# A PRELIMINARY APPRAISAL OF THE 4-H PROJECT, EXPLORING FOODS AND NUTRITION

Thesis for the Dogree of M. S. MICHIGAN STATE UNIVERSITY Muriel Sarah Brink 1964



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# A PRELIMINARY APPRAISAL OF THE 4-H PROJECT, EXPLORING FOODS AND NUTRITION

By

Muriel Sarah Brink

# AN ABSTRACT OF A THESIS

# Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

### MASTER OF SCIENCE

Institute for Extension Personnel Development

#### ABSTRACT

## A PRELIMINARY APPRAISAL OF THE 4-H PROJECT, EXPLORING FOODS AND NUTRITION

by Muriel Sarah Brink

The 4-H program is designed for youth 9-18 years of age. However, in Michigan the majority (seventy-three per cent) of the 4-H'ers are less than 14 years of age. The Michigan 4-H staff has been aware of this situation for some time. One of the major steps initiated to help alleviate this situation was the introduction of the multiphase program. In this program, consideration is given to the members' interests and abilities at various age levels. In conjunction with the multiphase program, changes are being made in the 4-H projects. The purpose of this study was to evaluate, under field conditions, one of the new foods and nutrition projects designed for the older members, 14-18 years of age.

Data used in this study were obtained from enrollment figures, project outlines prepared by the 4-H members, and a questionnaire pertaining to career interests in foods and nutrition. The sample included 4-H foods and nutrition members 14 years of age and older from four counties in which the project leaders had attended a county training meeting for the Exploring Foods and Nutrition project. The study was planned to follow the "typical" procedures of the county program. Of the one hundred forty-seven potential members, forty-seven completed the requirements of the study.

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The manipulated variable was the amount and type of information available to the members. The control group received mimeographed information about the project found in the <u>Michigan</u> <u>4-H Project Book</u>. The second group received the bulletin, <u>Exploring Foods and Nutrition</u>. The bulletin plus some additional references were available to the third group.

The comparison between potential and enrolled members in the three groups was statistically significant, indicating that the bulletin and the available references to the members in Group III may have provided some incentive to the members who enrolled in the project. However, the data comparing the enrolled membership to the number of members submitting outlines were not significant. The characteristics of the leaders, rather than the manipulated variable, may be the important factor in the observed differences in responses.

A system for rating project outlines was developed. The mean scores of the outlines for each of the three groups were compared. The only comparison which was significant was Group I (control) compared with Group III. The range of scores for Group I was greater than either Group II or Group III. The role of the leader, and the age, experience, and interest of the members may be the underlying factors influencing the results.

The career interest in foods or nutrition was significant in the unpredicted direction. Fewer members indicated an interest than was expected.

In conclusion, the bulletin may have influenced some of the older members to enroll in the project. However, the total effectiveness of the bulletin and project can not be evaluated without further study.

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#### INTRODUCTION

#### History and Purpose of 4-H

The 4-H program was instituted in 1914 with the passage of the Smith Lever Act. However, the actual groundwork dates back to the late nineteenth century when progressive educators were introducing nature study in the school curriculum. About this same time the rural school teachers were including nature study in the school to meet the demands of the rural society.<sup>1</sup> From nature study, to corn and garden clubs, to boys' and girls' clubs, the 4-H program has increased in scope to include projects in several subject matter areas.

According to T. T. Martin the main purpose of 4-H club work is

. . . the development of boys and girls through self-help programs and the improvement of farm, home, and neighborhood practices in such a way that both rural and urban youth are brought into touch with the best of each environment and helped to make themselves efficient, public spirited, and useful citizens.<sup>2</sup>

He continued by emphasizing that 4-H club work is set up to meet the economic, social, and educational needs of youth.

<sup>&</sup>lt;sup>1</sup>Charles E. Potter, "Early Developments in 4-H," <u>Selected</u> <u>Readings and References in 4-H Work</u>, ed. G. L. Carter, Jr. and Robert C. Clark (Madison: National Agriculture Extension Center for Advanced Study, U. of Wisc., 1961), pp. 8-9.

<sup>&</sup>lt;sup>2</sup>T. T. Martin, <u>The 4-H Club Leader's Handbook</u> (New York: Harper and Brothers, 1956), p. 2.

At the onset of the 4-H program membership was open to all youth 10-21 years of age. In 1964 the age span was reduced to 9-18 years of age.

<u>The 4-H Situation</u>: The 4-H program differs from formal education in at least four ways.<sup>1</sup> First, 4-H membership is voluntary, i.e., the individual can join or discontinue club membership at his own discretion. Secondly, the curriculum is unstructured. The member selects the projects (subject matter areas) which interest him most. Another difference is the less well defined student-teacher relationship. In most instances the teacher (4-H leader) is a parent of one of the club members. The fourth difference is that the member learns by doing which is the basis of personal development.

## Purpose of the Study

If the 4-H program were meeting the economic, social and educational needs of the youths, one could assume that the membership would be evenly distributed among all age groups. A look at the 1963 4-H Club Annual Statistics<sup>2</sup> shows this is not true in Michigan. Approximately seventy-three per cent of the total enrollment is comprised of youngsters 10-13 years of age. The remaining twenty-seven per cent includes all the youths 14-21 years of age.

The Michigan 4-H staff has been aware of this situation for some time. One major step initiated to help alleviate this situation was the

<sup>1</sup>G. L. Carter, Jr., "A Conception of 4-H," Part II, <u>Journal of</u> Cooperative Extension, I (Winter, 1963), pp. 229-230.

<sup>2</sup>"1963 4-H Club Annual Statistics, "State 4-H Office, Michigan State University.

introduction of the multiphase program.<sup>1</sup> In this program, consideration is given to the members' interests and abilities at various age levels, grouping the ages 10-12, 12-14, and 14-18. In conjunction with this program, changes have been and are being made in the projects.

The purpose of this study is to evaluate one of the newly developed foods and nutrition projects under field conditions to determine the project acceptability by the older potential members who are interested in foods.

<sup>&</sup>lt;sup>1</sup><u>Michigan 4-H Projects</u>, 4-H Club Bulletin 314-B (East Lansing: Michigan State University, Cooperative Extension Service, 4-H Club Program, 1963), pp. 6-7.

#### **REVIEW OF LITERATURE**

Little research has been done pertaining to the effect a project has upon the enrollment of older members or what types of projects interest teen-agers. It seems that both of these aspects are important in determining the cause for the lack of participation of older 4-H prospective members. The factors to be discussed in this section are:

- 1) Several reasons members discontinue membership in 4-H.
- 2) Certain factors which influence the effectiveness of printed communications.
- Considerations for good educational programs including the needs of adolescents and the factors affecting motivation and learning.
- 4) The considerations and recommendations for an older youth program.

#### Enrollment and Drop-Out Studies

Why do youngsters join 4-H? This question was asked by Krietlow and Barnes<sup>1</sup> in Wisconsin. One-fifth of the youths replied that the projects were the main reason for joining. One-third wanted to learn "something new" and one-fourth wanted to be with their friends.

<sup>&</sup>lt;sup>1</sup>Burton K. Kreitlow and R. F. Barnes, <u>4-H Impact</u>? Special Bulletin 8 (Madison: University of Wisconsin, Agricultural Experiment Station).

The same investigators asked why members drop-out of 4-H after having joined. The responses to the question were varied. Most stated they dropped-out because the program was weak and did not have enough appeal. The second most frequent answer was that the members were not given enough guidance in selecting projects.

Marie Bishop<sup>1</sup> reviewed the studies pertaining to 4-H drop-out and re-enrollment. Two factors brought out in the review were (1) the percentages of drop-outs increased as the age at which the youngster first joined 4-H increased, and (2) personal satisfaction from the project affected re-enrollment. One comment made with respect to these factors was that the 4-H projects may be aimed at the younger members. Therefore, the older youth did not find the experience satisfying. Sabrosky<sup>2</sup> said the reason the 10- and 11-yearolds re-enroll is because the basic needs are met. These young participants have a sense of achievement at the completion of the project that is rewarding.

Both Sabrosky<sup>3</sup> and Shipley<sup>4</sup> reviewed the Western Regional Study. Sabrosky interpreted the lack of re-enrollment as member dissatisfaction, stating the personal needs of the youths were not met. Shipley questioned the type of literature used, the activities offered, and the amount of help given to the members.

<sup>2</sup>Laural Sabrosky, "Let's Be Challenged," <u>Extension Service</u> Reviews, 29 (1959), p. 108.

<sup>3</sup>Sabrosky, "Some Ways to Hold Your Young People," <u>Extension</u> Service Reviews, 26 (1955), p. 100.

<sup>4</sup>Fern Shipley, "Probing to Determine Needs," <u>Extension</u> Service Review, 29 (1959), p. 181.

<sup>&</sup>lt;sup>1</sup>Marie Bishop, "Influence of Program Content on the Decision of Girls 14, 15, and 16 to Re-enroll in 4-H Club Work," Unpublished Master's Thesis, Michigan State University, East Lansing, 1956, pp. 3-8.

The problem of re-enrollment among the older youth is not unique to Michigan. In a Virginia Experiment Station bulletin published in 1930, William Ed. Garnett<sup>1</sup> referred to the decline in enrollment after the age of 14. At that time he felt the psychological differences in youth were being ignored and the 4-H program was appealing to the younger group but not to the late adolescents.

Although a favorable response was given to the existing 4-H program, 221 of the 359 Texas 4-H'ers made additional suggestions for improvement including ". . . a greater variety of projects and activities. "<sup>2</sup>

Aiton<sup>3</sup> reported that members and leaders in 4-H clubs rated projects as being very important in club work. However, Copp and Clark<sup>4</sup> did not find any relationship between enrollment and the project and club experiences. Age, family background opportunities, parental participation, peer group, and peer participation were the determining factors in 4-H participation.

Although there is no conclusive cause and effect relationship between 4-H re-enrollment and the 4-H project in the literature cited here, there is evidence that the type of project and the method of presentation may be two factors affecting re-enrollment.

<sup>&</sup>lt;sup>1</sup>William Ed. Garnett quoted by V. Joseph McAuliffe, "Summary of an Evaluation of an Experimental 4-H Club Project Designed for Teenage Boys and Girls, "Mimeographed summary of Master's Thesis, 1955, p. 1.

<sup>&</sup>lt;sup>2</sup>B. H. Nelson and G. M. York, "An Analysis of 4-H Club Training and Educational and Occupational Goals of 4-H Club Members," <u>Review of Extension Research: January to December, 1959</u>, USDA Extension Circular 532 (July, 1960), pp. 64-65.

<sup>&</sup>lt;sup>3</sup>E. W. Aiton, "Background and Design for a Study of Vitality Factors in 4-H Club Programs," <u>Review of Extension Research</u>, USDA Extension Circular 511 (June, 1957), p. 31.

<sup>&</sup>lt;sup>4</sup>J. H. Copp and R. C. Clark, "Factors Associated with Reenrollment of 4-H Clubs," ibid., p. 33.

#### Effectiveness of Communications

There may be a correlation between the lack of participation by older members and the content of communications used in attempting to interest the prospective members.

Wilkening, Clark, and Landry studied the effectiveness of a clothing handbook in teaching 4-H club members. "The key finding of the study is that 4-H circulars and bulletins are recognized and used as important sources of help by girls in third- and fourth-year clothing projects. . . , "<sup>1</sup> The investigators interpreted the use of impersonal sources-- 4-H circulars and bulletins, books and magazines--as signifying ". . . a certain degree of interest in clothing construction on the part of the girls."<sup>2</sup>

According to Foster<sup>3</sup> the availability of reading materials and the individuals's needs and interests are two factors which affect reading habits. Sociologists<sup>4</sup> have stated that individuals are highly selective in the communications they attend to and select what is important to them. "All human action and reaction, including changes in attitude and knowledge, are in some way directed towards the satisfaction of wants and needs."<sup>5</sup>

<sup>1</sup>Eugene A. Wilkening, et al., <u>Effectiveness of a Clothing Hand-</u> book in Teaching 4-H Members, Bulletin 522 (Madison: University of Wisconsin, July 1956), pp. 3-5.

<sup>2</sup>Ibid., p. 5.

<sup>3</sup>Joanne Foster, "Mass Communications," Forum VII, <u>Infor-</u> mation Sheets on Children and Youth, White House Conference on Children and Youth, 1960, pp. 1-3.

<sup>4</sup>W. Phillip Davison, "On the Effect of Communication," <u>POQ</u>, 23 (Fall, 1959), pp. 244-245; also, John W. Riley, Jr. and Matilda W. Riley, "Mass Communication and the Social System," <u>Sociology Today--</u> <u>Problems and Prospects</u>, ed. Merton, Broom, and Cottrell (New York: Basic Books, Inc., 1959), p. 544.

<sup>5</sup>Davison, op. cit., p. 244.

Based on the limited references, it appears that when there is interest in a topic, individuals will select and use the available materials to further their knowledge of the topic. It is, therefore, the duty of those in charge of the program to provide the conditions (project materials) which will increase the effectiveness of communications. Two of the factors are the context of the communication and the amount that is communicated.

#### Criteria for a Good Educational Program

The terminology used to define education varies.<sup>1</sup> Generally, education can be defined as a process involving the acquisition of new facts, attitudes, or skills which will aid the individual in solving problems, both now and in the future. What and how much an individual can learn depends primarily upon his physical and mental maturity, and the conditions under which learning is to occur.

<u>Developmental Tasks</u>: At birth an infant is helpless and is totally dependent upon others for care. As he grows he begins to gain control of his physical and mental capabilities. Each successful experience is an aid to his future experiences. This gradual learning process is composed of several developmental tasks.

A developmental task is a task which arises at or about a certain period of time in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks, while failure leads to unhappiness in the individual,

<sup>1</sup>See Ralph W. Tyler, "The Educational Potential of 4-H," <u>Selected Readings in 4-H Club Work</u>, ed. by Carter and Clark, p. 12; Homer Kempler, <u>Adult Education</u> (New York: McGraw-Hill Book Co., Inc., 1955), p. 17, and Wilbur B. Brookover and David Gottlieb, <u>A Sociology of Education</u> (second edition; New York: American Book Co., 1964), p. 15.

disapproval of society, and difficulty with later tasks.<sup>1</sup>

The developmental tasks emerge as the result of physical maturation, cultural pressures of society, and personal values and aspirations of the individual.<sup>2</sup> These tasks are much the same for all individuals in a society. "The degree to which the development of any one individual follows in an orderly manner depends upon how adequately the individual handles the developmental tasks with which he is faced." <sup>3</sup> Therefore, it is important to time the introduction of a new task to the individual's ability. Havighurst calls these times "teachable moments."<sup>4</sup>

Havighurst has listed ten developmental tasks of adolescence which should be taken into account. They are:

- 1. Achieving new and more mature relations with age-mates of both sexes.
- 2. Achieving a masculine or feminine social role.
- 3. Accepting one's physique and using the body effectively.
- 4. Achieving independence of parents and other adults.
- 5. Achieving assurance of economic independence.
- 6. Selecting and preparing for an occupation.
- 7. Preparing for marriage and family life.
- 8. Developing intellectual skills and concepts necessary for civic competence.
- 9. Desiring and achieving socially responsible behavior.
- Acquiring a set of values and an ethical system as a guide to behavior.<sup>5</sup>

<sup>1</sup>Robert J. Havighurst, <u>Developmental Tasks and Education</u> (New York: Longmans, Green and Co., 1960), p. 2.

<sup>2</sup>Ibid., p. 4.

<sup>3</sup>Donald Super, et al., "The Process of Vocational Development," <u>The Adolescent-A Book of Readings</u>, ed. Jerome M. Seidman

(New York: Holt, Rinehart, and Winston, Inc., 1960), p. 447.

<sup>4</sup>Havighurst, <u>op</u>. <u>cit</u>., p. 5.

<sup>5</sup>Ibid., pp. 33-71.

Gesell <u>et al.</u>, stated that by the age of fourteen most adolescents are ". . . capable of thinking and can take an intellectual pleasure in discussion."<sup>1</sup> The youths have the ability to look at both sides of an issue and draw a conclusion.

During this period the youths become involved in special interest groups and hobbies. Included in these groups are school and church organizations, 4-H and Y-teen clubs, and special clubs pertaining to music, art, science, and others.<sup>2</sup> If youths seek clubs, but do not join or stay in 4-H, this may mean there is something lacking in the present 4-H program which discourages the older members from joining or maintaining membership.

#### Motivation and Learning:

Motivation, the desire and will to act, springs from within each person, arising from his universal human drive to act so as to secure the things he needs and wants, or escape the things he dreads and fears.<sup>3</sup>

Another conception of motivation emphasizes the need for selfactualization or self-identification. Factors which help meet this need are:

- 1. Opportunities for achievement in work.
- 2. Recognition for work done.
- 3. Interesting and challenging work.
- 4. Responsibility for own work or work of others.
- 5. Advancement resulting from work done.<sup>4</sup>

<sup>2</sup>Ibid., p. 426.

<sup>3</sup>Glenn C. Dildine, "Effects of Competition on Individual Motivation and Personal Development--An Interpretation of Research." Prepared for the National 4-H Club Foundation, December, 1958, Mimeographed, p. 4.

<sup>4</sup>Denzil O. Clegg, "Work as a Motivator," <u>Journal of Coopera</u>tive Extension, 1 (Fall, 1963), p. 144.

<sup>&</sup>lt;sup>1</sup>Arnold Gesell, Frances Ilg, and Louise Bates Ames, <u>Youth--</u> <u>The Years from Ten to Sixteen</u> (New York: Harpers and Brothers, 1956), p. 178.

Spindler and Kelley<sup>1</sup> emphasized three factors to consider when attempting to motivate teenagers. These factors were (1) understand them, (2) base the approach on their needs and wants, and (3) involve the teenagers in solving a problem. Dildine<sup>2</sup> also stressed planning from the youth's viewpoint. The situation must have meaning to the individuals and fit into their present and future needs. The youths may need help, in a subtle way, in defining these needs and in planning ways to satisfy them by means of a positive approach.

Effective learning takes place when the learner recognizes some inadequacy in his behavior and can visualize some means of improving it. "A learning experience is a series of activities and appraisals from which one gains meanings that can be used in facing new problems and planning new experiences."<sup>3</sup> In developing new behavioral patterns the learner needs some guidance and practice. Standards of success are essential so the individual can evaluate his progress and obtain satisfaction from his accomplishments.<sup>4</sup>

Fleming's summary of Thorpe and Schmuller's work pertaining to learning indicates that learning is facilitated and tends to be permanent when:

- 1. The learner is motivated--when he has some stake in the activity.
- 2. The learning is geared to the learner's level--when it is compatible with the learner's physical and intellectual ability.

<sup>1</sup>Evelyn Spindler and Fern Kelley, <u>Improving Teenage Nutrition</u>, USDA PA-599 (Washington, D.C., Federal Extension Service, December, 1963), p. 8.

<sup>2</sup>Dildine, op. cit., p. 4.

<sup>3</sup>Paul Essert, <u>Creative Leadership of Adult Education</u> (Prentice-Hall, Inc., 1951). Quoted by Homer Kempler, <u>Adult Education</u> (New York: McGraw-Hill Book Co., Inc., 1955), p. 17.

<sup>4</sup>Tyler, <u>op</u>. <u>cit</u>., pp. 13-14.

- 3. The learning is patterned--when learners can see meaningful relationships between the activity and the goal.
- 4. The learning is evaluated--when the learner has some way of knowing what progress he is making.
- 5. The learning is integrated with personal, social development--when the learner experiences satisfactory growth and adjustment.<sup>1</sup>

In summary, the essentials for a good educational program include consideration for individual differences in maturity, interest and ability. In addition the individuals need to be challenged and to be able to have the feeling of achievement. They need guidance and recognition for the selected tasks. Learning is effective when the learner is interested and has the desire to learn.

#### Considerations for Older Youth Programs

The motivation and learning principles related above apply to all types of educational experiences--formal and informal--and should be applied. In addition, there are several other factors to consider in an educational situation. "The greatest help that can be given . . . is a means of keeping his (the individual's) information up-to-date and a desire for continuing all his life to learn what he will need for living and learning."<sup>2</sup> This statement, made by Alice Meil at the 1960 White House Conference on Children and Youth, holds true for all educational organizations at all age levels. The 4-H programs should be evaluated frequently to maintain this objective.

<sup>&</sup>lt;sup>1</sup>Robert S. Fleming, "How Children Learn," <u>Proceedings of</u> <u>Nutrition Education Conference</u>, USDA Miscellaneous Publication No. 913 (September, 1962), p. 21.

<sup>&</sup>lt;sup>2</sup>Alice Meil, "Trends in Curriculum Teaching and Guidance," <u>Children and Youth in the 1960's</u> (Golden White House Conference on Children and Youth, Inc., 1960), p. 121.

John and Mayer<sup>1</sup> conducted a study to determine the interests, aspirations and models of adolescents. The subjects included junior and senior high school students and post-adolescents, 18-24 years of age. The adolescents were more interested in "active activities" although as the age increased, the subjects selected more passive types of activities. In most instances the activities involved being with others.

When building programs for youth, E. W. Aiton suggested keeping in tune with the youth. The purposes of the programs should be to:

- 1. Help youth grow and develop. . . .
- 2. Help boys and girls learn facts, skills and techniques. . .
- 3. Provide opportunity for youth to develop listening and satisfying attitudes towards life and towards other people.<sup>2</sup>

In planning the program, consideration should be given not only to the youths' interests and needs but also to the potential resources which are available to them.

#### Suggestions for Improving the 4-H Program

Tyler<sup>3</sup> has looked at the 4-H situation in terms of the motivation and learning principles. Some of the attributes of the 4-H program were:

 The member's interest supplies the motivation required for positive learning to occur.

<sup>1</sup>M. E. John and Kathleen Mayer, "Adolescents--Their Interests, Aspirations, and Models," <u>Bulletin 695</u> (Penn. State University, June, 1962), pp. 2-5.

<sup>2</sup>E. W. Aiton, "Building Programs to Meet Their Needs," Extension Service Review, 28 (1957), p. 99.

<sup>3</sup>Tyler, op. cit., pp. 14-16.

- 2. Why's are explained by concrete observations and practice.
- 3. A good youth-adult working relationship exists.
- 4. Opportunities are available for career exploration and exploration of the greater world.
- 5. Individual investigation is encouraged.

Whether or not these attributes function in the local situations is unknown and is difficult to determine. The fact remains that many of the members do not continue in 4-H after the age of fourteen.

Four of the eight essentials for older youth programs afforded by Mary Lyle<sup>1</sup> were: (1) minimum organization, (2) more leadership training, (3) meetings four to twelve times a year, and (4) an educational program. Special interest groups are necessary to meet the needs and interests of the individual members.

In the 4-H situation the educational program is centered around projects from several interest and subject matter areas. "Projects are useful tasks by which youth are challenged, and the medium through which their solid growth occurs."<sup>2</sup> Therefore, the projects must meet the needs, interests, experiences, and opportunities of the members if they are going to fulfill the components of this definition. Some recommendations for a successful foods and nutrition program for teenagers have been provided by Spindler and Kelley:

- 1. Be sure the program is meaningful and educational. Make sure the program is purposeful and teaches nutrition.
- 2. Give leeway for the use of imagination and creativeness. Detailed material are not necessary.

<sup>1</sup>Mary Francis Lyle, "Participation of Older Members in 4-H," <u>Selected Readings and References in 4-H Clubs</u>, ed. Carter, Jr. and <u>Clark, op. cit.</u>, p. 81.

<sup>2</sup>4-H Foods--Nutrition Meeting Notes, Camp Kett (June, 1962), p. 2. Mimeographed, Michigan State University.

- 3. Recognize the importance of boy-girl relations.
- 4. Choose leaders, . . . , or counselors for this group with care. Teenagers need guidance in developing leadership.
- 5. Make the program fun and different. It will be competing with other organizations and interests.
- 6. Don't preach. Teenagers want facts and can draw their own conclusions from them. They may need some guidance from the leader.
- 7. Try to broaden their horizons. Introduce the youths to new foods, places and experiences.
- 8. Make nutrition vital. Present the facts in an interesting, enthusiastic manner.
- 9. Provide opportunities for individuals who want to specialize in the subject. Let members do independent studies.
- 10. Remember, this is an exploratory age. Provide a challenge.<sup>1</sup>
- In brief, the literature review indicates that:
- 4-H'ers discontinue their membership because the program is not challenging, appealing, or satisfying.
- 2. Individuals select and use the information that satisfies their needs and interests.
- The development of an individual depends upon his past experiences and the opportunities available to him now and in the future.
- 4. A learning experience is more effective if the person is interested and wants to learn.
- 5. Youth programs should be centered around the needs and interests of the youths.
- Programs for older youths should not be rigid--allow the youths to make their own decisions about what they study and how.

<sup>1</sup>Evelyn Spindler and Fern Kelley, <u>Your Program Can Have a</u> Forward Look in Foods and Nutrition (Washington, D.C.: USDA Federal Extension Service, 4-H - 11, January, 1961), back cover.

#### METHODOLOGY AND PROCEDURES

One of the newly developed projects, Exploring Foods and Nutrition, was planned for the advanced age group, 14-18 years old. An attempt was made to organize the project according to the factors discussed in the review of literature. Basic to this project is the project bulletin. The project differs from the other three foods projects for this age group in two ways. (1) Organization: (a) The new bulletin is divided into five general areas of foods and nutrition. These areas are consumer education and marketing; experimental foods; food preparation and management; food travels, too; and nutrition. Provided for each of the areas are objectives, suggested topics, and references from which members can make selections. Sample projects are also included. The members select, organize, and develop topics which are of interest to them largely at their own intiative. (b) Traditional projects are structured. All members perform the same activities suggested in the bulletin under the guidance of the project leader. (2) Content: The new bulletin is merely suggestive. The only subject matter in the bulletin is that which is presented in the sample projects. The members must gather their own information. Traditionally, bulletins contain the subject matter which the members are to learn.

#### Objectives

The main objectives of this study in the evaluation of the 4-H bulletin, Exploring Foods and Nutrition, were:

a) To discover what effect this type of project has upon the enrollment of the older members interested in foods and nutrition.

b) To evaluate the usefulness of the contents of the bulletin as reflected in the quality of the project outlines.

c) To measure the members' interests in foods or nutrition careers after exposure to the project.

#### Definition of Terms Used in the Study

1. Potential member--A 4-H member 14 years or older who enrolled in 4-H with the intention of selecting a foods and nutrition project. Members indicate their preference for certain project areas before they sign up for a specific project.

2. Actual or enrolled member--The potential member who enrolled specifically in Exploring Foods and Nutrition.

#### Study Design

Inasmuch as this experiment was performed under field conditions, it was necessary to select a design which accounted for the greatest number of extraneous variables including location and size of club. The simple random replication procedures<sup>1</sup> were preferred because all extraneous variables would be randomly distributed throughout the test groups. There were a few exceptions made in the design. Certain clubs were assigned to a specified group for reasons designated in Table 1. The reasons for the changes were based upon two factors: (1) the form, Just a Bit of Information, (Appendix A-1) which deals with the club and its leadership, and (2) conversation with the county agents.

<sup>&</sup>lt;sup>1</sup>E. F. Lindquist, <u>Design and Analysis of Experiments in Psy-</u> <u>chology and Education</u> (Boston: Houghton Mifflin Co., 1952), pp. 190-202.

#### Selection of Counties

Five counties--Clinton, Eaton, Jackson, Ingham, and Kent-were chosen to be included in the study. These counties had a foods enrollment of over 400 members in 1963 and were a reasonable distance from East Lansing. In January, 1964 William Tedrick from the State 4-H staff and this writer met with the agents from the selected counties. The purpose of the meeting was to inform the agents about the study and to obtain some information pertaining to the potential sample size. The agents were given the forms (Appendices A-2 and A-3). The total number of foods leaders and members 14 and over, based on the agents' estimates, were 245 and 480, respectively.

#### Selection of Sample

Dates for the foods and nutrition training meetings were set shortly after the meeting with the agents. Since some of these counties did not have female 4-H agents, the dates had to be confirmed with the home agents. All five of the sessions were held between April 9th and April 24th. The two main functions of these meetings in relation to this field study were (1) to make the situation more realistic, i.e., when new projects are introduced, it is customary to hold training sessions with the leader; and (2) to serve as a means to determine the clubs which would be included in the sample. The 4-H clubs which had leaders represented at the meeting comprised the sample. The criteria first developed required that the participating clubs:

- 1) Have members who were at least 14 years old in 1964.
- 2) Have at least four members in the project club.
- 3) Have a leader in attendance at the foods training meeting.
- Begin the project and submit the outlines at approximately the same time.



These criteria were followed except for criterion two. Due to differences in club organization and the shortage of older members even in the counties with the larger food project enrollments, all clubs which had members 14 years of age and older enrolled in foods projects were included in the study.

# County Training Meetings for Foods and Nutrition Leaders

At the end of January, 1964 a publicity communique and an accompanying letter (Appendices A-4 and A-5) were mailed to the agents. The communique was used to inform the leaders about the training meeting.

The purpose of the meetings was to acquaint the leaders with the new project, Exploring Foods and Nutrition. The topics discussed were the objectives of the project, the different areas and suitable topics that the members may want to study, the location of reference materials, ways to share the knowledge gained, and the roles of the project leader. The leaders completed the form, Just a Bit of Information (Appendix A-1). A copy of the form, Location of References (Appendix A-6) was given to them. In addition the leaders received copies of Let's Hear About You and the mimeographed material about Exploring Foods and Nutrition (Appendices A-7 and B-1, respectively) for the individual club members.

#### Treatment

At the completion of the county training sessions, the leaders' 4-H experience and formal education were evaluated as well as the possible membership (an estimate made by the leader). Since there was little difference in education and experience among the leaders, these factors were classified as extraneous variables. After following random replication procedures, the size of each group was determined by the leaders' estimates. Prior to assigning the groups, a decision was made that the size variation among the groups could be no greater than ten members and no more than three clubs. Table 1 indicates where the random assignment procedures were not followed.

The clubs within each county were assigned to one of the three groups:

	GROUP			
REPLICATION	<u> </u>	II	III	
1	х	X+A	X+A+B	
2	Х	X+A	X+A+B	
3	Х	X+A	X+A+B	

- X Mimeographed copies of Exploring Foods and Nutrition information from the <u>Michigan 4-H Project Book</u>, 314-B (Appendix B-1).
- A Members' bulletin, 155-k, and leader's guide, 355-k, Exploring Foods and Nutrition (Appendix B-2 and B-3).
- B Suggested references from the bulletin which were given to the project leader. Listed in Appendix B-4.

The members in the control group (Group I) received copies of the mimeographed information pertaining to the Exploring Foods and Nutrition project which was available in the <u>Michigan 4-H Project Book</u>. This information served as the bulletin for the group. Those in Group II received the mimeographed information plus the project bulletin, <u>Exploring Foods and Nutrition</u>. In addition the project leaders received the leader's guide. The leaders in Group III were given additional bulletins which the members could use as references. The leaders and members also received the project bulletins.

		Group Number				
	One		Two		Three	
	Club	Number of	Club	Number of	Club	Number of
County	No.	Members	No.	Members	No.	Members
Clinton	9	1	10	1	5	7 **
	8	3	7	3	1	1
	6	8	2	10	4	28 †
	3	4				
Eaton	6	10	4	2 *	2	8 *
	1	6	7	30 †	3	5
					5	2
Ingham	7	10	2	4	4	8
	1	4	5	4	3	6
			6	6		
Jackson	5	6	1	8	2	4
	3	15 †			4	2
Kent	1	4	8	3	3	8
	6	3	4	8	9	3
	5	4	7	3	2	2
TOTAL	<b></b>					***
Number	of					
Clubs	13		12		13	
Number of						
Membe	rs	78		82		84

Table 1. Random Assignment of Clubs Into Groups: ClassifiedAccording to Club Number and the Estimated Membership

\* The leaders in these clubs attended the training session held at Camp Kett April 30th and May 1st

\*\* Leader is a secretary in the County Extension Office and was aware of the study.

<sup>†</sup> Clubs specifically assigned to the group because of the large enrollment estimate.

#### Schedule

The time schedule followed during the study was:

February 1, 1964	- All county contacts completed.
May 1, 1964	- Completion of training meetings for the foods leaders.
June 1, 1964	- Club enrollment completed.
July 1, 1964	- Members' outlines and career interest question- naires turned into the county offices.

#### Distribution of Materials

At the training meetings a sufficient supply of the mimeographed information (Appendix B-1) was distributed to the leaders for members of the respective clubs. The leaders were told that this information would serve as the bulletin because the bulletin was not available from the printers.

When all of the April meetings were completed and the groups determined, leader kits for groups two and three were prepared and sent to the agents in the counties. The county penalty slips were added and the kits were mailed to the leaders. At that time the counties received notification of the club classification, Division of Clubs into Experimental Groups (Appendix A-8) was completed for each county.

Exploring Foods and Nutrition bulletins were packaged and mailed to the county offices for the clubs in groups two and three the first week in June.

#### Hypotheses

This study was guided by the general hypothesis, "the style of presenting material will have an effect on the ability to retain the membership for the 14-18 year old age group." More specifically if the bulletin, <u>Exploring Foods and Nutrition</u>, meets the needs and interests of the potential 4-H members, the individuals will enroll and complete the project outline.

The hypotheses tested were:

(1) Of the potential members, those exposed to the bulletin plus references are more likely to enroll than those exposed to the bulletin only. In turn this group is more likely to enroll than the members receiving only the mimeographed information.

<u>Rationale</u>: Prior to the selection of the foods and nutrition project by the members, the leaders should have a copy of the information used in the project. The members should have an opportunity to look through it. If the materials available are acceptable, the members will select the project.

(2) The enrolled members receiving the bulletin and having access to references will complete and turn in more outlines than those receiving just the bulletin (Group II). This group will complete and turn in more outlines than the enrolled members receiving the mimeographed material only.

<u>Rationale</u>: One criticism directed at the present 4-H program is that the projects are designed to meet the needs of the younger members, 10-12 year olds. According to some, older youths are inquisitive, want responsibility, and prefer to draw conclusions from the facts. The Exploring Foods and Nutrition project and bulletin afford the members these opportunities.

Interest in a project can be initiated by the amount and type of information that can be easily obtained. Therefore, the more accessible the information, the more likely the members will be to enroll and submit outlines.

(3) The enrolled members who receive the bulletin and have access to additional references will submit outlines of higher caliber than those who receive only the bulletin. These members will submit better outlines than those who received only the mimeographed material. <u>Rationale</u>: The bulletin offers suggestions for organizing and conducting a study. This information should be beneficial in preparing the outlines. In addition one group has easy access to references which may be helpful in preparing the outlines.

(4) Those enrolled members receiving the bulletins will be more interested in a foods or nutrition related career than will those not receiving it.

<u>Rationale</u>: Interest in a career often arises from a satisfying experience. The bulletin contains a list of the many career opportunities in foods and nutrition. A member who is enjoying the project and who has the bulletin can determine quite easily which career is related to his topic. Therefore, the members with the bulletin will have career interests reinforced by knowing the career does exist.

#### Variables

The manipulated variable was the amount and type of information readily available to the members.

The measured variables were:

- 1) The acceptance of the new project, based on the enrollment data.
- The usefulness of the publication, based upon the quality of the project outlines produced.
- The interest shown by the members in the foods or nutrition career after working in the project.

<u>Enrollment Data</u>: This variable was measured twice. Originally the first comparison was to be made between the leaders' enrollment estimates and the actual enrollment of the members. After the first training meeting, it was discovered that many of the clubs had not yet been organized and the leaders were not sure of the potential enrollment. Therefore, the leaders' estimates were not used for this analysis
although the estimates were used in assigning the groups (Table 1, page 22). Instead the number of potential members was based on all 4-H members 14 and over in the club. This number was compared with the number of members enrolled in Exploring Foods and Nutrition.

The second comparison was between the members who enrolled and those who submitted the required outlines. The statistical test applied in both cases was chi square.

Usefulness of the Bulletin: Due to the nature of the bulletin, it was impossible to develop a test which would measure the usefulness of the bulletin. For this reason the outlines, prepared by the members, were evaluated. The measuring instrument used to analyze the outlines was developed Winter term, 1964 at Michigan State University. Six members from the foods and nutrition department and one from the State 4-H staff assisted in the development of the instrument. Each person was given a copy of "Criteria for Evaluating an Outline for an Independent Study " (Appendix A-9). The staff members were instructed to check the criteria which they felt should be included in an outline and to make additional suggestions. After these results were counted and evaluated, a second form, composed of eight criteria, was prepared (Appendix A-10). The same staff members rated the eight criteria on a five-point rating scale from zero to four. A rating of four meant that the criterion was essential in the outlines. The rounded mean value was determined from the judges' scores and was used as the weighted value of each criterion.

The outlines were also rated on a five-point rating scale, zero to four, for all eight criteria by the author. A four meant that the criterion was clearly defined in the outline and a zero meant it was excluded. This value was multiplied by the weighted value to give the score for each of the criteria. The possible range was zero to one hundred-eight points (Table 2, page 27).

Table 2. Criteria Used in Evaluation of Outlines, Including Weighted Values of Each Criteria and the Highest and Lowest Possible Scores 0-4

Criteria	Set Value	High	Total	Low	Total
Clear, concise statement of the problem or purpose of the study.	4	4	16	0	0
Hypothesis to be tested or question to be answered.	4	4	16	0	0
Evidence of background reading for the study including a list of references	. 3	4	12	0	0
Method of procedure to be used in achieving the goal, including provision for collecting data (when appropriate).	s 4	4	16	0	0
Suitability of topic: includes scope, knowledge required for understanding, etcetera.	4	4	16	0	0
Awareness of supplied and equipment needed. If supplies are purchased, estimate cost. Some indication of the place in which the study will be used.	3	4	12	0	0
An awareness for the need to evaluate results, giving some indication as to how the results will be applied. If project is experimental, some indi- cation that controls will be used in the					
evaluation	3	4	12	0	0
General appearance and organization of the outline.	2	4	8	0	0
Grand Total			108		0

The mean value of these scores for each group was calculated. To determine the significant differences between the means of the three groups, the "t" test was used. Originally, the writer planned to use the chi square test but due to variation in the size of the groups, it was not used. In order to determine where the greatest score discrepancies occurred among the groups, scores were reanalyzed and grouped in ten-point intervals.

The accuracy of the outline analyses was checked by a staff member's evaluation of 10 per cent of the outlines. These scores were compared with the writer's scores.

<u>Career Interest</u>: Members enrolled in the project completed a questionnaire, What Are Your Plans? (Appendix A-11), to determine interest in a career in foods or nutrition. The questionnaires were mailed to the leaders along with a letter of explanation (Appendix A-12) in the middle of June.

The results were analyzed on the basis of being interested or not being interested in a foods or nutrition career. For example; an interested member may have written, "As the result of this project, I have decided to look more deeply into the career possibilities in the foods area." On the other hand, a disinterested member may have stated, "I have already decided to go to business school."

A comparison was made among the three groups to determine any significant differences. Chi square test was applied.

### PRESENTATION AND ANALYSIS OF DATA

As stated earlier the potential membership was defined as the number of 4-H members from the participating clubs who are fourteen years old or older enrolled in any foods-nutrition project. The breakdown of the potential members into the experimental groups is reported in Table 3. Note that the total potential membership is smaller than the estimates (Table 1) made by the leaders (234 vs. 147).

Table 3. Potential Enrollment by the Amount of Information AvailableTo the Members

Group I (No Bulletin)	59
Group II (Members' and Leader's Bulletin)	42
Group III (Bulletins plus)	46
Total $\ldots$ $\ldots$ $\ldots$ $\ldots$ $\ldots$ $\ldots$ $1$	47

The reasons for this discrepancy are:

1) The leaders' estimates surpassed the available number of potential members in the respective clubs. Many of the estimates were based on the past year's enrollment.

2) One leader discontinued the leadership of the foods club after the county training meeting. The agent quoted her as saying, "I do not feel competent to lead in Exploring Foods and Nutrition."<sup>1</sup>

<sup>&</sup>lt;sup>1</sup>Ruth Beale, Extension Agent, Home Economics, Jackson County, private communication.

3) Kent County was dropped from the study. A policy change was made which shortened the time allotted for summer projects. The leaders reported there was not time for the members to do a study in Exploring Foods and Nutrition. One of the 4-H agents reported that several of the members were planning to enroll in the project this fall.

The division of membership according to county, club member and club size is shown in Table I, Appendix C.

The effect of the bulletin upon the enrollment of older 4-H members was measured by three variables; namely, (1) the enrollment data, (2) the scores of the outlines, and (3) the interest in a foods or nutrition career shown by the members enrolled in the project. The results were statistically analyzed by the chi square, contingency coefficient, and "t" tests. The acceptance level was set at the five per cent level of confidence; i.e., the obtained chi square value could not be due to change alone more than five per cent of the time. The obtained value was compared with the values computed from Table C, in <u>Nonparametric Statistics for the Behavioral Sciences</u> by Siegel<sup>1</sup> and Table IX in <u>Statistical Inference</u> by Walker and Lev.<sup>2</sup>

#### Enrollment

This variable, which measured the acceptance of the bulletin according to the number of members selecting the project was assessed twice: first to see if the type of information available to the members would influence the selection of the project and then to note the influence

<sup>&</sup>lt;sup>1</sup>Sidney Siegel, <u>Nonparametric Statistics for the Behavioral</u> Sciences (New York: McGraw-Hill Book Co., Inc., 1956), p. 249.

<sup>&</sup>lt;sup>2</sup>Helen M. Walker and Joseph Lev, <u>Statistical Inference</u> (Holt, Rinehart and Winston, 1953), p. 465.

the materials had upon the completion of the outlines by the enrolled members.

Potential vs. Enrolled Membership: The number of potential members who selected the project as compared with those who did not is shown in Table 4. After calculating the chi square value as prescribed by Siegel,<sup>1</sup> the results indicated that the amount and type of information did affect the enrollment of potential members. The contingency coefficient equal to 0.24 also suggests that there is some relationship between the materials available and the enrollment of potential members.

Table 4.The Number of Potential Members Who Enrolled in the Project<br/>Compared With Those Who Did Not, According to Experimental<br/>Groups

Group	Number of Members		Totala
Group	Yes	No	
	(30.905)*	(28.095)	
I	31	28	59
	(22.000)	(20.000)	
II	15	27	42
	(24.095	(21.905)	
III	31	15	46
Totals	77	70	147
Chi square	= 8.83 df. = 2 Significant at	a = 0.05 ( t 5% level of confide	C 0.24 ence

The expected value is calculated by multiplying the two marginal totals common to the particular cell, and dividing the product by the total number of cases.

<sup>1</sup><u>Ibid</u>., p. 104.

A closer observation of the data indicates that the observed and expected frequencies of Group I are approximately equal while seven (or 6.6%) more members enrolled in Group III than expected. On the other hand there were seven fewer members enrolling in Group II, those who received the bulletin only, than was expected. This divergence may be attributed to one of several factors or a combination of factors which were not tested in the study. They are:

1) The potential members who did not elect to select Exploring Foods and Nutrition were just fourteen years old. They were eligible to enroll in the foods project designed for member twelve to fourteen years of age. This latter project was new this year also.

2) The members could have decided to sign up for one of the remaining three foods projects planned for the older members.

3) The project leaders, who are influential in the club, may have discouraged the members from enrolling in the project this year. At the training meeting some of the leaders felt the project was "too much like school." In some instances the leaders stated that they should know the answers to all of the questions the members might ask and they did not see how this could be possible in a project like Exploring Foods and Nutrition.

<u>Completion of Project Outlines</u>: One of the stipulations set up by the committee composed of extension specialists, 4-H staff personnel, and county agents was that members prepare a project outline which was to be submitted to the county office for approval. The number of members who completed outlines in each of the three groups is presented in Table 5. Statistically the results denote that the type and amount of information did not encourage the members to complete the outlines.

Group	Number	Total		
Group	Yes	No	Total	
I	(18.992) 23	(12.078) 8	31	
II	(9.156) 9	( 5.844) 6	15	
III	(18.992) 15	(12.078)	31	
Totals	47	30	77	
Chi square = 4.34 df. = 2 a = 0.05 C. = 0.07 Not significant at 5% level of confidence				

Table 5. Number of Outlines Completed by 4-H Members in Each of the Experimental Groups

The contingency coefficient was almost nil, signifying there was little or no relationship between the information available and the number of outlines completed.

These findings may have resulted from some uncontrollable events which occurred in two counties. The clubs involved had been assigned to Group III. In one case, a member was hospitalized after enrolling in the project and was unable to work on her project. The other incident was instigated by one of the foods leaders who had attended the Camp Kett session. At the Camp Kett meeting all of the leaders from the participating counties were informed about this field study. The leaders were asked not to discuss this project, Exploring Foods and Nutrition, in the counties. Those leaders whose clubs were included in the study were asked to continue as usual. This particular leader not only discouraged the member from her club from enrolling in the project but also four members from another club. After having been notified of these events, the six members were dropped from the study and the data were recalculated as shown below.

	Number of	<b>T</b> - 1	
Group	Yes	No	Totals
I	(20.521) 23	(10.479) 8	31
II	( 9.930) 9	(5.070) 6	15
III	(16.547)	(8.451) 10	25
Totals	47	24	71
Chi squa	are = 1.57 df. = 2 Not si	a = 0.05 gnificant	<b>C.</b> = 15

Table 6. Number of Outlines Completed by 4-H Members in Each of the Experimental Groups (Revised)

Although the chi square value did not prove to be significant, the relationship between the amount and type of information did increase. To what extent the increase is significant is unknown.

By comparing the observed values with the expected values the deviations between the two values can readily be seen. More members from the control group (Group I) completed outlines than expected. This could be related to the type of leadership and/or the standards set within the clubs.

From the data presented thus far, it appears that the type and amount of information did encourage the members to enroll in the project although the material had little influence with respect to outline completion.

#### Evaluation of Project Outlines

The forty-seven outlines which had been assigned random numbers were evaluated according to the eight criteria presented in Appendix A-10. The reliability of the outline ratings by this writer was checked by an extension specialist in foods and nutrition who randomly selected and evaluated 10 per cent of the outlines. A Spearman Rho correlation equal to 0.876 was obtained when the two sets of scores from the selected outlines were ranked.<sup>1</sup> This is a very acceptable level of inter-judge reliability.

The mean scores of the three groups are presented in Table 7.

	Experimental Groups					
	I, N = 23	II, N = 9	III, $N = 15$			
Mean Scores	44	50	61			

Table 7. Mean Scores of the Completed Outlines by ExperimentalGroups

The mean scores were compared by the "Student's" or "t" test as outlined in Walker and Lev.<sup>2</sup> These results are presented in Table 8, on the following page.

The comparison between Groups I and II, in which the result was not significant, may indicate that neither the members nor the leaders in Group II perceived the bulletin as an aid in developing the outlines. One reason for the six-point difference in the mean scores

<sup>&</sup>lt;sup>1</sup>Ibid., p. 207.

<sup>&</sup>lt;sup>2</sup>Helen M. Walker and Joseph Lev, <u>Statistical Inference</u>, (New York: Holt, Rinehart and Winston, 1953), p. 156.

	df	"t" test score
Group I vs. Group II	30	0.82 <sup>a</sup>
Group II vs. Group III	22	1.52 <sup>b</sup>
Group I vs. Group III	36	3.14 <sup>°</sup>

Table 8. Test Scores Resulting From the Comparison of The MeanScores Received on the Outlines

 ${}^{a}_{b}t = 2.04$ , for significance at 5% level of confidence  ${}^{b}_{c}t = 2.07$ , for significance at 5% level of confidence  ${}^{c}t = 2.04$ , for significance at 5% level of confidence

may be the lack of experience with this type of project. Checking back to Appendix C. Table I, it can be observed that a smaller percentage

of the members in Group I had previously been enrolled in the Creative Cookery project which was offered prior to Exploring Foods and Nutrition. If the members had participated in the Creative Cookery project, some experience had been gained in the preparation of outlines.

The "t" test score obtained by comparing the mean scores of Groups II and III was not statistically significant, although the mean scores for both groups were higher than for Group I. However, the difference in the mean scores in Groups I and III was significant at the 5 per cent level of confidence. Again these results may be attributed to differences in age and previous experience in the Creative Cookery project.

Another possible reason for Group I difference could be that as the amount of information available increased, the leaders gave the members more freedom in planning the individual projects. The leaders in Group I may have added more structure to the project and may have been more insistent about turning in the outlines. The leaders in the other groups, especially Group III, may have allowed the members to continue on their own. Therefore, of the enrolled members in Groups II and III, only the members with a real interest (and possibly ability) completed outlines. This could affect the quality of the outlines submitted. Note that in Table 6 sixty per cent of the enrolled members in Groups II and III submitted outlines while seventy-five per cent of those in Group I submitted outlines.

The distribution of outline scores ranged from 20 to 84, with the highest and lowest scores occurring in Group I. The range of scores and the number of outlines receiving the scores are presented in Table 9.

The narrower range of scores in groups II and III may suggest that the bulletin was of some help in preparing the outlines. Individual differences and the amount and type of help from the leader would also affect the outlines prepared and thus the scores of the outlines.

Range	Exp	Experimental Group			
	I	II	III		
108-99					
98-89					
88-79	1				
78-69	2	2	4		
68-59	4	1	6		
58-49		1	4		
48-39	4	1			
38-29	6	4	1		
28-19	6				
18- 9					
9- 0					

Table 9. Distribution of Outline Scores in Ten-Point Intervals Accord-ing to Experimental Groups

### Career Interest Evaluation

Of the forty-seven career interest forms returned, five members indicated they were interested in a career in foods or nutrition but not as a result of the project. Six did not state what type of influence the project had upon them. By disregarding these eleven replies, the sample size was reduced to thirty-six. The cell sizes were too small to analyze statistically according to experimental groups.<sup>1</sup> The opinions of the members have been classified in Table 10.

Table 10.The Influence of the Exploring Foods and Nutrition ProjectUpon the Enrolled Members in Regards to Career Possibili-<br/>ties by Experimental Groups

	Experimental Group					
Opinion	<u> </u>	N=23	<u>II</u> ,	N=9	<u>_</u> III,	N=15
	No.	Per cent	No.	Per cent	No.	Per cent
Interested	4	17.4	1	11.1	3	20.0
Not interested	13	56.5	5	55.5	10	66.7
Interested but not						
influential	3	13.0	1	11.1	1	6.7
Did not say	3	13.0	2	22.2	1	6.7

After grouping all of the members together and omitting those who did not give a direct response, both the chi square and the contingency coefficient values were computed (note Table 11). The chi square value was highly significant (.01), but not in the predicted direction. The contingency coefficient did show some correlation between the project and career interest in the foods and nutrition area.

<sup>1</sup>Ibid., p. 110.

Upon Nutri	the Member ition	s in Regards	to a Care	er in Food	s and
		Oninion			

The Influence of the Exploring Foods and Nutrition Project

	Op	111011	Total
	Interested	Not Interested	Total
Number of Members	(18) 8	(18) 28	36
Chi square = 11.12	df = l	a =.05	C. = 47

The outcome is adverse to that predicted: the project may have discouraged the members from considering a career in some area of foods or nutrition.

One of the possible explanations for the large number of not interested responses is that the members did not have enough time to work in the project. Therefore they did not have the opportunity to become involved in the studies and to develop an interest in a career. Although the training meetings were held in April, many of the clubs did not organize into project groups until June even though the members had enrolled in the project at an earlier date.

Another variable which may have affected the results is the members' level in school. More of the members in Group I were sophomores in school, while a larger percentage of those in Groups II and III were juniors and seniors (Appendix C, Table II). The former group may not have plans for the future whereas the latter group may already have decided on careers before enrolling in the project.

The most logical explanation, as indicated by the results, is that the bulletin and project do not entice the members to delve into the possibilities of a career in foods or nutrition.

Table 11.

#### DISCUSSION

The data obtained in this study not only furnished clues pertaining to the strengths and weaknesses of the Exploring Foods and Nutrition project but also identified some of the existing conditions at the local level which could affect this project as well as other projects. A continuation of the evaluation procedures is needed to analyze the quality of the projects completed and the enrollment trends in the future.

One of the weaknesses of the study was that there was no measure to determine if the members enrolling in the project would have enrolled in 4-H without this project. If the members find the project more challenging than the traditional ones, they may retain membership longer or show greater interest in the 4-H program. Some type of follow-up study in two years may show some trend between re-enrollment of older members and the Exploring Foods and Nutrition project.

The project was developed to include conditions conducive to the development of as many developmental tasks<sup>1</sup> as possible and to include the suggestions offered by Spindler and Kelley.<sup>2</sup> However, unless the local club conditions are favorable, these characteristics are not operative. One specific example is related to the development of independence, freedom in selecting a topic, and creativeness. These qualities can be attained in the project if members are given the opportunity for attainment. At the county meetings, several of the leaders questioned this freedom. The leaders could not understand the principle of individual projects and independent study.

<sup>&</sup>lt;sup>1</sup>Review of Literature, pp. 8-9.

<sup>&</sup>lt;sup>2</sup>Review of Literature, pp. 14-15.

Further evidence that certain leaders did not accept this principle was supplied by some of the outlines. In one instance the leader prepared the outline for the club in which the leader defined the responsibilities of the members. Secondly, it was obvious that although each of the members from some of the clubs prepared individual outlines, the topics were the same, as was the method of reaching the goal. These situations and a recollection of some of the reactions at the county meetings make the writer question who made the first major decision: the area to be studied this year.

Why the concern? According to the agents, leaders present at three of the four county meetings were those influential in the respective counties. These leaders were influential not only in the respective clubs with which they were associated but also in the county. If the leaders' role was placed into the "Construct for Social Action, "<sup>1</sup> these leaders would be the legitimizers. Their influence determines whether or not the project will be accepted in the county. If the legitimizers do not approve the project, the chances of the other foods leaders accepting it are decreased. The resulting action will be that the 4-H members interested in foods and nutrition will not be informed about the project. Therefore, it appears that more discussion about the role of the leader in this project is needed so the influential leaders will be informed and thus may react more favorably to the project.

One of the problems encountered in the study was the return of the outlines on time. The reasons the agents gave for the delay fell into three categories: (1) the club organized later than expected,

<sup>&</sup>lt;sup>1</sup>"Construct for Social Action, "Cooperative Extension Service, Iowa State College, Adopted from a Construct developed by Beal and Bonlin, Department of Economics and Sociology (Ames, Iowa: Iowa State College, TR-206, April, 1950). Mimeographed.

(2) the due date was forgotten, and (3) someone (the leader, member and/or agent) did not realize that outlines were required. Lack of communication may be a partial cause, although both the outlines and the deadlines were discussed at the training meetings and reminders were given via mail service and telephone calls. If the forgetfulness can be identified with the members, then more emphasis needs to be placed on accepting responsibility and appreciation for deadlines.

If the members are expected to submit outlines which include all of the criteria considered important by those who developed the evaluation instrument, more help must be given to the members. Some of the outlines were very good, but others were poor. Table 9 indicates that more members in Group I did receive lower scores than the members in the other groups receiving the bulletin. A partial solution for the improvement of the outlines may be more emphasis on pages 3-5 in the members' bulletin where guidelines are presented for selecting and organizing the topic.

One point which the leaders questioned at the county meetings, and the writer does now, is that of time. Will the members have enough time to finish the project? In April this writer believed the members would begin working on the project as soon as they enrolled (June 1st was the deadline). In some cases this was true. But in other instances the clubs waited until the middle of June or later to organize into project groups and to begin the project. With the county fairs in August, at least two of the four participating counties will have the fairs the first week, and with all of the other summer activities, this Question arises--did the members have enough time?

If the leader's role within the local club is as dominant as it appeared in this study, the type of media used in the projects may be unduly emphasized. The domineering leader will structure the project

to meet her standards whereas the less domineering leader will allow  $m \circ re$  freedom to the members under any conditions.

Both the leaders and members may have had trouble in adjusting not only to an unstructured project for the advanced group affording much freedom but also in adjusting to several other changes in the 4-H program this year. Both the Exploring Foods and Nutrition project and many of the changes were different from the traditional 4-H program. The leaders and members may need time to absorb the new ideas before the type of individual projects developed by the members will meet the desired standards.

### SUMMARY AND CONCLUSION

This study was primarily designed to evaluate the 4-H bulletin and project, Exploring Foods and Nutrition, planned for the older youth in 4-H. The tendency is for the members to discontinue 4-H after the age of fourteen. It was assumed that the type of projects being offered in the past did not satisfy the needs and interests of this group. The 4-H projects provide the subject matter in the 4-H program.

Hypotheses tested in the study were related to enrollment, outline completion, quality of outlines and career interest. Each of these variables was evaluated on the basis of the experimental groups receiving varying amounts and type of materials.

Five counties had been selected for the sample, but one was ropped due to a policy change in the county. Of the 147 potential members, forty-seven completed the required project outlines. Sixtyone per cent of the enrolled members completed the outlines.

The study was planned to follow the "typical" procedures of the **p**roject in each county. The leaders attended a training session prior **to** project selection. The deadlines and most of the information needed **c** oincided with those set by the counties.

#### Summary of Findings

1) The bulletin may have provided the members with some incentive to enroll in the project. However, the additional materials given to the leaders in Group III may have been an additional factor influencing enrollment.

2) There was no significant difference between the groups with respect to outline completion.

3) When the mean scores of the outlines from the three groups were compared, the only comparison which was significant was Group I (control) to Group III. The scores of the outlines in Groups II and III were grouped within a narrower range than those in Group I.

4) Neither the project nor the bulletin had any influence upon career selection.

### Conclusion

The results of this preliminary evaluation indicated that the <u>Exploring Foods and Nutrition</u> bulletin plus additional references did encourage the members to enroll in the project. However, before any conclusions pertaining to the total effectiveness of the project and bulletin can be formulated, some of the extraneous variables, especially the role of the project leader, must be analyzed and controlled.

#### Recommendations

As the result of this study, the following recommendations for those working with youth and/or interested in conducting a field study similar to this one are presented:

#### Study Procedures

1. Acquire as much knowledge as possible pertaining to the functions of the 4-H program within each county included in the study.

2. Select counties in which the agents are thoroughly familiar with the 4-H program in the respective counties.

#### Exploring Foods and Nutrition

 More guidelines should be provided for the development of outlines. However, caution must be taken so a "4-H way" does not develop.

2. Leader kits should be prepared for leaders who have members enrolled in the project.

3. More extensive and improved orientation is needed for leaders and members in a project of this type.

- a) Care must be exercised to fully train and commit to action the influential leaders since they are the legitimizers in the county and they will diffuse their ideas about the new project to other leaders and to the members.
- b) The members need more assistance in the selection of a topic that is not too broad. All that may be required is showing them how to use the guidelines already available in the bulletin.
- c) Both the leaders and members must realize that this project is not limited to one year.

#### Other

1. More time should be allowed for the completion of the foods projects.

2. Members should be given more freedom in selecting their foods projects as well as in planning what they will do in the project.

#### IMPLICATIONS FOR FUTURE RESEARCH

1. The attempt to introduce and to evaluate the impact of a new project on the enrollment pattern of the older 4-H membership in a single year proved to be somewhat unrealistic. At least two years will be needed to obtain valid data. Therefore, it is proposed that the study be continued and, if possible, expanded to include:

- a) A pretest, testing the members' attitudes toward a potential career in foods or nutrition, prior to exposure to this project as a means for comparing the effect of the project.
- b) A study of the factors influencing project selection by the members. It appears that the project leader is an important factor.

c) A study of the reasons older members do remain in 4-H.

2. Certain extraneous variables present in the county situation not anticipated at the initiation of this study deserve further attention.

- a) More information is needed with respect to personality traits of leaders. This may be obtained through psychological tests.
  Questions which need to be answered include:
  - 1. Is the leader domineering?
  - 2. Does the leader allow members freedom in making decisions?
  - 3. Must the leader be the authority?
- b) A less flexible time schedule should be followed.

3. In addition to the procedures used, the members' evaluations of the bulletin would supply information pertaining to the most helpful and useful sections of this publication. This type of evaluation would indicate the sections which need to be revised and may suggest the areas in which additional training is needed.

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APPENDICES

# FORMS USED IN THE STUDY

## JUST A BIT OF INFORMATION

Name	Address
Exchange & Phone No.	
Name of 4-H Club	
County	_
No. of Years as a 4-H Leader (inclu	de this year)
No. of Years as a Foods Project Lea	der (include this year)
Last year attended in school	
Do you hold a college degree?	
Major field in college	
Amount of teaching experience	
ESTIMATE:	
1. Number of members in club:	_10-12;12-14;14-18.
2. Number of members 14-18 who hav	e taken one or more foods projects.
3. Number of members 14-18 that yo	ou think would be interested in en-
rolling in "Exploring Foods and	Nutrition."
4. Number of project meetings you	will hold between now and July 1.

#### Evaluation of 4-H Bulletin, EXPLORING FOODS & NUTRITION

<u>Purpose of the Study</u>: To determine whether or not the 4-H bulletin 155K, Exploring Foods and Nutrition, meets the needs and interest of the older 4-H youth, 14 - 18 years old. Does the bulletin contain sufficient information so that the members can complete the project once they have joined.

The study will be centered around three of the objectives of the bulletin:

- 1. to encourage older members to stay in 4-H
- 2. to suggest topics that the members can develop and references suitable for the topic
- 3. to introduce members to the career opportunities in foods and nutrition.

#### The Treatment

After each of the county leader training meetings, the clubs from each county will be randomly assigned to one of 3 groups - control, Group #1, and Group #2.

Replication	Control	1	_2
#1	x	X+A	X+B
#2	X	X+ <b>A</b>	X+B
<b>#</b> 3	X	X+	X+B
etc.	etc.	etc.	etc.

- X Mimeographed copies of the Exploring Foods and Nutrition information from the Michigan 4-H Project Book, 314-B
- A Members' Bulletin, 155-K, and leaders' guide, 355-K Exploring Foods and Nutrition
- B Bulletins 155-K and 355-K plus additional references given to the leaders.

#### Evaluation

Based on:

- 1. Information received from leaders at 1st training meeting
- 2. Enrollment cards
- 3. Member Personal Data Sheets
- 4. Project Gutlines
- 5. Evaluations completed at second county meeting. (omitted)

County \_\_\_\_\_

Deadline for Summer enrollment

Approximate number of Foods project leaders

Estimate number of members 14 and over who are eligible for this project \_\_\_\_\_\_

÷,

Miss Muriel Brink from Michigan State University will be with us to conduct the meeting. The major emphasis will be (1) to explain the project and its purpose, (2) to familiarize you with your role as project leader, and (3) to suggest ways of making this project a satisfying learning experience for the members.

Now remember: Date:

Place:

Time:

Purpose: Foods Meeting

January 30, 1964

Dear

:

Enclosed is the communication pertaining to the April leadertraining meeting in your county. I am hoping you will use it in a 4-H newsletter as well as any other available mass media in your area.

Since the leaders will not be informed that they are participating in a research study, will you please select other foods leaders from your county to attend the training sessions at Camp Kett? Exploring Foods and Nutrition will be one of the topics discussed there.

If you have any questions pertaining to the study, let me know.

Sincerely,

Muriel S. Brink Graduate Assistant 4-H Foods and Nutrition

## LOCATION OF REFERENCES

- 1. 4-H Bulletins
- 2. General Extension Bulletins
- 3. School and Public Libraries
- 4. Cookbooks
- 5. Textbooks
- 6. Commercial Publications
- 7. Magazines
- 8. Resource people
  - County Agents
  - Teachers
  - Businessmen
  - Other Professional People

# LET'S HEAR ABOUT YOU!

My name is
I was born: Month Date Year
I reside at (mailing address) which is in county.
My home is: ( ) rural farm ( ) rural non-farm ( ) urban (check one)
This is my year in 4-H (include current year).
I have completed (a number) foods projects.
In the past I (have/have not) taken the "Creative Cookery" project. (cross out one)
I'm in the grade in school.
So far I have had (a number) semesters of home economics in school,
Part of the time (was/was not) spent studying nutrition. (cross out one)
Approximate length of time was(weeks or hours),
Part of the time (was/was not) spent studying foods prepar- ation. (cross out one)
The approximate length of time was
I have also hadyears of science. (general science, biology, and/or chemistry)
I have taken these science courses. List.

## 1 March 1 W. Y. Lawrence and

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# DIVISION OF CLUBS INTO EXPERIMENTAL GROUPS

	Club				
Group 3 .	Project Leader				
2	Club				
Group	Project Leader				
(Control)	Club				
Group 1	Project Leader		61		

- will not receive either the members' bulletin or leaders' guide. The mimeographed sheet given out at the training meeting will be the bulletin. Group 1
- will receive the members! bulletin and leaders' guide. **Group 2**
- will receive the members' bulletin and leaders' guide. The project leaders also received additional references in the leaders kit, i e., included with the leader's copy of the bulletin. Group 3

### **APPENDIX A-9**

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The Siturtions Nou are asked to evaluate outlines propared by teenagers (4-M members) 14-18 years old. These outlines are a required part of the project. Before the teenagers can complete the study, they must get approval from the county office. The independent study may be made in one of four general areas: consumer education and marketing, experimental foods, food preparation and management; and nutrition.

That type of information would you look for? Below ave seen exiteria, check those which you believe the important. If you think some cuiteria have been orified, please add there

- Seasement of the problem or purpose
- ---- Suitability of topic (scope top broad, etc.; knowledge required for understanding)
- ---- Organization of topic
- .... Evidence that references were used
- ---- References listed
- one General content
- --- Form appearance of the outline
- --- List of supplies and equiparit product to complete the project
- --- Eypotheois

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- ord Procedures to be used
- --- Hebau for measuring or evaluating (as is appropriate to topic) recults
- --- Prodiction of rebuilts

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### APPENDIX A-10

THE SECTION STREET STREET

Thank you for completing the thrat form in the development of exiterin for evaluating an outline. You will recall that there coulines will be prepared by 14-11 yout old youths (4-9 members, as part or a 4-8 feeds project.

Lalow is a list of criteria which wave checked most frequently on the first soun. In some cases criteria have been scabined. Please evaluate the criteria on a 5 point rating conterns just from 0 to 4. Four represents a criteria which is supplied for a give childe. A new nears the criteria is not important. These, two and one values mass the criteria is important but to lesser degree thes a criteria react four.

line in measured vice, 0 to by to the left of anth criteria.

- le frect, contrat flavonnar of the problem or perpose of the study.
- a copyright to be reached or question to be answered.
- 3. Oviduos of bookgraid reading for the study including a list of kosteriorial
- 4. Mothod or protocute to be used in achieving the goal, including provisions for collecting data (when appropriate).
- Saltabalory of topics Ynclodes scope, knowlodge required for accompanding, etc.
- 6. Anerounds of supplies and combrant needed. If it is necessary to parthese amplies and equipment, sutimated cost should be given. The callene should give scap indication of the place in which the study will be made (bons, school, or club meetings)
- 7. As areas for the results persults, giving some Andication as to how the results be applied. If project is a spectrumed, cutling should provide an indication that controls will be used in the evaluation.
- E. Constal synametrie and organization of the outline.

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### APPENDIX A-11

Name:	
Club:	
Count	у:

### WHAT ARE YOUR PLANS?

Society's demands are changing rapidly to keep up with the technological advances. New employment opportunities are being developed and some of the jobs, once very important, are becoming obsolete. Have you thought about your future?

Although you have not completed your 4-H project, "Exploring Foods and Nutrition," has this project interested you enough to consider future employment in some area of foods and nutrition? If it has, please tell what area you are considering and why. If not, please tell why.

### COOPERATIVE EXTENSION SERVICE

MICHIGAN STATE UNIVERSITY - EAST LANSING

Home Economics

AND U.S. DEPARTMENT OF AGRICULTURE COOPERATING

June 4, 1964

Dear 4-H Foods Leader:

By now I am sure you are busy with the summer 4-H program and the foods project. I enjoyed meeting you last April and discussing one of the new foods and nutrition projects, "Exploring Foods and Nutrition."

If you will recall one of the main objectives of the project was to interest boys and girls in the many career possibilities in foods and nutrition. I am enclosing a questionnaire, "What Are Your Plans?" which I would like to have your members in "Exploring Foods and Nutrition" complete individually. Please do not assist the members in completing it. I hope that each member will give his honest opinion and not what he thinks I would like to read.

Have the members complete this questionnaire when they turn their outlines in to you. As I recall from the April meeting, your county has set a due date for the outlines. The questionnaire should be turned into the county office with the outlines. I will make arrangements to pick up the questionnaire from there.

Your cooperation will be greatly appreciated.

Sincerely,

Muriel Brink Graduate Assistant 4-H Foods and Nutrition

MB/wt

Enclosure

# APPENDIX B

# PUBLICATIONS USED IN THE STUDY

# APPENDIX B-1

# Foods and Nutrition (Continued)

# SUGGESTED PROJECT PLAN

Division		Learning Plan	Learning Activities*	
		14-18 Year Olds		
EXPLORING FOODS AND NUTRITIONA pro- Give n pletiSPECIAL NOTE: Members must have plan approved by 4-H Leader and County Extension Agent.Nut IntrodiFor Members: Exploring Foods and Nutrition, 155K For Leader's Guide: Exploring Foods and Nutrition, 355KE E E N To de cust tradition		ect designed to— nembers experience in planning and com- ng an independent project in Foods and ition. age originality, curiousity, and initiative. in sciences of Foods and Nutrition, such perimental Foods od Science attrition elop greater understanding of problems ed to food and agribusiness. elop greater understanding of foods and ms of other peoples, their cultures and tions.	<ul> <li>Suggested Marketing—Consumer Educ. Proje</li> <li>—Investigate career and job opportunities marketing. Make results available to in ested friends and school counselors.</li> <li>—Buy food for your family for an exten period of time.</li> <li>—Study of world food marketing.</li> <li>—Food protection, labeling.</li> <li>—Combating Food Misinformation. (Reference "Believe It Or Not", M.S.U. Ext. Bulle F-313.)</li> <li>—Impact of Food Merchandising and Admissing.</li> <li>—Camparative Shopping based on taste, qui ity, nutritive value, time of preparation, cost!</li> </ul>	
Learning Activities* Members can select a proble one of five broad areas: —Experimental Foods —Nutrition —Marketing—Consumer Ec —Food Preparation and Food agement —Foods Travel Too Specific suggestions listed belo Suggested Experimental Food I —Recipe testing and adaptin —Substitution of ingredient —Study what happens to food various conditions—for e when it is cooked or fro thawed. —Study development of a n or processed food. —Investigate "Foods of the I —Investigate career opportu Experimental Foods of the I —Investigate arear opportu Experimental Foods of the I —Investigate arear opportu Experimental Foods of the I —Investigate friends and counselors. Suggested Nutrition Projects: —Conduct an informal su food habits of group of club members, or family lyze and interpret resu make suggestions for in ments. —Prepare and display a m education. —Plan and carry out a self-in	m from ducation od Man- w: Projects: ng. s. dunder example, zen and ew food Future". nities in ood Sci- lable to school rvey of friends, . Ana- lts and mprove- icho	<ul> <li>food habits and activities. With the cooperation of your family physician, try to correct and control your weight intelligently.</li> <li>Study what happens to the food you eat. Refer to "The Wonder of You" and "Food and You" which are available from: <ul> <li>American Institute of Baking 400 East Ontario Street</li> <li>Chicago 11, Illinois</li> <li>Refer also to "How Your Body Uses Food" by Albert Piltz, available from: <ul> <li>National Dairy Council 111 North Canal Street</li> <li>Chicago 6, Illinois (20 cents)</li> </ul> </li> <li>Study the various meanings given to foods. How does this affect nutrition? Food Habits?</li> <li>Select deficiency disease—show its occurrence in history, cause, world distribution, and successful elimination. Who was responsible for its eradication?</li> <li>Develop project to show role of food in exploration—world and space.</li> <li>Investigate career opportunities in the field of nutrition. Make results available to interested friends and school counselors.</li> </ul> </li> </ul>	<ul> <li>Trace origin of one or more foods. Show nutritive value, areas of production, distribution, marketing pattern, parts of world where it is eaten, varieties available, method of cooking, etc. Examples: potato, rice, tapioca.</li> <li>Suggested Food Preparation and Food Manageagement Projects.</li> <li>Plan and prepare and cost meals at various levels of spending.</li> <li>Plan and prepare several meals that may be frozen for later use.</li> <li>Discuss how these might be improved to make better use of time, equipment, and to improve quality.</li> <li>Take part in community service (for example, shop regularly for shut-in.)</li> <li>Show why food spoils and how food poisoning can be avoided.</li> <li>Inevstigate job opportunities in food preparation. Make this material available to local library and school counselors.</li> <li>Suggested Projects in Foods Travel Too.</li> <li>Study foods, customs, and traditions of other countries.</li> <li>Gourmet cookery.</li> <li>Use of herbs and spices.</li> <li>Plan and prepare a meal for family or friends highlighting foods from one country or a group of countries.</li> </ul>	



# EXPLORING FOODS AND NUTRITION

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# Member's Guide

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### EXPLORING FOODS AND NUTRITION

### Introduction

Are you by nature inquisitive and adventurous? Are you inclined to ask "why?" or "how?" after you have been told facts? If so, here's your chance to answer your own questions through this 4-H project, "Exploring Foods and Nutrition." In former foods and nutrition projects, principles have been clearly stated. Now you can either test these principles or explore your own ideas.

For clarification this project has been divided into five areas:

- CONSUMER EDUCATION AND MARKETING deals with the availability of foods from the consumer and suppliers' viewpoints.
- 2. EXPERIMENTAL FOODS determining the role of an ingredient in a finished product. Also includes the effect of manipulation (mixing and handling) upon it.
- 3. FOOD PREPARATION AND MANAGEMENT making adequate use of the resources we have in food preparation.
- 4. FOOD TRAVELS, TOO includes Foreign Food Customs and Foods with a Flair (cooking for company, food origins, and study of herbs and spices, etc.).
- 5. NUTRITION why our bodies need certain foods and how we can meet the requirement.

It is up to you to develop your own independent project. This project must be approved by your local club leader and county 4-H agent. The approach for the project can be experimental, historical or recent developments. A more detailed explanation can be found at the end of this section. Share your information with others through reports, demonstrations, and displays.

### Goals

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Exploring Foods and Nutrition is designed to:

- 1. Encourage your originality, curiosity, and initiative.
- 2. Provide the opportunity for you to plan, conduct, and analyze an independent project in Foods and Nutrition according to your special interests, needs, and abilities.
- 3. Introduce you to careers and techniques used in sciences of Foods and Nutrition.

Section I

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- 4. Help you develop a greater understanding of foods and customs of other peoples, their cultures and traditions.
- 5. Help you develop a greater understanding of problems related to food and agri-business.

Employment Opportunities	for You-Fellas Too!				
In Foods and Nutrition					
COMMERCIAL FOODS	FOOD IN BUSINESS-PROMOTING NEW PRODUCTS				
Chefs Bakers, Salad Preparation	INSTITUTIONAL MANAGEMENT				
DIETETICS	Hospital School Cafeterias				
EDUCATION	Restaurants and Vending Machine Trade				
Junior and Senior High School Adult Education Programs Colleges and Universities	Hotel <b>s</b> Motels				
Specialists Consumer Marketing	JOURNALISM - FOOD EDITOR				
Foods and Nutrition Extension Foods	RADIO AND T.V. EDITORS				
Nutrition Public Health Nutritionist	RESEARCH Consumer Marketing				
HOME SERVICE DIRECTORS WITH UTILITY COMPANIES OR OTHER INDUSTRIES	Food Industry - Developing New Products Nutrition Test Kitchen Equipment				

Let's Get Started!

Say, wait a M-I-N-U-T-E!!! Don't start gathering the supplies you think you'll need YET. Sit down and think your project through FIRST. The one secret for a successful project is careful, thorough planning. It not only saves time and energy for you but also makes your project more interesting and more meaningful to you.

Note that one idea can be explored from several angles. For example: potatoes can be studied historically - where they originated and how they were brought to the United States. You can also look into the recent developments - such as the processes involved in preparing the different types of instant potatoes. Finally, potatoes can be studied experimentally - test for starch or find out what causes them to brown on exposure to air.

The three approaches do not limit the ways to study one idea. It may be viewed also from more than one of the five areas. Using potatoes as the example again, you could study the nutritional value, methods of preparation, and the marketing process.

After you select one idea, determine which of the areas and the approach you want to pursue first. Here is a guide to help you make this decision.

### GUIDE

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2. To which of these areas is it most related?

CONSUMER EDUCATION AND MARKETING

EXPERIMENTAL FOODS

FOOD PREPARATION AND FOOD MANAGEMENT

FOOD TRAVELS, TOO

NUTRITION

3. Do you think it can be explored in more than one area? List the possibilities under the heading below.

Areas	Ap	proach	
	Experimental	Historical	Recent Developments
Consumer Education and Marketing			
Experimental Foods			
Food Preparation and Food Management			
Food Travels, Too			
Nutrition			

4.	How many ways can this idea be expl approaches.	lored? Check (
5•	Now go back and place another check most interested in.	k (V) beside the ones you're
6.	Find yourself with quite a few doul material and equipment you have ave	ole checks? Now think of the ailable. List.
	At Home	In the Community
	4-H bulletins	Local Industries
	Parents' suggestions	
	Cooking utensils	
		Library
		Teachers
		Businessmen
		4-H leader
7•	When do you plan to carry out the	project?
	Free time	
	Meetings	
	School	
	Do you think your idea can be fini	shed within that time?
8.	Now state your specific topic and	the approach.

74 \_4\_ Now that you know what your project is, you are ready to develop your plan further. Remember, careful planning leads to a successful, interesting project. This statement is supported by the successful space flights by the astronauts. Many of the other changes which have taken place in the United States and the world in general would have "flopped" if plans had not been made first.

Maybe you have learned a way to plan a project in school. If you have not, here is one way, the scientific method. This method is not limited to just the projects with experiments but can be adapted to any type project.

### Steps of the Scientific Method

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- 1. <u>Clearly define the problem</u>. What is it that you want to know when you have completed the project?
- 2. Collect information. Gather all of the facts you can on the subject. Go back and look at the sources you checked on the Guide. Check these out. Take notes listing the references.
- 3. Form a trial answer or hypothesis. What do you think will be the result?
- 4. Test the answer. If you are doing an experiment, try it. Were the results the same as you had anticipated? If you did not do an experiment you can test your hypothesis by making the necessary changes, for example, improve your eating and nutrition habits you found that were needed.
- 5. <u>Revise the answer and test again</u>, if the results were not what you had expected. Do more reading and make the required changes in the experiment. Test again.
- 6. Summarize your conclusions. After you are sure of the results, summarize them. Be sure to indicate what caused the results to happen.

Beware of Averages!!!!

Average is midway between two points. It can be deceiving !!

Example: If you weigh 110 pounds and your baby sister weighs 20 pounds, then the average weight is 65 pounds. Is this true?

Here are a few points which need special emphasis:

- 1. Understand your project before you begin.
- 2. Decide where you will work. For example: check with Mom to be sure it is O.K. to use the kitchen.
- 3. Include time to complete the project.

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- 4. Collect needed supplies. This does not mean you need to buy all new materials and equipment. See what you have on hand.
- 5. Be organized don't waste time.
- 6. Write up a report, it may help you in future projects.

### Preparing the Report

If you have taken good notes on both readings and observations, writing the report will be easy. There are several ways it can be done. Again, you may know how to do it from your school experience. In case you don't, here are a couple examples:

### Method I 1

- 1. TITLE Short, but sufficient to tell what the project is about.
- 2. SUMMARY A brief statement telling the idea or principle behind the project. Also, some indication of how you conducted the project.
- 3. INTRODUCTION State why you selected the topic and give background information.
- 4. Discussion of the problem you studied. What caused you to form your hypothesis?
- 5. If the project involved an experiment, list the materials, supplies, methods, steps of the experiment, and controls.
- <u>CONTROLS</u> are used as a basis for comparison. In experimentation it is that to which nothing has been added or substracted or altered in any manner.
- Example: If you were studying the affect of baking powder in a cake, you would prepare two cakes. You would leave the baking powder out of one recipe but make the other cake according to the recipe with the baking powder. The latter would be the control and would serve as a basis for comparison.
- 6. State the summary of observations and data.
- 7. State the conclusions you have made. DO NOT generalize too much.
- 8. List any new questions and possible applications.

<sup>&</sup>lt;sup>1</sup> Adapted from Science Projects Handbook, ed. by Shirley Moore.

- 9. Include an appendix of graphs, charts, etc., if it is part of your project.
- 10. List the references you used.

Method II

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- 1. Introduction State why you selected the subject and what you expected to find at the end of the problem.
- 2. Preparation List supplies used.
- 3. State the procedure used. How did you develop your project?
- 4. Report findings. Explain the reason for the results.
- 5. List references.

At last, you can begin! The following sections are detailed descriptions of the five areas. Within each there are detailed plans for one project plus suggestions for several others.

<u>Don't</u> think you have to limit yourself to any of the suggestions!!!!!!!! This is <u>YOUR</u> project. Do what interests <u>YOU!!!!!!!!!!</u> Only one project from ONE of the five areas is suggested. However, you may do more than one.

78 Section II



CONSUMER EDUCATION AND MARKETING

How many times have you heard tales of the "good old days"? When the general stores had barrels of this and barrels of that from which you could select your "vittles"? The times when you had to grind your own wheat into flour or bring the wheat to some nearby mill to get it ground? Remember, horses were the only means of transportation. It was Sis' regular chore to churn the butter for the family. Those are the by-gone days. Today you can go to any modern food store and find six to eight thousand food and non-food items on the shelves. Many of the foods are ready-to-cat while others require only a few minutes for preparation.

Why are these foods placed in the stores? How do they get there? Why are the products labeled? How important are the labels to you, the consumer? These and many other questions can be answered by selecting the area of Consumer Education and Marketing for your project.

According to one of the Michigan State University marketing specialists, the purpose of consumer marketing information is to increase the efficiency of marketing distribution from the producer to the consumer; that is, to help keep a balance between the food supply and the market price. In consumer education emphasis is placed on helping the consumer obtain maximum satisfaction from the food dollar. This means getting the most for the money spent based on quality and satisfaction - not necessarily the cheapest food.

At the completion of your project, you should:

- 1. Have a greater appreciation for the variety of foods in the stores year around.
- 2. Be aware of the importance of reading labels carefully before purchasing.
- 3. Have gained some knowledge in comparative shopping.
- 4. Become aware of the present federal and state food laws that protect the consumer and the agencies responsible for enforcing them.
- 5. Develop on awareness of the impact of advertising by mass media on food sales.

Ideas for Projects

1. Investigate one or more aspects of a food commodity; for example: bread.

- a. The types of wheat.
- b. How the flour is processed.
- c. The various processing methods used. How were the no-sift flours developed?
- d. The market structure from field to consumer.
- e. Study the price spread between wheat and bread.
- f. Compare regular flour, no-sift flour and the new instantized, no-sift flour<sub>x</sub>. Prepare a food using the three types. Compare the finished products.
- 2. Study changes in eating habits and food buying.
  - a. Changes in the consumption of a particular food. Do we eat more or less of it than in the past?
  - b. Changes in food patterns. How do the foods we include in our diets today differ from the past? Why is there this difference?
- 3. Plan and conduct a food marketing survey.
  - a. How often do people shop for food?
  - b. What day(s)?
  - c. Why do they shop on those particular days.
  - d. Do they shop at a certain market? Why?
  - e. Do they select a particular food brand? Why?
- 4. Compare the cost of foods containing vitamin C. Which are the best vitamin C food sources in relation to cost?
- 5. Investigate food protection -- the labeling laws in Michigan.
- 6. What can you do to combat food misinformation?
- 7. Plan and conduct a study on comparative shopping based on taste, quality, nutritive value, preparation time required, and cost. Example: Compare three or more brands of a particular food, according to the above.
- 8. Study the impact of modern food merchandising and advertising. Identify the various techniques used for merchandising in the food markets in your community. How do they affect sales? Do you think people are aware of this influence on their shopping habits?

Sample:

### WHAT'S THE DIFFERENCE?

Do you buy processed foods according to the brand names? Just skimming a magazine or the ads in a newspaper makes one aware of the wide choice of brands available. Why do you select a particular brand? Are you getting the most from your food dollar? Although federal and state agencies have developed standards for processed foods, you can find variations within one grade.

The purpose of this project is to compare three or more brands of a processed fruit or vegetable to see what some of the differences may be. As a result of this project, you will become a more informed consumer.

Note: The following form can be easily adapted to compare three grades of one brand or to compare other processed foods. Consider comparing 3 grades of a store brand to one that is nationally advertised.

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## COMPARISON GUIDE FOR PROCESSED FRUITS AND VEGETABLES

Foods	Sample 🛆	Sample 🗖	Sample O	
Information from the Label				
Brand				
U.S. Grade AA Grade-U.S. Grade A U.S. Grade B				
Cost				
No. of Servings				
Can Size				
Net Weight				
Style of Pack - Ex. Peaches-Sliced or halved				
Variety				
Content (What's inside) Characteristics				
Amount of Liquid (Weight or Vol.				
If Fruit, Type of Syrup				
Pieces Amount of Food-Weight or Vol.				
Color				
Shape_Regular Irregular				
Other Qualities				
Amount of Prep. Time Required				
Flavor				
Texture				
Nutritive Value Based on amount of Food				
l. Protein				
2. Fat				
3. Carbohydrate				
4. Vitamins				
5. Minerals				

Now take a critical look at the results of the comparison.

- 1) What are the most distinguishing differences between the samples?
- 2) What is the cost per serving?
- 3) Taking everything into consideration, which product do you feel is the best buy? Why?
- 4) Would you use these products for the same purpose?
- 5) What do you feel is the most valuable information you have gained from this study?

Suggested References For Consumer Marketing Education

EXTENSION BULLETINS AND FEDERAL PUBLICATIONS

Consumer Marketing Information Cooperative Extension Service Michigan State University

- 1. Food in the Light of the Law
- 2. Food Marketing
- 3. Marketing the Nation's Food
- 4. The New in Foods
- 5. The Whole Picture on the Food Additives Puzzle

Cooperative Extension Service Contact Your County Office

- "Believe It or Not" Extension Folder F-313 What Can You Believe (mimeograph form).
- 2. Food Shopper's Guide Extension Folder 306

Office of Information United States Department of Agriculture Washington 25, D. C.

1. Milk and its Products - Facts for Consumer Education, Agriculture

2. Services for You PA 570

### COMMERCIAL PUBLICATIONS

Wheat Flour Institute 309 West Jackson Boulevard Chicago 6, Illinois

1. Eat to Live (1953)

### BOOKS

Foods - The Yearbook in Agriculture 1959 (Check with county agents)

Kinder, Faye, Meal Management 1962

Macmillan Co., New York Second Edition Available at Michigan State Library Call no. 642 K51 m<sup>2</sup> Lansing, Michigan

Wright, Carlton E. Food Buying

Macmillan Co., New York Available at Michigan State Library Call no. 641.3 W94f Lansing, Michigan.



### EXPERIMENTAL FOODS

When you are preparing or helping to prepare a meal at home, do you get the urge to add "just a pinch more of an ingredient or an extra ingredient?" How did the product turn out? Like it?

Essentially, this is experimenting with foods. The major differences between your present experimentation and that used by the

experts is the experts measure the amounts of extras added, use consistent methods, and compare their new product with the original.

"Experimental Foods" is defined as the study of the affect of each ingredient and the affect of the manipulation upon the finished product. It is more concerned with why foods are prepared as they are rather than "how to prepare them." Experiments can follow a basic recipe with variation of ingredients and/or methods. The basic recipe should always be made to serve as the control in the experiment. <u>REMEMBER</u>, the basic recipe does not have to be the superior product. The variation may be an improvement.

To make your experimentation more authentic, set up your own taste test panel. Maybe some of your friends or family members would like to serve on it. Here are a few different ways you could set it up:

### 1. Triangle Test

This test can be used when the two finished products are similar. Use two samples of one product and one sample of the other. It is suggested that half the panel receive two samples of the control while the other half receives two samples of the experimental product. The order of presentation should also be varied. That is, the one sample will be located in the various positions, like this:

Panelist	1)	Α	A	В
Panelist	2)	A	в	Α
Panelist	3)	в	A	A

For this test the symbols, circle, triangle, and square, are recommended as a means of identifying the samples. You will have to keep a record of which panelist has what order.

The panel members will have to distinguish between the control and experimental samples.

83 Section III

### 2. Scale Ratings

For this subjective test, each panelist is requested to give his honest evaluation of the product. You may analyze one or several qualities -- for example, texture, color, and/or flavor. You can develop your own evaluation sheet or use one that is commercially prepared. 1

The rating scale contains either five or seven points:

5 excellent 7 excellen 4 good 6 very goo	Int	7 Point
3 fair 5 good 2 poor 4 fair 1 inedible 3 poor 2 very poo 1 inedible	lent	7 excellent 6 very good 5 good 4 fair 3 poor 2 very poor 1 inedible

During your experimental foods project you should:

1. Become acquainted with the experimental procedures.

- a. accurate measurement (measure by weight or volume)
- b. consistent preparation methods.
- 2. Learn the reason or reasons for including a particular ingredient in a specific food product.
- 3. Develop the ability to judge and analyze food products critically.

Having trouble deciding what to do? This list of possible projects may help you decide.

- 1. Prepare half a cake mix according to directions on the package. Add extra amounts of one ingredient to the other half. Notice any difference in the finished product? How about the flavor? Keeping quality?
- 2. Select a basic meat loaf recipe.
  - a. Vary the meat content
    1) 100% beef; 2) 70% beef + 30% pork; 3) 40% beef + 30% pork + 30% veal; and 4) 40% ground ham + 30% pork + 30% veal.
    Which held its shape best? Which was liked the most by your family?

b. Vary the types of liquid
1) Using 100% ground beef with milk as a liquid, prepare a) half the recipe without monosodium glutamate and b) the other half with monosodium glutamate. Any difference in flavor?
2) Using 100% ground beef with tomato juice as liquid, prepare a) part with monosodium glutamate and b) part without. Notice any difference in flavor? Compare with meat loaves containing milk.

- c. Vary the type of extender in the recipe.
  - 1) bread crumbs soft and dried
  - 2) quick oatmeal
  - 3) cracker crumbs
  - 4) prepared cereal

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After meat loaves are baked, leave them in the baking pans for about five minutes. Pour off and measure the liquid. Any difference? Which extender holds the most moisture?

- 3. Select a basic muffin recipe.
  - a. Vary the proportion of ingredients one at a time. Could use the different types of four bran, cornneal, oatmeal, whole wheat; the different types of fat or baking powder.
  - b. Vary the amount of manipulation with the recipe, that is, you could stir one recipe 15 strokes, another 30 strokes, etc. Note the difference in texture.
  - c. Vary method of mixing.
    - 1) Muffin method
    - 2) Pastry or biscuit method
    - 3) Conventional cake method cream the shortening, add sugar, etc.
  - d. Compare "home-made" muffins with those prepared from a mix.
- Note: Use an ice cream scoop to get equal amounts of batter in each muffin tin.
- Idea: Cut muffin samples in half and make a print. Place muffin half in stamp pad or cheese cloth dipped in ink. Place inked muffin on white paper. Note differences in texture and size.
- 4. Investigate "Foods of the Future."
- 5. Investigate career opportunities in Experimental Foods or Food Science. Make results available to interested friends and school counselors.
- 6. Study what happens to food under various conditions, for example, when it is cooked or frozen and thawed.
- Sample: COMPARING THE GLUTEN FORMATION OF ALL-PURPOSE FLOUR TO WHOLE WHEAT FLOUR
- <u>Problem</u>: To determine the difference in the gluten formation of gluten balls made from all-purpose flour and whole wheat flour.

Collect Information:

- "From Wheat to Flour" Wheat Flour Institute (See suggested references)
- "Our Daily Bread" Standard Brands Incorporated (See suggested references)
- Foods The Yearbook of Agriculture 1959
- Hypothesis: The gluten ball made from the all-purpose flour will form a stronger, more plastic formation than the gluten ball made from whole wheat flour.

Test: The Experiment

Ingredients:

 $\frac{1}{2}$  c all-purpose flour, sifted  $\frac{1}{2}$  c whole wheat flour cold water as needed

Procedure:

- 1) Add just enough cold water to each type of flour to form a stiff dough. Record the amount of water for each type.
- 2) Allow dough to stand for 10 minutes in a bowl of cold water.
- 3) Place dough in cheese cloth and wash with cold water. Knead dough to facilitate the removal of starch by the cold water.
- 4) Reserve a portion of wash water made cloudy by starch, for further testing.
- 5) Continue washing until water is clear.
- 6) Shape gluten into a round ball. Compare the volume, weight, and consistency. Place on a lightly oiled cookie sheet.
- 7) Bake in an oven preheated to 425°F for 20 minutes. Reduce temperature to 300°F and continue baking until the ball is firm (10 minutes). Compare the size of the two balls.
- 8) Test wash waters from the gluten balls as follows:
  - a. Add 2 drops of iodine solution (tincture of iodine solution available at local drug store may be used) to 1 tablespoon wash water. Record any color changes.
  - b. Bring a ½ cup sample of each wash water to a full boil and boil two minutes. Record any changes in thickness of samples.

Questions to answer in report.

- 1. What is meant by gluten? Gluten formation?
- 2. Notice any difference in the gluten ball structures? In the size difference? What? What caused the differences?
- 3. What is the difference in the two flours?
- 4. Did you add equal amounts of water to the flours in the preparation of the gluten balls? If not, why were different amounts required?
- 5. What color changes took place when you added the iodine solution to the wash water? What does this indicate?
- 6. Did the boiled wash waters thicken? Was the thickness the same in both cases? What does this indicate?

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- 7. How can you use this information about gluten formations?
- 8. Would you like to do further experimentations with gluten balls?
  - a. Substitute different types of flour: rye, cornmeal, oatmeal, cake flour, etc.
  - b. Add 2 T sugar to flour before the gluten ball is formed. Remember to make a control so you can compare the difference.
  - c. Add 1 T oil to flour before adding water. Again prepare a control.

Suggested References for Experimental Foods

EXTENSION BULLETINS AND FEDERAL PUBLICATIONS

Cooperative Extension Service - contact your County Office

1. Home Freezing of Prepared Foods Extension Folder 270

### COMMERCIAL PUBLICATIONS

American Home Economics Association 1600 Twentieth Street, N. W. Washington 9, D. C.

- 1. Guide for Evaluating Cakes Made from Commercial Cake Mixes Which Contain Shortening  $15\phi$  each
- 2. Handbook of Food Preparation 50¢

American Institute of Baking Consumer Service Department 400 E. Ontario Street Chicago 11, Illinois

1. Cereal Glossary

Cereal Institute Educational Director 135 South LaSalle Street Chicago 3, Illinois

1. Cereal Glossary

Red Star Yeast and Products Company Milwaukee, Wisconsin

- 1. News about Yeast Baking (Home Service releases)
- 2. Red Star Manual on Yeast Baking
- 3. It's Fun to Bake with Yeast

Standard Brands, Inc. Educational Service, Room 1212 402 Lexington Avenue New York 17, New York

### 1. Our Daily Bread

Wheat Flour Institute 309 West Jackson Boulevard Chicago 6, Illinois

1. From Flour to Bread 25¢ per copy or 21 copies for \$1.00

### BOOKS

Food - The Yearbook of Agriculture 1959 published by USDA.

Note: Chapter "When You Look" by Elsie H. Dawson pp. 495-509 (Check to see if county office has a copy)

Stevenson, Gladys and Cora Miller, Introduction to Foods and Nutrition, New York: John Wiley and Sons, Inc., 1960, \$6.25 (available at Michigan State University library)

Section IV

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FOOD PREPARATION AND MANAGEMENT

When you are busily preparing the family dinner, isn't it fun to hear, "Gee, that smells good! When do we eat?" This comment is even more satisfying when you know that you are serving your family a nutritious meal they will enjoy. The appeal of food is important, but don't become a "slave to the kitchen" to reach this goal. Satisfying, well-balanced meals can be prepared in a limited time on a limited

food budget providing you take time to plan the meal or meals carefully. You don't believe it? Why not prove it to yourself?

The aim of this phase, "Food Preparation and Management," is managing your time, energy, family's food budget, and other resources wisely while planning and preparing food for the family. There is more than one way to accomplish a task just as there are many different ways to prepare foods. Learning various approaches will give you greater insight to changes that you can make to fit your personal needs.

How different life would be if man had closed all the doors on change!! Can you imagine living like the caveman did? All of the modern advances have come about because men have evaluated new ideas and adapted them to fit their situation. You can do the same! Why, hasn't anyone ever told you the most constant thing is change?

Variation in food preparation is one form of change. How many different ways can potatoes be prepared? Boiled potatoes everyday becomes monotonous. But having them baked, scalloped, creamed, browned, or serving them with a new garnish makes them more appealing. This is just one example; most foods can be prepared in several ways. Food dislikes can be the result of present preparation methods. Try preparing one of these foods a new way. How did the family like it?

In this phase of "Exploring Foods and Nutrition," you should:

- 1. Plan, prepare, and serve varied, satisfying, and nutritious meals that your family enjoys.
  - a) Use "planned-overs" rather than left-overs.
- 2. Become aware of ways to save time and evergy in meal preparation, but not at the expense of nutrition, the food budget, and food appeal.
- 3. Make better use of your kitchen appliances. Don't let them just occupy kitchen space.
- 4. Learn the general principles of food preparation.
- 5. Learn and apply the principles of management.

Project Ideas:

1. Make a critical analysis of your kitchen. Are the food supplies and equipment arranged in a logical order? If not, rearrange the cupboard space to save unnecessary walking. Prepare before and after plans of the kitchen. Before making any changes, check the plans with Mom.

Here's a little test you can carry out to check your new arrangement.

- 1. Prepare a dinner keeping track of time required and trips to supply centers.
- 2. Rearrange kitchen and become familiar with new arrangement. Prepare the same meal. Save any time?
- 3. Learn various ways to use one or more of the government donated foods. Share this knowledge with others. Check with county extension office and/ or a representative at the Board of Social Welfare, Department of Health, Commodities Distribution Office in your area.
- 4. Learn to use and properly care for one or more of your kitchen appliances. Can you think of any new uses?
- 5. Plan and prepare several meals that may be frozen for use later. Be sure that you are actually saving time. Consider the time spent in preparing the product for freezing, the thawing period and cooking time.
- 6. Ever heard of dovetailing? It's combining more than one activity or preparation. For example, while the roast, potatoes and carrots are baking in the oven, you could prepare the salad, or knit, or read for enjoyment. When planning meals, look for other ways to dovetail your work. Share this information with fellow members and with Mom!!
- 7. Plan and prepare menus for your family for a week at 80¢ per person per day. Use the Basic 4 as a guide. Keep an accurate account of the amounts and cost of foods used.
- 8. Using the bulletin, "Family Food Plans and Food Costs," as a reference; plan menus suitable for your family at the Low-cost, Moderate cost and Liberal plans for a week. What food differences do you notice in the menus? Were you able to plan well-balanced menus in all cases?

EXAMPLE:

### IT'S IN THE OVEN

Morning, noon, and night - breakfast, lunch and dinner. This is the meal pattern that has been adopted incur society. How many hours do you spend in the kitchen preparing meals for your family? How often does that "last minute rush" occur? One solution to this eternal problem is to prepare oven meals. Oven meals are time savers because the food requires less watching than food cooked on top of the range. Since the major part of the meal is in the oven, the only possible last minute preparations would be the salad and setting the table. Even some salads can be prepared ahead of time.

Oven meals add variety. Foods prepared in the oven develop a flavor different from those prepared on top of the range. The general appearance (color and surface texture) is also changed.

Oven meals have a "keeping quality." Flavor and attractiveness are not lost if the meal isn't served at the exact hour. Keep this in mind if you are having guests or if some member of your family isn't quite sure when he will be home.

Don't forget the economy aspect of oven meals. Several foods can be prepared for the same cost as one. Why prepare part of the meal on top of the range if some of it is being baked in the oven?

### Planning Oven Meals

Planning is the most important aspect of oven meals. Here are six points to help you:

- 1) Special recipes are not necessary for oven meals. Use your own favorites.
- 2) Choose foods that will cook well at the same oven temperature.
- 3) If the automatic clock is to be used and you do not plan to be home during the cooking operation, choose foods which cook at the same temperature for the same length of time.
- 4) Food requiring different cooking times may be used by starting the longer cooking foods and later adding the foods which require a shorter cooking period. Or start all foods at the same time and remove the shorter cooking food when done. This is desirable when you wish to serve a food cold or cooled, as for example, a pie.
- 5) Vegetables best suited for oven cooking are potatoes (white or sweet), carrots, beets, turnips, parsnips, onions, squash (white or yellow), and corn. Delicate green vegetables and those belonging to the cabbage family have a more attractive color and better flavor when cooked on top of the range. The cooking time of vegetables may be decreased if vegetables are cut into smaller pieces.
- 6) The foods you may include in automatic oven meals are many and varied. Exceptions are ground meats and fresh fish which are highly perishable and should never stand for any appreciable time at room temperature.

With these six points in mind, a chart similar to the one below will be useful in planning oven meals.

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# COMBINING FOODS FOR OVEN MEALS

# Arranged according to time and temperature

Time Required	Meat (or Main Dish)	Vegetables	Dessert	Oven Temperature
1/2 Hour				
l Hour				
1-1/2 Hour				
2 Hours				
2-1/2 Hours				

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Advantages of Chart A:

- 1) Groups foods requiring similar oven temperatures.
- 2) Shows maximum cooking time for baked foods.
- 3) Provides ideas for interesting combinations of food for oven meals.

Some foods may be partially cooked on the top of the range and finished in the oven. Just a few examples are Swedish meatballs and pot roasts:

### Preparation

After you have decided what foods to include in the menu, the next step is preparation. Prepare the foods which require the longest cooking time or the most preparation first. Be sure you have all the recipes handy. Using a tray, gather the necessary ingredients and equipment. Until you have gained a little more experience, a chart such as this will be helpful.

Dish to be	Supplies		Preparation	Cooking Time	
Prepared	Ingredients	Equipment	Time	Start	Finish
				-	
		1			

### FOOD PREPARATION GUIDE

Are you not sure of the method to use in preparing the foods for the oven? These tips may help you.

- 1) Place tender cuts of meat (veal, pork, lamb, or beef roast), fish or poultry in a shallow uncovered pan. Do not add water.
- 2) Brown less tender cuts of meat (pot roasts, Swiss steak, etc.) in skillet on surface unit, then place in covered utensil and add 1/4 cup liquid.
- 3) Bake vegetables according to directions in "How to Prepare Vegetables," Extension Bulletin 350.

Refer to the 4-H Bulletin, "Today's Girl - Tomorrow's Homemaker," for additional information on meat cookery and the preparation method best suited for the various cuts of meat.

At this point the food is ready to be placed in the oven.

- 1) Adjust racks while oven is cold.
- 2) Place food to be browned (breads, cakes, pastry) on upper rack.
- 3) Arrange pans so they do not touch each other or oven walls and so that one is not directly above another. This is important in order to maintain good heat circulation.

Just think! The meal is ready except for the cooking. What are you going to do with your extra time - prepare an extra special centerpiece? Read a book? Or just relax and dress for dinner in leisure?

1. How did the meal turn out?

2. Do you plan to try an oven meal again? Why?

3. What cooking principles did you apply in preparing the meal?

4. How would you judge yourself as a manager? List the management principles you used.

5. Was the meal attractively served?

6. How would you evaluate the meal from the nutrition standpoint?

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### SUGGESTED REFERENCES FOR FOOD PREPARATION AND MANAGEMENT

### EXTENSION BULLETINS AND FEDERAL PUBLICATIONS

Cooperative Extension Service. Available at your county office; Home Freezing of Prepared Foods, Ext. Folder F-270 1. 2. "How Many Persons is a Homemaker?", E-415, by Helen Bell How to Prepare Vegetables, Ext. Bulletin E-350 3. 4. Meals with Meaning, Misc. Series Circular E-27 5. Nutrition for You, Misc. Series Circular E-26 6. Plan Your Kitchen to Take It Easy, Ext. Folder F-217 7. Take It Easy in the Kitchen, Ext. Folder F-216 8. "Values in Living", No. Dakota E 416 Versatile Salads, Ext. Bulletin E-368 9. 10. Family Food Plans and Food Costs, Home Economics Research Report, No. 20. Publications, United States Department of Agriculture, Washington 25, D.C. Cheese in Your Meals, L-262 1.

2. How to Use Whole and Non-fat Dry Milk, L-275

### COMMERCIAL PUBLICATIONS

American Home Economics Association, 1600 20th Street, N.W., Washington 9, D.C.

1. Handbook of Food Preparation 50¢

Betty Crocker, General Mills, Minneapolis, Minnesota

1. How to Master the Art of Mealtime Planning

Equitable Life Insurance Society of the U.S., 393 Seventh Avenue, New York 1, N.Y.

1. Kitchen Sense for Assurance of a Fuller Life

General Foods Kitchen, General Foods Corporation, White Plains, New York

1. Home Meal Planner

Kraft Food Company, Educational Department, 500 Peshtigo Court, Chicago 90, Ill.

1. The World of Cheese

95 -25Kinder, Faye, <u>Meal Management</u>, Second Edition, Macmillan, Co. New York, 1962 Available at Michigan State Library, Lansing, Michigan, Call No. 642 K51 m<sup>2</sup> 1

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Check Basic Cookbooks. Most have much useful information


# FOOD TRAVELS, TOO

North, South, East, and West from country to country, continent to continent, across oceans, streams, mountains and plains, food travels!! Travel does not refer to the way food is transported from field to market but to the way food habits and customs are developed, adopted and passed on. You may think your ways of eating and selection of food are truly American, but are they? Where did your ancestors come from? Have any of your family or friends traveled in foreign lands?

To be frank, you don't even have to leave the United States to find differences in food habits and selection. The people in the New England States and the Pennsylvania Dutch eat foods quite different from those we eat in the Midwest. Within the Midwest you will find variations between states depending upon the nationality of the early settlers.

You too can create food that will travel. All it takes is a slight variation in a recipe that is liked by a friend who will pass it on to another friend. Wouldn't it be interesting to find out where some of your favorite foods did originate? What foods did Marco Polo discover on his expedition?

This area, "Food Travels, Too," is actually a specialized continuation of Food Preparation and Management. It gives you an opportunity to explore the origin and cultural aspects of food as well as to explore the uses of herbs and spices in your everyday meal preparation. One warning -- don't combine too many flavors in one meal. By following good meal planning principles, you should be able to serve several interesting, attractive meals to your family and friends.

## Ideas for Projects

- 1. Study foods, customs, and traditions of a country or group of countries. Plan, prepare, and serve a meal for family or friends highlighting the foods and customs.
- 2. How do the food habits and selection vary in the United States? Select one region of the United States and make a detailed study. Compare to your family's habits. What are the differences? Similarities?
- 3. Select one or more food items and trace the origin(s). How did it get to the United States? What role does the food (or foods) have in the United States? Is it important in the American diet? How significant is it in other cultures?
- 4. How many herbs and spices do you know? How do you use them in food preparation? Study the uses of these and other spices and herbs. Apply this information to your final preparation. And remember, don't mix too many flavors in one meal!!!

5. Collect and organize the information pertaining to the importance of herbs and spices in the past. What role did they have in the founding of the United States? Where do we get most of them? Prepare a display and/or report.

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- 6. Do you prefer fresh herbs? Why not start your own herb garden? In the report include the growing conditions required for herbs and how you care for them. What herbs did you include in the garden? How do you substitude fresh herbs for dry in recipes?
- 7. Carefully analyze your family's food habits and traditions. Where did they originate? What country or region has the greatest influence? Study the foods and customs of this country or region.

Sample:

#### A TALENT FOR FOOD

No one is born with special cooking talents, although some may develop a greater interest in food and food preparation than others. The real secret to Mrs. A's delicious beef stew is the foods and seasonings she includes in it. Mrs. A does not wait until she is planning meals for guest to add a spark to eating. She plans and serves appealing, appetizing meals year 'round to her family.

Don't wait for a special occasion to put just a little extra effort into meal planning and serving. In fact, a little practice - without guests - puts the family at ease when special occasions do arise. Are you thinking, "But the food budget does not allow for extra special meals"? You can use the same basic ingredients and produce a meal that is bound to arouse a favorable response from the family.

One person can not prepare a menu that will please the tastebuds of all Michigan residents. But, one menu may give you some ideas to ways you can change everyday monotonous mealtime into delightful events.

> \* Tomato Bouillon \* Oven Fried Chicken \* Browned Rice Fresh or Frozen Peas with Mushrooms Tossed Salad with your favorite "home-made" dressing Brown and Serve Rolls Butter Pineapple Sherbet with Cookies or Fresh Fruit (in-season) Coffee

Milk

\* Recipes includes

#### Principles that have been applied:

1. The dinner was planned around the main dish, Oven Fried Chicken.

2. No one food was repeated.

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- 3. Repetition of flavor and texture was avoided. The flavors of the foods used complement each other.
- 4. Both hot and cold foods are included.
- 5. The food can be recognized but the shapes of the food included are varied.
- 6. The meal is colorful.
- 7. Includes foods from the Basic 4.
- 8. The chicken, rice and rolls can be baked at the same oven temperatures. Check amount of time required for baking.

Planning an appealing menu is just the first step towards making mealtime an enjoyable event. The selection and use of table appointments tablecloth or placemats, napkins, flatware, dinnerware, and decoration -- and an appropriate type of table service also need consideration.

The table appointments set the mood for the meal. It can be picturesque and appealing or messy and ugly. Believe it or not, this does influence the taste of the food. Table appointments do not have to be new or fancy, just nicely arranged on the table in an orderly manner.

A clean table cloth or placemats gives unity to the table setting. Flatware and dinnerware, placed with care, make a better impression than if "thrown" on the table. A centerpiece or some type of decoration adds brightness and gaiety to the setting. Centerpieces do not have to be fancy or expensive. An attractive arrangement of flowers or a bowl of fruit is good. However, if you have time, making other centerpieces is fun and creative.

There are a variety of ways the meal can be served. The type of service depends upon the menu, the number of people and the room available. In our society the trend is toward informality. Of the seven types of meal service, only one requires trained servants. The remaining six can be served successfully with the help of the family members. You do not know the types of meal service? Ask the county agents if you can borrow the book, <u>Meal Management</u>, by Faye Kinder. Miss Kinder gives an excellent description of the types of meal service.

Tomato Bouillon, the appetizer in the menu, may be served at the dining table or in the living room. For this meal it will be served in the living room. Serve the bouillon in mugs. Pass a tray with small napkins and pretzel sticks. This gives the person preparing the meal time to finish last minute preparations.

Since the menu was planned for a family dinner, family service is appropriate. The one limitation to this type of service is that the food will get cold if the group is large. At least one course is served at the table by the host (Dad). He can serve the entire meal or the person on his left can serve the vegetable. The host indicates for whom the plate is intended. Mom (the hostess) passes the rolls and butter. To avoid confusion pass the food to the right. The salad is placed on the table before the family sits down to eat.

99 -29After the main course, the table is cleared by a family member. All serving dishes are removed first followed by the individual covers (places). If there is not enough room for the person to walk around the table, the plates can be passed hand to hand and placed on a teacart or small table.

The dessert will be served from the kitchen. Mom will serve the beverage.

Do not have the attitude, "that sounds too complicated" or "it is too much work". Using the different types of service with the family puts everyone at ease when guests are present or when you are dining out.

Throughout the discussion it has been assumed that you will apply good food preparation and management principles. How do you expect to enjoy the meal if you are exhausted from last-minute preparations?

To avoid the last-minute rush, make a time schedule. What responsibilities do you have besides preparing the one meal? Do you have time to do any advance preparation?

When you are deciding which foods can be prepared in advance, remember the good characteristics of each finished products. Is it better served warm or cold? Does it have good keeping qualities? How much time is required to prepare the finished product including both preparation and cooking time? Carefully read all recipes and directions well in <u>advance</u>. Refer to extension bulletin <u>Meals with Meaning</u> (E-27), for help in timing.

RECIPES

# Tomato Bouillon

Combine equal amounts of tomato juice and diluted beef bouillon. Season with dehydrated onions, salt, and pepper. Serve hot. Allow 1 cup (approx. 6 oz.) per person.

Serve with pretzel sticks or small crackers.

# Oven-Fried Chicken (For 6)

Select 3 broilers which have been quartered. Season with salt, garlic salt and pepper, dust lightly with flour and place in a tightly covered casserole or baking pan. For each broiled pour  $\frac{1}{4}$  cup of melted butter over. Cover tightly and bake at 350 degrees for 45 minutes. Remove cover and finish cooking to desired doneness (approx. 45 minutes). Requires approximately  $l\frac{1}{2}$  hours total cooking time.

#### Browned Rice (For 6)

1 cup long grain rice 2 T. butter or margarine 1 t. salt  $2\frac{1}{2}$  cups stock or bouillon

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Wash and fry rice in the butter or margarine until it is well browned. Add the salt and stock of bouillon and place in a casserole. Cover and bake at 350 degrees until the rice is light and feathery (approx. 45 minutes). Service rice in the casserole.

# Questions to think about:

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Have you gotten any ideas for other meals? Start a collection for the ideas.
 Are you going to try using different spices and garnishes in the future?
 How did you manage your time? Did you prepare a time schedule?

4. Which menu planning and food preparation principles did you apply?

# HOW DID YOUR MEAL RATE?

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#### FOR PALATIBILITY:

- 1. Eye Appeal
  - A. Color Conbinations pleasing and colorful?
  - B. Texture Varied or the same?
  - C. Size and Shape Foods varied in size and shape? Do you recognize the food?
  - D. Originality?

## 2. Taste Appeal

- A. Pleasing flavor combinations
  - (1) Did the flavors complement each other?
  - (2) Were there too many mild or strong flavored foods?
  - (3) Originality?
- B. Texture

Appealing to the tastebuds? Some smooth, some hard, and some soft.

- C. Temperature
  - (1) Were hot foods served hot and cold food cold?
  - (2) Were both hot and cold foods included?

#### FOR PRESENTATION:

- A. Type of Service
  - 1. Appropriate for the occasion?
  - 2. Appropriate for the foods included in the menu?
  - 3. Convenient?
  - 4. Acceptable to family situation?

# B. Table or Buffet Setting

- 1. Centerpiece pleasing? Was it too large or too small?
- 2. Individual covers neatly arranged?
- 3. Color scheme pleasing and attractive?
- 4. Include any originality?

# C. Serving the Meal

- 1. Satisfied?
- 2. How could you improve?

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#### SUGGESTED REFERENCES FOR FOOD TRAVELS, TOO

# EXTENSION BULLETINS AND FEDERAL PUBLICATIONS

Cooperative Extension Service. Available at your county office.

- 1. Scandinavian Foods and Customs, Ext. Folder F-927 10¢
- 2. Your Meals and Your Manners, Ext. Folder E-337
- 3. Meals with Meaning, Ext. Folder E-27
- 4. "Passport to the World" 4-H 399

U.S. Committee for the U.N., 816 21st Street, N.W., Washington 6, D.C.

1. Favorite Recipes from the United Nations

- 1 9 copies \$1.50 each
- 10 24 copies \$1.00 each

Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

1. "Savory Herbs - Culture and Use" 15¢

# COMMERCIAL PUBLICATIONS

- American Dairy Association, Home Service Department, 20 North Wacker Drive, Chicago 6, Ill.
  - 1. Young Ideas in Cooking (1959)

Evaporated Milk Ass'n., 228 North LaSalle Street, Chicago 1, Ill.

- 1. Ground Beef Passport to Far Away Eating
- National Committee on Boys and Girls Club Work, Inc., 59 East VanBuren St. Chicago 5, Ill.
  - 1. Breads of Many Lands by Clara G. Snyder
- Standard Brands, Inc., Educational Service Room 1212, 420 Lexington Ave., New York 17, N.Y.
  - 1. Intriguing Foreign Breads and Rolls

American Spice Trade Ass'n., Inc., 82 Wall Street, New York 5, N.Y.

- 1. "Spices, What they Are, Where They Come From"
- 2. "How to Use Spices"

#### COMMERCIAL PUBLICATIONS - continued

Ferry - Morse Seed Company, Detroit, Michigan

- 1. Tastier Meals with Garden Herbs
  - 1 4 copies  $10\phi$  each and 5 or more copies  $5\phi$  each

McCormick and Co., Inc., Baltimore 2, Maryland

- 1. Cooking Magic with Herbs and Spices
- 2. McCormick's Map of the World
- 3. Outdoor Eating
- 4. Handie Flavoring Guide

R. T. French Co., 64 Mustard Street, Rochester 9, New York

- 1. Seasoning Makes the Difference
- 2. Let's Put Spice in Your Life

#### BOOKS

Kinder, Faye <u>Meal Management</u>. Second Edition, Macmillan Co., N.Y. (1962). Available at Michigan State Library, Lansing - Call No. 642 K51  $\frac{2}{m}$ .

The Sunset Cook Book - Food with a Gourmet Touch, by the Sunset Editorial

Staff. Menlo Park, California: Lane Book Company.

Check the local bookstores and library for cookbooks featuring foreign, regional and herb cookery.

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105 Section VI

# NUTRITION

READ + CEREAL = Q Q LILIE LI

What does nutrition mean to you? Is it just a few facts about calcium, protein, vitamins, etc. which don't seem too important? OR is it the way our bodies utilize the foods we eat? The way you view nutrition determines your attitude towards it. Let's take the positive view!

Nutrition can be defined in several ways. Until you become better informed on the subject, let's define Nutrition as the total process by which plants, animals, and humans take in and use food substances. Nutrients (protein, carbohydrates, fats, vitamins, minerals and water) are the essential food substances needed for proper growth and health. These nutrients are found in the various foods which we include in our daily diet.

During your study of nutrition, you should:

- 1. Become better informed about the food sources of the various nutrients.
- 2. Gain a better understanding as to how the body utilizes the food you eat.
- 3. Analyze your present eating habits and make the necessary changes so your body receives the needed nutrients in adequate amounts.
- 4. Share your increased knowledge with others in a talk, a demonstration, a display, or some other interesting way.

The types of nutrition projects you can develop are unlimited. They can range from animal experiements to nutritional surveys. A few suggestions are:

- 1. Study the ways you can meet the daily recommended allowances for a particular nutrient. What are the food sources and how much is required? Which sources are best? Which do you prefer? How do you meet the need for recommended allowances.
- 2. Find out how different nutrients can be separated and identified in a sample of food. Set up a demonstration to show this. Check your high school science book "The Wonder of You" for methods.
- 3. Observe the food selection in the school cafeteria. If there is a selection, what foods are selected most often? Which foods are discarded? Any recommendations?
- 4. Plan and carry out a self-improvement project. If underweight or overweight, analyze your own food habits and activities. With the cooperation of your family physician, try to correct and control your weight intelligently.
- 5. Select a deficiency disease. Show its occurence in history, its cause, world distribution, and successful elimination. Who was responsible for its elimination?

- 6. Investigate careers in the field of nutrition. Make results available to interested friends and school counselors.
- 7. Study the lives and work of famous scientists in the field of nutrition, such as William Beaumont, and Lazzaro Spallanzani.

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Sample:

#### LET'S EAT! -- BUT WHY?

Why do you eat? Is it because you feel hungry or because Mom makes you? Can you think of any reasons why you should eat? Of course, to keep healthy and to stay alive! You've probably read many pamphlets about the importance of selecting the right food for your diet. But seldom are you told why certain foods are important or what happens to the food we do eat. The purpose of this study is to show the changes that occur when food is eaten, digested, and absorbed.

So often people associate a nutrient with a particular food. It may be that a certain food is an excellent source of the nutrient, but this food usually contains other nutrients as well. In the digestion process these nutrients are separated. For example, milk is broken down to protein calcium fat, carbohydrate in the form of lactose, and other vitamins, and minerals. Therefore, in the digestion process one food becomes involved in several reactions.

Before the discussion gets too involved, here are a few terms that you should know.

- 1. Ingestion: the intake of food.
- 2. Digestion: the breakdown of food into small, soluble materials, i.e., materials that can be dissolved in a liquid.
- 3. Absorption: the passage of the materials (nutrients) through the lining of the digestive tract into the blood stream (2).
- 4. Enzyme: A compound which aids in a reaction without changing form itself; an organic catalyst. Each enzyme reacts with a specific compound in a definite sequence (3). Enzymes derive their names from the substance they act upon plus the ending "ase" (2). For example, protein enzyme is proteases.
- 5. Metabolism: A term which denotes all the changes which occur in living cells including intake of nutrients and elimination of waste products.
- 6. Digestive Enzymes: Substances that cause chemical changes to take place in food (1).

#### Ingestion

Ingestion is the first step towards metabolism. It's the one step we have control over. The amount and type of food we eat determines the amount and type of nutrients our bodies will receive.

#### Digestion

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Digestion is the breakdown of food into small, soluble materials. These materials are simplified forms of the nutrients - protein, carbohydrates, and fats. The minerals and vitamins do not require digestion. They are absorbed directly into the blood stream from the small intestine.

#### Digestion in the Mouth



Digestion begins in the mouth by both physical and chemical means. When you chew food, your teeth mix and break the food into small particles. Some of the carbohydrates (starches) undergo chemical change. When one chews food, it mixes with a digestive juice called saliva. This juice contains water, mucus, and a digestive enzyme, <u>ptyalin</u>.

Ptyalin is a specific enzyme for starch. Therefore, some of the starch in food - such as breads, or potatoes - is broken down into smaller molecules.

Starch + Ptyalin----Dextrin + Ptyalin,

Dextrin is a complex sugar which will be broken down into simple sugars in the small intestine.

Before further digestion can occur, the food mass, called the bolis, must be passed on to the stomach by the esophagus. This is a mechanical process caused by the contraction of the circular and lengthwise muscle fibers. This muscular activity is called peristalis.





Cross section view of the esophagus showing the bolis and lengthwise and crosswise muscles. Digestion in the Stomach



When the food enters the stomach it remains temporarily in the upper part. Most of the digestion, however, occurs in the lower part. Ê

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The strong stomach walls mix the food with the gastric juices - hydrochloric acid, pepsinogen, and gastric lipase. Before the mixture becomes too acidic, starch digestion continues. The starch enzyme, otyalin works in an alkaline medium.

Hydrochloric acid (HCl) has an important role in stomach digestion. It converts pepsinogen to pepsin, a protein-splitting enzyme or a protease. The protease cannot be present in the active form, pepsin, when there is no food in the stomach. Pepsin would digest the stomach walls. Other functions of HCl are to create "the optimum audity in the stomach for protein digestion; and (to) act as a bactericide preventing the entrance of bacteria into the lower digestive tract." (2) HCl also makes two

minerals, calcium and iron, more stable. This allows for a more complete absorption of these minerals in the small intestine.

After HCl has converted pepsinogen to pepsin, the pepsin starts dividing the protein into smaller units -- proteoses, peptones and peptides.

Due to the acidic condition of the stomach, the gastric lipase, a fat enzyme in the stomach, is inactive. However, the gastric lipase may start to breakdown the fat found in milk and egg yolk.

The time the bolis remains in the stomach varies from 3 to  $4\frac{1}{2}$  hours (2). This depends on the type of food eaten, the condition of the stomach, and the consistency of the mass. The pylorus (note diagram) allows the mixture to pass into the duodenum of the small intestine only after it reaches a certain consistency. This milk-like paste is called chyme. The carbohydrates leave the stomach first, followed by proteins, and finally fats.

#### Digestion in the Small Intestine

Once the chyme reaches the small intestine all of the nutrients take part in the digestive process. Both the pancreas and gall bladder excrete fluids which are essential for digestion.

108 -38Digestion in the Small Intestine Continued



By this time some of the starch has been broken down into dextrin either in the mouth or in the stomach before it became too acidic. As the dextrin reaches the duodenum, the pancreas releases a pancreatic amalyase, starchsplitting enzyme, which further divides the dextrin into a compound sugar or disaccharide, called maltose.

This same enzyme also aids in the conversion of starch, which has not entered the digestive process, to maltose

pancreatic Starch maltose amalyase

Other carbohydrates that are present in food as disac-

charides, like granular sugar, and maltose from starch are converted to simple sugars by their specific enzymes. These enzymes are present in the intestinal fluid.

Sucrose sucrase glucose + fructose Maltose maltase glucose + glucose Lactose lactase glucose + galactose

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These simple sugars are absorbed into the blood stream.

Let's see whats happening to the proteins. Some of them were converted to proteases, peptones, and peptides in the stomach, but not all of them. As the protein enters the duodenum of the small intestine, the pancreas releases an inactive enzyme, trypsinogen, which becomes active trypsin. Again this protease must be stored in the inactive form to prevent the intestinal walls from being digested. Trypsin along with two other pancreatic proteases divide the protein molecules to proteoses, peptones, and peptides.

1**09** -39At this point three intestinal proteases, protein enzymes, take action. They divide the polypeptides - peptones, peptoses and peptides - to the amino acids which can be utilized by the body.

Polypeptides \_\_\_\_\_\_\_ amino acids.

If you recall, little or no fat digestion has taken place. But once it reaches the small intestine, action begins. The gall bladder releases stored bile which breaks fat into tiny globules. In this form fats can be acted upon by the fat enzymes, lipase, presented in the pancreatic fluids. Bile also aids in the absorption of fatty acids and the fat soluble vitamins, A, D, E and K. Another function of bile is to carry certain waste products which are excreted in the intestinal tract.

Now that the fat has been emulsified into the tiny globules, the pancreatic lipase is able to break the fat down to fatty acids and glycerol. To accomplish this, one molecule of water,  $H_2O$ , is released.

Fat \_\_\_\_\_\_\_\_\_ fatty acids + glycerol + water. lipase

At this stage all foods that can be digested are digested and the nutrients are in forms which the body can use. Some of the fibrous foods like celery can not be digested. These foods and other wastes continue to the large intestine and are eliminated from the body.

#### Absorption:

Just having the nutrients in a soluble, useful form is not enough. These nutrients must be absorbed through the linings of the digestive tract. Most of this absorption occurs in the small intestine. However, some water and small amounts of simple sugars can be absorbed into the blood stream from the stomach. Water is also absorbed from the large intestine.



The lining of the small intestine has tiny finger-like projections called <u>villi</u>. The villi are very important in the absorption of nutrients. Each villus contains a lymph vessel and a net-work of capillaries. The amino acids from protein digestion and the simple sugars from carbohydrates pass into the capillaries. The products of fat digestion pass into the lymph vessels. Ê

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The vitamins, minerals, and water also enter the absorption pathways in the small intestine. They pass directly into the blood stream. Once the nutrients are absorbed, they begin to supply energy for our needs and build and repair body cells. Why don't you find out how the body uses the nutrients?

110 -40Here's a chart to summarize the digestive process.

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	Source of	Site of	Carbohyd	rates	Tete	Desta i s
	Enzyme	Reaction	Starches	Sugars	Fats	Proteins
	Saliva	Mouth	ptyalin dextrin			
	Stomach	Stomach			lipase	pepsin polypeptides
	Bile from Gall Blad- der (not an enzyme)	Sm. Intestine			emulsifiers fat	
	Pancreas	Sm. Intestine	Pancreatic Amylase maltose		Pancreatic lipase fatty acids + glycerol	trypsin + other, proteases polypeptides
ii E E	Wall of Small Intestine	Sm. Intestine	````	Sucase Maltase		Intestinal proteases I, II, & III
	End Produc	<u>ets</u>	Glucose, Fru and galactos	uctose se	fatty acids and glycerol	amino acids

At this point the nutrients are absorbed from the small intestines



adapted from "The Wonder of You" pg. 7

111 -41It's difficult to realize how hard our bodies work to keep us healthy. Next time when you select food remember to give your body the right foods.

# References

- Piltz, Albert, <u>How Your Body Uses Food</u>. Chicago; National Dairy Council - 1962.
- 2. Wilson, Eva D., Katherine H. Fisher, and Mary E. Fuqua, <u>Principles of</u> <u>Nutrition</u>. New York - John Wiley and Sons, Inc. 1961.
- 3. The Wonder of You. American Institute of Baking Chicago (1961).

Suggested References for Nutrition

## COMMERCIAL PUBLICATIONS

- -- American Institute of Baking, 400 East Ontario Street, Chicago 11, Ill.
  - 1. Eat and Grow Slim
  - 2. Food and You
  - 3. The Wonder of You

-- American Medical Ass'n., 535 North Dearborn St., Chicago 10, Ill., 🖇 Order Dept. 🔰

- 1. Food for Energy by Hazel Houch  $15\phi$
- 2. Today's Knowledge of Nutrition by Elmer McCollum 10¢
- 3. Why Vitamins by C. A. Elvehjum  $15\phi$

-- Michigan Department of Health, Lansing 4, Michigan

- 1. Fruits Do You Have Enough? G-5
- 2. How Do You Rate? G-47
- 3. Vegetables Do You Have Enough? G-4
- 4. Vitamins Where You Get Them, Why You Need Them G-6
- -- National Dairy Council, Chicago 6, Ill.
  - 1. Animal Feeding Demonstrations
  - 2. How Your Body Uses Food by Albert Piltz (1962) 20¢

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EXTENSION BULLETINS AND FEDERAL PUBLICATIONS

-- Cooperative Extension Service. Available at your county office.

- 1. Breakfast Bonus F-248
- 2. Nutrition For You E-26
- 3. Thiamine Tally F-249

NATIONAL 4-H SERVICE COMMITTEE -- 59 East VanBuren Street, Chicago 5, Ill.

1. Personality "Plus" Through Diets for Teen-agers by Charles King and Gwen Lam

-- Superintendent of Documents, Washington 25, D. C.

- 1. Facts about Nutrition (1963) 15¢
- Foods The Yearbook of Agriculture 1959 \$2.25
  (Check with your county extension office.)

#### BOOKS

- -- Oceana Publications, Inc., Dobbs Ferry, N. Y.
  - 1. The World Must Eat 50¢
- -- Understanding Food The Chemistry of Nutrition by Beulah Tannenbaum and Myra Stillman. McGraw-Hill Book Co., Inc., N. Y. 1962 Available at Michigan State Library, Lansing, Michigan Call No. J 641.1 T

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Exploring Foods and Nutrition

Leader's Guide

# Content

- I. Introduction
- II. Your Role as a Leader
- III. The Club Meeting
  - A. Club Activities (suggestions)
  - IV. Some Don'ts to Remember
  - V. Additional References

# Leader's Guide

#### Exploring Foods and Nutrition

You are a V.I.P.--very im\_ortant person--since you became the project leader for Exploring Foods and Nutrition. You will be working with 4-H'ers 14-18 years old, the leaders of tomorrow. Being a leader for this project is just a little different than for other projects. You will be an advisor rather than a teacher.

The purpose of this project is to encourage members to develop and carry out their own special problems in one or more areas of foods and nutrition which interests them. The plans for the problem must be discussed with you and the county agent. The members should conduct the problem in an orderly manner, gathering as much information as possible on the subject.

#### Your Role as a Leader

1. Your main purpose should be to provide encouragement and motivation to the members. When each member is selecting his problem, make sure the topic isn't too broad. Suggest, when possible, additional references and resources available. You should not talk them into selecting problems which do not interest them.

2. As the advisor, you should be able to give enough direction so that each member can proceed with enthusiasm. Caution: Don't try to supply all the answers.

3. Help the members interpret the information they have learned and help them to apply it to other situations. Caution the members about making too many generalizations that would not be true in other cases.

4. After the members have completed their problems, stimulate interest for further investigation by asking questions.

5. Stress the scientific approach when appropriate.

#### The Club Meeting

The organization of the club meetings is left up to you and the members. This may be the time the members want to work on their projects or they may want to develop a project to be done as a club and work on the individual projects at home.

You should plan to include time for the members to give progress reports, demonstrations, etc. pertaining to their problems. This gives the members an opportunity to learn from each other. Inviting friends, parents, members of the community club, and other interested people to a meeting when members are demonstrating or having thier problems on display may stimulate more 4-H'ers to enroll in the project. This also gives the members an opportunity to gain poise and selfconfidence since they will be presenting information to more people than their selected group.

#### Some Suggested Club Activities

1. Start a local club reference library in foods and nutrition. Many commercial companies and public agencies have useful information that can be obtained free of charge or at a very nominal cost.

2. Tours of the local or state food industries and/or a food market would be an interesting learning experience.

- 3. Develop a club project: Here are just a few suggestions.
  - a) Panel discussion: cooperating with school personnel check the lunch trays in the school cafeteria.

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- 1) What foods are selected?
- 2) Which ones are left on tray untouched?

- 3) What are some reasons (excuses) the people give for not eating properly?
- 4) Can this problem be solved? What foods would be preferred? Are these requests reasonable? Prepare a list of recommendations. Present a copy to the school lunch supervisor. Discuss with your friends why good eating habits are necessary.
- b) Debate: Why have nutrition levels risen? Is the population better educated or has technology made more food available?
- c) Leader (or member) would prepare a problem or story pertaining to nutrition, table manners or food preparation principles. Prepare a list of generalizations. Have the members rate the generalizations very good, good, undecided, poor, or very poor. Discuss.
- d) Quantity Foods Project: Plan, prepare, and serve a tea or luncheon for the Golden Age Club or some other community organization. Remember, it should be nourishing, attractive, and properly served.

#### Some Don'ts to Remember

- 1. Don't discourage originality.
- 2. Don't place a time limit on the individual problems. Some problems require more time than others.
- 3. Don't limit the members to one problem a year. This may crush their interest in the project and 4-H.
- 4. Encourage members to check local resources and contact county agents rather than to write to the state office.

# REFERENCES IN ADDITION TO THOSE IN MEMBER'S BULLETIN

Consumer Marketing Information available from Home Agents who have attended the training programs. Check with your home agent.

- 1. Your Money's Worth in Cereal
- 2. Your Money's Worth in Dairy Products
- 3. Your Money's Worth in Fruits and Vegetables
- 4. Your Money's Worth in Meats

Cooking with a Foreign Accent (1962)

A Sunset Book Lane Book Company Menlo Park, California

Corbett, Helen, Helen Corbett's Cookbook \$5.00

- Extension Service, College of Agriculture, University of Connecticut, Storrs, Connecticut
  - 1. Chinese Foods and Traditions No. 58-16
  - 2. Entertaining with Cosmopolitan Flavor No. 57-18
  - 3. Hungarian Foods and Tradition No.58-2

- 119 -3-Marsh, Dorothy, Good Housekeeping Party Book (1958) Harper and Brothers Publisher, New York F Leverton, Ruth, Food Becomes You Iowa State University Press (1960) Paperback 95¢ Sullivan, Lenore What to Cook for Company Ames, Iowa: The Iowa State College Press (1953) Wilmot, Jennie 5, and Margaret C. Balger, Food for the Family--5th Edition Ē New York and Chicago, J.B. Lippincott Company (1960) Wilson, Eva D. et. al. Principles of Nutrition New York: John Wiley and Sons, Inc. Publisher (1961) Available at County Extension Office. The following references are from those listed in Bibliography of Recommended Books, Pamphlets, and Teaching Aids on Foods and Nutrition, prepared by A Committee of the Foods and Nutrition Section, American Home Economics Association, (1963). Callahan, Dorothy and Alma Smith Payn, The Great Nutrition Puzzle New York: Charles Scaribner's Sons, 1956 \$2.95 Fleck, Henrietta and Nunves, Elizabeth D., Introduction to Nutrition New York: The Macmillan Company, 1962 \$6.50 Hutchinson, Raymond C., Foods for Better Performance f New York: Cambridge University Press, 1958 \$2.75 Meredith, Florence L., L. W. Irwin and W. M. Slaten, Health and Fitness Third Edition, Boston: D. C. Heath and Company, 1957 \$4.20 White, Ruth B., You and Your Food Englewood Cliffs, New Jersey: Prentic Hall, Inc., 1961 \$6.35 Wright, Catlton E., Food Buying, Marketing Information for Consumers New York: The Macmillan Company, 1962 \$6.75 Film and Handout National Dairy Council Chicago 6, Illinois ŧ, "It's All in Knowing How" (1958) 1. Available at the MSU Audiovisual Center Evaporated Milk Association 228 La Salle Street Chicago 1, Illinois
  - 1. "Ground Beef--Passport to Far Away Eating," (36-frame filmstrip; Free on permanent loan basis)

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# **APPENDIX B-4**

## **REFERENCES GIVEN TO LEADERS**

# **Extension** Bulletins

Believe It or Not Breakfast Bonus Cheese in Your Meals Food and You Food Shopper's Guide Home Freezing of Prepared Foods How to Prepare and Serve Vegetables Just a Pinch of Herbs Meals with Meaning Nutrition for You Personality "Plus" through Diets Plan Your Kitchen Scandinavian Foods and Customs Shoppers Guide to U. S. Grades for Food Take It Easy in the Kitchen Versatile Salads What Can You Believe? The Wonder of You Your Meals and Your Manners Your Thiamine Tally

# Marketing Bulletins

Food in the Light of the Law Food Marketing Marketing the Nation's Food The Whole Picture of Food Additive Puzzle

# Michigan Health Department Bulletins

Fruit, Do You Have Enough? How Do You Rate? Vegetables, Do You Have Enough? Vitamins--Where You Get Them, Why You Need Them APPENDIX C

TABLES

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		Expe	erimental C	Groups		
	One		Tw	0	Three	
County	Club	Enroll-	Club	Enroll-	Club	Enroll-
	Number	ment	Number	ment	Number	ment
Clinton	9	2	10	3	5	10
	8	4	7	2	4	11
	6	9	2	3	1	0**
	3	4				
Eaton	6	8	4	4	2	1
	1	8	7	3	3	4
				-	5	1
Ingham	7	7	2	4	4	5
8	1	10	5	8	3	6
			6	5	_	-
				5		
Jackson	5	0*	1	10	2	5
	3	7			4	3
	-				_	
	<b>↓</b>	······		<u></u>		
	1.10					
No. of Club			9		10	
No. of Mer	nbers	59		42		46

Table I. Potential Membership in Participating Clubs Based on County Enrollment Figures According to Club Number

\* Leader discontinued as project leader before enrollments were in. The members were old enough to take the project.

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\*\*No members 14 and over.

Table II. Information Pertaining to the 4-H Club Members Who Completed "Let's Hear About You"

			Experiment	tal Group		
	One, N	= 17	Two, N	[ = 13	Three,	N = 16
Characteristic	Per cent	Number of Members	Per cent	Number of Members	Per cent	Number of Members
Age						
14	7.4	2	0	0	6.2	1
15	33.3	6	7.7	l	37.5	9
16	33,3	6	38.5	J.	18.8	ŝ
17	14.8	4	38.5	ъ	31.3	5
18	11.1	°	1.5	2	0	0
19	0	0	0	0	0	0
20					6.2	1
Residence						• <u>•</u> ••••••••••••••••••••••••••••••••••
Rural farm	37.0	10	53,8	7	50.0	œ
Rural non-farm	33,3	6	15.4	2	50.0	∞
Urban	29.6	œ	30.8	4	0	0
Years in 4-H						
1 - 3	0	0	0	0	18.8	ŝ
4-6	59.2	16	15.4	2	31.3	5
7-9	40,9	11	84 。 6	11	43.7	2
10-11	0	0	0	0	6.2	1
Number of Foods Projects						
Completed						
0-2	25.9	7	7.7	l	25.0	4
3-5	40°7	11	7.7	l	25.0	4
6-8	33.3	6	69.2	6	43.8	2
9-11	0	0	15.4	2	6.2	l
	ŧ					

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Took Creative Cookery		Ľ	E 3	٢		α
Y es No	70°4 70,4	c 61	46°2	9	43.8	0 ~
Did not check	11,1	Ś	0	0	6.2	I
Grade in School						
œ	0	0	0	0	6.2	l
6	7.4	2	7.7	1	12.5	2
10	51.8	14	0	0	25.0	4
11	22.2	6	30.8	4	37.5	9
12	18.5	ъ	53.8	2	12.5	2
College	0	0	7.7	1	6.2	l
Number of semesters of						
Home Economics						
0-1	51.8	14	53.8	7	25.0	4
2-3	29.6	∞	23.0	ŝ	31.3	Ŋ
4-5	7.4	2	15.4	2	31.3	ŋ
6-7	7.4	2	7.7	-1	6.2	l
8-9	3.7	1	00.0	0	0.0	0
10-11	0°0	0	00.0	0	6.2	1
Studied Nutrition						
Yes	81.5	22	46.2	6	81,3	13
No	18.5	ß	53.8	7	18.7	3
Studied Foods						
Yes	88.9	24	46.2	6	81.3	13
No	11.1	ŝ	53.8	7	18,7	3
Number of Science Classes						
0	0.0	0	7.7	1	6.3	I
l	29.6	8	30.8	4	25.0	4
2	18,5	Ω	38.5	ъ	31.3	5
£	44.4	12	23.1	ŝ	12.5	2
4	7.4	2	0°0	0	12.5	2
Ū.	0°0	0	0°0	0	6.3	l
6	0.0	0	0°0	0	6.3	l

# HARD USE ONLY

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