

Chapter Eight

Evaluation

EVALUATION IS THE PROCESS of determining where your students are in relation to the objectives for the lesson or course. If you are concerned with growth of students as a result of your teaching, you compare their status before and after teaching. To do this you collect evidence about such behavior as student learning, ability to think, attitudes, interests, or appreciations. Valid comparisons of these data in order to determine growth are dependent upon collecting similar data and interpreting them accurately.

Evaluation is an integral part of any comprehensive plan for teaching. It serves both teacher and student in any learning situation. By means of evaluation the teacher notes the success of the teaching and the learning difficulties of students; the student is motivated by knowledge of his progress toward educational goals. Evaluation is a necessary step in making nutrition work.

Your first two steps in planning for evaluation will have been taken when your objectives have been stated in terms of student behavior and you have selected the generalizations you expect students to understand well enough to use. These two aspects of planning for learning are discussed in Chapters 6 and 7. Objectives for a lesson, a course, or a curriculum are guideposts for teaching. Changes in the behavior of students are the bases for evaluation.

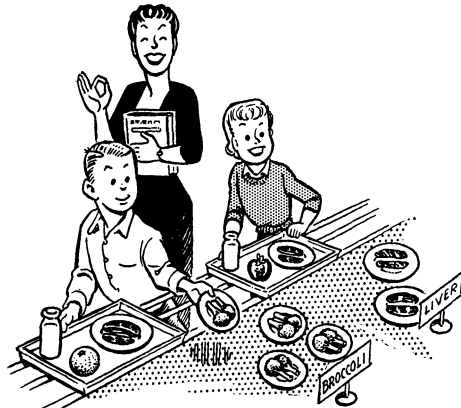
The third step is to identify the situations in which you might find your students and the competences you would expect them to exhibit in each situation. This step would further clarify your objectives. If at the same time you describe ways in which students might meet each situation—from acceptable to unacceptable—your bases for evaluation would be still clearer.

Your evaluation program should be comprehensive enough to indicate growth toward all of your objectives. Meeting this standard is not easy and may not be possible, but another kind of analysis of

your objectives will help. If you think of your objectives as organized in the three categories which follow, you can check to see that none are neglected.

- I. Acquisition of important information and appraisal of dependable sources
 - A. Recall facts related to the nutrients needed daily.
 - B. Recall facts concerning kinds and amounts of foods needed to ensure an adequate supply of these nutrients.
 - C. Recognize half-truths, incomplete facts, misinformation, or superstitions concerning a food or foods.
 - D. Have some criteria by which to evaluate sources of information.
- II. Development of effective methods of thinking
 - A. Formulate reasonable generalizations from specific facts as shown by ability to:
 1. Interpret and use data from research related to nutritional needs of persons of different ages, states of health, and activities.
 2. Recognize or formulate sound generalizations related to nutritional needs and ways to satisfy them.
 - B. Solve problems as shown by ability to:
 1. Make good decisions when selecting food.
 2. Analyze a problem relative to the choice of foods.
 3. Determine alternate courses of action and the values to be attained through each alternative.
 - C. Apply generalizations when making decisions.

*Teacher notes
the result of
the teaching.*



III. Development of attitudes and beliefs

- A. Be willing to try new foods.
- B. Accept responsibility for own food practices.
- C. Tend to be critical of information about nutritive value of foods until sources have been evaluated.
- D. Maintain an open-minded attitude toward information about food.
- E. Believe that food selection is essential to good nutrition, and good nutrition to health, and health to happiness.

Only when your evaluation program is comprehensive enough to give an accurate index of status and growth of students, can you be sure that your objectives are realistic and that students are using their opportunities to learn. This ideal is not always achieved, but use of all feasible methods of evaluation will yield more complete evidence than you would hope to get from one type of evaluation.

The fourth step is to select and try the most promising methods for evaluating each of the objectives, paper and pencil tests as well as less formal methods. You may either structure a situation in such a way that choices of students are limited or you may secure data about students in situations when they are unaware of being observed. You may collect all of the data for evaluating progress yourself or you may use the results of self-evaluation by students. Whatever you do, accuracy of your interpretations will be influenced by the objectivity with which you judge the responses of students. Suggestions for making your scores as objective as possible are given with some of the test items which follow in this chapter.

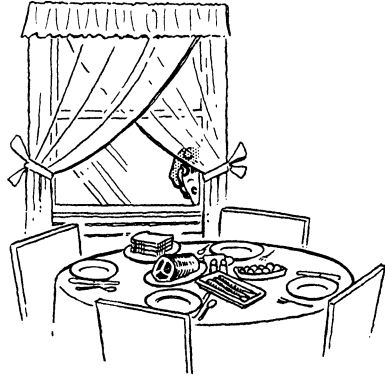
Other ways to facilitate interpretation of student growth are:

- I. Be certain that you know what behavior you expect of students. Exactly how competent do you expect them to be? If you have completed the third step you will have descriptions of acceptable responses in the situations you use for evaluation.
- II. Collect a sample of each kind of behavior that will give you confidence that students have had opportunities to show you what they know or how they think or feel.
- III. Analyze student scores for each kind of behavior separately. This is the only way that you can discover strengths and difficulties. Adding scores for ability to think to those for attitudes is like adding apples and pears. You know how many pieces of fruit you have but you know nothing about how they are distributed.

EVALUATION OF ACQUISITION OF FACTS

The easiest growth to evaluate is whether or not students can recall the facts which you gave them the opportunity to learn. You

***Obtain data when
people are unaware
of being observed.***



can identify the facts that you consider most important, and from among them select those to use in the test. Paper and pencil tests are usually used for this evaluation. Examples are given of matching, completion check sheets, true-false, and problem-type items.

All of these are guided-response types of test items. When you use this type of item rather than an essay type you can obtain responses to more items in a given length of time because students can answer them more quickly. Another advantage is that you can score the items more quickly and more objectively. You can more easily ascertain the relative ratings of the students in a group, or of one group with other groups.

If you wish to know how well students can recall nutritive content of foods, you may use *matching items* in a test such as this:

Select a food (or foods) in the right-hand column that is (or are) a good source of protein, and place the number of that food in the first blank. Fill each succeeding blank by selecting the food (or foods) that is (or are) a good source of the nutrient, and place the number in the appropriate blank.

- | | |
|----------------------------------|----------------|
| _____ A good source of protein | 1. Beef |
| _____ A good source of vitamin A | 2. Oranges |
| _____ A good source of calcium | 3. Cabbage |
| _____ A good source of iron | 4. Cauliflower |
| _____ A good source of vitamin C | 5. Bread |
| | 6. Butter |
| | 7. Milk |
| | 8. Eggs |

A check list such as the one illustrated is another means of obtaining evidence of the accuracy of a student's facts. A check list is a device for recording a person's reaction to each idea (word, phrase, sentence, paragraph) that is listed. The reactions to each idea are recorded by a check (x) in columns to the right of the list. Sometimes one column must be selected; at other times all appropriate columns are checked. Following is an illustration of this type of item, taken from materials prepared by Chadderdon (1).

I. In order to plan meals we need to know what foods are especially good sources of the food nutrients. Below is a chart of foods and nutrients. Check (x) in the blank for the nutrients which each of these foods contain in *important amounts* in the quantities used. *

Foods	NUTRIENTS				
	Carbo- hydrates A	Proteins B	Minerals (1 or more) C	Vitamins (1 or more) D	None of These E
Milk		x	x	x	
Butter				x	
Eggs		x	x	x	
Meat		x	x	x	
Citrus fruit				x	
Vegetables, yellow				x	
Candy	x				
Salad oil					x

* The checks, words, and phrases in the blanks indicate the key.

Another type of guided-response item combines checking and completion. An item from evaluation materials prepared by Chadderdon (1) requires students to check correct items and then complete each answer by writing a word or two in spaces to the right.

II. In most families the large meal of the day usually contains meat. For lunch or supper a food other than meat often is used to help supply the protein needed.

Below is a list of prepared dishes. Place a check (x) in front of those letters where the prepared dish has a generous amount of protein. In the space to the right, state the food in the prepared dish which contains the protein.*

Prepared Dishes

<u> x </u>	A. baked beans	<u>dried beans</u>
<u> </u>	B. chicken noodle soup	<u> </u>
<u> </u>	C. potato salad	<u> </u>
<u> x </u>	D. tuna fish salad	<u> tuna </u>
<u> x </u>	E. omelet	<u> eggs </u>

<u> x </u>	F. deviled eggs	<u> eggs </u>
<u> </u>	G. sliced bananas with cream	<u> </u>
<u> x </u>	H. cottage cheese and tomato	<u> cheese </u>
<u> </u>	I. Jello with pineapple and carrots	<u> </u>
<u> </u>	J. lettuce, bacon, and tomato sandwich	<u> </u>
<u> x </u>	K. peanut butter sandwich	<u> peanuts </u>

* The checks, words, and phrases in the blanks indicate the key.

As an illustration of the *true-false test*, items are taken from an unpublished test prepared by Barrick (2) as one means of evaluating methods used for teaching freshman college women. Students were instructed to read each statement carefully and then indicate their beliefs as follows:

T = True; you agree with the statement.

D = Doubtful; you doubt the truth of the statement.

F = False; you disagree with the statement.

U = Uncertain; you are very uncertain whether the statement is true or false.

Here are some of the statements:

Vitamin pills should be taken by people who dislike many foods.

Products made from milk have the same nutritive value.

Canned pineapple is a good source of vitamin C.

A reducing diet should consist largely of fruits and vegetables.

In the same test are items that express half-truths. This kind of an item is different from one that is completely wrong or right. Examples of these items are:

An easy way to reduce is by taking exercises.

Poor nutrition is often one of the underlying causes of juvenile delinquency.

Milk is a perfect food.

A safe way to reduce is to eat small portions of everything served.

If you add a response, P, to the four above, you can use the last four items to determine whether or not students detect half-truths. A new response might read P = Partly true; you believe that the statement is partly true.

Students who mark the last four items P thus will be answering correctly because the statements are neither true nor false. Oppor-

tunity to make this response helps the most discerning students because they are most likely to detect half-truths.

Another kind of true-false item identifies the knowledge of students about certain superstitions. An illustration of this kind of item is taken from materials prepared by Chadderdon (1); this illustration shows only four of the more than fifty possibilities suitable for use in a test item.

III. These statements are expressions of opinions which many people have. Read each statement carefully before checking (x) in the column which best indicates your belief. Do *not* sign your name.

Check "True" if you agree with the statement.

"Doubtful" if you doubt the truth of the statement.

"False" if you disagree with the statement.

"I don't know" if you have no idea whether the statement is true or false.

Statements	True	Doubtful	False	I don't know
1. Girls of the same age, size, and activity need about the same amount of food.	x*			
2. Vitamin pills should be taken by people who dislike many foods.		x		
3. Protein and starchy foods should not be eaten at the same meal.			x	
4. There are no shortcuts to reducing weight.	x			

* x indicates key.

When scoring a test including these four kinds of true-false statements, you will obtain more specific or exact information about the difficulties of students by three separate scores than a single score. With a score for each type of error, you and the students will be aware of their misconceptions.

The *problem-type question* may be used to check the accuracy of information. It has the advantage of presenting facts about a situation so that there is less likelihood of misunderstanding the statement to which reaction is requested. This type of item was selected from another test used by Barrick (2). The directions for this test were:

On the following pages you will find described a series of situations involving nutrition problems. Read each one carefully and check (x) the answer or answers on the answer sheet. After selecting the best answers, read the entire list of reasons and check on the answer sheet those that explain why your answers are the best ones.

One item in the test reads:

Marge Macley is allergic to tomatoes in any form. Several fruits are served at the dorm for breakfast, so she can avoid tomato juice. Since the meals at the dorm are planned to meet daily requirements for good nutrition, it is important that she choose the right fruits. If she eats plenty of green and yellow vegetables, which of these could she select that will be good substitutes for the tomatoes?

- a. Grapefruit
- b. Prunes
- c. Oranges
- d. Pineapple juice

Check the reasons why the fruits you checked above are good substitutes for tomatoes.

- 1. Grapefruit, like tomatoes, is high in vitamin B.
- 2. Grapefruit contains a large amount of vitamin C.
- 3. Prunes supply roughage.
- 4. Prunes are high in iron.
- 5. Oranges are a citrus fruit and so will substitute for tomatoes.
- 6. Pineapple is a citrus fruit.
- 7. Pineapple is an important source of vitamin C.

Any type of *essay writing* expected of students can be examined for accuracy of information. The essay type of item for acquisition of information has advantages and disadvantages. One advantage is that students may not be aware that the accuracy of their information is being tested. In other words, in an essay examination the student's ability to call up spontaneous information has an opportunity for expression. Disadvantages are that (a) only a small sample of information is used by the student and (b) the time used by the teacher in discovering and pointing out errors of students may be greater than that required for constructing and scoring a guided-response type of test.

The disadvantages of the essay type of item can be partially overcome by some structuring of responses. Another item from Chadderdon's (1) material illustrates how you can obtain free responses and still increase size of sample of responses from students.

*Essay writing
has disadvantages . . .*





IV. Phyllis' brother Mark, 13, wants to make the high school basketball team. He is growing very rapidly, so he thinks he will be tall enough. He practices basketball every evening. Mark has asked Phyllis to help him with his diet so he can be active and grow strong. His daily diet meets the basic food requirements.

Check (x) the nutrients which he should be especially careful to include in generous amounts.* Explain your choice in the blanks at the right.

Nutrients		Reasons	
<u> x </u>	A. Carbohydrates	A.	<u>Needs energy-rich foods</u>
<u> x </u>	B. Fats	B.	<u>Needs energy-rich foods and fats are the highest energy-giving nutrients.</u>
<u> x </u>	C. Minerals	C.	<u>Needs to develop bones, to form blood, and to build muscles.</u>
<u> x </u>	D. Proteins	D.	<u>Needs to build tissues during growth and to replace worn tissue.</u>
<u> x </u>	E. Vitamins	E.	<u>Needs to build tissue.</u>

* The checks, words, or phrases indicate the key.

Knowledge of dependable sources of information is not simply a recall of information. To achieve this objective, students must know sound criteria for judging the source of information and be able to use these criteria when accepting or rejecting information that they read or hear.

The criteria suggested on pages 185–86 can be the basis for tests similar to the ones suggested for recall of facts. Before testing ability to use these criteria, you will wish to know whether or not the criteria are known and accepted by students.

Tests of ability to *use* the criteria may be similar to those on the preceding pages, where ways for evaluating ability to apply generalizations are discussed. Actually, criteria are generalizations that indicate the importance attached to certain characteristics of a product.

Steps to follow in constructing such a test are:

1. Present excerpts from 2 articles to your students, giving complete information of authorship and publication.
2. Have students select the article considered most reliable, with reasons for their selection.
3. Select student statements of reasons which:
 - a. Support each article and are good criteria.
 - b. Are not sound criteria for determining reliability of the article.
 - c. Are not relevant to the problem.

EVALUATION OF DEVELOPMENT OF EFFECTIVE METHODS OF THINKING



Ability To Interpret Data

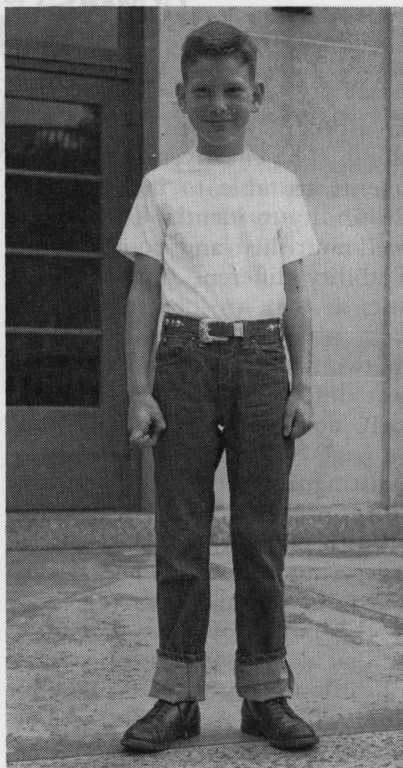
The ability to interpret data is one aspect of ability to think that is often an objective of nutrition teaching. The effectiveness of many visual materials is limited unless students are able to interpret for themselves what they see. For example, ability to identify similarities and differences in characteristics of well-nourished and poorly nourished individuals requires a level of ability different from that required to memorize these characteristics as they are pointed out by the teacher.

If you have used the pictures of the two teen-age girls on page 104 to teach students to identify important differences in physical characteristics of well-nourished and poorly nourished individuals, you can use the pictures of the two boys on page 208 as a new situation to test the ability of your students to distinguish differences between them. The first time or two the pictures are used as a testing situation you can ask such questions as: Which of the two boys seems to be the more healthy? Give reasons for your answer. The reasons given by each student may be classified in several ways: (a) characteristics of good health shown by the boy chosen as the more healthy, (b) characteristics of this boy that do not indicate his state of health, (c) characteristics of good health that are not evident in the picture of the boy. This procedure will reveal whether or not students can identify accurately the characteristics of good health as shown in the picture.

When constructing a guided-response test item you will wish, among statements of reasons to which students can react, some of each type that apply to each boy. Since statements in the language of students are not likely to be obviously wrong or right, the answers you receive from them can be selected from each of the three classifications suggested in the previous paragraph.

When interpreting data from such a test you will discover students who (a) recognize all of the characteristics that apply to the picture of the boy chosen; (b) are unable to distinguish between characteristics that apply to the problem and those that do not; or (c) know the characteristics of a healthy person but do not restrict their answers to the problem of nutrition.

Tests similar to those using the pictures of the two boys can be based on data such as are found in graphs, tables of food composition, pictograms similar to those in Chapters 2 and 11, or charts such as those which show growth curves of rats on different diets. In each case, a student's responses will indicate whether he (a) can accurately show relationships among the data, (b) can see all of the relationships in the data, and (c) does not go beyond the data presented and thus overgeneralize.



An example of good nutrition.



An example of poor nutrition.

At the end of a lesson, you can test informally the ability of students to interpret data if you ask them to write in complete sentences what they have learned during the lesson. Thus you will know which of your students can state generalizations that are complete and accurate.

Ability To Apply Generalizations

Ability to apply principles or generalizations of nutrition when making decisions is different from the ability to generalize. A guided-response type of item for this evaluation presents a situation in which a person is required to make a decision. Two or more alternatives are offered, from which the student must choose one. After making a choice he checks facts or generalizations that are reasons for his answer. Among the reasons are untrue statements and true statements that do not explain the choice made. If several such items are included in a test, you will have some evidence of a student's ability to apply generalizations accurately.

The two items which follow were selected from the materials prepared by Chadderdon (1).

I

Linda is a little overweight and she thinks it is because she eats too much between meals. Here are the meals she ate yesterday:

Breakfast		Lunch	
Egg	Toast	Hamburger on Bun	
Milk		Buttered Green Beans	
		Chocolate Cake	
		Milk	
Supper			
Broiled Ham	Gravy	Mashed Potatoes	
	Asparagus		
	Cookies	Milk	

Here are some foods that she might eat between meals. Check (x) the ones that will be least likely to cause her to add weight.

<input checked="" type="checkbox"/>	A. Apple	<input type="checkbox"/>	E. Malted milk
<input checked="" type="checkbox"/>	B. Celery	<input type="checkbox"/>	F. Cookie
<input type="checkbox"/>	C. Candy bar	<input checked="" type="checkbox"/>	G. Milk (skim)
<input type="checkbox"/>	D. Lettuce sandwich	<input type="checkbox"/>	H. Ice cream

In this test students are expected to apply a generalization such as: For good nutrition, reducing diets need to include adequate amounts of meat, eggs, vegetables, fresh fruits, and skim or whole milk but the amounts of fats, sugar, bread, and cereals need to be limited.

II

When we go to the grocery we have many choices to make between foods, and most families need to make these choices wisely to keep food costs down. Which one of the following pairs of foods is the better choice from the standpoint of *cost* and *food value*? Check (x) the better one.

Foods					
A.	<u> x </u>	1. Broccoli	E.	<u> x </u>	1. Liver
	<u> </u>	2. Asparagus		<u> </u>	2. Steak
B.	<u> </u>	1. Round steak	F.	<u> x </u>	1. Carrots
	<u> x </u>	2. Hamburger		<u> </u>	2. Canned corn
C.	<u> </u>	1. Corn flakes	G.	<u> x </u>	1. Cabbage
	<u> x </u>	2. Oatmeal		<u> </u>	2. Lettuce, head
D.	<u> x </u>	1. Celery	H.	<u> </u>	1. Canned pears
	<u> </u>	2. Olives		<u> x </u>	2. Canned peaches

In this test students are expected to apply the following generalizations:

The larger the amount or the more expensive the processing of a food, the higher price as a rule.

Cuts of meat from the loin or steak areas of the animal are more expensive than those from the organs or from less tender cuts of meat, yet they are no more nutritious.

Foods which are more perishable are more expensive than those that can be shipped and held more easily.

Green, leafy, and yellow vegetables and yellow fruits contain more of the protective nutrients than other vegetables and fruits.

A less formal way to evaluate ability to apply generalizations is to judge the work of students when they prepare exhibits and posters. You can observe the importance of the generalizations they select to illustrate the appropriateness of the illustrations and the accuracy of captions. If you do not wish to have students prepare exhibits or posters, they can evaluate those prepared by others. Your questions can direct them to use their knowledge of generalizations as bases for their evaluations. If you require complete sentences when students make these evaluations, you can judge ability to apply generalizations.

The foods that individuals eat are one indication of ability to apply generalizations of nutrition. Food records kept for 3 to 7 days provide more reliable data than do occasional observations of food practices in public places. Seven-day records taken at intervals throughout the year probably give the best over-all picture of food consumption, but such records are not feasible in many situations. Methods of rating and evaluating diets are given in Appendix B, pages 295-96.

Data from food records must be interpreted cautiously because several factors may be influencing the kind and amount of food eaten. Students may know the generalizations and how to apply them, but may not actually practice good nutrition because (a) appropriate food is not available to them; (b) they do not believe that what they eat will make a difference in their health; or (c) satisfactions other than health may be of major importance to them.

EVALUATION OF DEVELOPMENT OF ATTITUDES AND VALUES

Attitudes about food and values of individuals may have greater influence on food consumption than facts they can recall about nutrition.

Identifying attitudes, values, interests, or appreciations is difficult because means for evaluating them have not been refined. Unless you can find a "test" that seems satisfactory, you may wish to use such means as self-evaluation by students, observations, or interviews.

You can study the food likes and dislikes of your students by asking them to check a questionnaire similar to the one in the materials prepared by Chadderdon (3). The two check sheets that follow are means of self-evaluation by students. Only the first six items in the first check list are given.

How Am I Doing?

Most people could enjoy their food more if they liked a wide variety of foods; then, too, they could be better guests if they ate everything served them. Learning to like many foods is an important part of really growing up, of acting more like an adult.

Below is a list of vegetables to use in checking how well you are progressing toward eating a variety of foods. Check (x) in the column or columns which best describe where you are now. If you prefer some other method of preparing any of the vegetables, add it and check in the columns.

Food	Eat It When Offered		Need To Learn To Eat	Have Never Eaten; Need Chance To Taste
	Enjoy	Do Not Enjoy		
Asparagus, creamed				
Beans, green, buttered				
Beets buttered				
pickled				
Broccoli, buttered				
Brussel sprouts, buttered				
Cabbage salad				
slaw				
buttered				

Learning To Enjoy a Variety of Vegetables

Record of Progress

I agree to try to learn to enjoy three new vegetables.

Name

- A. After you have checked the list of vegetables on How Am I Doing?, select three that you checked Do Not Enjoy, Need To Learn To Eat, or Need Chance To Taste. Write the three selected in the following chart.
- B. Use every opportunity you have to taste these vegetables, eat them in small quantities, or eat them in combination with foods you like.
- C. Record (x) in the blanks of the chart each time you eat some of each vegetable until you can check "Enjoy." If you need more trials, extend the chart in the space below it.

Vegetable	Trials								Enjoy
	1	2	3	4	5	6	7	8	
1.									
2.									
3.									

Systematic observations of individuals in situations where their choices seem to depend upon willingness to try new foods is another way to evaluate this objective. For example, responses of individuals to invitations to eat foods prepared in a demonstration or by class members will reveal attitudes toward food. Another situation for such observations is afforded when a group plans for foods to be prepared. Success of this means of evaluation is dependent upon your ability to observe objectively and record accurately what you have observed; this becomes a basis for later interpretation.

Anecdotal records of your observations will give data for evaluation that are more reliable than casual observations. Often an accumulation of incidents will reveal changes in attitudes that are not evident in one or two observations. Such records require time to keep, and are not necessary for everyone. They are most valuable for the student whose attitude seems to need changing.

Probably the most difficult *attitude* to change is that food does not really make a difference in the way one looks, feels, and acts. Evaluation of students in this respect is difficult too. Barbour (4) interviewed students to discover what they believed were the functions of different foods. One question that she asked illustrates this method of determining their beliefs about food. Reasons given are actual responses made by the students:

Question: Does kind of food eaten affect the way you look?

Answer: Yes.

Reasons given:

1. Eating right foods makes you look better.
2. Have nicer teeth.
3. Sweets make pimples on your face.
4. Kind of food affects complexion.
5. Kind of food affects hands and fingernails.
6. Chocolate and rich foods cause pimples.
7. Not enough food makes you look thin.
8. Some foods give color to your face.
9. Carrots make eyes look well.
10. Make a face when you eat sour or strong foods.
11. Too much fat and starches make you fat.
12. Some foods make hair glossier.
13. Kind of food affects posture.
14. Plenty of proteins fill you out, otherwise you are skinny.
15. Not enough carrots make eyes dull and sore.

Satisfactions from the enjoyment of food or from belonging to a group may be more important to your students than health. To discover the *values* that her students associated with food, Nichol (5) prepared and gave a values test to a group of boys. An item from her test illustrates one type of values test:

Read the following situation carefully and decide how you would act in a similar situation.

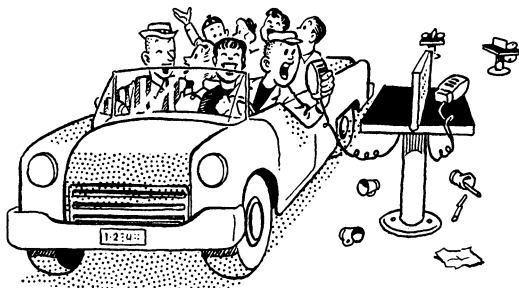
Jim is 15 years old and in the 10th grade. His best friends go to a restaurant for lunch where the food is rather carelessly prepared and served but where the boys have a lot of fun. About the only kind of lunch they can get is a sandwich, cake or cookies, and a beverage. Jim doesn't often go with his friends and they cannot understand why he doesn't go with them. Jim enjoys the fun at the restaurant but he doesn't like the food. He thinks he should have more vegetables and fruit and salads to stay healthy. He can get these at the school cafeteria and he likes the food there much better, although the cost is slightly higher. Jim's parents think he is wise to go to the cafeteria.

Check *each* of the following statements to show how each reason would influence your decision in this situation:

- VG if you think it is a very good reason and would greatly influence your decision.
- G if you think it is a good reason and might influence your decision.
- U if you are uncertain whether it would influence your decision.
- P if you think it is a poor reason and would seldom influence you.
- VP if you think it is a very poor reason and would never influence you.

	VG	G	U	P	VP
1. It is foolish to save money and have a poor lunch.	—	—	—	—	—
2. Jim should consider whether he enjoys his lunch or not.	—	—	—	—	—
3. Jim should do what he wants to — it wouldn't make any difference to his being well liked by his friends.	—	—	—	—	—
4. If Jim is healthy, he doesn't have to worry about what he eats.	—	—	—	—	—
5. Jim should take the advice of his parents.	—	—	—	—	—
6. Jim should save as much as he can on his lunch if he needs money for other things.	—	—	—	—	—
7. Health is one of the most important considerations when choosing food.	—	—	—	—	—
8. Jim will lose his popularity with the group if he doesn't go with them.	—	—	—	—	—
9. It is important for Jim to enjoy his lunch.	—	—	—	—	—
10. Jim is old enough to make up his own mind and his parents should not try to influence him.	—	—	—	—	—

When you are evaluating willingness to try new foods, you may also discover how well students will accept responsibility for their own food practices. Whenever free choices can be made, responsibility must be accepted. Whether or not students recognize this fact



*Belonging to a group
may be more important
than health.*

is not easy to determine. Essays which contain free expression of ideas may be most fruitful in revealing attitudes toward personal responsibility. Interviews with students or their parents are helpful, too.

Interest in keeping personal records of growth up to and through adolescence indicates acceptance of responsibility for one's own health. Records of weight kept after growth is completed indicate the same attitude. These records will be especially revealing if growth charts and other records are kept at the same time. One kind of record may be of foods eaten. When the relationship between these two records is recognized, students show satisfactory understanding of this aspect of nutrition.

STUDENT EVALUATION OF TEACHING

Student evaluation of what they have learned from a lesson, unit, or nutrition program may give some data that are not obtained in any other way. If you ask what was the most important thing learned today, you will discover the emphasis which was recognized by students.

To obtain student appraisal of your methods, you can ask such questions as: What is the strongest thing about these lessons? What is the weakest thing about them? What suggestions have you for improvement?

Interpretation is very difficult when opinions of students are used for evaluation. Their opinions must be examined in terms of your objectives, and not always accepted exactly as given. For example, if one of your objectives is to teach students to think, those students who wish you to tell them the answers to their questions may criticize your teaching. When you study their criticisms, you must decide which ones indicate a need to revise your methods and which reflect resistance to your requirement that students think for themselves.

EVALUATION AS A MEANS OF IMPROVING TEACHING

Evaluation cannot be really effective unless it is part of the teaching-learning process. This means that your evaluation program must

be "tailor-made" for each of your classes — designed to measure growth toward objectives of a specific class such as comprehension of generalizations or principles, and ability to use learning in situations familiar to students.

This means that you will probably want either to assemble items suitable for your classes or write items of your own. Reasons for describing evaluation items in detail for this chapter were to suggest sources of items for tests and to illustrate types of items that you might use as patterns. If you wish to prepare your own items, two publications may be helpful: Tschudin *et al.* (6) and Wrightstone *et al.* (7).

Evaluation can be a powerful means of motivation. Knowledge of progress encourages students to continue to learn. Thus if you take time to either discuss the results of a test with students, or to guide them in interpreting other data, your evaluation program can be helpful in encouraging members of your groups to use the opportunities that you provide for them to learn.

Students are likely to be impressed by what you include in a test or have evaluated by other means. If your tests emphasize recall of information, students are likely to spend their study time memorizing facts. If your tests require students to solve problems, they are likely to use opportunities provided for them to learn how to solve problems. Evaluation is an important part of the teaching-learning process whether or not you use it consciously for emphasizing important kinds of learning.

If you wish to interpret data from evaluation and use them as a basis for modifying teaching methods, you may find it advisable to note the success of your teaching throughout the nutrition unit. Thus you will know whether or not students are progressing satisfactorily for the time spent and for their maturity. Where progress is not so great as you believe is desirable, you will see that students have different learning opportunities.

When data concerning the growth of students are incomplete, your judgment may not be sound. You cannot know how effective your teaching has been unless you have data about students before and after they have had opportunities to learn under your guidance. This

*Where progress is
not so great as you
believe desirable . . .*



means that you will need two forms of a test or use the same form with caution. Chances of recalling answers to items can be minimized by spacing tests far enough apart so that students are not likely to remember the items and by omitting discussion of responses to the first test. Type of evaluation depends upon pretests and post tests. It supplements, rather than replaces, evaluation throughout the unit.

The purposes of this chapter have been to illustrate: (a) statement of objectives as types of student behavior; (b) selection of methods of evaluation that will reveal the kind of behavior indicated as desirable by the objectives; (c) devices that have been found useful; and (d) some interpretations possible when certain methods are used. There has been no attempt to discuss ways that the validity or reliability of tests can be determined.

REFERENCES

1. Chadderdon, Hester, "Evaluation Materials, Tenth Grade. Food and Nutrition." Iowa State University Book Store, Ames.
2. Barrick, Mary Jean, "Evaluation of three types of audio-visual material for teaching nutrition to freshman college women." Unpublished M.S. thesis, Iowa State University Library, Ames, 1947.
3. Chadderdon, Hester, "Evaluation Materials, Ninth Grade. Food and Nutrition." Iowa State University Book Store, Ames.
4. Barbour, Helen, "Relationships of values and process concepts of selected students to generalizations in nutrition." Unpublished Ph.D. dissertation, Iowa State University Library, Ames, 1953.
5. Nichol, Verna, "Values considered important by eleventh grade boys in selection of food, with implications for nutrition education at the University of Toronto schools." Unpublished M.S. thesis, Iowa State University Library, Ames, 1946.
6. Tschudin, Mary, *et al.*, *Evaluation in Basic Nursing Education*. G. P. Putnam's Sons, New York, 1958.
7. Wrightstone, *et al.*, *Evaluation in Modern Education*. American Book Company, 1956.