THE FLORIDA STATE UNIVERSITY
SCHOOL OF HOME ECONOMICS

A COMPARATIVE STUDY OF DIETARY HABITS OF
ELEMENTARY SCHOOL CHILDREN RECEIVING
TWO TYPES OF NUTRITION EDUCATION

By
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A Paper submitted to the
Department of Home Economics Education
in partial fulfillment of the
requirements for the degree of
Master of Science

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August, 1974
ACKNOWLEDGMENTS

Sincere appreciation is extended to Dr. Bonnie B. Greenwood, my major professor, for her constant encouragement, helpful assistance, and continual guidance. Without her help this study would not have been possible. To Dr. Mary Lee Hurt, Department Head, my heartfelt gratitude for her unwavering kindness.

The contributions of the teachers and students who participated in this study are gratefully recognized.

To my mother and father I am most grateful for their infinite faith and love. For their understanding and support of my goals in life, I am most thankful.
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CHAPTER I

INTRODUCTION

What role can the school lunchroom play in teaching children to eat proper foods? Why do children select some foods to eat over others? How effective can teachers be in influencing a child's feeling and opinion about the food he eats? Is nutrition education important for students?

A primary aim of nutrition education is the development of good food habits early in life. Good food habits do not mean that a person eats only those foods which are "good" for him but rather that he has the knowledge and willingness to select the kinds and amounts of foods he needs for good health.

The school lunch program has an important part to play, both in contributing to the nutrition of children and in helping them to form good food habits. If eaten regularly, lunch furnishes one-third of the meals for the week, and at least one-sixth of the total meals for a calendar year. The lunch served at school, therefore, can make a substantial contribution to the total food intake of the child and provide experiences with foods which can help him to learn to like or at least accept a variety of wholesome foods.
There is and should be a difference between a school lunch program and a mere feeding operation. According to many educators, a school is fully justified in providing a noon lunch for children only if it is used to help develop good food practices. The school can do this by: (a) insuring that the noon meal supplied to the children is nutritionally adequate and appetizing and (b) using the lunch to reinforce the nutrition taught in the classroom. In other words, the lunch must be a part of the total educational program and should be used as a positive force for good nutrition.

There are many factors related to whether one selects foods which will provide a nutritionally sound diet. Two of the most significant of these are: (a) knowledge of what foods make up a good diet and (b) the enjoyment of a wide variety of foods. Fortunately, these are the two factors about which the school can do something.

Need for the Study

After the 1969 White House Conference of Food, Nutrition, and Health, conference participants expressed alarm at the increasing deterioration of dietary habits and issued an extensive list of recommendations to combat the situation. Paramount among these recommendations was the designation of school programs of nutrition education as the major deterrent to poor dietary practices. Conference delegates acknowledged that past efforts in nutrition education had been relatively ineffective due, they claimed,
to a disorganized approach to the subject. ("Report, Section Four: Nutrition Teaching and Nutrition Education," 1970)

The needs and desires of the students and the community will govern largely the character of nutrition education in a given school district. The incorporation of self-evaluation in nutrition education curriculum development with accreditation standards serving as guidelines would be expected to result in more viable programs geared to local needs with the cooperation of local educators (teachers, principals, and supervisors). Incorporation of nutrition education into present curriculum should not require major efforts.

With emphasis on teaching nutrition education in the classroom, as a subject with realistic application, it seems imperative that the total involvement include students, teachers, principals, and supervisors. School programs could well be the nucleus of improved nutrition practices.

**Objectives of the Study**

The objectives of the intended study were the following:

1. To plan and implement a nutrition education program for teachers and elementary students.

2. To compare dietary practices of students having had nutrition education correlated with the school lunchroom to dietary habits of students whose nutrition education was confined to the classroom.

**Statement of the Problem**

Specifically, the study sought an answer to the following question. Do students with nutrition education instruction
consume a more adequate Type A lunch than students who have
nutrition education not related to the school lunch program?

Assumptions

The following assumptions were made in conducting the study:

1. The students ate that food which was missing from
their plates.
2. The teachers had good rapport with the students.
3. The teachers utilized effective teaching methods
and techniques.
4. During the study, the normal school lunch selection
of food was served (regular Type A menus).
5. The inservice training program in nutrition
furnished sufficient information to the teachers
to adequately teach nutrition.

Delimitations

1. The study was limited to two elementary schools in
Dixie County, Florida.
2. The study was limited to four fourth grade classes,
four fifth grade classes, and four sixth grade
classes in Dixie County, Florida.

Definition of Terms

To aid in understanding the study, the following terms
were defined in accordance with the purpose of the
investigation:

1. Four food groups: the type of foods that contain
the same nutrients in about the same amounts;
Milk Group, Meat Group, Fruit and Vegetable Group,
Bread and Cereal Group (U.S.D.A. Menu Planning


5. Type A lunch: the typical lunch served at school and approved by the United States Department of Agriculture, as nutritionally adequate for 9-12 year old boys and girls (United States Department of Agriculture Guidelines, 1974).
CHAPTER II

REVIEW OF LITERATURE

A review of literature revealed limited research done in the area of nutrition education in relationship to the school lunch program. However, some studies have dealt with nutrition education and its effects on eating habits. Also, a number of studies exist on the nutritional status of children. In the review of literature, a representative sample of literature will be presented.

Nutrition Education

There is at least some evidence to show a relationship between teaching methods and materials used in nutrition education and eating habits of students being taught. A study conducted in California during 1969-70 and administered by Lovett (1970) revealed that students given nutrition education by trained teachers using prepared materials showed improvements in nutritional knowledge when compared to classes taught using materials alone or textbooks alone.

Benzley (1972) conducted a study of eating habits of elementary age students in the Salt Lake City public school study. He found that students left less plate waste when the teaching material method was related to the Type A lunch
requirements.

Stott (1973) conducted an investigation in South Africa headquartered at a health center, with the doctors and nurses instructing and encouraging interest in proper dietary habits. The findings indicated that incidence of malnutrition, close to the center and supervision dropped, but that malnutrition rose as the distance from the center increased.

Although man may have remarkable powers of adaptation, there is a definite limit to his ability to adapt to an inadequate intake of nutrients, particularly when he is a growing child. According to Todhunter (1970), nutritionist, the curriculum should encompass nutrition education as it relates to the school feeding program.

The American Dietetic Association (1974) in a Position Paper on child nutrition programs took the view that the emphasis should be placed on the preventive aspects of nutrition and on active involvement of the child in his education about food and nutrition.

Schoor, Sanjur and Erickson (1972) studied factors affecting teen-age food habits, including food preference, nutrient intake, and the relation of eating habits to living habits and to nutrient intake. The researchers' findings indicated that the complexity of an adolescent's diet increased significantly with an increase in his father's and mother's occupational status, his mother's education,
employment, but was not related to his age, sex, family size, and the number of his nutrition information channels. It was concluded that the complexity of dietary patterns are based on many factors.

**Nutritional Status of Children**

White (1973) conducted research in the form of a national nutrition survey. He concluded that a significant proportion of the people surveyed were malnourished or nearly so. Adolescents, in general, had the highest incidence of unsatisfactory nutritional status. The evidence given supported the fact that patterns for eating habits begin early in life.

The need for further emphasis in the area of nutrition education has been soundly established by recent dietary surveys in the United States. In 1963, the Tulane University School of Medicine in cooperation with the Louisiana State Board of Health began a study of children between the ages of ten and sixteen. Biochemical and clinical evidence of deficiencies of iodine, iron, riboflavin, thiamine, ascorbic acid, and vitamin A were found (Goldsmith, 1965).

Steel (1972) found in a study in Melbourne, Australia that with a maximum score for adequate intake of the various nutrients being 80, only 20% of the girls and 30% of the boys rated maximum scores prior to 12 years of age. However, it was found that during the 12 year old period, the
percentage of maximum diet scores rose to 48%.

Bender, Magee, and Nash (1972) conducted a study in London which involved measurement of the amount of food eaten in 48 infant, infant-junior, junior, and senior schools. The intake of energy, protein, and minerals was estimated and the values compared with United Kingdom recommendations. In eight infant schools, energy intake was 70% and protein intake 57% of the standard. The corresponding values in 18 infant-junior schools were 69 and 60; for 12 junior schools, 63 and 55; and for 10 senior schools, 75 and 61. Average wastage was 10% of all food offered to the children.

In Korea a study was carried out by Lee (1971) involving 1,000 pupils. The daily intake for those 10 to 12 years of age was 22% below the recommendation for energy, 13% for protein, 58% for calcium, 64% for vitamin A, 11% for thiamine, 45% for riboflavin, and 45% for ascorbic acid.

**Summary**

Research has provided evidence which indicates that nutritional status throughout the world needs improvement. The world situation with respect to hunger and malnutrition has been reviewed by Goldsmith (1971). His findings indicated the long-term nature of the task and the need for international and national collaboration.

Research tends to indicate the method of nutrition education utilized has some relationship to diet patterns.
Also the less than desirable nutritional status of young people has been documented by numerous researchers.
CHAPTER III
PROCEDURE

The following procedure was used in carrying out the purposes of the study: (a) selection of the sample; (b) development and implementation of the teacher inservice training program; (c) development of the instrument; (d) collection of the data; and (e) treatment of the data.

Selection of the Sample

Three hundred thirty two students were selected as the sample on a voluntary basis by twelve teachers at two schools. The group was made up of four fourth grade classes, four fifth grade classes, and four sixth grade classes, of 25, 27, 31, 22, 30, 31, 26, 26, 28, 29, 30, 27, respectively, for the total of 332 students.

Planning and Implementing the Teacher Inservice Training Program

Prior to the study, a two hour nutrition education workshop was presented to teachers of the selected sample by the researcher (see Appendix). The objectives were identified based on the nutrition curriculum to be taught. That is, one group of teachers teaching a fourth, fifth, and sixth grade set had the additional objective of relating
nutrition education to the lunchroom program. The objectives of the other group of teachers were limited to nutrition education in the classroom with no correlation to the lunchroom program. A planned outline for nutrition education was furnished to the teachers at the workshop. The twelve teachers taught nutrition education following the planned outline for each day for a period of four weeks.

**Development of the Instrument**

A checklist was developed for use in recording foods consumed by the sample. The instrument was designed so that foods consumed from the Type A menu could be tallied in food groups by the stroke method. It was possible for the researcher to do the actual tallying on the prescribed data collection days.

**Collection of the Data**

Data were collected for a five day week from each of the two groups of the sample following four weeks of nutrition instruction. At the end of each lunch period of the data collection week, the researcher viewed each participant's plate individually. Based on her observation, the checklist was marked by food groups as to foods consumed by the participants. The teachers assisted the researcher in the orderly conduct of this procedure.
Treatment of the Data

Data were tabulated in terms of food groups consumed by participants during lunch at school. Frequencies and percentages were calculated to determine nutritional adequacy of lunches eaten as determined by the four food groups. Also, the food choices of the two student groups were compared.
A study of food consumption of the Type A lunch in relation to the content of the nutrition curriculum to which participants were exposed was conducted in spring, 1974. The researcher presented a nutrition education workshop to the participating teachers. One group of teachers were given objectives that related nutrition education to the lunchroom program and the other group of teachers had objectives which limited the behavioral objectives to the classroom with no correlation to the lunchroom program. During the following four weeks, the planned curriculum of nutrition was taught to the sample by the trained teachers. The nutrition lessons occurred on a regular daily basis, and included, but were not limited to: lectures, demonstrations, movies, slides, experiments, and games. Following the four week unit on nutrition, the researcher recorded foods consumed by each of the two groups in the school lunchroom for a five day week.

**Description of the Sample**

Two groups of participants were randomly selected from each of two elementary schools in Dixie County, Florida. The
first group in both schools consisted of 162 students and were treated as a control group. The second group in both schools consisted of 170 students and were treated as the experimental group. The total sample consisted of 332 participants, all of whom were enrolled in the fourth, fifth and sixth grades.

Of the 810 responses expected from the control group of 162 participants in the five day tally period, 770 responses were received constituting a 95% return. The highest number of responses from the control group was 157 received on Monday of the tally period. The lowest number of responses from the control group was 148 received on Friday.

Of the 850 responses expected from the experimental group of 170 participants in the five day tally period 773 responses (91%) were received. The highest number of responses from the experimental group was 159 received on Monday of the tally period. The lowest number of responses from the treated group was 145 received on Friday (see Table 1).
TABLE 1
ANALYSIS OF RESPONSES

<table>
<thead>
<tr>
<th></th>
<th>Number Received</th>
<th>Percent Number Received</th>
<th>Highest Number Received</th>
<th>Lowest Number Received</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per Week Average Sample</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Sample</td>
<td>770</td>
<td>154</td>
<td>91</td>
<td>157</td>
</tr>
<tr>
<td>Experimental Sample</td>
<td>773</td>
<td>155</td>
<td>95</td>
<td>159</td>
</tr>
</tbody>
</table>

Food Consumptions

Data were tallied by the researcher according to the food groups consumed from the Type A lunch by the sample. Of the 770 control group responses 621 (86%) consumed milk. Six hundred and ninety five (90%) consumed the meat group food, 609 (79%) consumed the fruit-vegetable group food, and 724 (94%) consumed the bread-cereal group food.

Of the 773 experimental group responses, the researcher found that 719 (93%) consumed milk. Seven hundred and fifteen (93%) consumed the meat group food, 663 (86%) consumed the fruit-vegetable group food, and 748 (97%) consumed the bread-cereal group food.

Comparison of Food Consumptions by the Control Group and the Experimental Group

The experimental group of participants consistently ate
consumption of all of the four food groups. Whereas the largest percentage of positive difference occurred in the milk group (12%), the meat group and the bread-cereal group consumption was greater by 3% each. The fruit-vegetable group consumption for the experimental group was 7% greater than for the control group (see Table 2).
### TABLE 2

**COMPARISON OF FOOD CONSUMPTION OF CONTROL GROUP AND EXPERIMENTAL GROUP**

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th></th>
<th>Experimental Group</th>
<th></th>
<th>Percentage Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number Responses</td>
<td>Number Consumed</td>
<td>Percentage Consumed</td>
<td>Number Responses</td>
<td>Number Consumed</td>
</tr>
<tr>
<td><strong>Milk</strong></td>
<td>770</td>
<td>621</td>
<td>81</td>
<td>773</td>
<td>719</td>
</tr>
<tr>
<td><strong>Meat</strong></td>
<td>770</td>
<td>695</td>
<td>90</td>
<td>773</td>
<td>715</td>
</tr>
<tr>
<td><strong>Fruit-Vegetable</strong></td>
<td>770</td>
<td>609</td>
<td>79</td>
<td>773</td>
<td>663</td>
</tr>
<tr>
<td><strong>Bread-Cereal</strong></td>
<td>770</td>
<td>724</td>
<td>94</td>
<td>773</td>
<td>748</td>
</tr>
</tbody>
</table>
Results

Fourth, fifth, and sixth grade students with nutrition education instruction in conjunction with the school lunch program consumed a more adequate Type A lunch than did students who had nutrition education unrelated to the school lunch program.
CHAPTER V

SUMMARY, CONCLUSION, DISCUSSION
AND RECOMMENDATIONS

A comparative study of dietary habits of two groups of fourth, fifth, and sixth grade children receiving two different methods of instruction in nutrition education was conducted during spring, 1974. The purpose of the study was to determine if children exhibited better eating habits when the instruction was correlated to the lunchroom program. The researcher tallied food consumptions from each group for a five day period following instruction. The data were analyzed in terms of the percentages of increase for the four food groups consumed.

Conclusion

Based on the data, the following conclusion was drawn: Fourth, fifth, and sixth grade students at two elementary schools in Dixie County having had nutrition education correlated with the school lunchroom practiced better dietary habits than students whose nutrition education was confined to the classroom.
Discussion

The study supports findings of several other investigations cited in the literature. Benzley found as did this study that there was less student plate waste when the nutrition instruction was related to the Type A lunch. The findings would seem to agree with Todhunter's opinion that curriculum should encompass nutrition education as it relates to the school feeding program. Schools are an appropriate setting for active involvement of the child in his education about food and nutrition as recommended by the American Dietetic Association.

Whereas Lovett's study indicated that nutrition education materials had a more favorable effect on student learning than did textbooks, this study seemed to indicate that specialized teacher training was also important in the teaching of nutrition education.

The literature cited studies from several parts of the world. Although the objective of this study has not been extensively investigated in the United States, there seems to be an indication that the method of teaching and how it is related to the food service program has a bearing on student behavior.

Recommendations

Based on the conclusion of this study, the following
1. Further study of dietary habits of young children be conducted using a larger sample.

2. Further study of dietary habits of young children be conducted using other variables such as foods consumed at home.

3. Further study of dietary habits of young children be conducted with the additional variable of the school breakfast program.
APPENDIX
UNIT OUTLINE

Unit Objective: To help students understand four basic concepts of nutrition.

I. Nutrition is the food we eat and how the body uses it.
   A. Sources of food
   B. Digestion of food
   C. Relation of food to health

II. Foods are divided into four food groups depending on the nutrients found therein.
   A. Classification by nutrients
      1. Milk group
      2. Meat group
      3. Fruit-vegetable group
      4. Bread-cereal group
   B. Functions of nutrients

III. Everyone needs nutrients, but in varying amounts.
   A. Adequate diet
      1. Age
      2. Sex
      3. Activity
   B. Self needs for nutrients

IV. The treatment of food affects its nutritive value.
   A. Physical properties of food
   B. Food storage and processing
   C. Food labeling

V. Summary

Instructors followed same outline for both participant groups but the activities of the experimental group were correlated to the lunchroom program.
DAILY TALLY SHEET

School Name: ___________________________ Date: ______________

Group Identification: ____________________________

MILK GROUP

Total ______

FRUIT-VEGETABLE

GROUP

Total ______

MEAT GROUP

Total ______

BREAD-CEREAL

GROUP

Total ______
REFERENCES
REFERENCES


Steel, J. E. A serial study of nutrient intakes of children from 3 to 18 years of age. Food and Nutrition Notes and Reviews, 1972, 29, 63-69.

Stott, H. H. The Valley Trust experiment in raising the nutritional standards of a less-developed rural community. Nutrition Abstracts and Reviews, 1973, 43, 1572-1574. (Abstract)


VITA

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Name: Claudia Rose Bass
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The Florida State University, Tallahassee, Florida
 Bachelor of Science, Home Economics Education . . . 1968
 Master of Science, Home Economics Education . . . 1974

Work Experience

School Food Service Director, Dixie and Gilchrist
 County School Boards, Cross City and Trenton, Florida . . . . . . . . . . . . . . 1970-Present
School Food Service Director, Suwannee County
 School Board, Live Oak, Florida . . . . . . . . . . . . . . . . . . . . . . . . . . . .1968-1970

Honors

High School: Valedictorian
 Beta Club
 National Honor Society
 "Most Intellectual"
 State Teacher's Scholarship
 Farm Bureau State Award
 Winn-Dixie State Award
 Senior Placement Test Award
 Elks District "Americanism vs. Communism"
 Essay Award
 Lions Club State Award
 Editor-in-Chief of School Newspaper
Undergraduate

President's List
Dean's List

Postgraduate

Outstanding Young Women in America.

Travel

European Tour--1967
Austria, Belgium, Czechoslovakia, Denmark, East Germany, England, France, Italy, West Germany, Switzerland, West Germany

Bahama Islands--1970

Hawaii--1972

Mexico--1973

Organizations and Activities

American School Food Service Association
Florida School Food Service Association
Alpha Delta Kappa Educational Honorary
American Home Economics Association
Live Oak Junior Woman's Club
Member of Mt. Zion Christian Church