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A STUDY TO DETERMINE THE EFFECT OF A NUTRITION
PROGRAM ON THE EATING HABITS OF A GROUP OF FIRST GRADE CHILDREN

By
Eunice Bryan Outlaw

An abstract of a thesis submitted to the
Faculty of the University of North Carolina
in partial fulfillment of the requirements
for the degree of Master of Science.

Greensboro

1943

EUNICE BRYAN OUTLAW. A Study to Determine the Effect of a Nutrition Program on the Eating Habits of a Group of First Grade Children. (Under the guidance of MISS VIVA M. PLAYFOOT, Chairman of Committee and DR. ORREA F. PYE, Director.)

The purpose of this study was to discover whether improvements could be brought about in the food habits of first grade children by a nutrition teaching unit. First, information regarding food habits of the children when they started to school was obtained from both children and parents through the personal interview or questionnaire method; second, records were kept of their eating habits in the school lunchroom; third, information was obtained from both children and parents by individual interviews, after the nutrition teaching. A comparison of the children's eating habits before and after the teaching program showed improvement in the majority of cases. A close relationship between economic status and intelligence quotients with improved eating habits was indicated. It is concluded that the food habits of children of first grade age level can be improved by a nutrition teaching unit adapted to their needs and interests.

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CHAPTER I

Introduction

Within recent years the need for nutrition education throughout our nation has become more and more apparent. Of the million men examined physically by Selective Service before May, 1941, approximately 400,000 were found unfit for military service. It was estimated by Brigadier General Lewis B. Hershey that probably one-third of these were suffering from disabilities directly or indirectly connected with nutrition. The chief single cause for rejection was bad teeth. The National Nutrition Conference called in May, 1941, by President Franklin D. Roosevelt focused public attention on the necessity for an all-out program to improve the nation's health by education concerning right food habits and food values. Our present emergency has pointed out the need for better nutrition; it has not created it. It has jogged us out of a rut, made us think what might be done, and wonder what is the most effective way to do it. The recommendations of the National Nutrition Conference included the following:

The development of an integrated program of nutrition education to be carried on through the schools from the first grade through the adult education classes.

1.

Lewis B. Hershey, "Selective Service and Its Relation to Nutrition," Proceedings of the National Nutrition Conference for Defense, p. 67.

2.

Howard Y. McClusky, "Community Planning for Nutrition," Proceedings of the National Nutrition Conference for Defense, p. 195.

and:

Suitable teaching of good food habits should be given in the schools at all levels and to both sexes. The teaching should be adapted to the needs of various population groups and to the economic situation of the family. The educational possibilities of the school lunch should be utilized.³

Letitia Walsh says of elementary nutrition education. "It would seem both economical and effective for children at an early age to establish right habits of eating food. Not only would such instruction in the primary grades save the need of breaking undesirable habits later, but it would also provide for cumulative social learnings at the various levels of the pupils' maturity and needs."⁴

The purpose of this study is to attempt to measure the effectiveness of a nutrition teaching program in the first grade-- to determine if possible to what extent sound food habits may be established through instruction in nutrition. The interest of the writer grew out of a desire to find out for herself how much information in nutrition, given first grade students in the classroom, could be made use of in real life situations.

³Lucy H. Gillett and Hazel Kyrk, "Economic Policy and Social Responsibility", Proceedings of the National Nutrition Conference for Defense, p. 99.

⁴Letitia Walsh, "Home Economics in General Education at Elementary and Secondary Levels", Journal of Home Economics, XXIX (October, 1937), 534.

CHAPTER II

Review of Literature

In reviewing the literature, a summary is given first of studies which have been made pertaining to the measurement and improvement of the food habits of groups of children. Second, a summary is given of the methods used in these and other studies to obtain information about the eating habits of various groups of students. The purpose of this is to find the methods which would be most adaptable and reliable for use in the present study. In the third part of this chapter, a digest is given of various experiences and conclusions of several workers in the field of elementary education which seem pertinent to the teaching program to be undertaken in this experiment.

The influence of numerous factors upon the food habits of different groups of students at various age levels has been the subject of several studies. The groups studied have included nursery school, children in public schools, and college students.

At the nursery school level, Campbell studied the effect of nursery school teaching in 1933 when he compared seventeen former nursery school children, aged five to fifteen years, and a similar group of non-nursery school children as observed in a summer school camp. It was found that the former group ate more vegetables, but less bread and eggs. There was little detectable difference in the two groups on the whole.¹

¹E. H. Campbell, "The Effect of Nursery School Training Upon the Later Food Habits of the Child", Child Development, IV(December, 1933), 328.

In 1933 Jimsiana Brassfield made a study to determine to what extent the food and health habits of elementary pupils could be evaluated and improved when necessary. She used a list of foods which students ate previous to a teaching program as an indication of their eating habits, and the lists of foods which the pupils learned to like during the study as an indication that the teaching of nutrition changed their food habits, at least for the time. Her conclusions were that the fundamental principles of nutrition are easily taught and less difficult for the dull or disinterested student to learn when there is an opportunity to make practical applications.²

Martha Hardy and Carolyn Hoefer made a study of the results of a health education program in Joliet, Illinois. The program investigated included two years of preliminary teaching followed by a three-year period of health instruction in which classroom projects were supplemented by interviews with child specialists. The immediate outcomes were measured by means of dietary histories covering the period of health instruction. At the end of every year each child was given a health examination by a physician. After each of these examinations the physician summarized his findings in the form of a general description of the child's health status. When comparisons were made of children of the same age, with the same physical condition at the beginning of the program, and from similar types of homes, those who had participated in the health projects conducted in the classrooms were said to be healthier at the close of the pro-

² Jimsiana Brassfield, An Experiment in the Teaching of Nutrition To Improve the Food Habits of a Group of Elementary School Pupils and College Students, (Unpublished Master's thesis, The Ohio State University, Columbus, Ohio, 1933.)

gram than those who did not receive that instruction. The change between the first examination and the last was quite noticeable in the case of the instructed pupils, and it was believed that a real improvement was indicated. The pupils in the control group were in little better condition at the final examination than they were in the beginning of the program. The instructed pupils improved in dietary practices with the exception of drinking tea and coffee. The most marked difference made between the two groups was observed in the consumption of other vegetables and milk. Marked increase in consumption cereals was likewise established in the instructed group. Among the instructed pupils the chances were better than 93 in 100 that fruits were more frequently a part of their daily diet during the last year of the teaching than it had been the preceding year.³

A five-year program of health education was carried out by Bent and Green in Nashville, Tennessee, to alleviate the high death rate among negroes in that vicinity. A questionnaire revealed knowledge of foods to be most deficient and food habits very poor. The facts obtained from 140 students were: 11 had fairly well-balanced diets: 122 drank no milk whatsoever; 136 ate neither tomatoes nor oranges; 58 ate no green leafy vegetables. After a health program taught throughout the school, a second survey showed the following improvements; 36 per cent instead of 14 per cent included milk in their diet regularly, 16 per cent instead of 0.04 per cent included fruits and vegetables in their diets regularly.⁴

³ Martha Hardy and Carolyn H. Hoefer, Healthy Growth, p. 261-263.

⁴ M. J. Bent and Ellen E. Green, "An Experiment in Health Education," Journal of Health and Physical Education, VII (October, 1936), 486-488.

In 1923 the city of Fargo, North Dakota, entered into partnership with the Commonwealth Fund in a five-year demonstration of ways and means by which approved child health services might be incorporated into the permanent program of the health department and the public school system. The aim of the school health program was to institute for every child a personal health program which would enable him to reach and hold the highest level of physical health of which he was individually capable, to develop the public health program to a point where this became possible, and to give the child the facts necessary to make both programs self-perpetuating. The health routine, in which the Fargo classrooms were engaged, in addition to medical and dental examinations, immunization, and home visiting by the nurses, included the continuous observation of the individual child by the teacher, who kept informal memoranda in record form. These memoranda recorded the child's progress in the correctible defects and the major elements in his individual health problem. A health habit record was kept by the child at school and also by the parent at home. Daily health inspection was made informally while health records were being marked. Weight and height records were kept, and weight report cards were kept. Milk was served at school to every child. Health was taught in all grades and many activities and projects were carried out. It was believed that the teaching was quite successful, but no objective measurements of progress were made.⁵

As a part of an experimental school health educational project which extended over a six-year period from 1932 in Cattaraugus County, New York,

⁵ Maud A Brown, Teaching Health In Fargo, p.p. 2-4, 138.

effectively as an educational project for improvement of food habits.⁷

Lacey demonstrated improvement of eating habits of second grade children through a classroom unit of foods using subjective means of measurements.⁸

Rhinehart, in 1942, carried out a five-year developmental experiment sponsored by a private social agency in a public school, through which he sought to develop better sleep and dietary habits in order to improve home and school adjustments, the general physical development of the children, and their social relationships. Dietary and sleep records were kept of the children and they indicated appreciable favorable change. Weight changes offered some substantiation of the improvement in dietary and sleep records.⁹

Botto, in 1931-1932, carried on an investigation in seven schools in the state of Kentucky with about five hundred girls, of whom about two-thirds had had home economics instruction. She found that the home economics training had not significantly improved the food habits of the students.¹⁰

Jones, in 1934, made a study of the same type as Botto's in Iowa, but gathered additional information. She found out which foods served were not eaten, and she gave a test to discover what the children knew

⁷American Child Health Association, Child Health Demonstration, Mansfield and Richland County, Ohio, p.p. 291-292, 298.

⁸Frances Lacey, "Building Health Through a School Activity," Childhood Education, XII (March, 1936), 273-75.

⁹Jesse Batley Rhinehart, "Some Effects of a Five-Year Developmental Experiment Sponsored by a Private Social Agency in a Public School," Journal of Experimental Education, X (June, 1942), 200-205.

¹⁰Clara M. Brown, Evaluation and Investigation in Home Economics, p. 246.

Shuttleworth made a series of evaluation studies in an effort to determine the effectiveness of the program in terms of two objectives, namely, the improvement of pupil health behavior and of pupil understanding in relation to health. At the elementary level, comparisons were made between conditions as they existed in the one-teacher and two-teacher schools in 1932, near the beginning of the experimental project, and again in 1936 or later. Evaluation methods included pupil questionnaires on daily health practices; health information tests; classroom observations of pupils' health habits; and parent interviews. A questionnaire on daily health practices formed the basis for the home studies. Thorough analysis showed that health practices in 1936 were significantly better than in 1932. Evidences of improvement seemed to indicate that the school program was slowly producing beneficial effects in aiding pupils to assume greater responsibility for the practice of health habits.⁶

A successful child health demonstration was carried on in Mansfield and Richland County, Ohio, from 1922-1925 through the American Red Cross. The nutrition teaching in the elementary grades was given by the regular classroom teachers under the direction of the health education director. Food score cards of food habits were kept by each teacher for every child. These indicated in many cases great improvement in habits. They served the three-fold purpose of actively interesting the teacher, the child and the parent in the child's food habits. Successful efforts were also made to correlate nutrition with other subjects taught in the curriculum. The school lunch was used very

⁶ Ruth E. Grout, "Appraising a School Health Education Program," American Journal of Public Health, XXX (July, 1940), 798-804.

about food values. She concluded as had Botto, that the home economics training given had not significantly improved food habits, although such training seemed to have some influence in the case of certain foods. She discovered, in addition, that meals served to the children were often inadequate and that there appeared to be little relationship between food habits and knowledge of food values.¹¹

In 1936, when the Wisconsin Home Economics Association was attempting to develop an improved course of study for the secondary schools of the state, Segner decided to have their proposed foods unit tried out in the state. She checked the pupils' knowledge both before and after instruction, using pencil and paper tests. She developed a dietary form on which students recorded what they ate, when they ate it, and what was on the table that they refused to eat. She also developed a crude scoring form to use in evaluating the dietaries. Like Botto and Jones, Segner found no significant improvement in dietary practices resulting from the study of the foods unit, although the classes made significant gains on the pencil and paper tests. She found that the lack of improvement in dietary habits might in many cases be explained by the fact that the students were not offered adequate meals. Probably the most significant of Segner's findings was that, although the improvement in dietary practices for the group as a whole was disappointingly small, the improvement in certain classes was very marked. She had no evidence to show why some groups improved their habits and others did not.¹²

¹¹ Ibid., p. 246.

¹² Ibid., p. 246.

With results in contrast to the three latter studies cited above, Stone, as reported by Brendle, carried out a similar study investigating the improvements in nutritional habits of high school students through home economics teaching in 1929. Weight gains in both groups were studied, and a decided increase in the number of pupils eating the types of breakfasts and lunches classified as good led her to conclude that food habits of high school students could be improved by instruction based on their nutritional needs, but that lack of control of home conditions may hinder nutritional changes.¹³

The present study was conducted with first grade children. An attempt was made to evaluate the effectiveness of an intensive period of nutrition teaching upon the food habits of these children. In seeking the best method for determining what the children's eating habits were prior to and after teaching, the studies just reviewed and others were examined for suggestions as to methods. Bent used a questionnaire which revealed knowledge about foods and good eating habits to be deficient.¹⁴ Prentiss and Jones analyzed records of nursery school children kept by adults.¹⁵ McCoy and Bull used a like method with a similar group.¹⁶

¹³ Gleo Brendle, "Food Production and Consumption Practices in a Selected Group of North Carolina Homes," (Unpublished Master's thesis, The University of North Carolina, Greensboro, North Carolina, 1941.)

¹⁴ Bent and Green, op. cit., p. 486.

¹⁵ Sara W. Prentiss and Mary Cover Jones, "The Observations of Food Habits in Young Children," Childhood Education, VII (September, 1930), 14-17.

¹⁶ Jeanette B. McCoy and Helen D. Bull, "Ten Good Eaters and Ten Poor Eaters," Journal of Pediatrics, XVII (August, 1940), 232.

Shuttleworth used pupil questionnaires, health information tests, classroom observations on pupils' health practices, and parent interviews.¹⁷ Hardy measured immediate outcomes of a teaching program by

means of dietary histories covering the period of instruction.¹⁸

Martin made a survey of the selection of school lunches during a whole year to see the effect of a health program in progress.¹⁹

Peterson, who investigated the food habits of 1,624 sixth and seventh grade pupils in ten elementary schools of Chicago obtained information concerning food consumption by having the pupils keep daily records of their food consumption for one week. Pupils submitted these without signing their names, and it was thought that they were fairly accurate.²⁰ It was felt that a combination of a number of these methods would be desirable to use in the study about to be undertaken.

In planning an effective means of nutrition teaching for the first grade children, the experiences and conclusions of workers in the field of elementary health education were studied.

The Joint Committee on Health Problems in Education has defined

¹⁷ Grout, op. cit., p. 799.

¹⁸ Hardy and Hoefer, op. cit., p. 261.

¹⁹ Ethel Austin Martin, "Food Selection For Health," Nation's Schools, XXIV (October, 1939), 62-66.

²⁰ Agnes B. Peterson, "Food Habits of Sixth and Seventh Grade Children in Ten Elementary Schools of Chicago," Research Quarterly, IX (December, 1938), 75-76.

the general term "health education" as the "sum of experiences in the school and elsewhere, which favorably influence habits, attitudes, and knowledge....." ²¹ Very little concrete information is given in the literature as to how it is best to build attitudes except by training in habits and knowledge and letting attitudes develop incidentally. "Health teaching in the primary grades consists largely of supervising and directing pupils in healthful living and developing desirable attitudes for healthful living." ²²

Stone says, "The teaching of nutrition in the grades should be done by the regular classroom teacher as an integral part of their health instruction." ²³ Most educators agree that the formation of habits is of utmost importance, but that unless these habits are controlled by thought they will not function under all circumstances. "Life demands that we continually make adjustments to unexpected situations. Habits alone will not always help us..... Teaching should be based on life experiences, and not subject matter topics. Subject matter should be presented if it contributes to life experiences." ²⁴ Strang and Smiley believe that with such instruction there is no gap between thinking and doing. The children learn to do better the things they would be doing without guidance. Only if this

²¹ Health Education, Report of Joint Committee on Health Problems in Education, p. 16.

²² "Suggested School Health Policies. A Committee Report: Part II," Journal of Health and Physical Education, XI (June, 1940), 358.

²³ Harriet Stone, "The Functions of the Nutritionist," Health and Physical Education, IX (October, 1938), 482.

²⁴ Lillian Davis, "The Function of the Health Teacher," Health and Physical Education, IX (September, 1938), 420-421.

action is followed up by reason will the principles applied in school be effective in other situations at home and in later life.²⁵

It is conceded by most health specialists that the specific knowledge concerning foods and growth which children in the primary grades should be expected to learn, is very simple and very limited in amount.

According to Stone:

The chief nutritional emphases for these younger children are: that we should have breakfast every morning before coming to school; that we should have milk in some form at every meal; that we should eat vegetables and some whole grain cereal or bread every day; that cod liver oil helps children to grow with straight legs and good teeth; that sweets are desserts to be eaten at the end of a meal, not between meals..... Other aspects of health education must be developed along with nutrition education. The relationship between nutrition, sleep, and rest, regularity of living, sunshine and fresh air, exercise and resistance to infection, sanitation and safety becomes increasingly more apparent and more significant.²⁶

Grout says that there should be little, if any formal health teaching in the lower grades.²⁷ The greatest single weakness of health teaching has been the tendency to "talk" health to pupils, when they should be doing "healthful things".²⁸ Educators must enter the child's world and demonstrate how health habits contribute to the things the child wants to do and be.²⁹

²⁵ Ruth M. Strang and Dean F. Smiley, The Role of the Teacher in Health Education, p. 221.

²⁶ Harriet Stone, "Nutrition in the Classroom", Health and Physical Education, XII (November, 1941), 504-505, 531-533.

²⁷ Ruth E. Grout, Handbook of Health Education, p. 12.

²⁸ Howard L. Conrad and Joseph F. Meister, Teaching Procedures in Health Education, p. 71.

²⁹ Ruth Strang, "Three R's for Health Habits," Health and Physical Education, VIII (September, 1937), 411.

According to Strang and Smiley, it is of value for children to read of situations similar to their own which reinforce their good habits and lead to the formation of simple guiding principles for future conduct. Fanciful tales and stories about faraway things and places may have little health educational value since children fail to connect these remote experiences with their own daily activities.³⁰ Classroom experiences with pictures, stories, discussions, and expressions of approval on the part of the teacher and members of the class help to build up a favorable class attitude.

The importance of having children actually handle foods is stressed throughout the literature. Strang and Smiley say that nothing arouses so much interest among primary children as cooking and eating. They summarize the experiments of Rose and Bosley in teaching nutrition as follows:

It was found that the preparation of simple foods in the classroom was a most effective introduction to them... This introduction of the essential foods, one by one, involving preparation, discussion, and eating of the food, makes an impression that posters and scrapbooks fail to make. ³¹

French Boyd found that in teaching nutrition, stressing food values and the importance of certain foods in the body had little effect on the child's food habits. She obtained better results when she put the cart before the horse, and instead of teaching about food first, she taught about growth. All her students were interested in growing. They liked to be weighed and measured, and to show their muscles. They enjoyed

³⁰ Strang and Smiley, op. cit., p. 222.

³¹ Ibid., p. 224.

looking at their nail beds to see if they were healthy, and they wanted to feel well at all times. She achieved better results when she tied these natural interests into her nutrition teaching.³²

Pazourek stresses the importance of the school lunch. He says that it provides one of the richest health teaching situations in the school, an opportunity which few schools are adequately utilizing.³³ Wood believes that by means of the school lunch the child should form good food habits. He should learn to eat the right kind of food, and to have some conception of a suitable meal. He should learn to acquire a taste for various vegetables and fruits, and to eat all the food on his plate. The influence of the social group is such that he will often eat at school the food that he refuses at home.³⁴

These references have applied to the objectives, methods, and outcomes of nutrition teaching in the primary grades. The present study sought to conform to the best techniques of teaching as described. The formation of good eating habits was a major objective of the teaching done. At all times attempts were made to back up this teaching by imparting understanding of the reasons for the importance of these habits, and by seeking to develop proper attitudes.

³² French Boyd, "The Nutritionist at Work," Nation's Schools, XXVII (February, 1941), 70-71.

³³ Leone Pazourek, "The School Lunchroom as a Center for Health Education," Health and Physical Education, XI. (December, 1940), 592-593/

³⁴ Thomas D. Wood, Health Education, p. 176.

CHAPTER III

Procedure

The Subjects.

This study was undertaken with a group of thirty first grade children at the Curry School, a demonstration school on the campus of the Woman's College of the University of North Carolina. In the group there were fourteen boys and sixteen girls. The ages of these children ranged from six years, one month to seven years, four months with a median of six years, ten months at the time the teaching unit was initiated. Table 1 shows the distribution of ages represented. There were no repeaters in the group. One girl had started in the first grade the year before, but because of very severe burns, she had been forced to drop out and start again this year.

Table 1. Age Distribution of Children

Age	Number
6- $6\frac{1}{2}$ yrs.	9
$6\frac{1}{2}$ - 7 yrs.	13
7 - $7\frac{1}{2}$ yrs.	8

Twenty-eight of the children were given the Stanford-Binet or Kuhlmann-Anderson intelligence test by college students under the supervision of their instructor in the mental measurements and child psychology classes. The range of intelligence quotients was from eighty-eight to one hundred forty with a median of one hundred six. Table 2 shows the distribution of intelligence quotients.

Table 2. Distribution of Intelligence Quotients

<u>Intelligence Quotient</u>	<u>Number</u>
80- 99	6
100- 119	15
120 and above	7

The economic level of the family of each child was classified according to the criteria set up by the Psychological Corporation of New York, which was developed from their long experience in making market surveys where accurate results depended upon obtaining a representative sampling of the total population. It was found that in the average community, according to their criteria, approximately 10 per cent of the homes fell within the A economic group, 30 per cent within the B economic group, 40 per cent within the C economic group and 20 per cent within the D economic group.¹ A copy of this form is given in the appendix. A summary of the results of classification according to economic level is given in Table 3.

Table 3. Economic Classification of the Families of the Subjects.

<u>Economic Level</u>	<u>Number</u>
A	0
B	10
C	11
D	9

¹ Wilton P. Chase, Child Study Manual, (Used in the course in child psychology, Woman's College of the University of North Carolina, 1942-1943.) p. 6.

Methods of Obtaining Data on the Eating Habits of the Subjects.

In order to measure the results of a nutrition teaching program, it was first necessary to learn just what the eating habits of the children were when they came to school. After the teaching program, it was necessary to discover what changes, if any, had occurred in their eating habits. Three methods were used to obtain essential facts concerning the children's eating habits. They were: first, interview with child; second, interview with parent; and third, observation of noon meal at school. It was felt that the use of three methods would give a check on the accuracy of the information obtained on each child's eating behavior. Within the first two months of school the writer interviewed each child individually and obtained reports from each mother.

Initial Interviews With Children.

The interview with the child was conducted in as objective and informal a manner as possible. The subject of eating was brought up quite naturally because the children knew that the interviewer was connected with the cafeteria. They had been going there for their mid-morning lunch each day, and they knew that they were to begin eating lunch in the cafeteria very soon, so it did not seem unusual that the interviewer was interested in the kind and amount of foods which they ate. Most of them talked to her in a very free and unrestrained manner, which made it fairly easy to obtain information about their food habits. The same type of interviewing was done at the end of the teaching unit to determine what changes had occurred in their eating behavior. The interviews both before and after the teaching unit included the following questions:

1. What did you have for breakfast this morning?

2. Is that what you usually have?
3. Do you like milk?
4. How much milk do you usually drink every day?
5. What kind of bread do you like best?
6. Do you eat that kind most of the time?
7. What kinds of fruit do you like most?
8. Do you usually eat some fruit for breakfast?
9. What fruits do you eat at home most of the time?
10. What are your favorite vegetables?
11. Do you like and eat carrots? Cabbage? Turnip greens?
Corn? Tomatoes? Celery? Lettuce? Sweet Potatoes? White
Potatoes? Butter Beans? Green Peas? Black-eyed Peas?
12. Can you name any other vegetables that you eat at home?
13. How often do you eat candy?
14. How often do you drink bottle drinks?
15. If you could have anything you wanted for lunch today,
what would it be?
16. What does Mother usually have for you when you are at
home for lunch on Saturdays?

Information from Parents.

After the children had been interviewed, the writer visited the home of each child, talked with each mother, and asked her cooperation in helping to obtain accurate information about the present eating habits of her child. The interviewer explained her position in the school cafeteria and stated that she was making a study of the eating habits of the first grade children. She left a blank with each mother to be filled out and returned to school by the child. Most of the parents

were very responsive and eager to be of any assistance that they could. Only three failed to return the questionnaire blanks. One of these was the mother of two children, so there were four children out of thirty whose parents did not report. A copy of the blank used is in the appendix.

Observation of Eating Habits in School Cafeteria.

Immediately after the writer had finished interviewing the first grade children, they began to eat lunch in the school cafeteria. Beginning then and continuing throughout the time that the teaching program was going on, and several weeks after, records were kept several days out of each week of the food left on the plates of each child to see if any improvement could be detected in their eating habits at lunch.

The Teaching Program.

The nutrition unit was launched the first day of school after the Christmas holidays. At this time the penny milk program was just being started at Curry and this proved to be an excellent stimulus to the interest of the children in the importance of milk and other foods. This natural curiosity of the children was utilized as a means of motivating their activities. Although the first hour of the morning from 8:30 to 9:30 was set aside for activities concerned with this unit, it was by no means confined to this time only. It was rather a unit in which integration of many activities throughout the day occurred. Examples of this integration were: painting pictures of cows seen at the dairy farm as a part of art work, learning songs about foods during music period, reading books about foods during reading periods, writing a class diary each day of activities

participated in, and making recipe books as gifts for the mothers. A detailed day by day account of the unit as it occurred is given in the appendix. The objectives of the nutrition unit were to establish in every child the following fundamental habits:

1. Eating a good breakfast every morning before coming to school.
2. Drinking a quart of milk every day and liking it.
3. Eating at least one fresh fruit daily.
4. Eating two vegetables besides potatoes every day including a raw vegetable, if possible.
5. Liking a greater variety of vegetables and fruits than at present.
6. Eating whole grain cereals instead of refined cereals.

A summary of the activities which were carried on throughout the unit are listed below:

1. The children read stories about foods, animals, farms, grocery stores, and gardens. The bibliography contains a list of books used by the children.
2. They listened to stories about foods, animals, grocery stores, farms, and gardens.
3. They discussed together the importance of food. They described their own eating habits from day to day.
4. Pictures and clippings were brought from home about the things discussed at school.
5. Pictures of foods and animals were colored and painted.
6. They planted a vegetable garden.
7. They visited the school cafeteria to see food in preparation.
8. Weight and height records of the children were kept.

9. They visited the near-by home of a friend where they saw kittens, chickens, goats, puppies, and a calf. They discussed the food for each of these animals.
10. They visited a dairy farm where they saw cows being milked, calves, bulls, and the bottling machines in operation.
11. They visited a grocery store.
12. They prepared the following foods: applesauce; baked apples; fruit gelatin; vegetable soup; whole grain cereals; tossed green salad; apple, cabbage, and raisin salad; carrot and celery sticks; baked potatoes; and meat balls.
13. They kept a diary of each day's activities.
14. They outfitted a kitchen in one corner of their room for which they made:
 - a. dish towels, aprons, and a tablecloth,
 - b. drainboard beside sink,
 - c. kitchen cabinet.
15. Recipe books were made as gifts for the mothers.
16. A party was given for the mothers. Invitations were made and brightly colored napkins were prepared for this. A program was presented which included songs about foods and a poem about eating breakfast, which was recited and pantomimed. The children had made cookies and applesauce which they served as refreshments. The gift recipe books were presented to their mothers at this time.
17. A chapel program was presented to inform the rest of the school what they had learned about foods.
18. For Easter the children chose, instead of an Easter egg

hunt, to have a luncheon in their room, the food for which they helped prepare.

The Foods Test.

On March 5 the children were given a simple test on foods by their teacher. It consisted of making choices between white or brown bread, an apple or a candy bar, milk or a bottle drink, a good or a poor breakfast, a good or a poor supper, and marking the number of glasses of milk they needed every day. A copy of this is in the appendix with the directions which were given for marking. The children were told that it was a food game in which the teacher did all the talking while they listened without speaking. They were cautioned against looking at any body else's paper. It was felt that they followed these directions well.

Information was obtained after the teaching program about the eating habits of the children for final evaluation by three methods similar to those used previously: first, an individual interview with each child; second, an individual interview with each parent; and third, continual observation of eating behavior in the school cafeteria.

Final Interviews With Children.

The writer's second interview with each child was as much like the first as possible. The same list of questions that had been asked during the first interview was asked again. The children responded freely to all questions. Before beginning, the interviewer stated in an impersonal manner: "I know that you know now what foods you should eat because we have been talking a great deal about these foods recently. Now, I want you to tell me about the things that

you really are eating at home whether they are the proper things or not." It was believed that in most instances the children were truthful as far as they were able to be.

Interviews With Parents.

After the second interview with the children, the writer again visited each of their homes to interview the mothers. The interview was conducted in the following manner: upon arrival the interviewer greeted the parent and stated briefly the purpose of her visit. She reminded the parent that she was making a study of the eating habits of the first grade children, and that she wished to ask some questions in order to determine the effects of the teaching that had been done. If possible, at this point she switched the topic of conversation and for a few minutes talked of other things in order to minimize any tendency the parent might have to try to claim desirable effects for her child. At no time did she mention the word "improvement". She tried to avoid having them realize that that was what she really desired to find. After a few minutes of informal chatting she began to ask some direct questions about the child's eating habits such as, "How much milk does Charlotte drink every day? Tell me about the kinds of bread and cereals she eats most often. Have you noticed any changes in the kinds and amounts of fruits or vegetables she eats since she started to school? Has she shown any interest or desire to help you with food at home?" Before going to each house the writer compiled a list of specific things she wanted to learn about each child from the results of the other three interviews. For example, if the mother had said before that Van did not like lettuce, the interviewer asked if he now ate lettuce. All parents were cooperative

in giving the information desired. It was felt that the information obtained was as reliable as was possible under the circumstances.

CHAPTER IV

Results and Discussion

Information Secured From Children and Parents.

In compiling the data obtained from children and parents, the following definitions of terms were adopted:

An excellent breakfast includes milk, fruit, whole grain cereals plus some other foods for energy.

A good breakfast includes milk plus one of the following combinations: either fruit and cereal; or egg and cereal; or egg and fruit.

A fair breakfast includes either milk or fruit plus some other food to supply calories.

A poor breakfast includes neither milk nor fruit.

An acceptable lunch contains milk and one or more other foods which have appreciable nutritive value.

A non-acceptable lunch contains no milk nor other food with any appreciable nutritive value. An example of this is a hot dog and a bottle drink.

Table 4 summarizes the information obtained from the children in the individual interviews before and after the teaching program. The number and percentage of children reporting each item "before" and "after" are given, and the difference between these is listed. These items are tabulated in groups according to the amount or extent of improvement, as shown by an increase in the number reporting favorable items and a decrease in the number reporting unfavorable items.

The changes were greatest in the case of milk, with 60 per cent of the children drinking one quart daily after the teaching program as compared with only 7 per cent before, an increase of 53 per cent. In

the case of bread, 63 per cent preferred brown to white after the teaching as compared with 13 per cent who preferred it before. This increase of 50 per cent is paralleled, of course, by a decrease of 50 per cent in preferences for white bread. The next greatest improvement was shown in the eating of fruits. Then followed improvement in nutritive value of imaginary lunches described, and in actual lunches reported eaten at home. Following that came the report of having eaten an excellent breakfast where there was an increase of 27 per cent in the number reporting an excellent breakfast and a decrease of 20 per cent reporting a poor breakfast. The percentage of children reporting that they liked the various kinds of vegetables before the unit ranged from 70 to 93 per cent for any one vegetable, whereas, with the omission of corn, the range was 90 to 100 per cent after the unit. The greatest improvements were shown in the number reporting that they liked and ate carrots, turnip greens, tomatoes, celery, and butter beans. Lesser improvements were shown in the number reporting that they liked and ate cabbage and lettuce. There was a decrease of 7 per cent in the number reporting that they liked and ate corn. There was some decrease reported in the amount of coffee, tea, candy, and bottle drinks consumed.

Table 4. Summary of Data Obtained from Interviews with Children

Children Reporting:	Before Unit		After Unit		Difference	
	No.	%	No.	%	No.	%
1. That they drank 4 glasses of milk daily.	2	7	18	60	16	53
2. That they drank 3 glasses of milk daily.	7	23	9	30	2	7
3. That they drank 2 glasses of milk daily.	8	27	2	7	-6*	20
4. That they drank 1 glass of milk daily.	11		1	3	-10	33

Table 4. Summary of Data from Interview With Children(continued).

Children Reporting:	Before		After		Difference	
	No.	%	No.	%	No.	%
5. That they drank no milk daily.	2	7	0	0	2	7
6. That they preferred brown to white bread.	4	13	19	63	15	50
7. That they preferred white to brown bread.	26	87	11	37	-15	50
8. That they ate three or more fruits at home often.**	9	30	19	63	10	33
9. That they ate two fruits often at home.**	9	30	10	33	1	3
10. That they ate one fruit at home often.**	15	50	1	3	-14	47
11. That they usually ate fruit for breakfast.	5	17	14	47	9	30
12. A description of an acceptable imaginary lunch.	20	67	29	97	9	30
13. A description of an unacceptable imaginary lunch.	10	33	1	3	-9	30
14. Having eaten an acceptable lunch at home.	23	77	30	100	7	23
15. Having eaten an unacceptable lunch at home.	7	23	0	0	-7	23
16. Having eaten an excellent breakfast.	2	7	10	33	8	27
17. Having eaten a good breakfast.	7	23	9	30	2	7
18. Having eaten a fair breakfast.	14	47	10	33	-4	13
19. Having eaten a poor breakfast.	7	23	1	3	-6	20

Table 4. Summary of Data from Interviews With Children (continued)

Children Reporting:	Before		After		Difference	
	No.	%	No.	%	No.	%
20. That they liked and ate carrots	23	77	30	100	7	23
21. That they liked and ate turnip greens	21	70	27	90	6	20
22. That they liked and ate tomatoes	25	83	29	97	4	13
23. That they liked and ate celery	26	87	30	100	4	13
24. That they liked and ate butter beans	25	83	29	97	4	13
25. That they liked and ate cabbage	26	87	28	93	2	7
26. That they liked and ate lettuce	27	90	29	97	2	7
27. That they liked and ate sweet potatoes	28	93	29	97	1	3
28. That they liked and ate black eyed peas	26	87	27	90	1	3
29. That they liked and ate white potatoes	28	93	28	93	0	0
30. That they liked and ate corn	27	90	25	83	-2	7
<hr/>						
31. That they ate candy often	8	27	3	10	-5	-17
32. That they ate candy occasionally	19	63	12	40	-7	23
<hr/>						
33. That they drank tea or coffee often	6	20	0	0	-6	20
34. That they drank tea or coffee occasionally	1	3	0	0	-1	3

Table 4. Summary of Data from Interviews With Children (continued)

Children Reporting:	Before		After		Difference	
	Unit		Unit			
	No.	%	No.	%	No.	%
35. That they drank bottle drinks often	2	7	2	7	0	0
36. That they drank bottle drinks occasionally	24	80	20	67	-4	13

* Minus sign denotes decrease in number.

** Incomplete information but approximately accurate.

Table 5 summarizes in the same way the information obtained from parents by means of a written questionnaire and interviews. The changes noted were greatest in the case of bread. There were 63 per cent who reported that their children preferred brown to white bread after the teaching program, as compared with 13 per cent who preferred it before, an increase of 50 per cent. The next greatest improvements were shown in the eating of fruits and vegetables where there was an increase of 23 per cent in the number of parents reporting that their children ate a large amount and a wide variety of these foods. Smaller improvements were shown in the increase in number reporting that their children drank one quart of milk daily after the teaching program; in the decrease in number reporting that their children drank tea or coffee often; in the decrease in the number reporting that their children ate sweets often and drank bottle drinks often. It is noteworthy that the improvement reported in the case of bread by both children and parents is identical. There is also a marked similarity in the improvement reported by both parents and children in the following items: in the eating of fruits, the former reported improvement of 23 per cent whereas the latter reported 33 per cent; in the frequent drinking of coffee or tea the former reported an improvement of 17 per cent, the latter 20 per cent;

in the case of eating sweets often, 13 per cent and 17 per cent respectively.

Table 5. Summary of Data Obtained from Parents

Parents Reporting That Their Children:	Before		After		Difference	
	No.	%	No.	%	No.	%
1. Prefer brown to white bread	4	13	19	63	15	50
2. Prefer white to brown bread	26	87	11	37	-15	50
3. Eat a large amount of fruit and like a wide variety	17	57	24	80	7	23
4. Eat a small amount of fruit and like a small variety	13	43	6	20	-7	23
5. Eat a large amount of vege- tables and like a wide variety	17	57	23	77	7	23
6. Eat a small amount of vege- tables and like a small variety	13	43	7	23	-6	20
7. Drink 4 or more glasses of milk daily	12	40	17	57	5	17
8. Drink 3 glasses of milk daily	7	23	9	30	2	7
9. Drink 2 glasses of milk daily	8	27	1	3	-7	23
10. Drink 1 glass of milk daily	3	10	3	10	0	0
11. Drink tea or coffee often	7	23	2	7	-5	17
12. Drink tea or coffee occasionally	1	3	4	13	3	10
13. Eat sweets often---candy, cake, pastries	10	33	6	20	-4	13
14. Eat sweets occasionally--- cake, candy, pastry	4	13	3	10	-1	3

Table 5. Summary of Data Obtained from Parents (continued)

Parents Reporting That Their Children:	Before		After		Difference	
	Unit		Unit			
	No.	%	No.	%	No.	%
15. Drink bottle drinks often	2	7	1	3	-1	3
16. Drink bottle drinks occasionally	7	23	6	20	-1	3

In the final interview with each mother, she was asked if she noticed any changes in her child's eating habits --- in amounts or kinds of food eaten --- since he started to school. The following table summarizes their reports:

	Number	Per Cent
1. Has improved in eating habits markedly since coming to school	10	33
2. Has improved some in eating habits since coming to school	17	57
3. Has not improved in eating habits since coming to school	3	10

The fact that the children reported greatest improvements in their milk consumption and preference for brown instead of white bread, and the parents reported greatest improvement in the latter may be explained partially by the fact that milk and bread usually appear at each meal, and are very definite experiences which call to the mind of a child certain pictures. In contrast to this, fruits and vegetables appear less often in a day's diet and in varied forms. Their names are more vague and do not bring to the mind any one definite mental picture. This may be one reason that more decided improvements were shown in the cases of milk and bread than in fruits and vegetables.

The criteria listed below were used in evaluating the daily dietary habits of the children according to information obtained from children

and parents both before and after the teaching program. In each classification the first criterion refers to milk, the second to common sources of ascorbic acid, the third to other fruits, and so on.

Excellent

1. Has 3-4 glasses of milk daily.
2. Has one or more servings of orange, grapefruit, tomato, or raw green vegetables daily.
3. Has 1 or more servings of other fruit, raw or cooked daily.
4. Has at least 1 serving of green or yellow vegetables daily.
5. Has 2 other vegetables daily.
6. Has 1 or more serving of meat, fish, chicken or satisfactory alternate daily.*
7. Has 2 or more servings of whole grain cereals daily.
8. Eats breakfast regularly including milk, fruit, whole grain cereal plus some other energy food.
9. Eats three full meals daily. Cleans plate at each meal without playing with food.
10. Likes to try new foods. Has few food dislikes.
11. In-between meal eating is restricted to simple foods such as fruit, bread, or milk.
12. Drinks no coffee or tea.

Good

1. Has 3 glasses of milk daily.
2. Has 1 serving of orange, grapefruit, tomato, or raw green vegetable daily.
3. Has 1 serving of other fruit, raw or cooked daily.
4. Has 1 serving of green or yellow vegetables daily.
5. Has 1 other vegetable daily.
6. Has 1 serving of meat, fish, chicken or some satisfactory alternate daily.*
7. Has 2 servings of whole grain or enriched cereals daily.
8. Eats breakfast regularly including milk plus one of the following combinations: either fruit and cereal; or egg and cereal; or egg and fruit.
9. Eats 3 meals daily. Usually cleans plate, but sometimes leaves small portions of food.
10. Will try new foods, Has few food dislikes.
11. In-between meal eating is usually restricted to fruit, bread, or milk.
12. Drinks no coffee or tea.

Fair

1. Has 2 glasses of milk daily.
2. Has 1 serving of orange, grapefruit, tomato, or raw green vegetables daily.
3. Has 1 serving of other fruit, raw or cooked 3-4 times weekly.
4. Has 1 serving of green or yellow vegetables 3-4 times weekly.
5. Has 1 other vegetable 3-4 times weekly.
6. Has 1 serving of meat, fish, chicken or some satisfactory alternate

- daily.*
7. Has 1 serving of whole grain or enriched cereal daily.
 8. Eats breakfast regularly including fruit or milk plus some other energy foods.
 9. Has three meals daily. Is prone to leave foods fairly often.
 10. Does not welcome new foods. Has some pronounced food dislikes.
 11. Sometimes has candy, other sweet foods, and bottle drinks in between meals.
 12. Drinks no coffee or tea.

Poor

Does not meet standards classified as fair in any of the ways listed.

*Eggs, legumes, or nuts in appreciable amount were accepted as satisfactory alternates.

Each child was checked on the above twelve criteria according to both his and his parent's reports before and after the teaching program. The complete picture of his daily dietary habits was studied carefully, and judged as excellent, good, fair, or poor, with greater weight being given to the items concerned more with quality of food consumed than to the items concerned less with quality. Examples of how this was done was shown in the following scoring charts:

Child Number Five Before Unit		Child Number Five After Unit	
Report of Parent	Report of Child	Report of Parent	Report of Child
Criteria Judged as:			
E- none	E- none	E- none	E- none
G- 9, 10	G- 2, 8, 9	G- 2, 4, 5, 6	G- 2, 4, 5, 9, 10
F- 2, 4, 5, 6	F- 3, 5, 6, 10	F- 1, 3, 8, 10	F- 1, 3, 6
P- 1, 3, 7, 8, 11, 12	P- 1, 4, 7, 11, 12	P- 7, 11, 12	P- 7, 8, 11, 12
Judged to be on the whole:			
Poor	Poor	Poor	Fair

Child Number Four Before Unit		Child Number Four After Unit	
Report of Parent	Report of Child	Report of Parent	Report of Child
Criteria Judged as:			
E- 1, 2, 3, 4, 6, 11, 12	E- 2, 3, 4, 5, 6, 12	E- 1, 2, 3, 4, 5, 6, 11, 12	E- 1, 2, 3, 4, 5, 6, 11, 12
G- 5, 7, 9	G- 8, 9, 11	G- 7, 8, 9	G- 7, 8, 9
F- 8	F- 1, 7, 10	F- 10	F- 10
P- 10	P- none	P- none	P- none
Judged to be on the whole:			
Good	Good	Excellent	Excellent

E- Excellent; G- Good; F- Fair; P-Poor

Child Number Five was placed in the "poor" classification according to his and his mother's reports before the teaching unit because although he rated "good" on the items concerned with trial of new foods, number of foods disliked and the eating of three full meals daily, he rated "poor" or "fair" on the points concerned with consumption of milk, fruits, vegetables, and whole grain cereals, which were considered to be more important. At the final interview with both parent and child, they reported improvements in his eating of these foods, so he was rated "fair" at that time.

In contrast to this is the case of Child Number Four, whose daily dietary habits were considered "good" according to his and his mother's report before the teaching program, although he scored "fair" or "poor" on the item concerned with trial of new foods, and having decided food dislikes, but scored "good" or "excellent" on the items concerned with consumption of milk, fruits, and vegetables. At the final interview with both parent and child, they reported that he had improved in his eating of whole grain cereals and in his attitudes toward new foods,

and that he had overcome his dislikes for certain foods; therefore he was rated as excellent at that time.

Compilation Table 1, which is in the appendix, presents the ratings given each child before and after the teaching program according to both his and his parents' reports, and Table 6 summarizes these classifications for the group. A comparison of ratings of dietary habits based on parents' reports before and after the teaching program shows an increase of 30 per cent in the number rated excellent. A similar comparison of ratings based on children's reports shows an increase of 37 per cent. Likewise a decrease of 17 per cent and 27 per cent respectively is shown in ratings of dietary habits classified as poor. The median change shown in both parents' and children's reports was from one category to the next best; i. e., from poor to fair, fair to good, or good to excellent. Twenty ratings, according to children's reports, were improved one category, and six-teen ratings, according to parents' reports, were improved one category. Thus the vast majority, according to both reports, improved by one category. There is a marked similarity in the percentages cited between parents' and children's reports. Throughout this study the discrepancies in reports of children and parents were carefully noted, and in general a good agreement was found. The percentage of agreement of the classification of the daily dietary habits based on the parents' reports with that based on the children's reports was found to be 50 per cent before the teaching program and 47 per cent after. Considering that the percentage of agreement which would probably occur by chance is only 25 per cent,

this is exceptional. Also there were only two reports "before" and one "after" which were not within one category of each other in the classification; i. e., these reports showed a wide discrepancy between reports of children and parents. On the whole the children tended to report greater improvements than did the parents.

No doubt, there exists on the part of parents and children a tendency to exaggerate in their statements in order to make a favorable impression. Attempts were made to hold this factor to a minimum, and it was controlled somewhat by the fact that it was likely to have been present in both initial and final interviews. Therefore, it was felt that the improvement in food habits which we were most interested in detecting would not be so greatly affected by this tendency of the parents and children to stretch the truth. It was believed, however, that in the case of the children, probably the second interview was a less reliable reflection of their food habits than the first, since they knew more at that time and were anxious to please the interviewer. Nevertheless, the fact that they were able to give the approved responses at the final interview indicates learning.

Table 6. Summary of Classification of Daily Dietary Habits of Children According to Reports from Individual Children and Parents

Report from: Rated as	Before Unit				After Unit				Difference			
	Parents		Children		Parents		Children		Parents		Children	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Excellent	2	7	0	0	11	37	11	37	9	30	11	37
Good	13	43	7	23	11	37	14	47	-2	7	7	23
Fair	8	27	15	50	6	20	5	17	-2	7	-10	33
Poor	7	23	8	27	2	7	0	0	-5	17	8	27

Records on Consumption of Lunch at School.

The records of the lunches eaten by the children in the school cafeteria were analyzed and placed in three categories for three periods: before, during, and after the teaching program. Six lunches for every child for each of these periods, were selected at random and were studied and classified as either good, fair, or poor. The child's lunch was considered good when he cleaned his plate and drank all of his milk; fair when he left only small portions of food; or poor when he left large portions of food. Compilation Table 2, which is in the appendix, shows the classification of each individual child according to his school lunch eating habits before, during, and after the teaching program, and Table 7 summarizes these ratings. The improvement evidenced by this table is perhaps due partly to the fact that as time passed the children became accustomed to the food served them in the cafeteria, because there was naturally a great deal of repetition of menus served. However, it is believed that the increase of 30 per cent more children who ate good lunches and the decrease of 30 per cent less who ate poor lunches after the teaching program than before the teaching program shows a greater improvement than would have followed from the operation of that factor only. The median lunch before the teaching program was "fair" with more in the "poor" group than in the "good" group; whereas the median lunch after the teaching program was "good" with more in the "fair" group than in the "poor" group.

The Foods Test.

The children did very well on the foods test which was given them after the nutrition unit. Twenty-five of them or 83 per cent marked their

papers perfectly, and three others had all answers correct except that they marked three glasses of milk instead of four as their daily need. Child Number Thirteen chose the poor breakfast and omitted the question which asked for a choice between a glass of milk and a bottle drink. Child Number Four chose the poor breakfast and marked only two glasses of milk.

Table 7. Summary of Evaluation of Children's Lunches Eaten in School Cafeteria.

Number of Children who:	Before		During		After		Difference in	
	No.	%	No.	%	No.	%	No.	%
Ate good lunches	9	30	16	53	18	60	9	30
Ate fair lunches	8	27	9	30	8	27	0	0
Ate poor lunches	13	43	5	17	4	13	9	30

Relationship Between Economic Level and Improvement of Eating Habits.

In order to determine if there were any relationship between economic level and improvement of eating habits, a comparison was made of these two things. The two children who were rated "excellent" according to their mothers' reports before the teaching program were eliminated from the comparison because there was no room for them to improve. One of these was in economic group B, and one in group C. Likewise, four children in group B, three in group C, and two in group D were eliminated from the comparison of the improvement in school lunch eating habits with economic levels. In Table 8 this comparison is shown. The greatest improvements according to reports of parents and of children, and observation of school lunch, took place in the children in B economic group. There is a direct relationship between economic status and amount of improvement shown in reports of children and in school lunch eating habits. The same trend is evidenced in parents' reports

in that the B group shows greater improvement than the C or D group.

Table 8. Relationship between Improvement in Eating Habits and Economic Status.

Economic Level	Parents' Report			Children's Report			Observation of School Lunch			
	Could Improve	Did Improve	%	Could Improve	Did Improve	%	Could Improve	Did Improve	%	
	No.	No.	No.	No.	No.	%	No.	No.	%	
B	10	9	7	78	10	10	100	6	6	100
C	11	10	6	60	11	10	91	7	7	100
D	9	9	6	67	9	8	89	7	5	71

Relationship Between Intelligence Quotients and Improvements in Eating Habits.

Likewise, to see if there were any relationship between intelligence quotients and improvements in eating habits, a comparison of the two was made. As was done in compiling Table 8, the two children who were rated "excellent" according to their mothers' reports before the teaching program were eliminated from the comparison. Both of these had intelligence quotients falling in the range from 100-119. Similarly, one child with an intelligence quotient in the group ranging from 80-99; six children with intelligence quotients in the group ranging from 100-119; and two children with intelligence quotients in the group ranging from 120 and above were eliminated from the comparison between improvement in school lunch eating habits with intelligence quotients because they were rated "good" at first. Table 9 presents this comparison. The greatest improvements according to reports of parents and children, and observations of school lunches took place in the children with intelligence quotients ranging from 120 and

above. There is a direct relationship between intelligence and amount of improvement evidenced in reports of parents. In the children's reports the greatest proportion of change was shown in the lowest and highest groups. In the observation of the school lunch this was true also, except that the highest group in intelligence showed the greatest proportion of improvement. There may be a direct relationship between intelligence and improvement which is obscured by the small numbers in the groups.

Table 9. Relationship between Improvement in Eating Habits and Intelligence Quotients.

Intelligence Quotient	Parents' Reports				Children's Reports			Observation of School Lunch		
	Could Improve		Did Improve		No.	No.	%	No.	No.	%
	No.	No.	No.	%						
120 and above	7	7	5	71	7	7	100	5	5	100
100 - 119	15	13	9	69	15	13	87	9	6	67
80 - 99	6	6	4	67	6	6	100	5	4	80

Studies with older groups which are being currently conducted seem to indicate that increased knowledge of nutrition facts can favorably influence eating habits, but that several factors interfere with 100 per cent improvement. The most important of these factors appear to be low economic status and failure to recognize need of change in established eating habits. With a first grade group there is likely to be greater improvement observed because eating habits are not as firmly established. However, at this level lack of interest on the part of the parents as well as low economic status may become a hindrance to improvement of eating habits.

CHAPTER V

Some Striking Changes Occurring in Eating Habits of Individual Children

As a matter of interest, the following cases of specific changes in eating habits of individual children are cited. The fact that these improvements actually took place was evidenced by reports from both parents and children as well as by the observation of their lunch period in the school cafeteria.

Child Number Six has increased his consumption of milk, now eats more whole grain cereals, eats a greater variety and quantity of fruits, and has learned to like carrots. He previously preferred white bread, but now eats brown bread altogether. He enjoys helping his mother with food at home. He likes to feel that he is setting a good example for his younger brothers in his eating habits.

Child Number Seven has increased the amount of milk she drinks and the quantity and variety of fruits she likes and eats, and has learned to like tomatoes. She drinks fewer bottle drinks than previously, and she has improved markedly in her attitude toward new foods.

Child Number Ten and Child Number Eleven, who are twins, both drank coffee every morning for breakfast previously but now drink milk instead. Both of these children have increased their consumption of milk, eat less candy and more fruit, and now eat a greater variety of vegetables than before the teaching program. The former has learned to like tomatoes.

Child Number Fifteen has increased the amount of milk she drinks, has learned to like carrots, and has improved in eating green leafy vegetables, which she previously disliked. She now eats whole wheat

bread, whereas she formerly liked only white. She baked apples and cut carrot strips at home.

Child Number Nineteen is reported by his mother to have an increased appetite since Christmas. He now eats a greater variety of vegetables than formerly. He eats brown bread, whereas he did not like it before. He would not eat mixed green salad in the school cafeteria before the teaching unit, but during and after, he did eat it. His mother reported that he had made it at home and she believed that he liked the salad now "because he knows what foods go in it and that it is not just a conglomeration of stuff."

Child Number Twenty-one doubled her consumption of milk; i.e., increased the number of glasses drunk daily from two to four, and learned to like turnip greens. Her mother reported before the teaching program that fairly often she would suddenly lose her appetite at meal times for no apparent reason. At the final interview with the mother, she reported that this tendency has been overcome to a great extent.

An interesting story was told by Child Number Twenty-three's mother of an incident that took place at the supper table about three months after Christmas. It seemed that it was the custom in this family to serve at all meals both brown and white bread, because the mother preferred brown whereas the father and children preferred white. Child Twenty-three had previously eaten only white bread, but several weeks after the nutrition unit began at school, she started eating brown altogether. On this evening the older daughter happened to ask the mother what kind of bread was best for them to eat. The mother answered,

"Brown bread," whereupon the child very quickly stated in an authoritative tone, "That's right!" "What kind of milk is best, white or chocolate?" asked the sister. The mother replied, "White". "That's right," said Charlotte again.

CHAPTER VI

Summary, Conclusions and Recommendations

The purpose of this study was to measure the effect of a nutrition program on the eating habits of a group of first grade children. Information was obtained about the eating habits of these children, prior to the teaching program, by individual interviews with the children and questionnaires returned by the parents. Records were kept of the way these children ate lunch in the school cafeteria before, during, and after the teaching. The nutrition unit was taught by the regular first grade teacher in cooperation with the home economics teacher. It included many activities of various kinds. A pencil and paper test was given to the children after the unit to be certain that they had learned the difference in good and poor eating habits. Immediately following the test, information was secured concerning the food habits of the children again, in order to evaluate any changes which had occurred. This was done by interviewing both parents and children individually. A comparison of the information secured from these sources before and after the teaching program was made to see what changes had taken place in the food habits. Improvements were reported by both parents and children, and the validity of these improvements was supported by favorable changes observed in the school cafeteria.

This study has demonstrated:

- A. that a group of first grade children such as this one can profit from a nutrition unit in the following ways:
 1. by increasing their knowledge of what foods are approved and why;

2. by improving the quantity and variety of food eaten at school lunch;
 3. by improving daily dietary habits as reported by parents and children;
- B. that individuals in a first grade group can profit from a nutrition unit in the following ways;
1. by improving the dietary habits of some of them markedly;
 2. by improving the dietary habits of others to some extent;
- C. that a better than chance agreement can be obtained between parents' and children's reports of eating habits as given in individual interviews;
- D. that the higher the economic levels of the families and probably also the higher the intelligence quotients of the children the greater the number who will show improvement.

In concluding this study, the writer offers the following recommendations:

1. That a program in nutrition teaching be inaugurated in the primary grades, in which many activities, including the actual handling of foods under supervision, be carried on.
2. That the lunch hour for young children at school be carefully supervised. Children should never be nagged or begged to eat, but very young ones often need reminding that they are supposed to be eating a meal.
3. Young children should not be allowed a wide variety of choices of foods for their school lunch. They should be required to choose between groups of food, rather than be allowed to make a

a capricious selection of individual items. An example of this is letting them choose whether they will have a vegetable plate and milk; or vegetable soup, a meat or cheese sandwich, and milk.

4. While the agreement of parents' and children's reports is substantial, it is far from perfect. Therefore, the writer believes that a good method in attempting to evaluate children's eating habits is to check one report by the other and when possible to observe their actual eating habits.

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APPENDIX

FIRST GRADE NUTRITION UNIT

Tuesday, January 5, 1943

Since the penny milk program was just being started at Curry, Mr. Brimley, principal of Curry school, came to the first grade room to explain to the children the details and general purpose of the new system. About ninety per cent of these children preferred chocolate milk to white milk, but with penny milk the sale of the former was being discontinued. Mr. Brimley explained that since white milk is better for them than chocolate, the latter was not included. They wondered why milk is important enough for so many people to be concerned about their drinking it. Realizing that there must be something especially significant about milk if the government and other agencies were willing to pay part of the expenses so that they would buy it for a penny, they decided that they would try to find out more about milk. When they discussed how they would go about finding out these things, one child suggested that they ask someone who had studied about foods and would know. They decided that the school cafeteria directors would know, and one child was appointed to go and ask one of them to please come the next morning to tell the class some things about milk and to bring any pictures that she might have which would help to explain the importance of milk.

Wednesday, January 7, 1943

Miss Outlaw collected various milk pictures and went as requested to the first grade room. The children explained to her why they were interested and asked if she would tell them why so many people thought it was important that they drink milk. She told them that building their bodies was like building a house because there must be special kinds of materials

to build certain parts. She explained that since the materials from which our bodies are built come from the foods we eat, we must all be very careful to eat the right foods because we want our bodies to be strong and healthy. Milk is one of our most important building foods because it has in it a substance which our bodies need to build our bones and our teeth. While she showed the pictures of children drinking milk other points were brought out: that sunshine is needed by our bodies in order that the substance in milk may be used, and that cod liver oil, which we often take in the winter when we can not get enough sunshine, is a kind of "bottled sunshine." A few of the children said they were taking cod liver oil now. Miss Outlaw asked if any of the children knew how much milk they needed every day. One child said, "One quart!"; but when the question was asked, "How many glasses are there in a quart?" there were many guesses. Miss Cooper, their teacher, suggested that since they were not sure, it would be interesting the next day actually to measure the number of glasses in a quart to see for themselves.

Thursday, January 7, 1943

Two children were delegated to help Miss Outlaw bring the quart milk bottle and the glasses needed for the demonstration this morning. Before the measuring was done, Miss Cooper asked several children how many glasses they thought were in a quart of milk. Many answers were given, and all the children were very interested in learning the correct number. They all watched eagerly while the bottle was being filled, and counted each glass as it was poured in---one, two, three, four. A child then poured four full glasses from the bottle. The children then discussed how much milk they had been drinking. Many questions were asked such as, "Barbara, if you drink one glass of milk for breakfast, and one glass here at school,

how many more do you need the rest of the day at home?"

Later the children decided that they would like to plant a garden and grow some real vegetables for themselves. Several children volunteered to bring seed catalogues the next day.

Friday, January 8, 1943

The unit had been named "Learning About Foods" because the children decided that they wanted to find out all they could about foods. They had been bringing food pictures, but today there were more than ever. There were two seed catalogues, also. In one book on gardening which was brought, a picture of a box ready for planting vegetables inside the house was discussed, and they said they would like to try that. They enjoyed looking at the colorful pictures of the vegetables in the seed catalogues. Two children were appointed to go to the cafeteria to see if there were any empty boxes which they might use for indoor planting.

Miss Cooper had some new pictures to show of foods. First, she held up a picture of "A Good Breakfast" and talked about the importance of eating fruit for breakfast. Children named various fruits they had been eating as part of their breakfasts. Next, they looked at a picture of "A Good Dinner". They named the foods in the picture: meat, baked potato, cabbage, carrots, whole wheat bread, butter, and milk. "The Good Supper" consisted of a poached egg on whole wheat toast, spinach, stewed apricots, and milk.

One child had brought a picture of some cows at a dairy farm. Miss Cooper told them about her trip to a dairy farm several years before. She described the precautions that were taken for cleanliness there. Several children told of visits in the country where they had seen cows.

Miss Cooper gave each child a picture sheet which was to be made into

a booklet. This sheet had the following pictures to be colored:

1. rabbits eating vegetables,
2. horses eating fruit,
3. kittens drinking milk,
4. ducks bathing,
5. calves and cows drinking milk,
6. lambs playing in the sunshine,
7. chickens going to bed early,
8. puppies with strong teeth.

The children read these captions. On the back were stories about each picture. They began work on these and took them home to be finished.

Monday, January 11, 1943

For the two new pupils who had ^{just} ~~not~~ ^{this} entered that morning, and the children who were absent the previous week Miss Cooper asked several children to summarize the plans that they had made. These children described the vegetable garden they wanted to plant and explained how some plants must be started in boxes inside the house during the winter.

One child suggested that they go to a dairy farm and ask questions in order to find out some other things about milk. Miss Cooper asked how else they might find out about foods, and suggested that they write down some plans. The children suggested the following things, which she wrote on the board:

1. Go to the cafeteria kitchen.
2. Go to a dairy.
3. Go to a grocery store.
4. Ask questions of various people:
 - a. a farmer.

- b. gardeners.
 - c. food specialists.
 - d. groceryman.
 - e. dairyman.
5. Plant a garden.

Tuesday, January 12, 1943

Children prepared several boxes for seeds and planted beets, carrots, and lettuce. They made plans for planting other things out of doors and discussed their visit to the cafeteria the next morning.

Wednesday, January 13, 1943

The children visited the school cafeteria where they saw:

1. Milk kept in an ice box with chipped ice around it to keep it cold.
2. Various vegetables being prepared to go into soup: carrots, celery, onions, peas, tomatoes, potatoes. They were especially interested in the soup stock and how it was prepared.
3. Celery being washed carefully for celery sticks.
4. Dishes being washed and rinsed in steaming water.
5. A box of frozen green beans which they were to have for their lunch that day.
6. Cabbage and apple slaw being prepared.
7. The steam table. They noticed especially:
 - a. the roll warmer;
 - b. the water inside which made steam when the burners underneath were lit;
 - c. the vegetable and meat containers.
8. The home economics laboratory unit kitchens.

Thursday, January 14, 1943

The children talked about their visit to the cafeteria on the previous day. They seemed to have enjoyed it very much. They made plans to go to the home economics department the next day to prepare applesauce and baked potatoes for their lunch. They wrote a letter to Turner, the janitor, requesting that he come to their room the next morning to help them dig up their garden outdoors.

Friday, January 15, 1943

Part of the children went outdoors to help get the garden dug and the onion sets and turnip greens planted. The others came to the home economics department to cook. They were divided into groups, the potato group and the apple group. The apple group washed, peeled, and sliced the apples for applesauce, and put them on to cook. The potato group scrubbed the potatoes very clean with brushes and put them into the oven ready to be baked. Applesauce had always been their favorite luncheon dessert and they enjoyed it thoroughly today. Not a single child left any of his applesauce and only one child left the baked potato.

Monday, January 18, 1943

As the children were talking over the things they had done during the past week-end, Peggy said that she had had a baby jaw tooth with a hole in it removed. Janet, whose father is a dentist, said that that hole was a cavity. The children, then, discussed the following ways to take care of their teeth:

1. Drink plenty of milk.
2. Brush your teeth twice a day.
3. Sleep 9-10 hours each night. You need extra sleep when you have

done extra things.

Allen said that carrots were needed to go along with the milk. Miss Cooper asked, "What other vegetables which are yellow are good for us?" They named squash and sweet potatoes.

Charles said that children needed eggs, also.

"Let's name the fruits we like and that are good for us," suggested Miss Cooper. "What fruits did you eat for breakfast?" They named oranges, bananas, grapefruit, and orange juice.

"What fruits do we cook?" The children named pears, peaches, prunes, cherries, and pineapple.

"What kind of vegetables do we need besides yellow ones?" They named turnip greens, peas, green beans, spinach, cabbage, lettuce, and potatoes.

"What other kinds of foods do we need?" "Meat," replied Pat. They named ham, liver, pork, chicken, fish, shrimp, oysters, crabs, sausage, and steak.

Miss cooper said, "I can think of another food we haven't named, which is important for us to eat. It is whole grain cereals." The children recalled a chapel program which they had seen before Christmas given by the Health Camp children in which the importance of whole grain cereals was emphasized. They named the kinds of ready-to-eat and cooked cereals they had had for breakfast that morning. They seemed surprised to learn that brown bread was better for them to eat than white bread.

Miss Cooper talked about their trip to the dairy farm which they were planning for that week. She gave each of them a note to take home to their parents about it.

Tuesday, January 19, 1943

The children were hoping for a pretty day tomorrow, because arrange-

ments had been made for them to go to the dairy farm if the weather was good. This morning they talked together about their trip, and discussed the things they would look for, the questions they would ask, and the way they would act. The dairy farm which they are going to visit is at the Agricultural and Technical College for negroes located here in Greensboro. They could go to and from there on the city bus, as the bus route was very convenient for this visit.

Wednesday, January 20, 1943

Miss Cooper was ill and unable to come to school that day and the weather was quite cold, so the trip to the dairy was not carried out as planned. Instead the group was divided into three parts to work in the home economics laboratory. One group washed and scrubbed carrots and cut them into strips for their lunch, leaving them on ice. A second group fixed celery sticks in a similar manner. The third group mixed the ground meat, bread crumbs, and salt for their meat balls. They especially enjoyed scooping the meat into nice round patties and putting them into the pan ready to be cooked. At lunch time very little of these foods were left on the plates of the children.

Thursday, January 21, 1943

Miss Cooper was still sick, so the trip to the dairy was again postponed. The children wrote letters to her in which they described their cooking activities the day before, and drew various sketches of them. They drew pictures of the lunch they had helped cook during their art period.

Friday, January 22, 1943

This morning the children looked at a group of pictures of healthy boys and girls riding bicycles, playing tennis, basketball, football, swimming etc., which depicted the value of drinking milk for the "boy or

girl you are going to be." They talked about how much milk they were drinking, and the vegetables, fruits, and whole wheat cereals they were eating. After a discussion period they were given picture sheets of Nancy, a girl with strong, healthy teeth. They read the description of each picture and then went to their desks and colored each picture with their wax crayons: yellow grapefruit, orange carrots, green vegetables, and brown bread.

Monday, January 25, 1943

This morning Miss Cooper was back at school, and the children told her about their cooking activities the week before. Plans were made to go to the dairy the first day that the weather was suitable.

Tuesday, January 26, 1943

This morning the children came to the home economics department to make apple, raisin, and cabbage salad for their lunch. They first washed the apples and cabbage carefully, and then cut them into small pieces. It was explained to them why the apples were not peeled, and why the outside leaves of the cabbage were not thrown away. They used small knives to cut up the cabbage leaves. After they had put all the cabbage, apples, and raisins in a pan, they mixed them all together with a small amount of salad dressing. The children had been served this salad several times before in the cafeteria, but today, there was less of it left on their plates at lunch than ever before.

Wednesday, January 27, 1943

Van brought colored pictures of cows and bulls this morning. The children talked about the four kinds that were illustrated: Jerseys, Guernseys, Holsteins, and Brown Swiss. They knew that the cows they would see at the dairy farm would be Jerseys.

Janet had brought a book about milk from home, which the children looked at together. The name of this book was "A Happy Day." It had a picture of children brushing their teeth, which they discussed. Then a picture of children eating breakfast brought forth a discussion of a good breakfast and a poor breakfast. A picture of children playing in the sunshine caused them to remark that playing in the sunshine was good for children because they needed it for growth of their bones and teeth. A picture of a dentist called attention to the fact that children should go to a dentist at least once every six months.

Some of the children had finished their booklet "Farm Friends" which they had started the first week of the unit. They looked at these and discussed them this morning.

Miss Cooper said that she would like them to look at home in some old magazines for pictures of young animals which drank milk. They named some that they might look for. She told them of the possibility of their going to Ken's house to see the animals there. Ken is a little boy in the kindergarten who lived quite near the school. He had a pet baby goat, some kittens, puppies, chickens, and also a calf. The children were very eager to go to see all these animals which drink milk, so they planned to go on Friday if possible.

Thursday, January 28, 1943

The children had asked if they could make some soup like that they had seen being made the day they visited the school cafeteria, so this morning they came to the home economics laboratory to make some for their lunch. First, they put the soup bones in some water on the stove to cook for soup stock. Then they cut up potatoes, carrots, and celery and put them together on the stove to cook. The green peas, butter beans, and tomatoes

came out of cans. When they ate their soup they were very much pleased that it turned out to be so good.

Friday, January 29, 1943

Today the children visited Ken's house. They were delighted with animals they saw there. They saw goats, chickens, kittens, puppies, and a calf. The chickens were eating corn, and the puppies, kittens, baby goat, and calf were drinking milk.

Monday, February 1, 1943

This morning the children were divided into two groups. One group came to the home economics kitchen to bake apples, and the other group went out doors to work in the garden.

Miss Outlaw worked with the cooking group as usual. Before they began work on their apples, they talked to her about the things they were eating. Every child out of thirty except three said they had milk for breakfast, and all but six said they had eaten some kind of cooked or fresh fruit for breakfast that morning. This was an improvement over the week before when the same questions had been asked.

They washed their apples very carefully because they said they wanted to get them so clean that they could eat the peelings. With the help of a student teacher, they cut out the cores. Then they put brown sugar and raisins in the hole in the apple, and when the hole was filled a dab of butter was put on top. These were then ready to be baked.

When this group had finished, they went out to vegetable garden and the other group came to the kitchen to prepare their apples.

Tuesday, February 2, 1943

This morning the children again were divided into two groups as they had been the day before. In the kitchen they made a tossed salad of green

leafy vegetables, carrots, and apples. They cut up green cabbage, being careful not to throw away the outer leaves, and green spinach with scissors, and cut up the apples and carrots with small knives. When all the vegetables were ready they were mixed in a big bowl with salad dressing. They were pleased with the red, green, and orange color of their salad, which they ate for lunch. Out of the 29 who were present only 4 children failed to eat all of their serving. Two weeks before 10 children had left their entire servings of this same kind of salad.

Wednesday, February 3, 1943

At last, the children visited the dairy farm. They ate an early lunch, and got on the bus in front of the school, which carried them all the way. First, they were taken into the barns where the cattle were housed to see the stalls. They were especially interested in the individual water fountains in each stall, of which they had seen pictures in their books. They saw the silo where the grain for the cows was kept. Then they saw the milking barn before the cows were brought in to be milked. They noticed its cleanliness and tidiness, and looked at the scales which were used to weigh the milk. The milking was to be at 12 o'clock, and by this time it was 11:45, so they then went to the bottling and pasteurizing room to see the bottling machines. These machines washed each bottle, filled it with milk, and capped it. They saw these in operation and then returned to the milking barn. By now it was time for the cows to come in to be milked. The children stood on the sides and quietly watched this process. It had been impressed upon them that they must be very quiet, so they would not frighten the cows. The milking was done by hand, while the cows were eating. The milk given by each cow was weighed and recorded. The milkers washed their hands and the cow's udders carefully before each milking. The children had many questions which they whispered quietly to Dr.

Kennedy, who was very kind in explaining each point to them. Some of their questions were, "Do you have any cows besides Jerseys? Why must the food and milk of each cow be weighed? Why must each cow have two names? May we see the marking which you stamped on one of the cows? How many times do you milk each day?"

After the milking the children went out to the pasture to see the calves and bulls. They liked to watch the calves, but they were more impressed with the strength and fierceness of the bulls with the rings in their noses. After they had watched them awhile they returned to school on the bus.

Thursday, February 4, 1943

This morning the children discussed their trip. They seemed to have enjoyed it tremendously, and to have learned a great deal from it. They talked of visiting a near-by grocery store soon. They asked today if they might bake some apples again, so that activity was planned for the next day.

Friday, February 5, 1943

The children came to the kitchen to prepare their apples in groups as they had previously done. Again they washed, cored, and stuffed the apples with raisins, brown sugar, and butter. They put them in the oven with the heat turned on.

Only one child out of the thirty reported that she had had no milk for breakfast that morning, and only two reported that they had had no fruit.

Monday, February 8, 1943

This morning Miss Outlaw began weighing and measuring the children. Their weights and heights were recorded for comparison with future figures. This stimulated a great deal of interest among the group. They asked such questions as, "What can I do to be sure I will grow?" They enjoyed comparing their weights and heights with one another.

Thursday, February 9, 1943

The rest of the children were weighed and measured this morning. Plans were made for the children to make fruit gelatin the next day.

Wednesday, February 10, 1943

The children came to the kitchen in groups again this morning as they had before. They cut up peaches and pineapple into small pieces and put them in the gelatin molds. They chose strawberry gelatin because they liked the red color. When they had melted the gelatin in hot water, they added an equal portion of peach and pineapple juice, and poured this solution into the molds on top of the fruit. Each child poured the fluid into one mold. Then the molds were placed in the refrigerator to congeal. This was to be eaten for their lunch the following day.

Thursday, February 11, 1943

Today the children ate their gelatin on green lettuce as part of their lunch. They enjoyed it very much. Every child but one ate all of his serving. They made the following plans for the future.

1. Work fertilizer into the garden.
2. Make a big picture of cows in a barn.
3. Make a kitchen in their room.
 - a. Make a kitchen cabinet.
 - b. Make a drainboard beside the sink.
 - c. Sew on aprons, tablecloth, and towels.
 - d. Paint cabinet.

Friday, February 12, 1943

It was cold today so the children could not work in their garden as they had planned. They talked together about their absence and tardy records. Miss Cooper said that she believed one of the main reasons that Peggy had had

First Grade Children Preparing Whole Grain Cereals



no absences or tardies all year was that she eats so well and plays a long time outdoors every day. Food and garden books were checked in and out by the class librarian, and the children took turns reading to the class from the books they had selected. They read stories about food, gardens, and grocery stores. Elaine began reading Skags, the Milk Horse to the class, which they liked very much. They wanted to hear the rest of it soon. Several children described the cooking they were doing at home.

Monday, February 15, 1943

This morning the children came to the kitchen to cook whole grain cereals. They prepared five kinds: Oatmeal with raisins in it, Wheatena, Farina, Ralston's, and Wheathearts. Pictures were made of this activity. Each child ate a small portion of each kind with sugar and cream.

The Wheathearts and oatmeal were liked best by the children, and the Wheatena was next in popularity.

Three children went this morning with a student teacher to buy additional seeds for the garden. They came in late to sample the cereals.

This unit was planned for only six weeks, and this diary account was kept only for that period, but the unit did not stop at the end of that time. The following activities, which had been previously planned, were carried on after the six weeks period:

1. The kitchen was made in one corner of the room with the wooden drainboard by the sink, a kitchen cabinet, and a hot plate. Dish towels, aprons, and a tablecloth were made.
2. Many vegetables were grown in the garden successfully.
3. The trip to the grocery store was made. A booklet was made by each child about the things seen.
4. Recipe books were made as a gift for the mothers.

5. A party was given for the mothers. Invitations were made and napkins were colored gayly for this. A program was presented which included songs about foods, and a poem about eating breakfast, which was recited and pantomimed. The children had made cookies and applesauce for refreshments. The gift recipe books were presented to the mothers at this time.

6. A chapel program was presented to inform the rest of the school what they had learned about foods.

7. For Easter the children chose, instead of an Easter egg hunt, to have a luncheon in their room. They wanted to help prepare the food for this luncheon. They planned the following menu: creamed eggs, mashed potatoes, applesauce, and milk. They made the applesauce in their own kitchen and the mashed potatoes in the home economics kitchen. Table mats and paper napkins were colored decoratively for this special occasion.

CRITERIA FOR ECONOMIC GROUPS

Criterion

A Economic Group

B Economic Group

C Economic Group

D Economic Group

TYPE OF HOME

Large one-family, 8 or more rooms usually with garage for one and frequently two cars. Usually two or more bathrooms.

Mainly moderate size one-family houses, some of the best two family and duplex homes, and moderately expensive apartment houses.

Small one-family houses fairly well kept, many two-family houses and older, cheaper apartments.

Run down one-family houses, poor two-family and tenements.

OCCUPATIONS OF HEADS OF FAMILIES

Executives and successful professional people.

Average professional people and the bulk of the average or better paid white collar jobs. A few highly paid skilled mechanics and craftsmen. Successful retail store owners.

Skilled workers in both trades and factories, police and firemen in many cities, truck drivers and poorly paid white collar jobs. Small retail store managers and owners.

Unskilled labor, unemployed, janitors, and many of the unskilled and poorly paid factory workers. Usually includes all of most of the negro sections.

AUTOMOBILES

90 to 95% own one or more (in the Far West and some parts of the Mid West practically 100%).

60 to 80% own one, a few own two older or less expensive cars.

40 to 70% own one.

20 to 40% on the west coast about 50% own a car but frequently an old one 6 to 10 years old.

AUTOMATIC REFRIGERATORS

85 to 100% have one.

70 to 90% have one.

40 to 70% have one.

10 to 30% have one.

TELEPHONE

Almost 100% have telephones in their home.

Between 70 and 90% have a telephone.

A wide range depending on location - 20 to 80%, averaging about 50% for the whole country. Telephone ownership in some southern cities is almost 0%. Average 10-30%.

I. About how much does your child eat of the following every day?

- 1. Green vegetables _____ servings
- 2. Raw vegetables _____ servings
- 3. Starchy vegetables _____ servings
- 4. Milk, sweet or buttermilk _____ cups
- 5. Milk, chocolate _____ cups
- 6. Fruit, fresh _____ servings
- 7. Fruits, dried or cooked _____ servings
- 8. White bread _____ slices
- 9. Whole wheat bread _____ slices
- 10. Coffee or Tea _____ cups
- 11. Bottle drinks _____
- 12. Eggs _____

Does he eat the following foods?

	Often	Occasionally	Seldom or not at all
Blackeyed peas			
Butter beans			
Cabbage			
Carrots			
Celery			
Corn			
Lettuce			
Tomatoes			
Turnip greens			
Sweet potatoes			
White potatoes			

II. Actual food eaten in 24 hour period

Write down the foods consumed by him or her both at meal time and between meals during the last 24 hours.

Breakfast	Evening Meal	In between Meals	Typical noon meal when at home

III. Attitude towards food

Does he like to try new foods?

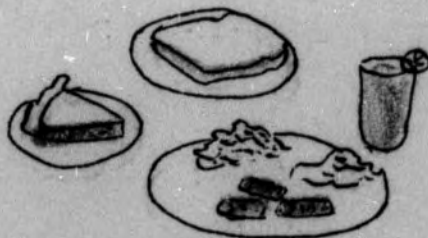
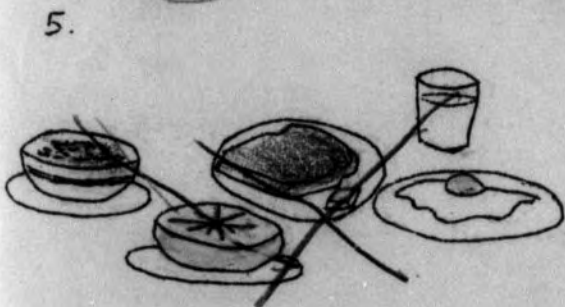
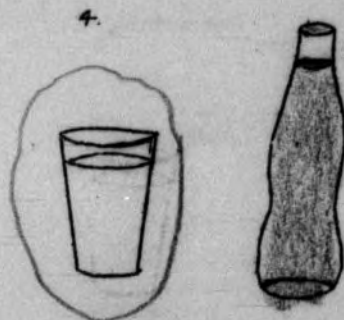
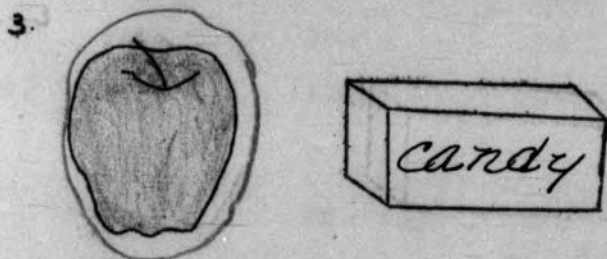
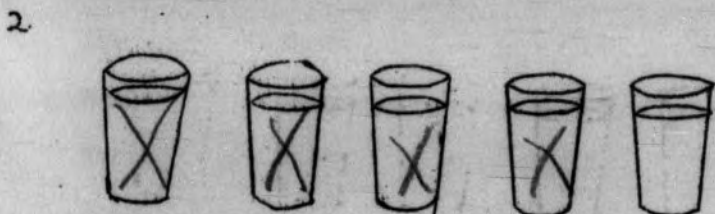
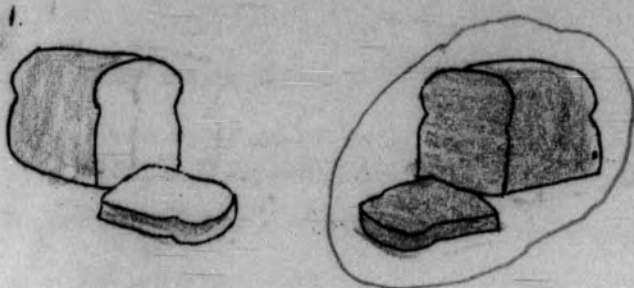
What are some of his most outstanding food likes?

What are some of his most outstanding food dislikes?

Any special problems?

Directions for Giving Foods Test to First Grade Children

1. Teacher says, "At the top of the page are two loaves of bread. One of them is white bread, and the other is whole wheat bread. Draw a circle around the one which is best for children to eat."
2. "Under the bread are some glasses of milk. Put a cross mark on as many glasses as you need everyday."
3. "Under the milk is an apple and a candy bar. Draw a circle around the one, which would be best for you to eat in the middle of the afternoon."
4. Teacher points to glass of milk and bottle drink and says, "Here is a glass of milk and a bottle drink. Draw a circle around the one which is best for you to drink."
5. Teacher points, "Here are two breakfasts. In the first one there is a half grapefruit, a bowl of oatmeal, an egg, a piece of whole wheat toast with butter and a glass of milk. In the other breakfast there is a bowl of cornflakes, some grits, a piece of white bread, some jam and a cup of coffee. Put a cross on the one you would rather have."
6. Underneath the breakfasts are two dinners. One has a piece of steak, some green peas, a baked potato, carrot, spinach and cabbage salad on green lettuce, a whole wheat muffin with butter, a baked apple and a glass of milk. The other breakfast has some fried sausage, some mashed potatoes, some white rice, a piece of white bread, a piece of chocolate pie and a glass of tea. Put a cross on the one you would choose."



Compilation Table 1.

Classification of Daily Dietary Habits of Children According to
 Reports from Individual Children and Parents .

Study Number of Individual	Parent		Child	
	Before	After	Before	After
One	Good	Excellent	Fair	Excellent
Two	Excellent	Excellent	Good	Excellent
Three	Good	Excellent	Fair	Good
Four	Good	Excellent	Good	Excellent
Five	Poor	Fair	Poor	Fair
Six	Good	Excellent	Good	Excellent
Seven	Poor	Good	Fair	Good
Eight	Poor	Fair	Poor	Fair
Nine	Fair*	Good	Fair	Good
Ten	Fair*	Excellent	Fair	Good
Eleven	Fair*	Excellent	Fair	Excellent
Twelve	Good	Excellent	Good	Excellent
Thirteen	Good	Good	Good	Excellent
Fourteen	Good	Good	Good	Excellent
Fifteen	Poor	Fair	Poor	Good
Sixteen	Good	Good	Fair	Excellent
Seventeen	Poor	Poor	Fair	Good
Eighteen	Good	Excellent	Fair	Good
Nineteen	Fair	Good	Poor	Fair
Twenty	Good	Good	Good	Good

Compilation Table 1. (continued)

Study Number of Individual Child	Parent		Child	
	Before	After	Before	After
Twenty-one	Good	Excellent	Fair	Excellent
Twenty-two	Good	Good	Poor	Fair
Twenty-three	Excellent	Excellent	Fair	Good
Twenty-four	Fair	Good	Poor	Good
Twenty-five	Fair	Good	Fair	Good
Twenty-six	Good	Fair	Fair	Good
Twenty-seven	Poor	Fair	Poor	Good
Twenty-eight	Fair	Fair	Fair	Good
Twenty-nine	Fair	Good	Poor	Excellent
Thirty	Poor*	Poor	Fair	Fair

Compilation Table 2. Classification of School Lunch Eating Habits of Individual Children

Study Number of Individual	Before Unit	During Unit	After Unit
One	Fair	Good	Good
Two	Good	Good	Good
Three	Poor	Fair	Fair
Four	Good	Good	Good
Five	Good	Good	Good
Six	Fair	Good	Good
Seven	Good	Good	Good
Eight	Poor	Fair	Fair
Nine	Fair	Fair	Good
Ten	Fair	Good	Good
Eleven	Poor	Fair	Good
Twelve	Fair	Good	Good
Thirteen	Poor	Poor	Poor
Fourteen	Good	Fair	Good
Fifteen	Poor	Poor	Fair
Sixteen	Poor	Fair	Fair
Seventeen	Poor	Poor	Poor
Eighteen	Fair	Good	Good
Nineteen	Poor	Fair	Good
Twenty	Good	Good	Good
Twenty-one	Good	Good	Good

Compilation Table 2. Classification of School Lunch Eating Habits of Individual Children (continued)

Twenty-two	Poor	Fair	Fair
Twenty-three	Fair	Good	Good
Twenty-four	Good	Good	Good
Twenty-five	Poor	Fair	Fair
Twenty-six	Poor	Poor	Poor
Twenty-seven	Poor	Poor	Poor
Twenty-eight	Fair	Good	Fair
Twenty-nine	Good	Good	Good
Thirty	Poor	Fair	Fair

Good--- Drank all milk and cleaned plate.

Fair---Left only small portions of food.

Poor---Left large portions of food.