

Chapter Seven

Methods of Teaching

DAILY ACTIVITIES become so much a part of an individual that resistance to any change in routine can be expected. This is so with food particularly. Suggest to some people that food practices should be changed and they feel that their personal rights to freedom are being violated. Others will agree that some diets should be better, but they fail to evaluate their own food plan and make changes where needed. A feeling that what one eats is one's own responsibility may be among the reasons why efforts to improve food habits of the American people have been discouraging.

This feeling, however, also can be an asset to nutrition education. If you as a teacher believe this, you will make a more personal approach to your audience than is usually made. People will change food habits when they believe that good nutritional status will help them achieve their own important goals. You will not tell people what they should do. Rather you will teach in such a way that individuals decide to improve their food practices because they recognize the advantages of changing.

The results of educational programs in nutrition have not been proportional to the efforts expended. The field of nutrition has much to offer for the improvement of mankind. There is enough knowledge now available to produce a superior race of people if we will only put it into practice. Application, however, lags far behind the progress of the science.

At this point the evaluation of methods may be as important as accumulating knowledge. We constantly need to "sharpen our tools." Writing on the subject of how to get the most out of health education

tools, Stone (1) said, in effect: First, know what you want to teach. Second, whom you wish to reach. Then, "Light a fire . . . build a bridge . . . get down to cases . . . ask for action." In other words, create an interest, and bridge the gap from interest to goal. Illustrate with actual cases. Don't leave your public saying, "So what!" Ask for action in clear, certain, definite terms.

EMPHASIS ON NEGLECTED FOODS

Nutrition education in the past has been too general, according to Pett (2). He stated that it has consisted of a "shotgun" or "blunderbuss" approach; that we have dealt too much in national averages and too little with individual situations. It is wrong to suppose that everyone must drink more milk, just because the national average needs to be increased. We need a new viewpoint, a new method of attack. This new method must be an individual approach based on a definite knowledge of conditions in homes and the community, and carried into effect by individuals in the community.

Ideally the approach described by Pett is based on nutritional appraisal of the specific group involved. This step will take the guesswork out of the problem to be faced. General surveys suggest the scope of the problems with school children and the points of emphasis for the general population. But every teacher should study his or her own group in order to ascertain their particular problems.

Numerous studies have revealed that food groups most likely to be inadequately represented in children's diets are: milk and milk products, green and yellow vegetables, vitamin C-rich foods, and eggs. Since many diets would be satisfactory if these foods were adequately represented, probably the most effective teaching will aim to increase the acceptance and use of these neglected foods.

As new foods are accepted, amounts of food from other food groups should be studied in order to control the total amount eaten.

METHODS TO DETERMINE THE FOOD PRACTICES OF STUDENTS

Several methods may be used to discover and evaluate the food practices of students. The 3- to 7-day record of all foods eaten gives some information. Methods of evaluation will depend on the maturity of the student and the use to be made of the information. Some ways suggested are to:

1. Calculate the nutritive value by a simple short method.
2. Rate the diet as shown in Appendix B, pages 295-96.
3. Examine the record qualitatively for the use of certain food groups in specified units: e.g., 2 to 3 cups milk daily; one serving meat, poultry, fish; one serving green and yellow vegetables. Either the Basic 4 or Basic 7 classification of foods in groups could be used. A comparison of these classifications can be found on pages 106-8. For identification of foods in groups, see Appendix A, pages 291-94.

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Incomplete but valuable information may be secured by observing the selections of food by people in public eating places. School lunch-room selections of food prepared in various ways and plate waste will indicate which foods are well accepted among those served. This information can be particularly valuable if it is compared with data from check sheets that indicate the food likes and dislikes of people. Observations in eating places will give similar information, especially about between-meal snacks.

Parents, too, may provide information regarding foods eaten by their children. But Rodewald (3) found that mothers' reports of foods eaten agreed more closely with dietary records kept by their sons than by their daughters. The girls tended to report better diets than their mothers' reports indicated. It helps us to know from the parents what foods are served at home during the same period that the students report their diets. A food may be missing on a student's list because of refusal to eat it, or because it was not served to him. The first reason would call for different education than would the second one.

IMPORTANCE OF KNOWING FAMILY FOOD PRACTICES

Efforts to change food habits of people should be accompanied by certain precautions. Due respect must be given habits and customs that do not conform to our standards, if they have resulted in a healthy people. There are many gaps in our present-day knowledge of the constituents of the perfect diet. Studies of the food habits of any group of people should be approached with the idea of learning as well as reforming.

It is also important to remember that food habits are complex. Few foods are consumed as isolated units. Our diets are full of food combinations such as bread and butter; meat, potatoes and gravy; cake and ice cream; sugar and cream with coffee. The intake of any food is likely to influence the intake of other foods.

Dickins (4) has said, ". . . a given diet is an intricate, interrelated combination of foods in which an increase or decrease in the consumption of any one element not only affects the balance of the diet in terms of the contributions made by that particular food, but may also increase or decrease the consumption of related foods." Observations of the effects of a white corn meal shortage in the diets of Mississippi children illustrated her point. With the customary cornbread made of white meal, the children liked greens, buttermilk, beans, and peas.

With biscuits they preferred such foods as sirup and gravy. Interestingly enough, with yellow corn meal, they preferred the foods desired with biscuits, namely, sirup and gravy. The ultimate benefits derived from the substitution of yellow corn meal for white were therefore questionable.

Such dangers would be minimized if emphases of education were on the importance of nutritionally adequate diets rather than on conformity to standard rules for menu planning. If this emphasis were given to teaching, foreign dishes would not be treated as novelties to be featured only at Christmastime or for entertaining. Rather, people would be taught ways of using available foods in preparing such dishes for the enjoyment of family members who like foreign dishes or unusual combinations. Furthermore, national dishes that contain fruits, vegetables, eggs, and milk in abundance, as well as dishes made largely of cereal products and sugar, would be featured in exhibits, demonstrations, or articles.

Most teachers belong to the middle class and believe that they should teach their students the social and food practices which they were taught, even when most of their students come from homes where these practices are strange. Such a belief has led to frustration in many instances because teachers have found that even though students may seem interested in what is being taught, practices at home are not changed.

Results of an exploratory study in a Michigan school are worthy of consideration by teachers. When Hurt (5) studied the attitudes of some ninth-grade girls and their mothers, she found that teaching a unit, "Helping With the Family Meals," was most effective when keyed to customary practices of the families. Girls in three ninth-grade homemaking classes were from families ranked in the lower-middle or lower-class social groups and were taught by the same teacher. In one class the values and practices of middle-class families, usually found in textbooks, were emphasized. In a second class, both lower- and middle-class practices were taught. In a third group, teaching was keyed to lower-class values and practices and included only a few middle-class practices. More students in the second and third groups than in the first group seemed to like what they studied. They said that what they had learned was practical for their homes. The mothers of the students agreed with their daughters.

The results of Hurt's study are not surprising when you consider how much easier it is to understand what is being taught when the teaching agrees with home practices. Likewise, it is easier for the family members to accept the foods that are not completely unfamiliar to them. There is reason enough why many people are confused when they are introduced to unfamiliar foods, cooked in strange

equipment, combined in an unfamiliar meal pattern, and served in a manner that seems formal and strange. The family, too, may not appreciate attempts of the teacher to change practices that are as personal as those related to food. This is especially true when the most obvious basis for a proposed change is social custom.

NUTRITION EDUCATION MUST HAVE MEANING FOR STUDENTS

Students can interpret new experiences only in terms of their own past experiences, either actual or vicarious. This is another reason why modification of a family's customary dietary pattern is likely to be more effective than attempts to impose a new one. Communication and understanding are easier when students know the meanings of words used by the teacher. If she believes that meaningful experiences are important, she will be alert to provide experiences that result in common understanding of words.

One basis for misunderstanding may be the different interpretations of nutritional status. Nutrition education may have little meaning to people who are unaware of the characteristics of a well-nourished individual. Words are quite inadequate for describing a boy or girl with good nutritional status. At least a picture of a well-nourished person such as Figure 7.1 must be seen if words describing her are to mean the same to both teacher and student. An impressive collection of pictures of people with either good or poor nutrition may be made from newspapers, magazines, and photographs of friends and their families.

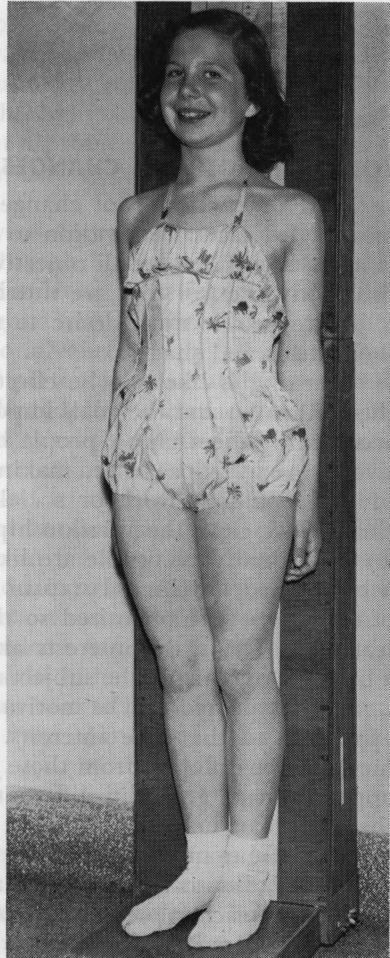
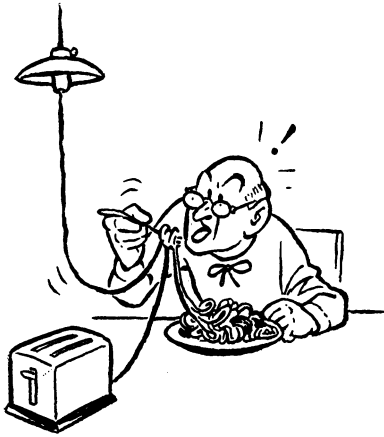


FIG. 7.1 — The marks of physical perfection include beautiful posture, soft glossy hair, radiant skin, and an abundance of energy.



Use available foods for the enjoyment of family members who like foreign dishes or unusual combinations.

YOU CAN MOTIVATE CHANGES IN PRACTICES

Food practices do not change just because people have accurate, meaningful facts. Motivation to use their knowledge in daily living is necessary. The over-all objective of nutrition education is to establish food practices that are nutritionally sound. To accomplish this objective people must desire to make any necessary modification in their meals and snacks.

Learning is likely to be effective when the relationships between the food eaten and the goals important to students are recognized and accepted by them. Most people have as goals: maintaining an attractive personal appearance, making friends, and having enough pep to participate in work or social activities. When nutrition education makes clear the relationship between these goals and the food an individual eats, people are likely to be motivated to learn how to achieve good nutritional status. In Chapter 6 you noticed that facts of nutrition were organized so that they could be used to motivate learning. The usual interests and concerns of people were used as a basis for organizing the subject matter.

Not all people can be motivated to improve nutritional status by appealing to the same interests. Because the interests of boys and men may be different from those of girls and women, you will wish to appeal to each group in different ways. For example, the knowledge that food can help to build big strong bodies, if genetic factors are favorable, may motivate a group of boys to eat enough of the important foods. But as a group, girls are not anxious to have large bodies. Unless the teacher points out that good health contributes to beauty of skin, hair, nails, and so forth, the girls in her group probably will not be interested in changing their food practices.

DESIRE FOR INDEPENDENCE AS MOTIVATION

Eating as one wishes may be a symbol of personal independence even in infancy. Certain tendencies do not change from one generation

to the next. Sweeney (7) discussed the importance of capitalizing upon the desire of individuals for independence by helping them make free choices of food in a wise way. She wrote about the importance of:

. . . setting up situations in which responsible choice can replace either the slavish acceptance of a traditional diet or the equally slavish refusal to accept it in order to appear independent.

At what age should a boy or girl be expected to take responsibility for choice of food? The exact age varies somewhat with individuals but probably adults attempt to use authority long after this method is neither effective nor desirable with children. In fact, failure to teach children how to make decisions about a problem as vital as food may actually delay development of the ability to assume other responsibilities.

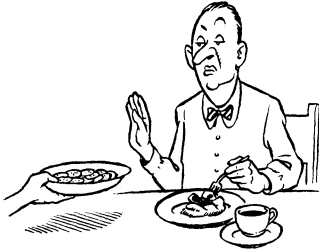
Some children prefer the security of doing what a so-called "authority" dictates. The wisdom of such a method of securing adequate food is questionable as preparation for living in a rapidly changing world. Blindly following rules for good nutrition may not provide adequate preparation for adjusting to advances in the science of nutrition and in food technology. The person without ability to make intelligent decisions about food may be helpless when faced with half-truths about new forms of food, sometimes presented in advertisements or in articles by unscrupulous or misinformed persons.

The goals of people change somewhat as they grow from childhood to adulthood; therefore, education that has been effective at one time may not motivate a change in behavior at a later stage of development. As the goals of individuals or groups change, so will the problems they recognize as important to solve. The teacher who can use some of these important problems as a basis for teaching is likely to be most satisfied with the results of her efforts.

When an individual desires to learn how to improve his nutrition, teaching is relatively simple. But he must also be ready for the kind of experiences planned for him.

READINESS TO LEARN

Readiness of a student to learn depends in part upon his past experiences. Words will have the same meaning for a student and his teacher only when they represent similar experiences. For example, a student may be as confused when he tries to visualize the unfamiliar vegetable, broccoli, as he is when he tries to formulate the concept of differences among food groups. The teacher who knows *when* students need experiences that will give meaning to words and *how to* provide these experiences, will increase the readiness of her students to learn about nutrition.



*... if Father ridicules the idea,
he may influence the actions
of his child.*

Although it has not been proved, it seems likely that boys and girls who live in families where they are served nutritious food daily are more ready to learn about nutrition than are children who live in families with poor food practices. When the school reinforces learning at home, children may be expected to have less conflict in accepting teaching at school. There should be no reason for a feeling of disloyalty to the family when evaluation of meals served at home indicates that they are inadequate.

However, there may be the child who is not ready emotionally to accept and use nutrition facts until he has learned that he can appreciate members of his family even though he does not always agree with them. For example, if father ridicules the idea of eating some of the green and yellow vegetables, he may influence the actions of his child. The child's acceptance of these vegetables is difficult even when their nutritive value is known to him. The teacher who helps students resolve conflicts when teachings at home do not agree with those at school, increases readiness of students to learn.

The period when students are ready for any aspect of nutrition teaching depends, also, upon their mental development. During late childhood pupils begin to grasp the notion that changes may be brought about by conditions that cannot be observed directly. But scientific interest can be more fully developed during early adolescence. If students are expected to do a kind of thinking for which they are not ready, thoughts of others may be memorized without understanding. When this happens, it may be difficult to motivate learning at a later, more appropriate time, because the students may think that the material has been learned.

THE USE OF DISCUSSION IN TEACHING

Group discussion is one way to involve individuals in their own learning. A good discussion gives people opportunities to express themselves, to try out new ideas and to think aloud — all of which are ways to participate in the learning process. Unless members of your group participate actively in the opportunities provided for them to learn, they are likely to learn little or none of what you expected them to know.

When your students talk among themselves and to you without fear of criticism, they are likely to share feelings and experiences that may reveal their attitudes, problems, beliefs, and expectations.

It is only when learners describe experiences honestly and without fear that you will know how their experiences differ from yours and be able to plan opportunities for learning that are suitable for your group. Meaning depends upon past experiences — their experiences, not yours.

Discussion in which all or nearly all of the group participates is likely to make clear the complexity of nutrition problems. Students may suggest factors and forces influencing solutions to problems that have never occurred to you. As you guide students through the problem-solving process, they may suggest either alternatives or arguments for or against various alternatives that were not part of your teaching plan. When all ideas are pooled, suggestions are likely to go beyond what any of you had thought. If students participate in identifying nutrition problems and the difficulties to be met in solving them, your teaching is likely to be more effective.

Discussion requires planning on your part because you need to anticipate the suggestions of students and be prepared to use their contributions wherever possible. As you use the suggestions of a student, expand it yourself, or guide his thinking so he can enlarge upon it, or clarify his idea, you increase his confidence in himself and encourage his continued participation. Thus members of your group gradually overcome fear of failure.

Planning also involves anticipation of terms that might not be understood by members of the group. Some of these terms can be defined in words but some need more concrete means of explanation. This is true of many nutrition terms that are in common use. Ideas may be vague or actually inaccurate. When this is true the time needed to develop a new concept is well spent. Unless terms have similar meanings for all members of a group, discussions are likely to be unsatisfactory.

When planning for a meeting, key questions written out will help you structure the discussion enough to keep it moving toward the goal. This does not mean that you dominate the discussion — quite the contrary is true. Often poorly thought-out questions can be answered by “yes” or “no.” These result in far too much talking and directing by the leader. Well-phrased questions stimulate discussion and encourage students to think for themselves.

During an actual discussion your questions may be phrased differently from those in your plan, but this is to be expected. You will be able to suggest better questions during discussion because you can adapt your original questions to the thoughts and ideas that have developed during the discussion.

Discussion can be facilitated in ways other than asking questions. For example, you can:

1. Arrange seating so members of the group face each other.
2. Give information yourself or encourage students to read and report to the group.
3. Summarize what has been learned when (a) an important point has been made and before going on to the next point, (b) the group seems confused because controversial viewpoints have been expressed, or (c) the discussion will be continued in another meeting of the group.
4. Restate the question being discussed when the group seems to be "off the track."
5. Arrange for a time to discuss an issue that seems important but does not relate directly to the question.

Group discussion will not be effective unless you believe that members of your group should learn to think for themselves; unless you trust them to interpret their own experiences and to solve their own problems.

PROBLEM SOLVING

Good discussion is essentially problem solving. Members of a group will participate in discussions if they believe that the problems to be considered are important enough to justify seeking solutions to them. As a leader of discussion this is your first concern — that your students are aware of nutrition problems and want to solve them. Problem solving begins with a felt need.

After a problem has been selected for discussion, the next step is to define it clearly. Often nutrition problems are not what they seem to be. For example, when a child does not eat well, parents may not know the possible causes of their child's poor eating habits and thus are not ready to attack the problem intelligently. You may use such means as films, anecdotes, or role playing to encourage students to clarify the problems so that basic causes are evident. Reading also may help students identify the difficulties that must be removed if the problem is to be solved.

When the problem has been clarified, students are ready to set goals for themselves in solving it. This will increase students' feelings of being involved in the process as well as to help you know what they are ready to learn and what goals and values are important to them.

The third step is to propose alternative solutions to the problem, making the list as complete as possible from experiences of the group. If you know alternatives that have not been proposed, you can either suggest them or encourage members of your group to find additional ideas from reading. This is a place where you might use *brainstorming*.

*... to anticipate
consequences*



The next step is to anticipate consequences of each proposed solution. Often this is the point where facts are needed, because clear thinking is impossible if opinions are accepted as final when new facts are available. Part of this step is to evaluate each solution in light of the objectives.

The last step is to choose the alternative that seems most likely to meet the objectives. Only when the group plans to act, is it necessary to arrive at a group decision.

Some problems can be solved only by individuals. When this is true, the responsibility for individual decisions can be made clear. When you have helped students analyze a problem to the point of seeing clearly how to make a choice, your responsibility ends unless you find that several members of your group choose the same solution. If this happens you may encourage a decision to try the alternative selected and arrange for a group discussion of results.

Brainstorming

Brainstorming is a technique for getting many ideas before a group for consideration. This technique is unique in discussion because everyone is encouraged to suggest any idea that occurs to him as a possible solution for a problem. Quantity of ideas is important. One purpose is to release the potential of individuals for proposing new ideas.

Judgment is ruled out until the brainstorming session is over. The chairman is responsible for seeing that no contributions are evaluated, either criticized or praised. A group member may expand an idea but he does not judge it. This rule tends to change attitudes toward the ideas of others and of one's self.

THE USE OF DISCUSSION-DECISION METHODS

To break down resistance to change in food habits, Lewin (6) developed a method which lies between an individual and a mass approach. He suggested a group-decision method, which goes beyond group discussion. In group discussion a free interchange of ideas takes place; but no attempt is made to reach a decision. But a dis-

cussion-decision method leads to setting up definite goals of action either for the group as a whole or for each individual in the group.

The first experiment by Lewin and Willerman (6, 7) compared the group decision method with a request method, in attempting to increase the consumption of whole-wheat bread as compared with white bread in eight cooperative dormitories for men at the State University of Iowa. Each *request group* was asked to change its consumption of whole-wheat bread to the same amount that had been voluntarily chosen by a *decision group* with which it was paired.

Reaction to the proposal of participating in the experiment, eagerness of the students to reach their goal, and even their relative preference for whole-wheat bread depended upon the degree to which the decision was made by a majority. The *decision groups*, that set their goals at 66 per cent to 90 per cent increase in consumption of whole-wheat bread, reached their goals, whereas the *request groups* paired with them did not.

Radke and Klisurich (8), encouraged by the success of Lewin's studies, carried out two experiments designed to compare effectiveness of lecture versus discussion-decision techniques. The degree of change and the permanence of the new behavior were considered.

Their first experiment dealt with infant feeding. Half of the mothers of newborn babies in the maternity ward of a hospital received individual instruction from the dietitian, and were given a printed schedule to follow in feeding their babies at home. The other half of the mothers met with the dietitian in groups of six. In the meetings, which took as much time as the individual conferences, the dietitian played the role of both expert and leader. The problem of getting mothers to follow instructions given at the hospital was discussed, and the new mothers were asked to suggest better methods of accomplishing this. The discussion gave the mothers a chance to exchange ideas and ask questions.

The leader summarized the discussion, gave her own instructions, and then inquired about their willingness to carry out dietary instructions. The group decided to follow the instructions of the dietitian.

The dietitian made telephone calls 2 and 4 weeks after the group meetings to check the performance of the mothers. How well directions had been followed was estimated by the amount of orange juice and cod-liver oil given the babies, because these amounts had been carefully specified. In the *decision group*, 75 per cent of the mothers were giving orange juice in correct amounts at 2 weeks, and 100 per cent after 4 weeks. After *individual instruction*, 44 per cent were giving orange juice at 2 weeks, and 88 per cent at 4 weeks. In the *decision group*, 44 per cent were giving the correct amount of cod-liver oil after 2 weeks, and 88 per cent after 4 weeks. Among the mothers receiving the *individual instruction*, 18 per cent were giving cod-liver oil after 2 weeks and 53 per cent after 4 weeks. Apparently



Evident need of an educational program.

the 2- and 4-week checkups served as a stimulus for improvement in the following of directions. At both 2 and 4 weeks the decision group had done better than the group receiving individual instruction.

A second experiment conducted by Radke and Klisurich (8) involved a comparison of lecture and discussion-decision methods in increasing milk consumption of homemakers of low-income level. The results of this experiment also showed the success of the discussion-decision method.

Radke and Caso (9) applied the discussion-decision technique in a study undertaken at the request of the Student Council of the Weeks Junior High School, Newton, Massachusetts. The Council asked the Nutrition Center, a community agency supported by the City Health Department, the Community Chest, and the local Red Cross Chapter, to assist in a survey of the lunches selected by the students in the school cafeteria. The desirability of an educational program to follow the survey became evident. As a result, a study was made to test the effectiveness of lecture and discussion-decision methods for influencing the students to improve their school lunch habits.

Approximately 850 sixth-, seventh-, and eighth-grade students participated. Twelve home rooms were assigned to lecture, and twelve to discussion-decision treatment. Eight nutritionists served as group leaders, each having an equal number of lectures and discussion-decision meetings. Each group met for approximately half an hour either before or after lunch.

In the lecture groups, the nutritionist held discussion from the group to a minimum. She presented facts on nutrition and related them to the food habits of the students in the school cafeteria.

Students in the discussion-decision group were encouraged by their leader to contribute ideas. They were led to feel that they were responsible for helping themselves to overcome obstacles in the way of a good diet. Though a goal for personal action was suggested by the leader, the group in each case accepted it and gave some kind of voluntary, unsolicited group expression of commitment. The nutritionist suggested that the commitment be voted upon, with a show of hands. The decision was that each person would include foods from three basic-food groups in his lunch each day. Each person had evidence that the others were "going along" on the decision.

All the students filled out questionnaires about the lunches eaten at school; one questionnaire preceded the meeting and four were

given afterward. Through the questionnaires the percentage of students who chose an adequate lunch was determined.

At each testing, the *lecture* and *discussion-decision groups* were compared with a *control group* which had had no nutrition teaching. The three groups did not differ materially on the first questionnaire in the percentage of students reporting adequate lunches. Therefore it was possible to assume the groups to be roughly equivalent. Each later test showed an increase in the number of students in both the *lecture* and *discussion-decision groups* choosing adequate lunches as compared with the *control group*. The improvement was maintained or further increased by the *discussion-decision group* on Questionnaires 4 and 5. However, the *lecture group* fell to the level of the *control group*. These results indicate that motivation for eating a balanced lunch was set up by both the *lecture* and *discussion-decision* methods. The *lecture* had only a temporary effect in improving school lunches. Students in the *discussion-decision group* made a more stable improvement.

The discussion-decision technique may be effective partly because it permits the group member to define his own goals in relation to the question discussed as well as to receive support from the knowledge that fellow group members are faced with problems closely akin to his own.

Discussion is one way to stimulate students' thinking but sometimes it is difficult to guide unless there is a situation on which to focus attention. You and your students can observe and consider a situation together when it is presented in a *film*, *field trip*, *role playing*, in a *case study*, or on *radio* or *television*. Each of these methods is discussed in detail.

USING FILMS IN TEACHING NUTRITION

Films can be valuable aids to you in teaching nutrition. They effectively provide students with a common vicarious experience. It is difficult to duplicate the lifelike situations portrayed in a film by any other method. Time and space can be telescoped so that students view either the effects of time or situations that cannot be seen in person. For example, in *Fundamentals of Diet* (10) the growth of plants and animals, that requires months in nature, is shown in a matter of seconds in the film. In another film, *For Health and Happiness* (11), many children of different body types are shown. A comparable group of children would be difficult to observe in most communities because they would not be assembled in one place and might not be dressed so that the characteristics of good nutritional status would be evident.

Movies are most often seen for entertainment, and therefore films are eagerly anticipated by students. In this receptive frame of mind, people can be interested and informed. Films used for education

should be informative, but not ponderously dull, lest you spoil anticipation for future ones.

Students may not understand the point even when they are interested by the film. Only when their observation is *directed* can you be sure that students will remember the ideas for which the film was shown.

Because good films are made for more than one educational situation, and would not be as useful if oversimplified, you should guide your particular class to their own understanding of the film. Ask questions to focus attention on the aspects of the situation the students should observe, and thus you will simplify the film for them.

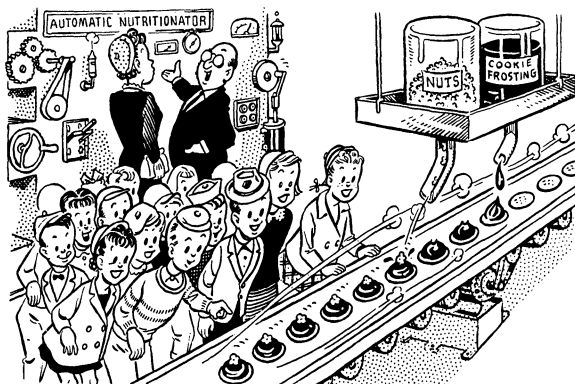
Furthermore, by emphasizing some aspects of a film and ignoring others, you can use the same film for different sequences of learning. The questions that you give to students before they view a film will tend to influence what they see and hear and what they discuss following the film. You may use a certain film differently if your objectives for showing the film are different.

Your Questions Are Important

Questions should reflect your knowledge of what will motivate the students. Students learn what they believe will help them to achieve their goals. Knowing this, you can use questions to point out how the abilities, attitudes, knowledge, or practices presented in the film will influence the attainment of goals important to your students. An illustration of how teachers may use nutrition films can be found in Appendix F, pages 314–19.

In 1949, a workshop group at the University of Tennessee (12) proposed a plan for formulating questions to guide observation and discussion of educational films. This plan was used when the lesson plans in Appendix F were made. It has been useful when planning discussions of different types of films with different age groups. It includes six steps in formulating questions:

1. Question No. 1 calls for information clearly presented in the film.
2. Question No. 2 calls for an examination of ideas in other situations.
3. Question No. 3 encourages drawing inferences, identifying cause and effect relationships, or expressing own ideas.
4. Question No. 4 asks for examination of these ideas as they apply to present-day life or in the light of authority.
5. Question No. 5 asks students to formulate generalizations of their own, based on data from the film, from experience, and from opinions of authorities.
6. Question No. 6 asks students to illustrate the meaning of generalizations; to apply these ideas in everyday practice.



*Field trips
create interest*

FIELD TRIPS

Much as films may serve to provide students with a common experience about food, field trips may be arranged to increase understanding and knowledge related to processing and distributing food.

You may wish to arrange a visit to a food processing plant or wholesale firm. Call the person in charge and tell him exactly what you want your students to know after they have made their tour. If you will visit the plant first, you will be better able to decide what the trip should include. Avoid unpleasant experiences for your children. Look at the trip through their eyes. For instance, young children from the city may be unfavorably impressed by a visit to a dairy farm and therefore may drink less milk for a while, simply because they do not like the barn odors. Limits in time must also be considered, so talk over with your host the particular places and procedures the students will want to see. It goes without saying that you will arrange in advance a definite time and day for the field trip.

The class should know beforehand what to look for during the trip. You and your class can discuss points of interest together and select the most important highlights of the planned tour. The host will spend more time explaining certain procedures if he knows the students are interested, as evidenced by their questions to him.

It is well to keep groups small enough so that questions and explanations can be understood en route. It is better to ask questions of the teacher or the person acting as a guide than of individual workers at the plant. To interrupt workers may cause accidents or delay in the process being carried out.

Field trips, if properly planned in advance, may create much interest and help the student gain knowledge and understanding which can be obtained in no other way. Real-life situations help to give meaning to words used in the classroom.

Good public relations may be established through contacts with

men and women who are active in businesses related to food and nutrition. Invite the host to visit your classroom before or after the tour. This is often appreciated and sometimes accepted. Then you can interpret food and nutrition information and activities at school to these people in the community who might not otherwise learn about them.

Following the field trip it is profitable to have a class discussion of what has been seen and to point out principles and generalizations which are related to the experiences of the field trip.

ROLE PLAYING IN GROUP DISCUSSION

Role playing is another method of getting a situation before a group for discussion. For the actors, role playing may be a moving experience; for the spectators, a concrete situation is portrayed that can be discussed objectively.

Role playing is the spontaneous acting out of a situation by two or more members of a group. The situation portrays an experience of common concern and one that will further group discussion.

Assuming that the majority of boys and girls in a group do not consistently eat breakfast, the leader may use role playing to start discussion, instead of a film as suggested earlier. The method would not be named but could be introduced naturally by suggesting that some members act out an early morning scene in a home.

Group members can set the stage by naming the people in the cast and describing the situation. They can decide what kind of person each actor is to portray but will not tell him how to act. The situation should be described sufficiently to make the problem clear. Spontaneous reactions to the situation as it develops are necessary if roles are to be portrayed realistically.

Role playing is not presenting a skit. The players may be given a short time to decide how the scene will open but they should not plan beyond this point. Underplanning by either the group or players is better than overplanning.

When the roles develop spontaneously, real emotions tend to be expressed and attitudes revealed. When a boy assumes the role of a parent, he is more likely to understand the feelings of his father as he responds to behavior of a boy his own age.

Persons are most likely to be comfortable in roles in which they feel at home. For this reason asking for volunteers is probably the best practice. If individuals do not volunteer, group members can suggest someone for each role. When there is an unfavorable role, the leader may wish to assign it to someone who has enough status in the group to feel secure.

You will be responsible for deciding when the scene should be cut. As soon as the problem is clearly defined, you should stop the acting. There is a tendency to let the scene go on too long. When

this happens, the players may have difficulty in carrying on, and the audience may become restless.

While discussing the situation portrayed, suggestions may be made for improving it. When this is done you may wish to have the scene replayed. This may be done by the same players, if they accept suggestions for making a new approach to the problem. If they cannot make changes naturally, new players may be selected to replay the original scene or one that may follow it.

If you use role playing, you will have to "think on your feet" because you will not know exactly what will happen. You cannot formulate your questions as specifically ahead of time as you can with films. But your students may respond better because the situation is real to them.

Preparation of the audience for observation is desirable and can be made when the actors are out of the room. Questions can call attention to the way the situation is handled by each player or to the way the problem is solved. These questions should help to prepare the group for the discussion to follow.

The discussion should lead either to some conclusions or recognition of need for more study of a problem. Your questions will help the group evaluate the situation. You may ask questions that will help the group state generalizations similar to those in Chapter 6. This is most likely to happen if role playing is used near the end of a lesson, when students have had enough experience to draw conclusions. The situation presented in role playing may be used to introduce a lesson, in which case you may ask questions to help students decide what additional experiences they need.

CASE PROBLEMS IN GROUP DISCUSSION

One reason why films are effective in teaching is that situations are presented so that many factors influencing the actions of people are seen. Stories or case problems can serve the same purpose in teaching and they have the advantage of being available when needed.

Because there may be emotional blocks when people try to solve their own problems related to food, case problems can be a means of learning to arrive at decisions objectively. If problems are too personal, prejudices may interfere with thinking so that individuals are either not able or not willing to consider all possibilities when seeking a solution to a problem.

Case Situations in Teaching

Case studies are brief descriptions of specific situations. Many facets of the situation are presented so that problems to be solved and factors to be considered when making decisions are not always evident until the situation has been analyzed.

The situation should be described objectively. This means that what individuals say or do is reported accurately without interpreta-

tion. This same objectivity is desirable when describing any other factors in the situation. The factors described will depend upon the purpose for which the case study is to be used. Since one objective of nutrition education is ability to plan for the use of resources to provide food for the family, the situations you use should include: specific information about goals and values of the people involved; amount and sources of income; equipment for storage, preparation, and service of food; demands upon the homemaker's time; financial obligations and money available; and educational background. If, in addition, you hope that students will be better able to extend the variety of foods eaten and enjoyed, the case situation should include: food customs, practices, and preferences; ages and physical state of family members; attitudes toward importance of food and toward change; availability of various foods; and skill in preparation and service of such foods as vegetables, eggs, and milk dishes. Describing some of these factors objectively is very difficult but necessary if discussions are to encourage thinking.

When analyzing case situations, opportunities are provided for identifying not only the factors that may be influencing food practices but also other conditions that may be influencing nutritional state. As part of the analysis you may expect students either to recall knowledge or to recognize when new information is needed before they are ready to propose all possible solutions for the problems involved or to evaluate alternative solutions. The information needed may come from many disciplines: psychology, anthropology, and economics as well as nutrition.

When the case study does not provide all of the information needed for analysis, students should be guided to discover what additional data they need in order to make sound decisions. If the required information is not available, students can recognize how their understanding of the situation is limited.

The case situation may be used throughout a unit of teaching: (a) as an introduction, (b) to focus attention in discussion, and (c) for evaluation. The way in which you wish to use the case and with whom you use it, will influence the questions that you ask to lead discussion. An illustration here might clarify this point. Suppose you were teaching a course in community nutrition to nurses preparing for public health nursing. They have studied normal nutrition and now your objective is: Comprehension of the factors influencing education planned to change food practices of families.

CASE PROBLEM

Jim and Ellie Wills are a young couple who live in a small town where Jim is a carpenter's apprentice. Ellie does not work, but Jim's income allows them to rent a small modern house and maintain a secondhand car on which three payments are still to be made. They have no savings. For food they spend about four dollars a month more than the amount of money

recommended by the Extension Nutritionist for families like theirs in similar communities. They have an electric refrigerator, gas range, and utensils for plain cooking. All of their food is bought from the supermarket three blocks from their home.

They have a baby girl, Kay, eighteen months old who has been anemic since birth. At nine months she had diarrhea and was hospitalized. Doctors could find nothing organically wrong with her but recommended that Ellie reduce excessive amounts of vitamins that Kay had been taking. There has been no recurrence of the diarrhea. Kay is fat with pale skin and dull eyes.

Ellie expects her second child in September. She is thin and has been told by her doctor that she should gain weight. When Mrs. Hull, the public health nurse, told her that good nutrition was important during pregnancy Ellie replied, "I don't believe that. Kay has been ill most of her life." Mrs. Hull is not sure what she should do to help in improving the nutrition of this family. Since both Ellie and her husband are high school graduates, she thought that giving Ellie the USDA bulletin: "Food for the Family With Young Children" would help, but it hasn't. Ellie says that the suggestions in this bulletin wouldn't work for her family. Anyway she really hasn't time to study it.

DISCUSSION OF THE CASE

If you used this case to introduce a unit you would probably use it to give experiences in deciding: (a) what the problems are for this family, (b) what assets they have for solving their problems, and (c) what are the problems of nutrition education.

Some of the questions which you might ask are:

1. What facts about this family would justify Mrs. Hull's concern about their nutritional state?
2. How much money is suggested for a minimum food budget in this town (or city)?
3. What is the evidence that changing food practices of the Wills family won't be easy?
4. What additional information would help you understand their problems better?
5. What might be reasons for their problems?
6. What might be done to convince Ellie that the reference given to her by Mrs. Hull is worth studying? (See section on motivation, pages 166-67.)
7. How might the bulletin be made more useful to her? (See section on meaning, page 165.)
8. What are the possibilities for teaching Ellie how to feed her family better?
9. Which of these possibilities might you use when you are a public health nurse?

During discussion of question 4 you might give some additional information about food practices of the Wills family to illustrate how new facts might change plans for trying to improve food practices.

ADDITIONAL FACTS ABOUT CASE PROBLEM

Kay eats with her father and mother and eats what they eat. She has never eaten baby foods and doesn't like whole milk. When she drinks orange or tomato juice, a skin rash develops.

Ellie says that Kay cries for orange juice when it is served for breakfast so they have stopped drinking it. In season, Jim and Ellie have fresh tomatoes often but none of them like tomato juice. They like other fruits and most vegetables except green leafy ones, carrots, and cauliflower.

Continued Discussion of Case Situation

If you wanted to emphasize the importance of knowing the kind and distribution of foods during the day and how to get this information when needed, you might ask such questions as:

1. How would a record of meals and snacks eaten by Jim and Ellie help you understand their nutrition problems better?
2. How might Mrs. Hull get this information?

Additional Information

Mrs. Hull interviewed Ellie and found her willing to report what she and Kay had eaten for two days. She was not sure of sizes of servings but the foods eaten were:

Wed.	<i>Breakfast</i>	<i>Lunch</i>	<i>Dinner</i>
	Oatmeal and milk	Chicken & rice soup	Hamburgers/catsup
	Sweet roll	Ham sandwich	Fried potatoes
	Coffee for Ellie	Bread, butter	Creamed corn
	Skim milk for Kay	Applesauce	Bread, butter
			Chocolate cake
Thurs.	Oatmeal & Milk for Kay	Peanut butter sandwich	Wieners
	Toast, buttered	Creamed corn	Cabbage slaw
	Coffee for Ellie	Chocolate cake	Mashed potatoes
	Skim milk for Kay	Skim milk	Buttered peas
			Apple pie

(Kay and Ellie had soft drinks in the middle of the afternoon and before going to bed.)

Continued Discussion

In order to make the nutrition problems more specific you might expect students to discuss questions such as:

1. What nutrients are inadequate in these menus?
2. Should Mrs. Hull suggest that multiple vitamin tablets would help solve their problem?
3. What foods might be added (or substituted) in the menus and snacks to improve the diet?
4. Can Ellie afford to serve all of the foods you suggested?

When discussing the question of how to convince Ellie that changes should be made, you might introduce such additional information as:

Ellie and Jim were married just before graduating from high school. Ellie was proud of her appearance and was often told that she was pretty. She hopes that Kay will be pretty too. When her children are old enough she plans to get a job as a waitress because they hope that some day Jim will have his own business. Jim is on a bowling team but Ellie has no organized recreation of this kind. She is always too tired to bowl and, anyway, they can't afford the fees. When in high school Ellie and Jim liked to roller skate but they haven't done this for a long time.

To apply the principles of motivation your students might discuss such questions as:

1. What seem to be the goals of Ellie and Jim?
2. How might these be used to convince Ellie that what they eat will make a difference in the achievement of their goals?
3. What could Mrs. Hull do to teach Ellie to change food practices of her family?
4. Which of your suggestions would be most appropriate for this situation?

When analyzing this case situation students could identify the factors that might be influencing Ellie's behavior. As part of this analysis, your students would be expected to review nutrition information and to find additional information that helped them clarify problems, discover relationships between factors in the situation, select alternative solutions to problems, and anticipate probable consequences of each solution.

If data about the situation do not include the goals and values of persons involved in the decision this, too, should be recognized. Failure to recognize and consider goals may explain why some solutions to problems are not really accepted by the persons involved. Thus students have opportunities to recognize the role of goals and values in decision making; to appreciate how conflicting values can block selection of satisfactory solutions to problems; and to comprehend why individuals in the same situation may make decisions that are different but appropriate for each of them.

Selection of Case Situations

The selection of case situations appropriate for a specific group is crucial to the success of this method of teaching. The anticipated roles of students, the problems that they recognize as important, and their readiness for the learning needed to satisfactorily solve their problems are important bases for judging the suitability of a case situation. For example, you might use the case of the Wills family with a group of young mothers whose situations were similar to the

Wills' but your discussion would be very different from the one suggested for the nurses. Instead of introducing Mrs. Hull into the case, you would hope that members of your group would identify with Ellie. If this was difficult, the selection of a situation that was more like theirs would make problems seem more real to them.

Unless mothers in the group have some nutrition education on which to build, your introduction of new topics would probably be most effective if you used such experiences as pictures, films, or demonstrations. For example, if you want your students to recognize the characteristics of well and of poorly nourished children you could use pictures of the children shown in this book or you might collect pictures of your own. This knowledge would be needed to recognize that the results of good nutrition are worth the effort needed for Ellie to solve her problems. To learn whether or not their problems are like Ellie's, members of the group might be taught how to assess the nutritional status of their own children.

When discussing difficulties that Ellie is likely to encounter in changing food practices of Kay, you could show and discuss a film such as "And One To Grow On," or "Food as Children See It." After members of your group accept the fact that food practices of children can be changed, you might summarize the principles for changing food practices and then encourage any who have this problem to try these suggestions at home. If you can interest this group of mothers in trying to solve a similar problem at home, your teaching is likely to be more effective. (See Discussion-Decision, pp. 171-74.)

If a problem of your group is dislike of vegetables or milk, you might demonstrate food preparation and serving of important foods. Tasting the final products will be important if you want your students to know what a good product is like and to enjoy the foods themselves.

Use of the same case situation with nurses preparing for public health service and with mothers has illustrated different ways to discuss the case. Experiences with the mothers were discussions of concrete situations such as pictures, films, or demonstrations; with the nurses it was assumed that they were ready for discussion of abstract ideas as presented in the case.

You can use the case situation for evaluation of what has been learned. When this kind of test situation is used, you expect students to analyze the situation to discover problems and to select alternative solutions for a problem and to justify the solution chosen. This is discussed in more detail in Chapter 8.

Writing Case Situations

You may want to write some or all of the case situations used in your classes in order to have some that are appropriate for use with your group or you may believe that when cases seem more real to you, you can make them "come to life" for students. Either of these

reasons may justify the time required to collect facts and write a good case situation, but in addition you will have analyzed the situation so you will be better prepared to guide the learning of students. You will be aware of problems and of difficulties in solving them as well as favorable conditions for their solutions.

Do you have adequate data about situations that can be used in nutrition education? Many of you are in positions where you have details about situations that can make people and their relationships with each other seem real. Data should include all available facts that might influence solution of the nutrition problems.

The more that you can learn about members of the group you will be teaching, the more likely you are to write case situations that will have meaning to them. What are their resources, including education? What are their present responsibilities? What do they anticipate as future roles? What are their attitudes that might influence nutrition education? What problems do they recognize? Answers to these questions can guide your selection of situations to write about because your students are most likely to be motivated to study the case if it seems related to their own situations.

The main purpose in using a case situation in teaching is to stimulate students to think for themselves. For this reason the most effective case situations are described objectively with no hint of the "right" decision. When a case situation reports a decision that has been made, thinking of students tends to be blocked unless your purpose is to require either evaluation of the decision or consideration of how a past decision affects present problems.

To be most effective the case should be about people whose identity is concealed but whose problems are real. A situation may be disguised by using past tense and changing location, names, or composition of the family. However, you may want to include facts about the case that give an idea of the atmosphere surrounding the people involved even though they are not directly related to the problem you are discussing. When all of the circumstances that you describe are plausible and contribute to an understanding of a family situation, your students are likely to enjoy learning as the case is studied.

TEACHING THROUGH RADIO AND TELEVISION

Radio and television programs may be sources of case studies that are interesting to students. Family situations are a popular type of program and may provide opportunities for you to capitalize on the current interests of the group.

When programs are given by a competent staff, the information is likely to be both reliable and up to date. For this reason you, as teachers, may find that the effort needed to locate and listen to educational broadcasts is well spent because you will gain knowledge yourselves, or you may be able to arrange for members of a group to get firsthand information that is not available elsewhere.

Undoubtedly, advertisements on radio and television influence the food practices of people. Many commercials are cleverly presented; persons responsible for them know how to appeal to emotions as well as to reason. In fact, some discourage the use of reason!

Older students and adults can be encouraged to evaluate the appeals made to them. Such evaluations require applying facts of motivation as well as recognizing the various ways in which advertisers make their appeal.

When students have opportunities to give a radio or television program, they are likely to be strongly motivated to learn what is needed to do a good job. If you have enough advance notice to allow students to plan and prepare a program, they will be motivated to learn how to organize and present needed facts, to develop needed skills, and to cooperate in a group project. Help from the drama department would be useful when such is available.

Students will probably be interested in making careful preparation when they know that they will reach a large audience and will have no opportunities to correct mistakes or to make additional explanations if ideas are not clear. Time limitations, too, encourage detailed planning.

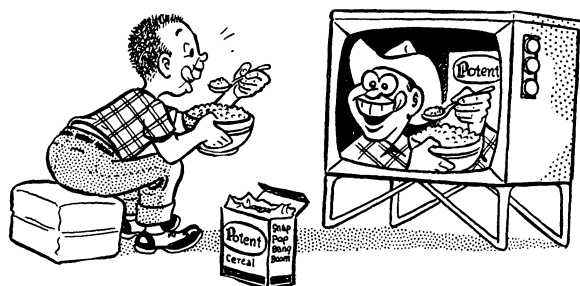
ANALYSIS OF PROPAGANDA

Means of communication today make it possible for information about food and its uses to confront the public at every turn. Newspapers and magazines make numerous claims for food products and use glamorous colored advertisements to encourage their purchase and use. Television screens are filled with clever quips and gimmicks to draw attention to special qualities of products. Sometimes the first tune a young child learns to sing is a jingle used to advertise a food product. Radio also contributes its share of claims and information about certain items of food.

It becomes urgent that the people receive help in how to evaluate these claims made by the food industry. To do this the following criteria may prove useful to the teacher of food and nutrition.

1. Where was the claim made? Newspaper, radio, television, magazine, billboard, etc.?
2. Was it made by a "self-interested" party?
3. Was any source mentioned for the scientific information?
4. Did the statements seem sensational or extravagant?
5. Are there any experiments, or other type of reliable evidence, to support the claim?
6. Are the statements misleading or in the category of half-truth?
7. What questions do the claims or statements raise in your mind?

Information coming from experiment station bulletins, USDA pamphlets, county home demonstration agents, or from staff members



*Clever advertising
related to foods
may need
evaluating.*

of recognized colleges and universities can be accepted as sound information. Statements which conform to the policies of the Council on Food and Nutrition of the American Medical Association and the Food and Nutrition Board of the National Research Council are considered valid.

A newspaper or magazine article is only as good as the person who wrote the article. If the reputation of the author is not known, information should be checked to verify its accuracy.

Clever advertising sometimes appeals to the public when the principle or generalization involved is not sound. People, both young and old, need help in evaluating the advertising schemes related to food and nutrition.

Frequently a food industry presents an appetite-appealing piece of propaganda in magazines, radio, or television which increases the sale of their product immensely. However, the information given about the product may not be of great importance in regard to nutrient or economic value.

Another way in which food advertising can mislead the consumer is to tell only a part of the function of the food product. No false claims are made, but only a fraction of the possible facts is given.

Teachers can help students and adults evaluate advertising propaganda if they give them reliable sources of information, ways to judge the worth of seals or other evidence of approval, and develop their judgment in the applications of facts and generalizations related to food and nutrition. The development of a critical attitude toward the acceptance of any claims related to food practices is urgent.

ANIMAL FEEDING EXPERIMENTS

Often experiences with concrete things are needed to give meaning to the abstract ideas expressed in nutrition generalizations. Animal feeding experiments and preparation of food at school are two such experiences. When these are student projects, students not only learn about nutrition but also they learn to take responsibility and to work together.

Animal feeding experiments can show living evidence that foods work together to promote growth and health. A daily food guide (see Appendix A, pages 291-94) is considered a practical plan to simplify nutrition and make it feasible in application. Yet many times students do not see the importance of such a guide until they are shown what makes it work and what is behind it.

Those who are trained in nutrition know well that a good basic food guide works because of the supplementation among the essential nutrients in these basic foods. Thus the group of foods containing meat, poultry, and fish provides a good protein base for the daily diet; the milk ensures an adequate supply of calcium; the group of foods containing citrus fruits, melons, and raw green vegetables supplies a large amount of vitamin C; and the green and yellow vegetables afford large amounts of carotene which is at least partially utilized by the body as vitamin A. Properly supplemented with other vegetables and fruits, cereals, fats, and sweets, the resulting diet will likely be adequate in food energy and the needed nutrients.

For a majority of students seeing is believing. It may be possible to work with the science teacher to set up relatively simple feeding experiments with weanling-age rats to demonstrate supplementary relations between two basic foods. Feeding experiments can be arranged in a series which increases in complexity as the interests and abilities of adults and children permit.

Students like projects in which they can participate. When they plan the diets, feed and care for the animals, and keep records of their growth, the results are remembered longer. They also learn as they tell others about the experiments.

Animal feeding experiments may be projects in which several classes participate. Younger pupils may learn only basic health rules or may simply watch animals grow week by week. Older students may make wider applications from their observations. Teamwork and a cooperative spirit are developed through participation of several different classes. The entire project becomes important in the eyes of the children.

You may wish to plan a rat-feeding experiment to demonstrate the need for foods that are missing in the diets of your students.¹ Such an experiment was part of teaching in several schools in Iowa. All rats were fed a basic diet consisting of navy beans, potatoes, rolled oats, white flour, sugar, salt, butter, and lard.

When meat is added to this diet, you will see that a bread, meat, potato, and dessert diet is represented. This is the type of diet eaten most of the time by many students. The second rat was fed the same diet with milk and eggs added.

The diet of the third rat was the same as the second except that green lettuce, spinach leaf, or carrot was added. This third diet contains all of the essential food nutrients except vitamin C. Normally, this nutrient is not essential in the diets of rats because they can make vitamin C in their bodies if their diet is adequate in other respects. When explaining why this nutrient is not needed in the diet by rats, you will have an opportunity to emphasize the fact that nutritional needs of rats are similar to those of human beings in many respects.

¹ For directions for preparing the diets and caring for the rats see Appendix G, pages 320-22.



*Exhibit the test animals
in a local window.*

Foods used to supplement the basic diet are served separately. The meat (lean hamburger) may be fed in marble-sized balls once every other day. The milk (dried) should be fed in servings of one tablespoon every day. The egg should be hard cooked and mashed immediately while hot. One egg will make about three feedings. A rat will eat about one-third of a carrot or a 2-inch square of lettuce in two days.

If you guide students' observations, you can help them formulate generalizations such as: Nutrition can affect the way you look and act. You can call attention to the appearance and actions of the rats, and then again point out that nutrients are as important to boys and girls as to rats.

To call attention to the characteristics of each rat you might ask such questions as:

1. Which rat has gained the most?
2. Which rat has the nicest fur?
3. Which rat has the brightest eyes?
4. Which rat is best looking now?
5. Which rat is least irritable?
6. Which rat seems to be the healthiest?
7. Which kind of posture does each rat have? (A healthy rat keeps its body close to the floor when walking; a sick one may be hunched or stiff.)
8. What made one rat healthier than the others?
9. What foods should we eat every day?

You will find that this experiment is interesting to adults as well as to children. Reports of the experiment are a means of reaching parents with nutrition education. Adults may be invited to school, or a parent-teacher program can provide an opportunity to hear students tell about the experiment. The rats will illustrate results, but growth charts help to interpret them. A display of foods eaten by each rat will emphasize the importance of milk, eggs, and green and yellow vegetables.

Another way to reach parents and other adults would be to exhibit animals from an experiment, or pictures of them, in a local store

window with the sign "Food Made the Difference." This method will probably not teach as much about the experiment as does the demonstration with reports, but it may reach more people.

Rat-feeding experiments have been found useful in teaching students of various ages. When the same students are taught with rat-feeding experiments in more than one grade, you will wish to vary the experiment. A plan used by Booher (13) is suggested.

Dr. Booher has devised three successive series of experiments with eighteen weanling, male albino rats grouped so that the combined weight of the six animals, composing each of three groups, was comparable. The purposes of these studies and the data for each group are shown in the following experiments:

EXPERIMENT A. To develop the generalization: *Breakfast cereals and milk are supplementary foods.*

Group 1. Unrestricted amounts of a finely ground mixture of equal weights of 19 breakfast foods (whole grain, enriched, or restored).

Group 2. Unrestricted amounts of homogenized vitamin D milk.

Group 3. Unrestricted amounts of both the finely ground cereal mixture and homogenized vitamin D milk.

EXPERIMENT B. To develop the generalization: *Sugar and pure starch are inadequate supplements for milk.*

Group 1. Unrestricted amounts of a finely ground mixture of equal weights of 20 breakfast cereals combined with milk in the proportion of 1 ounce of mixed cereals to 4 fluid ounces of fresh whole milk.

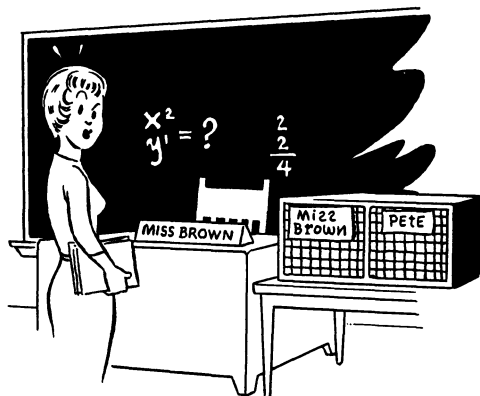
Group 2. Unrestricted amounts of cane sugar and milk in the proportions of 1 ounce of sugar to 4 fluid ounces of whole milk.

Group 3. Unrestricted amounts of cornstarch and powdered whole milk combined in the proportions of 1 ounce of starch to 0.5 ounce of powdered milk mixed with water.

Group 4. The same diet as Group 3 with cornstarch replaced by the mixture of 20 breakfast cereals.

EXPERIMENT C. To develop generalizations similar to 6 C. 6, page 139.

Following the same technical details as in Experiments A and B, diets consisting of a mixture of equal weights of 33 breakfast cereals combined with six different proportions of fresh whole milk were fed to six groups of weanling-age rats over a six-weeks period. The objective was to determine, within practical limits, the proportion of average breakfast cereal to milk representing the best nutritive combination of these two foods. The proportions of mixed breakfast cereals to milk ranged from 1 ounce of cereal per fluid ounce of milk to 1 ounce of cereal for approximately 30 fluid ounces of milk.



*It stimulates
interest to have
each rat named.*

Some deductions from an experiment such as the one conducted by Dr. Booher can be drawn by observing:

1. The relative value of a given combination of basic foods in promoting over-all growth and development as compared with any food alone.
2. The effects of replacing one of the two basic foods in the combination selected by food products which contribute only accidental traces of essential food value or none at all.
3. The degree to which nutrients in two basic foods supplement each other when the proportions in which the foods are combined and eaten are changed.

White rats are good experimental animals because they are small, clean, easily handled, and easily cared for. They respond to different foods much as do people. Compared with human beings, white rats have a short life span. Their growth rate is 30 times faster than human growth, which makes the effect of diet quickly apparent. Most children like animals, and the laboratory rat cages soon become a center of interest for children and adults. Ordinarily, rat-feeding experiments require 7 to 8 weeks to be carried to a satisfactory conclusion.

The basic food groups which are least adaptable for demonstrating supplementary relationships by use of the rat are those of citrus fruits and tomatoes and of butter and fortified margarine because the essential nutrients in them are limited to vitamin C and vitamin A. Deficiencies of vitamin A do not develop quickly because this vitamin is stored in the liver and the supply is often not depleted for many weeks. Basic foods most adaptable to showing the supplementary relations are combinations of milk and milk products with breads, flours, and cereals of whole grain, enriched, or restored types.

It is important that students understand the purpose of a rat-feeding experiment. If the initial planning for the project is one in which you and each member of your class assume a share of responsibility,

there will be more enjoyment and profit for the group. You should impress on your students that rats are a part of a scientific study and should not be considered pets. If your experiment is to be effective, you will constantly point out the similarity between the needs of the animals and of the students for the foods used in the experiment.

It stimulates interest to have each rat named. The progress of each animal can then be recorded on a large wall chart on which age, sex, diet, and starting weight should be indicated.

As the experiment progresses, students will need guidance in their observations of animal weight and growth, disposition, fur, skin, tail, eyes, ears, nose, breathing, red blood, facial expression, and general appearance of well-being. Encourage students to think of other signs of good or poor nutrition and list them. All details for conducting this experiment can be found in Appendix G, pp. 320–22.

At the end of an allotted time in the experiment, change the menus of the rats. The poorly nourished rats should be fed the diet of the well-nourished animal so that students can see that food makes a difference also in rebuilding bodies. Students usually feel sympathetic toward the poorly nourished rats and will be happy to see them grow bigger and stronger.

It may be desirable to feed the healthiest rat the poor diet, so pupils can recognize the need for a continued good diet. Do not let rats become so undernourished that there is risk of their dying. Probably a class demonstration should always have at least two rats on a given diet. In that way individual differences may be demonstrated. Two rats may be kept in one cage and distinguished from each other by ear marks.

When the rat experiment is completed, it is unwise to give them to children to take home. The janitor may dispose of rats painlessly by placing them in a small can with 1 teaspoon of chloroform or ether on absorbent cotton, then keeping the can tightly covered for 10 or 15 minutes. Other animals, such as the chicken, guinea pig, or hamster may be used for nutrition demonstrations.

PREPARATION OF FOOD AT SCHOOL

Preparation of food is a method of teaching which may help the students to change their attitudes about some foods, and it also provides opportunities to apply generalizations of nutrition. For instance, you can increase the acceptance of vegetables, fruits, eggs, and milk dishes by having the students prepare and eat them.

Rejection of many foods seems to be due to hesitancy to try the new. Studies of the popularity of foods show that often a food is disliked by people even though they have never tasted it. This is more often the case than when people have tasted and disliked the food. We need a spirit of adventure and curiosity in relation to food.

The classroom teacher can encourage this spirit of adventure by guiding the preparation of foods in several different ways and setting



*We need a
spirit of adventure
and curiosity . . .*

the stage so that students will taste each form. If you allow the reactions to each food to be freely expressed, you can show ways to modify flavor or texture so that the food is acceptable. If this approach is made, each individual can feel that he is making an independent choice rather than following rules made by an authority.

The teacher should present a food as being both enjoyable and nutritious. Even though our choices of food are made independently, they are not made wholly on the basis of pleasure in eating. *Every* food has something to offer. When a food is prepared, its role in a well-balanced diet should be presented in a manner the age group will understand.

If Jane says that she will eat but a few foods in each group, you can point out what this means in terms of values which she considers most important. If Jane chooses to continue questionable food practices after you are certain that she understands the facts, the decision is her responsibility, not yours.

PLANNING MENUS FOR THE SCHOOL LUNCH

Have you thought of arranging for students to help plan the menu for the school lunch? Often we talk about food and let the students prepare food in the classroom, but we forget the other real-life situations in which they can help.

Planning menus for the school lunch can be used as a means of changing attitudes of students toward foods. When food preferences

are different, students must learn how to make a group decision. This may mean that no one gets his first choice and that some foods on the menu may actually be disliked by a few students. Group pressures may be great enough to result in acceptance of foods by all class members if, at the beginning of the project, everyone agrees to support the decision of the majority.

When students are expected to solve real problems, they are likely to be fair about considering all important factors. In addition to considering differences in food preferences, the person who plans the school lunch menu is faced with the problem of providing at least one-third of the necessary nutrients for a day within limitations of money, time, and equipment. Students who puzzle through the many facts involved in solving these problems are more likely to cooperate by eating the foods actually served to them than are students who are merely told that such planning is difficult.

If this project includes checking plate waste by older students, they may become more aware of dangers to themselves in disliking foods important for good nutrition. Differences in food preferences make group feeding difficult. Limited budgets of both time and money prevent catering to personal tastes, so that meals away from home may be quite inadequate.

Furthermore, the menus planned later by the lunchroom manager may be more acceptable because she, too, can learn more about food preferences from the menus planned by students. The school lunch managers who cooperated in a study in Iowa seemed pleased to be considered a part of the educational team. All of them were willing to describe to the students limitations in each situation and to serve the menus planned by the various classes.

As students plan menus, they learn how to apply the facts and principles of nutrition. Furthermore, facts have more meaning as they are used. Meaningful facts are more easily remembered than abstract ones not related to experience.

MAKING AND USING POSTERS

Making nutrition posters and pictograms for the school lunchroom may be an excellent means for correlating the teaching of nutrition and art. A good poster conveys an important message in an interesting and artistic manner. In the process of selecting ideas for posters, students can be encouraged to study nutrition and to formulate generalizations that can be understood by all of the people they wish to reach.

In the process of organizing ideas so that they can be used for a poster, generalizations must often be simplified and reduced in length. When this is done, one must really know nutrition facts in order to make short, accurate statements. Thus, knowledge may be

increased. Furthermore, in an effort to show others *why* good nutrition is important, the student may convince himself.

"Being part of a poster" may create interest too. Have you ever used students as figures in a living poster or graph? One teacher wanted to show her class what proportion of them had good, fair, and poor diets so she asked members of the class to make a poster. First she had 10 girls stand up. Then she divided the girls into three groups to show the per cent of the class whose diets were poor, fair, or good. Four girls in one group represented the 40 per cent of the class whose diets were poor, and four more girls represented the 40 per cent whose diets were fair. The remaining two girls represented the 20 per cent who had good diets. This is a simple dramatic way to make percentages from food surveys meaningful. Of course, you might have to use some imagination if the per cents were different and you needed a fraction of a girl to represent a classification.

A living poster may be more interesting than a traditional one. It can be seen by everyone in an auditorium when many graphic materials cannot. Furthermore you may feel that you haven't time to make illustrative material of desirable standard and so you may pass up opportunities to make nutrition education interesting and meaningful. A living poster takes more imagination than time.

Children may have fun with pictograms, flannel graphs, or other visual materials which they may make for themselves if they have the information. The discussion of visual aids in connection with Table 11.1 suggests various ways to present information.

ILLUSTRATED TALKS

Students learn while preparing demonstrations and talks, just as while making posters. If ideas for the talks are selected from many sources, students must learn facts and generalizations and evaluate ways of applying them. The generalizations in Chapter 6 may be very helpful in organizing such presentations either by the students or the teachers. Talks are likely to be satisfactory if such criteria as the following are used to evaluate them.

1. Will the group hearing the talk think the facts selected are important?
2. Will they be able to use these facts as presented?
3. Do the illustrations project the idea clearly to the viewer?
4. Does the summary emphasize a few important generalizations and show ways to apply them?

There are many opportunities for giving such talks or demonstrations to: (a) one's own classmates, (b) groups of younger children, (c) parents, and (d) other adult groups. With such audiences, students recognize the importance of organizing their ideas so that each lesson is appropriate for each age group. This will improve their acquaintance with nutrition facts, and strengthen their desire to learn more.

USING LITERATURE EFFECTIVELY

Many interesting bulletins and books are available to the schools and adult groups for nutrition education. They are written for different age groups, with appropriate vocabularies. The concerns of different groups are anticipated. These books cannot replace the teacher, however, no matter how well written they may be. The teacher must guide the use of literature if reading is to be most effective.

Reading as part of nutrition education cannot be routine if it is to be valuable. Reading must be done for a purpose which the students recognize and accept. A reading assignment should be made only after students know why they are to read. During preparation for reading, the teacher can make sure that her objectives and those of her students are consistent, even if they are not identical.

Often students are expected to read for information. Information for what? To repeat facts to the teacher or to help the students think for themselves? If the teacher simply assigns pages in a book to be read, students can do little but guess what the teacher will ask them in recitation. On the other hand, if the students read when they need information, they not only know what to look for, but they have a reason to remember what they read.

Facts acquire meaning with use. If the students can see the usefulness of a fact, they learn it more easily. If no immediate use is evident, the fact is likely to be forgotten soon. For example, foods classified in each of several food groups are difficult to learn when mere memorization is expected. However, when we use the food groupings as a tool for planning menus and evaluating food plans, the facts themselves are more easily learned.

Sometimes students read for the story that is told and not primarily for nutrition facts. The story may describe a situation that is suitable for group discussion because it is similar to one which they might encounter. It may have enough detail to make intelligent discussion possible. When this is true, the story can be used as a case situation.

WAYS TO WORK WITH PARENTS

Because most of our food preferences are formed at home, the influence of our parents and other family members has been greater than that of anyone else in forming our food habits. This means that nutrition education with children may be ineffective unless we work with the parents of those we teach.

Personal contact is probably most effective, because talking over problems can be enlightening to everyone. We may be impatient with failure of parents to apply facts of nutrition until we are aware of the complexity of some of their problems. When two of the authors talked to a group of parents and suggested that children would benefit as much from well-planned menus as did pigs from well-planned

rations, one father reminded us that hogs ate what was served to them while children were not so docile.

Establishing desirable food habits or changing undesirable ones is not simple. Many factors may influence a child's acceptance of food. If you recognize the difficulties of parents, they will be more receptive of your teaching for several reasons: (a) You will not put them on the defensive by implying that they could do better if they really cared. (b) You will be sure that ways to increase acceptance of foods are taught along with the importance of the food. (c) You will plan with parents for ways that teaching at school can supplement learning at home.

Meeting parents in a group is usually more feasible than individual conferences and may actually be more effective. In a group you can show how nutrition can affect the way children look, act, and feel, and you can review ways to achieve good nutrition.

From the first meeting with parents, you will be most successful if you can establish rapport. Both you and the parents are interested in the growth of the children. Together you can identify difficulties in establishing good health habits and together you can solve problems.

The steps in problem solving can be used effectively with parents if the problems are real and clearly defined. In the process of solving a problem you will have opportunities to present pertinent facts and to show how alternate solutions will affect the welfare of children.

Parents can be informed by letters or printed material, but some dangers accompany this method of communication. The parents may misunderstand your motives in sending material home or they may not interpret the facts correctly.

Some parents may not be reached in any other way simply because they do not come to meetings or because you haven't time to visit them. If children are old enough to plan ways to get information to their parents, they may also interpret it so that it will be used effectively.

REFERENCES

1. Stone, J. G., "Getting the most out of health education tools." *Jour. Amer. Diet. Assn.*, 16:329, 1940.
2. Pett, L. B., "A new outlook for community nutrition." *Jour. Amer. Diet. Assn.*, 23:13, 1947.
3. Rodewald, Shirley, "Agreement between dietaries reported by Napier school children and their mothers." Unpublished M.S. thesis, Iowa State University Library, Ames, 1950.
4. Dickins, Dorothy, "Some effects of a white corn meal shortage." *Jour. Amer. Diet. Assn.*, 21:287, 1945.
5. Hurt, Mary Lee, "A study of the effect on, attitude toward, and home carry-over of homemaking education while teaching is keyed to lower and middle class values and practices." Doctoral thesis, University of Illinois, 1953.

6. Lewin, Kurt, "Forces behind food habits and methods of change." In *The problem of changing food habits*. Bul., Nat. Res. Council, 108:35, 1943.
7. Willerman, B., "Group decision and request as means of changing food habits." Com. on Food Habits, Nat. Res. Council. Mimeo., 1943.
8. Radke, M., and Klisurich, D., "Experiments in changing food habits." *Jour. Amer. Diet. Assn.*, 23:403, 1947.
9. ———, and Caso, E. K., "Lecture and discussion-decision as methods of influencing food habits." *Jour. Amer. Diet. Assn.*, 24:23, 1948.
10. Encyclopedia Britannica Films, Inc., *Fundamentals of diet*. Educational film. Wilmette, Ill.
11. USDA, Office of Information, *For health and happiness*. Educational film. Washington, D.C., 1942.
12. Tennessee State Dept. of Education, Div. of Vocational Education, Dept. of Home Economics Education. "Teaching materials for use in teaching of child development and related art in homemaking education in Tennessee." Report of a workshop. Mimeo., 1949.
13. Booher, Lela E., "Basic foods work together." *Forecast for Home Economists*, Oct., 1954.