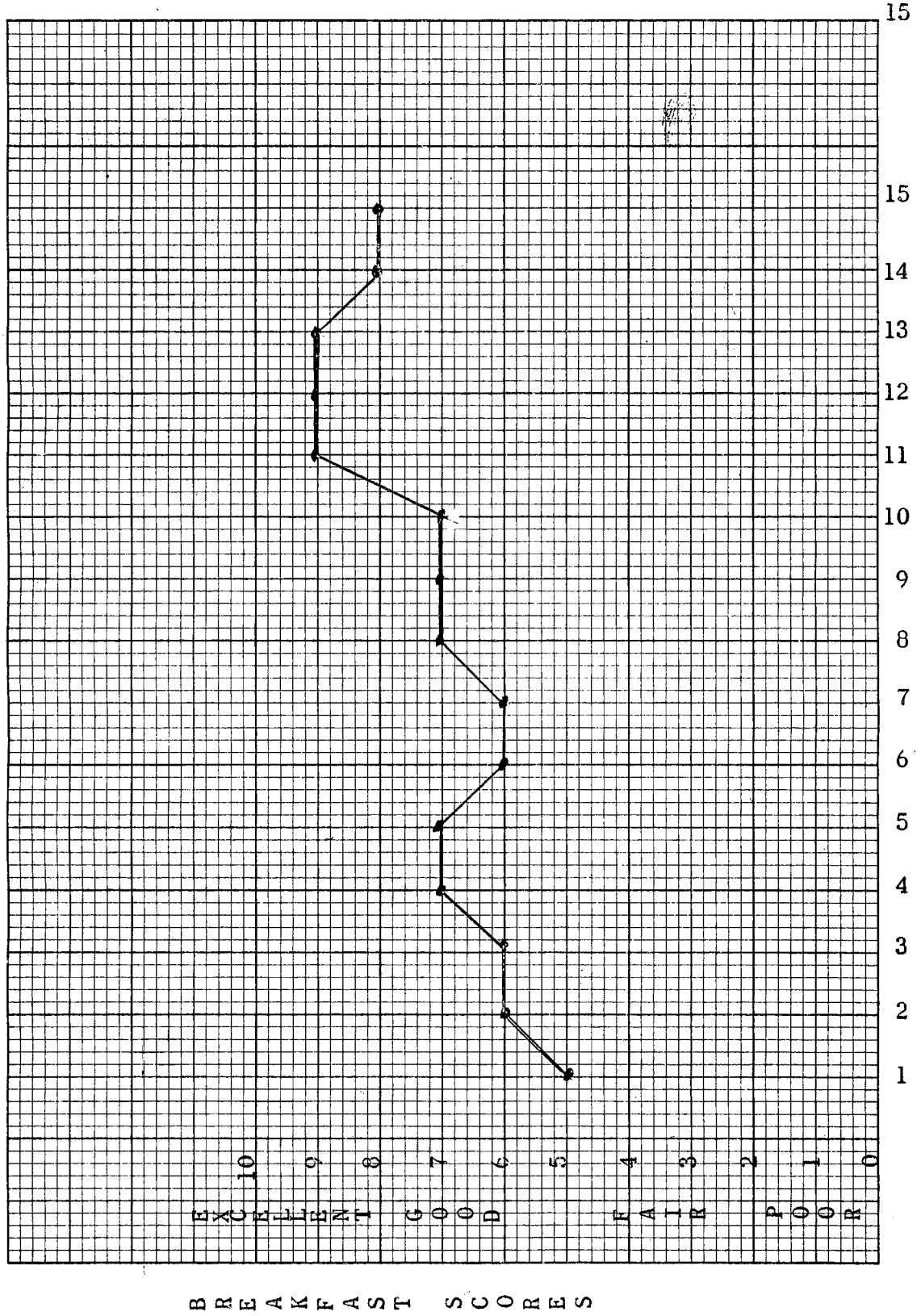

Fig. 3. Sample of Student Breakfast Record

TABLE V

RECORD OF BREAKFAST SCORES OF CLASS OF NINTH GRADE GIRLS AT ELGIN, OKLAHOMA FOR A TWELVE-WEEK PERIOD*

Food	Score	Weeks												Total Class Score	Average Number of Students
		1	2	3	4	5	6	7	8	9	10	11	12		
Milk	2	20	32	26	30	26	32	30	32	42	42	36	42	390	16.25
Citrus Fruits	2	14	18	8	14	14	16	8	16	18	16	24	26	192	8.00
Eggs	1	16	18	13	11	8	8	6	14	13	13	15	17	152	12.66
Meat	1	16	6	9	9	6	7	8	8	8	8	14	15	114	9.50
Bread	1	23	18	20	18	14	22	16	22	25	24	21	22	245	21.42
Cereal	1	7	10	2	7	7	7	6	6	10	5	5	10	82	6.83
Butter	1	15	18	16	17	11	17	17	20	16	18	20	19	204	17.00
Other Fruit	1	8	13	2	2	3	2	5	2	2	3	1	1	44	3.66
Total	10	119	133	96	108	89	111	96	120	134	129	136	152	1423	
Students Present		34	30	32	29	29	30	25	29	32	32	28	30	360	30.00
Average Score		3.5	4.4	3.0	3.7	3.1	3.7	3.8	4.14	4.2	4.0	4.9	5.07	3.95	

*Breakfasts were scored in class for the students in attendance.

TABLE VI

RECORD OF BREAKFAST SCORES OF CLASS OF NINTH GRADE GIRLS AT ELGIN, OKLAHOMA FOR A PERIOD OF FIFTEEN CONSECUTIVE SCHOOL DAYS*

Food	Score	Days															Total Score	Average Number of Students
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Milk	2	34	32	42	30	34	40	36	40	38	34	28	40	30	34	40	532	17.73
Citrus Fruit	2	18	18	28	18	24	22	22	24	26	26	22	28	14	22	22	334	11.14
Eggs	1	16	14	10	14	13	12	10	13	15	14	13	17	9	10	22	192	12.80
Meat	1	11	10	13	11	7	11	11	10	8	13	8	14	6	4	13	150	10.00
Bread	1	27	24	24	24	23	23	25	28	20	28	22	27	19	23	29	366	24.40
Cereal	1	5	6	10	7	7	5	9	10	12	10	7	7	7	9	16	127	8.47
Butter Oleo	1	19	19	21	20	14	18	21	23	16	21	14	20	17	21	24	288	19.20
Other Fruit	1	6	0	2	1	1	5	4	3	1	3	3	5	3	5	6	48	3.20
Total	10	136	123	150	125	123	136	138	151	126	149	117	158	105	128	172	2037	
Students Present		34	33	34	31	30	30	34	32	30	34	31	32	28	32	34	479	31.93
Average Score		4.00	3.93	4.41	4.03	4.10	4.53	4.06	4.72	4.20	4.39	3.77	4.94	3.75	4.00	5.06	4.25	

*Breakfasts were scored in class for the students in attendance.

assumed that the study of the diets of thirty-four students is a large enough group for an authentic dietary study, but the study is used as an example of a stimulating teaching procedure.

The percentage of students including each of the eight food groups in their daily breakfast diet is given in Table VII.

TABLE VII

CHANGE IN BREAKFAST HABITS OF NINTH GRADE GIRLS AT ELGIN, OKLAHOMA

Food	Percent of students eating food for breakfast		
	First Semester	Second Semester	Increase or Decrease
Milk	50.0	56.0	6.0
Citrus Fruits	27.0	35.0	8.0
Eggs	40.0	40.0	Same
Meat	31.0	31.0	Same
Bread	71.0	75.0	4.0
Cereal	23.0	27.0	4.0
Butter or Oleo	57.0	60.0	3.0
Other Fruits	12.0	10.0	- 2

A comparison is shown of the percentage for the first and second semester. The increase or decrease is indicated in the last column. The greatest improvement in the diet was the increase in the use of citrus fruits; an increase of 8 per cent. There was some increase in the use of bread, butter, cereal and milk; less improvement was shown in the use of meat and eggs. Use of other fruits in the diet showed a slight decline, probably due to the fact that local fruits are in season in the fall.

Foods predominating in the students' breakfasts at the close of the study were bread (75 per cent of the diets), butter (60 per cent), and milk (56 per cent). About 33 per cent of the girls were eating eggs, meat and citrus fruits. Cereals and other fruits were groups lowest in

the diets.

Girls were encouraged to eat some breakfast every morning and to choose foods previously lacking in their diet. Table VIII shows the number of students making various scores at the beginning and close of the nutrition project.

TABLE VIII

COMPARISON OF BREAKFAST SCORES AT BEGINNING AND CLOSE OF NUTRITION PROJECT

Breakfast Score	Students Making Score At Beginning	Total Score	Students Making Score at Close	Total Score
0	6	0	1	0
1	3	3	1	1
2	1	2	3	6
3	5	15	6	18
4	7	28	2	8
5	6	30	1	5
6	3	18	12	72
7	1	7	4	28
8	2	16	2	16
9	0	0	2	18
10	0	0	0	0
Total	34	119	34	172
Average		3.5		5.06

It was encouraging to the teacher to see the number of those eating no breakfast gradually diminish; there were six at the beginning and only one out of the thirty-four on the closing day. The average beginning score was 3.5, while the average closing score was 5.06.

Providing Laboratory Experience

Provision was made for students to have class and home experiences in preparing and serving adequate breakfasts. Experience was provided at school by dividing the class into small groups and each group planning,

marketing, preparing, serving, and eating a nutritious breakfast. The entire class had breakfast together at the close of the foods unit. The meal was served on the back lawn around an outdoor fireplace, where part of the meal was cooked. Each group was responsible for preparing one food for the meal. The outdoor breakfast served as a fitting climax for the nutritional study of breakfasts, and the girls discovered that eating breakfast could be fun.

Cleanliness, efficiency and attractiveness were encouraged in meal preparation. The following were demonstrated and practiced: setting a neat, attractive and convenient table; cleanliness in personal and food handling habits, and orderly and efficient housekeeping practices. The above statement is included because the teacher believed that a pleasant environment has a definite effect upon the appetite, digestion and assimilation of food. The practice of offering thanks before meals was usually followed voluntarily by students, in appreciation of the abundance of food. Guests at the meals, including freshman boys, club mothers, teachers and administrators, stimulated the girls to prepare and serve more attractive meals.

Home experiences were planned so that students would have additional laboratory experience in preparing well-balanced breakfasts. Subject matter of the projects included the preparing of servings of citrus fruits or tomato juice for the family for one week, including a variety of ways of serving milk for breakfast, and preparing eggs in different ways. Some students prepared and served an entire breakfast for one week. When the children ate later than the parents, girls planned their breakfasts for children, only.

A brief account has been given of a teaching-learning experience in which many people worked together in varying roles. The teacher assumed the responsibility for initiating a program, but the cooperation of others was a necessary part in following through to a successful conclusion. Table IX, pages 58-79, has been prepared in order to present a more graphic picture of the cooperation and inter-relationship of the entire personnel involved.

TABLE IX

CHART SHOWING INTER-RELATING ROLES OF PARTICIPANTS IN A PROJECT TO IMPROVE EATING HABITS OF NINTH GRADE GIRLS

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
How can a teacher acquire the necessary background for guiding students in improving eating habits?	Made Professional Preparation: 1. Made a survey of nutritional research which was part of a college course entitled "Newer Trends in Nutrition." 2. Made a study of breakfast patterns of high school students in a course entitled "Curriculum Workshop in Home Economics Education." a. Developed a desire to help improve eating habits of girls in local community. 3. Further investigated nutritional research findings concerning the diet of the adolescent girl. a. Discovered that authorities agree that the diet of the adolescent girl is more apt to be deficient than is the diet of any	School Superintendent and President of Board of Education encouraged teachers to continue professional study. People in the community showed interest when the teacher discussed with them some of the nutritional research findings.	

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	other age group or of the diets of boys of the same age.		
	b. Developed greater understanding of the vital importance of the diet of the teen-age girl in relation to early marriages and parenthood.		
	c. Grew in understanding of techniques used in determining nutritional status of a group.		
	d. Studied and evaluated suggested methods of approach to nutritional studies.	The local doctor and county nurse expressed interest in techniques and findings in nutritional research and offered suggestions for local project. The county nurse expressed a desire to work with the school in efforts to improve eating habits of adolescents.	

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	4. Worked with other homemaking teachers in neighborhood group in investigating and evaluating materials presented by curriculum planning groups. All teachers shared their experiences in teaching.		
Is there a need for the organized study of nutrition in the local high school classes?	<u>Became Desirous of Helping Students Improve Eating Habits</u> 1. Observed students to see if there were signs of malnutrition: a. Some students were not eating breakfast. b. Lunches often consisted of candy bar and soft drink. c. Cases of dental caries existed. d. Students frequently complained of headaches. e. Skin blemishes were prevalent.		

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	2. Compared observations with findings of nutritional authorities. Accepted broad generalizations: a. Many adolescent girls have poor diets. b. A poor breakfast is associated with a poor daily diet.		
How can the teacher initiate a nutrition project?	<u>Enlisted the Help of Others</u> 1. Contacted the superintendent of schools to present a tentative plan for a nutritional project.	Superintendent gave approval of project.	
	2. Contacted professional people concerned with health: doctors, nurses and dentists.	Doctors and dentists agreed to give, free of charge, health examinations to the student group concerned.	
	3. Talked with owner of local grocery store concerning availability of food and food expenditures of typical families.	Grocer furnished information on consumer's food buying practices.	

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	4. Decided to carry out study in the ninth grade because it was the largest and youngest class.		
	5. Visited the home of each girl in the ninth grade.		
	6. Talked with parents concerning the desirability of emphasizing nutrution.	1. Parents showed interest in the project.	Students participated in conversation concerning the project.
	7. Briefly outlined project:	2. Parents expressed desire to know more about nutrition themselves.	
	a. Providing for general health examination and dental check of each student.	3. Parents approved plans for health examinations.	
	b. Planning meetings with mothers.	4. Parents agreed to keep record of foods served to the family for one week and to keep an estimate of the cost.	Students showed interest in the proposed project.
	c. Keeping records of present student and family breakfast and daily eating habits.		
	e. Providing school and home laboratory experiences for students to practice good eating habits.	5. Parents responded favorably to an invitation to attend a meeting in the home economics department to help plan the project and to decide how to keep records.	Several students offered suggestions.

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	f. Having a second physical examination as one method of evaluation of progress.	6. Parents agreed to provide a suitable atmosphere and environment at home in which students might apply what they learned.	
What resources are available for teaching nutrition?	Surveyed Available Educational Material 1. Reading references: a. Student: books, bulletins, circulars, cirrent magazines. b. Teacher: nutritional magazines, books, sample charts and records, material from state curriculum committees, courses of study from various states.		
	2. Visual Aids: food charts, pictures, models, bulletin and flannel boards, film libraries, food display.	Bulletins helpful in food selection and menu planning were obtained from office of County Home Demonstration Agent.	
	3. Human Resources: possible talks and demonstrations from professional people, persons in community from other countries.		

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	4. Actual Situations: school lunch room, health center, grocery stores, foods laboratory, homes of students.	Local grocer offered to loan non-perishable foods for class demonstrations and displays.	
	Planned a Number of Possible Individual and Group Experiences		
	1. Doctors and dentists give general physical examinations and dental checks to students.		
	2. Students keep records of food eaten.		
	1. Daily for a week.		
	2. For breakfast for a period of time.		
	3. Students read from selected material.		
	4. Arrange bulletin and flannel boards.		
	5. Arrange food displays.		
	6. Prepare and serve foods appropriate for breakfast.		
	7. Score and evaluate food habits.		

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	8. Make field trips to health center and grocery stores.		
	9. Plan menus using foods lacking in present diet.		
	10. Teacher and student give demonstrations on housekeeping practices, safety in the laboratory, food preparation, table service and etiquette.		
	11. Plan, market, prepare, serve and eat adequate breakfasts, working in small groups.		
	12. Give an all-class breakfast.		
	13. Invite guests to meals.		
	14. Carry out additional food preparation practices in the home.		
	15. Have individual conferences concerning class and home experiences.		
	16. Carry out planned home experiences.		
	17. Show films on nutrition.		

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
What definite arrangements must the teacher make for a general health examination of students?	Directed Arrangements and Procedures for Health Examinations		
	1. Called at Health Center to set a definite date.	Doctor and dentist scheduled date agreeable to both health center and school.	
	2. Arranged with dentist for dental examinations to be given the afternoon of the day scheduled for health examinations.		
	3. Gained approval of the superintendent and placed date on school calendar.	Superintendent approved date.	
	4. Informed the other teachers as to date so they could arrange their class work accordingly.	Other teachers showed interest in the proposed examination; some asked to see results.	
	5. Invited mothers to informal coffee at homemaking department and discussed date and plans for the examination.	Mothers came to a planning meeting to discuss plans for the health examination and to receive information on keeping foods records for the family.	
	6. Prepared students for examination:		Gained understanding of the value of a physical examination

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Students Reaction
	a. Explained type of examination and purpose. b. Discussed the most desirable type of clothing to wear (blouse, skirt and slip). c. Planned for lunch - class decided to take sack lunches. d. Advised concerning social behavior in business offices.		in indicating physical deficiencies. Acquired knowledge and understanding concerning: 1. Individual preparation they need to make (a) suitable clothing, (b) responsibility for own sack lunch, (c) responsibility for personal behavior.
	7. Arranged for transportation - school bus and driver.	Personnel at the Health Center made arrangements to show educational films to students while they were waiting. They also offered the auditorium for use as a lunch room.	2. Applied knowledge to other situations.
	8. Encouraged students to express appreciation to the professional people who had given them their time and service.		Sent Christmas gifts to doctors and nurses who helped with the project.

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Students Reaction
How can a physical examination help students become aware of health deficiencies that may be influenced by their food habits?	Supervised Plans for Physical Examinations 1. Supervised the trip and activities while at the Center. 2. Conferred with doctor, dentist and nurse concerning irregularities and possible corrections.	County doctor, assisted by the nurse, gave general health examination to thirty-two girls. Gave advice to teacher and students concerning correction of irregularities.	Took general health examination which disclosed minor irregularities: 1. Several mild cases of acne. 2. Some abnormalities of weight. 3. Other irregularities that had less bearing on nutrition.
		Dentist examined the teeth and gums, gave each girl a card showing number and location of cavities and indicating condition of gums.	Girls became aware of dental deficiencies: 1. Number of caries. 2. Presence of malocclusion in several cases.
		Medical authorities made the following recommendations as to diet: 1. Eat a good general diet.	Were informed of foods important for good dental condition. Took card with dental information home to parents.

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Students Reaction
		2. Eat foods high in calcium and iron.	
		3. Eat foods high in Vitamins D and E for proper assimilation.	
How can the teacher guide students to become aware of poor eating habits?	Guided Students in Becoming Aware of Present Daily Eating Habits		Students kept a record of the food they ate for one week.
	1. Presented form for keeping a record of foods eaten.		
	2. Helped students become aware of the many influences on our eating habits.		Listed on blackboard the types of foods eaten by families in Elgin community.
	3. Guided students in gaining information on nutrition through selected readings and class discussions.	Housewife gave talk at F.H.A. meeting on food habits in her native land.	Reported on food habits in other countries, arranged a bulletin board with pictures of family meals in foreign countries.
	4. Helped students understand the qualities of a good daily diet.		Discussed influence of age, sex, health, family customs, economy and occupation on eating habits.

Table IX Cont'd.

Problems Confronting The Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Students Reaction
	5. Arranged for an F.H.A. speaker on food habits in other lands.		Drew conclusions as to the kinds of foods that should be included in the daily diet:
	6. Assembled part of the materials for bulletin board arrangement. Guided students in selecting material and arranging bulletin board.		1. Checked individual food records with the basic seven requirements. a. Discovered their diets were low in many groups. (1) Green and yellow vegetables (33% of diets deficient) (2) Citrus fruits, tomatoes, raw cabbage (33% deficient) (3) Milk and milk products (26% deficient) (4) Potatoes and other fruits

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Students Reaction
			and vegetables (26% deficient) (5) Butter and margarine (26% deficient)
			2. Discussed the body's need for food, and the purpose of the various nutrients. a. Prepared bulletin board illustrating the effect of the different nutrients on the personality.
	7. Helped students discover deficiencies in their own daily diet.	Mothers kept record of food served to the family for one week and estimated the cost of the groceries. 1. To show the availability of food.	3. Compared an estimate of their total daily caloric intake with the recommended amount for their age, sex, height and weight. a. Made allowances for variation in bone structure.

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	Determined daily caloric intake in samples of student recorded diets.		Discovered that in most cases they were not meeting the caloric requirement: 2500 c for girls ages 13 to 15. Determined normal weight for individual height and bone structure. a. Results indicated three were overweight and four were underweight.
	<u>Guided Students in Realizing the Importance of Eating Breakfast</u> 1. Helped students evaluate the adequacy of three sample student diets. 2. Illustrated with bar graphs the effect of an adequate breakfast on meeting the total daily food requirement. 3. Explained the qualities of an adequate breakfast. a. Contains 1/4 to 1/3 of the total recommended daily dietary allowance.		Students listed the foods eaten for breakfast in their community. Student studied some recommended breakfast patterns. Made some sample menus with

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
	b. Is high in protein. c. Contains a variety of foods.		with own breakfast pattern: a. Found that many of their breakfast diets were low in citrus and other fruits, milk, cereal, meat and eggs.
	Helped Students Analyze Excuses for not Eating an Adequate Breakfast		Analyzed their excuses for eating a poor breakfast: 1. Being up too late the night before. 2. Having to cook own breakfast. 3. Eating alone. 4. Being upset. 5. No appetite. 6. Getting up too late - having to catch the bus.
			Discussed ways of remedying situation and remov-

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
			ing obstacles.
	Planned for Breakfast Project with Mothers		
What methods can a teacher use to stimulate individual and group interest in eating breakfast?	Arranged for meeting and met with mothers a second time to present the plan for a breakfast study and to discuss with them ways they could help.	Mothers met a second time to discuss ways they could help girls with their nutrition projects. They took home bulletins on family meal planning and budgeting.	
	Guided discussion in evaluating the food records they had kept and planned together ways to improve family nutrition.		
	Taught a Unit Centered on Breakfast		
	Prepared individual servings of orange juice and toast as an introduction to the breakfast study.		Students ate samples of appropriate breakfast foods.
	Presented a method of scoring individual breakfasts.	Parents commented on interest shown in eating breakfast.	Discussed the plan and each girl decided to score one breakfast a week for a period of twelve weeks. Kept a line graph of individual
	Explained the use of a line graph to show progress in eating habits.		

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
			breakfast scores for individual evaluation.
	Used large cardboard thermometers to show group progress in eating habits.		Averaged individual scores and posted class score on large thermometer.
		Parents noted that breakfast habits improved when students were checked daily.	Kept breakfast scores daily for a 15-day period during the second semester to see if there was any improvement in breakfast habits.
How can the teacher provide laboratory experience in teaching nutrition?	Organized class for group activity in preparing and eating adequate breakfasts.		Cooperated with group in various activities.
	Encouraged cleanliness, efficiency and attractiveness in meal preparation: 1. Through demonstrations. 2. By developing standards for practice.		Participated in teacher demonstration or was responsible for a demonstration of the following: 1. Dish washing. 2. Table setting. 3. Manners. 4. Housekeeping duties.
	Encouraged girls to be appreciative of the things they had.		

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
			5. Safety in the kitchen.
	Guided in developing safety rules for working in the foods laboratory.		Learned and practiced safety measures in the kitchen.
	Guided students in planning marketing, preparing, serving, eating and evaluating breakfasts.	Superintendent, principal, other teachers, club mothers and freshman boys were guests at meals. Grocer furnished food exhibit.	Studied information on labels. Planned, marketed, prepared, served and ate adequate breakfasts.
	Encouraged planned home experiences in meal preparation. a. Had individual and group conferences with students.	Parents provided setting for home experiences and gave written evaluation of the girls' projects.	Carried out a home experience in meal preparation. Examples: 1. Prepared servings of citrus fruits for family meals for one week. 2. Used a variety of ways of serving milk. 3. Prepared eggs by different methods.

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
			4. Prepared family breakfast for one week. Had an all-class outdoor breakfast. Each group was responsible for preparing one food.
What indications are found that show students improved in eating habits?	Guided students in interpretation of results shown in breakfast records of the class. Guided in the evaluation of the study: 1. By class discussions. 2. By individual conferences.	Guests who ate with the girls commented on the attractive and tasty meals they had prepared. Parents commented that students made a greater effort to eat a good breakfast before going to school. Parents gave written evaluation of home experiences. Commented that food habits had improved.	Records of breakfast scores showed increase in score. 1. Average beginning score was 3.5. Average closing score was 5.06. (Interpretation: score for average breakfast was 3.5 - 5.5; score for a good breakfast 5.5 to 7.) 2. Increase shown in use of all the groups of foods except "other fruit." a. Greatest improvement shown in the use of citrus fruits.

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperation	Student Reaction
			Girls planned and ate adequate breakfasts in the school laboratory. Student evaluation of home experiences indicated that the girls were including the needed foods in their breakfast. Girls wrote evaluations of the nutrition project and expressed opinion that they were eating more nearly adequate breakfasts.
	Carried out plans for physical examination and dental checks at the end of the unit to see if there were indications of physical improvement. Helped some students make appointments for dental work.	Doctor, nurse and dentist cooperated in giving the second examination. Parents arranged to have the suggested dental repairs made. Parents frequently comment on improve-	Took second general and dental examinations. 1. Improvement shown in skin conditions. 2. Abnormalities in weight improved. 3. Many had dental repairs made.

Table IX Cont'd.

Problems Confronting the Teacher	Teacher's Guidance Role	Parent and Community Cooperating	Student Reaction
		ment in health condition and food habits of their children.	Students sometimes refer to their study of breakfast habits and say that they are still trying to eat a good breakfast.

Summary

The procedures and findings have been given for the planning and developing of a cooperative educational project in nutrition in the Elgin, Oklahoma community. The subjects of the study were thirty-four ninth grade girls.

The summary, conclusions and recommendations are given in Chapter V.

CHAPTER V

INTERPRETATION OF RESULTS

Summary and Conclusions

A brief study was made of the teacher's guidance role in a project designed to improve the eating habits of ninth grade girls in one Oklahoma community. The relationship of the teacher with others involved in the project was shown in the over-all planning and carrying through of the project. The problem selected for study was How Can a Teacher Initiate and Guide a Cooperative Project to Help Students Recognize Their Nutritional Status and Work Toward Improvement of Eating Habits?

The major hypothesis which guided the study was that, through the teacher's guidance and the cooperation of parents and community personnel, ninth grade girls can determine to some degree the adequacy of their diets, be willing to change and apply what they have learned in improving their eating habits.

The approach to the study was made through actual activities and the chief resources were the contributions of the people in the community. Indications of the nutritional status were based upon (1) findings in general physical examinations and (2) a study of seven-day student dietaries. Emphasis was placed on a study of breakfast habits as a means of solving student problems in eating habits. Breakfast records were scored by thirty-four ninth grade girls for a period of time to indicate improvement in eating habits.

A variety of techniques for initial approach, development, evaluating and culminating experiences in guiding improvement of student food habits was shown, but many other problems might have been selected and used, depending upon the needs of the particular group of students. Other methods and activities might have been used in solving the problems, such as dramatizations and greater use of films, charts and other visual aids. The record shows only those actually used in the study.

Evidence has been supplied to indicate that the three basic assumptions were valid: (1) many high school girls do not eat a balanced diet, (2) a project in nutrition requires the cooperative planning of all people concerned and (3) a knowledge of nutrition, a desire to change poor food habits and an effort on the part of the individual to change, will bring about improved eating habits. Evidence is also presented that showed that none of the participating students met accepted nutritional standards in their eating habits at the beginning of the study.

Results of the general health examinations pointed up some physical defects which may have been partially due to poor food habits. Diets were especially low in citrus fruits and green and yellow vegetables. Breakfasts were deficient in citrus and other fruits, milk, cereal, meat and eggs. These indications of dietary deficiencies are in agreement with research findings over many sections of the United States.

Activities are listed that indicate the role of the teacher is broader than mere classroom teaching and the way is illustrated in which a teacher utilized the personnel in the community to achieve a richer experience for the students and the other participants. When people actively participate in an educational enterprise they begin to feel, and justly so, that they are a part of the enterprise and that the

success is part of their responsibility.

The whole-hearted support of the personnel concerned was evidenced in their many contributions. The superintendent expressed interest in a project involving many fields of learning and helped teachers plan work cooperatively for the total development of the student. Parents agreed to provide home atmosphere for student experiences; were cooperative in planning for health examinations and a food habit study and assumed the responsibility for having many physical defects corrected. Business personnel offered information on consumer education and buying practices. Doctors, dentists and nurses devoted time and professional skill in giving examinations to students and offered advice as to corrective measures. One housewife contributed information about eating habits in her native land.

The study indicated the contributions of a number of people to one short project. It does not indicate their feelings but it is safe to assume that when one voluntarily puts a great deal of time and effort into a project, he is doing it because he feels the project is worthwhile.

Finally, evidence is given to show that students did gain in knowledge of nutrition, had a desire to change poor food habits, made an effort to change and did improve food habits. They first began to show interest and participate in the planning during the teacher's visit to the home. They became aware of physical and nutritional status through general health examinations and the evaluation of seven-day dietaries. Students made some improvement both in daily food habits and in breakfast habits as shown by individual records and anecdotal reports from students and parents. A gain in knowledge of nutrition was evidenced

in their ability to plan and prepare nutritious breakfasts both at school and at home.

There was evidence not only that better eating habits resulted but that concomitant learnings related to other major fields also occurred. Some of these learnings are cited: (1) dressing appropriately for the occasion, (2) developing increased understanding of accepted social behavior, (3) improving in language and mathematical skill, (4) expressing appreciation for personal interest and advice of professional people, (5) acquiring greater ability in working cooperatively with others and (6) applying what they had learned in new situations. These citations are made to show that the individual does not learn unrelatedly, but as a whole individual reacting to the total environment.

The previous summary cites evidence that the original assumptions which guided the study were valid. It indicates the kind of guidance the teacher gave, the contributions of others concerned with the project, and the growth made by the ninth grade girls who were the subjects of the study.

The project was limited to a study of eating habits but it is hoped that teachers will find methods presented herein that will be applicable to any project calling for group participation. The following recommendations are made in the light of the significance of the study for homemaking teachers:

Recommendations

1. That the teacher prepare herself professionally for the job she is to do.
2. That the teacher recognize her responsibility for classroom teaching

and the projection of that teaching within the community.

3. That the teacher utilize the many sources of people and environment in the community in creating real-life situations in learning.
4. That the teacher utilize the basic needs of the individual in all teaching, considering each separate learning in its relationship to the total development of the individual.
5. That teachers counsel with the superintendent when they wish to carry out any project involving the use of community resources and that he be kept thoroughly informed of the arrangements and developments so that he will be able to interpret to the community what is being done.
6. That the teacher work cooperatively with other teaching personnel.
7. That the parents and the teacher work toward common understandings and objectives in guiding the development of the student.
8. That students have a part in the planning of a project.
9. That problem-solving techniques be used in guiding students to make their own decisions.
10. That students learn to make use of educational materials in solving problems.
11. That the teacher realize the importance of the approach as a teaching device and as an integral part of the entire learning experience.
12. That the evaluation be such that the student is conscious of continual improvement.
13. That the teacher help students plan culminating experiences in which they can apply and interpret what has been learned.
14. That the teacher recognize the importance of the home environment in the total learnings of the child, thus encouraging home application of classroom learnings.

15. That care be taken in pointing out physical irregularities since students may misuse the indications of irregularities as a means of getting attention. A positive approach should be used, placing the emphasis on the corrective measures and the signs of improvement.

16. That the teacher recognize the limitations of her responsibility and that she use care that she does not over-step the limitations.

The final recommendation is that teachers try a cooperatively-planned educational project to test the richness of the experience for the teacher and for the participants involved.

BIBLIOGRAPHY

BOOKS

Bevier, Isabel, D. Sci. Home Economics in Education. Philadelphia, London, Chicago: J. B. Lippincott Company, 1928.

Chaney, Margaret S., Ph. D. Nutrition. Cambridge, Massachusetts: The Riverside Press, 1954

Counts, George S. Education and American Civilization. New York: Teachers College, Columbia University, 1952.

Durant, Will. The Story of Philosophy. Garden City, New York: Garden City Publishing Co. Inc., 1943.

Good, Carter V, A. S. Barr, and Douglas E. Scates. The Methodology of Educational Research. New York: Appleton, Century, and Crofts, Inc., 1941.

Leverton, Ruth M., Ph. D. Food Becomes You. Lincoln, Nebraska: University of Nebraska Press, 1953.

INTERVIEWS

Agnew, Dorothy, R. N. County Health Center, Lawton, Oklahoma. Personal interview on facilities available for giving general physical examinations, August 5, 1953.

Martin, C. M., M. D. Elgin, Oklahoma. Personal interview on value and method of giving health examinations, July 22, 1953.

Means, R. B., M. D. County Health Center, Lawton, Oklahoma, Personal interview on methods of determining general physical conditions, August 6, 1953.

MAGAZINE ARTICLES AND NEWS LETTERS

Bain, Katherine. "Personality, Growth and Nutrition." Journal of the American Dietetic Association, 28 (June, 1952), 520.

Bennett, Iva B. and Julian Swartz. "Breakfast Habits Can be Improved," Journal of Health and Physical Education, 16 (1945), 437-439.

Eppright, Ercel S. "Nutrition in the Second Decade of Life." Nutrition News, 19:4 (April, 1956), 1.

Eppright, Ercel S. "Vitalizing Nutrition Teaching." Journal of Home Economics, 43 (1951), 90.

Eppright, Ercel S. and Pearl P. Swanson. "Distribution of Nutrients Among Meals and Snacks of Iowa School Children." Journal of American Dietetic Association, 31 (1955), 256-260.

Huncher, Helen A. and Icie G. Macy. "Dietary Study Methods: I, Uses and Abuses of Dietary Study Methods," Journal of the American Dietetics Association, 27 (July, 1951), 557.

Leverton, Ruth M. and Maud C. Coggs. "Food Choices of Nebraska Children." Journal of Home Economics, 43 (1951), 176-178.

Macy, Icie G. "Nutrition of Teen-Age Girls and Motherhood." Nutrition News, 18:4 (April, 1955), 1.

Odland, Lura M., Louise Page, and Louise P. Guild. "Nutrient Intakes and Food Habits of Montana Students." Journal of American Dietetic Association, 31 (1955), 1134-1142.

Patgieter, Martha and Ellen H. Morse. "Food Habits of Children." Journal of American Dietetic Association, 31 (1955), 794.

Patton, M. N., et al. "Working Together for a Better Understanding of Nutrition of School Children." Journal of Home Economics, 45 (March, 1953), 161.

Phair, W. Philip. "Diet and Malocclusion." Nutrition News, 19:3 (February, 1956).

Shank, Robert E. "Revisions of the Recommended Dietary Allowances." Journal of American Dietetic Association, 30 (1954), 105-110.

Sanders, Margaret R. "A Family Centered Foods Course." Journal of Home Economics, 44 (December, 1952), 775.

Sidwell, Virginia D. and Ercel S. Eppright. "Food Habits of Iowa Children-Breakfasts." Journal of Home Economics, 45 (June, 1953), 401-405.

Spurling, Dorothy, et al. "Poor Food Habits are Everybody's Concern." Journal of Home Economics, 46 (1954), 713-715.

Steele, Betty F., et al. "Role of Breakfast and of Between-Meal Foods in Adolescents' Nutrient Intake." Journal of American Dietetic Association, 28 (November, 1952), 1054.

Trulson, Martha F. "Assessment of Dietary Study Methods: II. Variability of Eating Practices and Determination of Sample Size and Duration of Dietary Surveys." Journal of American Dietetic Association, 31 (1955), 707-802.

Tuttle, W. W. "Effect on School Boys of Omitting Breakfast." Journal of American Dietetic Association, 30 (1954), 674-677.

Tuttle, W. W., M. Wilson, and K. Daum. "Effect of Altered Breakfast Habits on Physiologic Response." Journal of Applied Physiology, 1 (1949), 545-559.

Warnick, Kathleen Porter. "Nutritional Status of Adolescent Idaho Children." Journal of American Dietetic Association, 31 (1955), 486.

Warnick, Kathleen Porter, Shirley V. Bring, and Ella Woods. "Nutritional Status of Adolescent Idaho Children: II. Food Habits." Journal of American Dietetic Association, 31 (1955), 1143-1147.

Wilson, Ollie M. and Nettie C. Esselbaugh. "Nutritional Status of Ten Family Groups in Washington State: I. Effect of Nutrition Education of Food Habits." Journal of the American Dietetic Association, 28 (December, 1952), 1133-1137.

Young, Charlotte M. et al. "A Comparison of Dietary Study Methods: II. Dietary History vs. Seven-Day Record vs. 24-Hour Recall." Journal of the American Dietetic Association, 28 (March, 1952), 218.

PAMPHLETS AND PUBLIC DOCUMENTS

American Home Economics Association. Handbook of Food Preparation. Washington, D. C., Revised, 1950.

Babcock, M. J. "Simplification of the 'Long Method' for Calculating The Nutritional Value of Diets." New Jersey Agricultural Experiment Station Bulletin Number 751 G (June, 1950), 79.

General Foods Corporation, Consumer Service Department. Food Chart. New York.

Havighurst, Robert J. Developmental Tasks and Education. Longmans, Green and Company, New York. Second Edition, 1952.

Leverton, Ruth M., Ph. D. A Girl and Her Figure. National Dairy Council, Chicago, 1955.

McCollum, E. V. Breakfast, Teacher's Source Book. Cereal Institute, Chicago, 1948.

National Academy of Sciences-National Research Council. Publication 302. Washington, D. C., 1953.

Oklahoma A. and M. College, Extension Division. Circular Number 471, Eat Wisely, Protect Health, Conserve Food. Stillwater, Oklahoma.

United States Department of Agriculture, Bureau of Human Nutrition and Home Economics. Bulletin Number AWI-107, Eat a Good Breakfast. Washington, 1944.

United States Department of Agriculture, Bureau of Human Nutrition and Home Economics. Bulletin Number AIS-59, Food for the Family with Young Children. Washington, 1946.

United States Department of Agriculture, Bureau of Human Nutrition and Home Economics. Leaflet Number 288, National Food Guide. Washington, 1948.

Vocational Division Bulletin Number 252, Home Economics Education Series Number 29, Home, School and Community Experiences in the Homemaking Program. Washington: Government Printing Office, 1953.

Wilkins, Walter, M. D., Ph. D., and French Boyd, B. S. Nutrition for You. Jacksonville, Florida, 1955.

UNPUBLISHED MATERIALS

Dickerson, Carrie. Improving the Eating Habits of Third and Fourth Grade Pupils. Unpublished Master's Thesis. Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma, 1950.

Hinnen, Norma. Study of Food Habits of Women Students in a College Residence Hall Dining Room. Unpublished Master's Thesis. Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma, 1950.

Johnson, Felicia. Guiding Students and Families in a Cooperative Effort Toward Improved Nutrition. Unpublished Master's Thesis. Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma, 1954.

Thomas, Hazel Marie. A Resource Unit for Parents of the Need of Protein in the Young Child's Diet. Unpublished Master's Thesis. Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma, 1951.

APPENDIX A

Copy of Invitation to Mothers to Attend Meeting

To the Mothers
of
The Freshman Girls:

Please come in for a cup of coffee Monday afternoon, August 27, from 2:45 to 3:45, in the Home Economics Building.

We would like to talk over some plans for the Homemaking I Class.

Sincerely,
Anna Ryan
Vocational Homemaking
Teacher

APPENDIX B

CHILD HEALTH RECORD

INDEXED	
Inf. Pres.	
School	

Name _____ Sex _____ Color _____
(last) (first) (middle)

Address _____

Father's Name _____

Date of Birth _____ Birthplace _____ Birth Registered _____ Father's Occupation _____

Attendant at Delivery _____ Family Physician _____ Mother's Name _____

IMMUNIZATIONS AND CLINICAL TESTS							Significant Facts (Disease, History, Habits, etc.)
	Date	Status	Date	Status	Date	Status	
Typhoid							
Smallpox							
Diphtheria							
Schick							
Pertussis							
Tetanus							

School							
Grade							
Date							
Age							
Nutrition							
Orthopedic							
Skin and Scalp							
Head and Neck							
Eyes							
Ears							
Nose							
Throat							
Teeth							
Oral Hygiene							
Heart							
Lungs							
Abdomen							
Genitalia							
Parent Present							
Examiner							
Date							
Height							
Weight							
Date							
Hearing	R— L—	R— L—	R— L—	R— L—	R— L—	R— L—	R— L—
Vision without Glasses	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20
Vision with Glasses	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20	R 20 L 20

Date	Inspections	Date	Inspections

Code: 0-Satisfactory; 1, 2-Slightly, Markedly Unsatisfactory; X- Needs Attention; — No information; Encircled Code - Correction

APPENDIX C

SCORECARD FOR DIETARY[a]

Name or Number_____

Food	Score	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1 Leafy green and yellow vegetables	2							
2. Citrus fruits, tomatoes, raw cabbage	2							
3. Potatoes and other vegetables and fruits	1							
4. Milk, cheese, ice cream	2							
5. Meat, poultry, fish, eggs, dried peas, beans	1							
6. Bread, flour, cereal, whole-grained or enriched	1							
7. Butter and fortified margarine	1							
Total								

a. Double score is given to foods that have been found to be most scarce in the diets of the high school girls.

VITA

Anna Laura Ryan

Candidate for the Degree of

Master of Science

Thesis: THE TEACHER'S ROLE IN A COOPERATIVE EDUCATIONAL PROJECT TO IMPROVE EATING HABITS

Major Field: Home Economics Education

Biographical:

Personal data: Born near Elgin, Oklahoma, October 7, 1915, the daughter of Timothy and Mary Ellen Ryan.

Education: Graduated from the Elgin High School, Elgin, Oklahoma in 1933; completed two years at Cameron State School of Agriculture and was graduated in 1935; received the Bachelor of Science degree from the Oklahoma Agricultural and Mechanical College, with a major in Home Economics Education, in August, 1937.

Graduate Study: Graduate courses completed at Oklahoma University, Norman, Oklahoma in 1939; at Colorado Agricultural and Mechanical College, Fort Collins, Colorado, 1947; and at Oklahoma Agricultural and Mechanical College, Stillwater, Oklahoma.

Professional Experience: Employed as Vocational Home Economics teacher at Arcadia High School, Arcadia, Oklahoma in 1938, and at the Elgin High School, Elgin, Oklahoma from 1938 to 1957.

Member of Omicron Nu, Chi Delta Phi, Oklahoma Home Economics Association, American Home Economics Association, Oklahoma Vocational Association, American Vocational Association, and Oklahoma Education Association.