Manual for Developing a Nutrition Education Curriculum

Unesco
Manual for Developing a Nutrition Education Curriculum

by

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Isobel Contento, Ph.D.
Kathleen Morin, Ed.D.
PREFACE

Welcome to this manual. It is designed to make the development of a nutrition education curriculum easier by leading you through the process step by step. By filling in the required information in the spaces provided in the manual, and by tearing these out, you will have, by the end of the process, a complete curriculum made of these tear-out sheets and attachments.

It is assumed that the curriculum development team will contain at least one nutritionist and one educator.

Developing a curriculum is usually thought of as consisting of three components:

(a) The design component
(b) The development component
(c) The field-testing component

This manual will take you through the first two of these components. The product you will have at the end will be a prototype or experimental version which you can then field test and revise as needed.

Best wishes as you embark on this creative process!!

The views expressed in this document are those of the authors and not necessarily those of Unesco.
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INTRODUCTION
INTRODUCTION

In any nation, individual progress and national development are alike dependent on health—the health of the individual and the health of the nation. Thus improved nutrition must be an important component of national development. Many factors contribute to improved nutrition—improved food production, more equitable food distribution, improved economic conditions, improved health care and more widespread dissemination of nutrition information throughout the country. Within this context, nutrition education in the schools can be an additional, and powerful, contribution to the improvement of the nutritional status of the nation's younger generation.

Throughout the world, daily nutritional practices reflect unique regional, economic, and cultural patterns. In addition, the nutrition-related health problems differ from country to country and often between populations within the same country. For some, deficiencies in calories, protein, or some of the major vitamins or minerals may be among the problems. For others, an unbalanced pattern of eating may be a major problem; e.g., the substitution of locally available foods which have provided sustenance for many generations by highly processed, "modern" foods, which tend to be high in sugar, fat, and salt. No one nutrition education curriculum, therefore, can be used universally. Within each nation, nutrition education in the schools should address the specific nutrition-related problems that are prevalent locally and should take into account locally available foods, local cultural patterns, and the nation's own political and economic system. Promoting health and preventing nutrition-related problems and diseases within given local contexts are thus the major goals of nutrition education.

Furthermore, because nutritional health is multifaceted and affects all aspects of human well-being, the design and implementation of nutrition education curricula require the participation of people from many disciplines and various agencies or sectors of the country. Specialists in nutrition and health should combine their efforts with those of the specialists in curriculum and child development. Parents, public health personnel and those involved in non-formal education, community organization and national development should also be consulted. Such multi-sectorial participation is the surest way of developing a curriculum that takes into account the needs of the child, the teachers, and the parents and at the same time is integrated with community programs and national development goals of the country. It can also help make the curriculum realistic and practical.

The process of curriculum development in various countries varies, of course, according to the nature of the administrative structures in place. In some countries curriculum development is highly centralized, with the Ministry of Education or some similar special institution as the responsible agency. In other countries, the process is partially decentralized, with states or regions having the major responsibility in curriculum development. In still other countries, curriculum development is very decentralized, with teachers and community people given the opportunity to develop school curricula at the local level.

The Purpose of the Manual

The purpose of this manual is to facilitate the development of nutrition education curricula—whether at the national, regional, or local level—by a multidisciplinary team consisting primarily of nutritionists and educators but with input of people from other disciplines or sectors. It is designed so that those who are new to curriculum design as well as those who are very experienced may find it useful in streamlining the curriculum development process. Since considerable nutrition and health education activities have already taken place in most countries, it is the intention of this manual that users will integrate that which is already available with new investigations to develop a
comprehensive whole. Also, it is designed not as an exhaustive, last word on curriculum development, but rather as a stepping off point, so that the user should feel free to adapt it and see new possibilities within the proposed process.

**Underlying Assumptions**

A number of general assumptions underlie the approach used in this manual. These assumptions derive from a number of sources: e.g., nutrition education reviews; statements of national, regional, and international meetings and organizations about nutrition education and UNESCO documents (UNESCO, Asian Programme of Educational Innovation for Development, 1981; Shack, 1977; Sinclair and Howat, 1980; Hambraeus, 1980; UNESCO: Griffin and Light; UNESCO: Israel and Tighe, 1984; UNESCO: Turner and Ingle, 1983); research and evaluation studies (Whitehead, 1973; Zeitlin and Formacion, 1981; Gussow and Contento, 1984); statements on educational theory and practice (Brubacker, 1982; Jarolimek, 1977; Michaelis, Grossman, Scott, 1975; Tyler, 1949) and others.

1. The development of a nutrition curriculum for the schools is seen as constituting only one part of nutrition education which in turn is only one component of health promotion programs or activities in a given community or country. Health promotion in turn is one of many factors that contribute to the quality of life.

Green, Kreuter, Deeds, and Partridge (1980) suggest a framework for program planning that is useful here. They suggest that quality of life is subjectively and objectively defined by individuals or by communities and is influenced by both health problems and non-health related factors in society. Health-related problems are in turn influenced by behavioral and non-behavioral factors. Behavioral causes of health-related problems are determined by such factors as knowledge, attitudes and values, availability of health resources and the influence of family, peers, and teachers. Behavioral causes are the usual target of educational interventions.

Adapting Green's model:

- **Nutrition education** → Education → Behavioral causes → Non-behavioral causes → Non-health factors → Quality of life
- **Public health education** → Other strategies → Nutritional problems

That is, the quality of life for individuals or communities is determined by many non-health as well as nutritional problems. Nutritional health problems, in turn, can arise from the behaviors adopted by individuals and groups or from a variety of non-behavioral causes such as lack of resources with which to buy or grow food, lack of availability of the right foods, lack of services, etc. Nutrition education has traditionally been targeted at the behavioral component of the overall framework and is designed to bring about or maintain desirable dietary practices or eating behaviors of individuals or groups through education. Other professionals such as public health nutritionists, health workers and community developers have traditionally taken on the role of embarking on other strategies designed to improve the health of the public.

At a workshop held in Dar Es Salaam in 1978, members of the committee on "Education of the Public" of the International Union of Nutrition Scientists (IUNS, 1978) and other participants issued a report which called on nutrition educators to broaden their role. "If one accepts that malnutrition in the final analysis results from a maldistribution of food and the means for food production, then nutrition educators
must come to grips with the need for redistribution of such resources and orient their activities accordingly. . . . From this it follows that nutrition educators like everyone else play a political role in all societies." The report goes on to suggest that "for a society where the economic policy and programmes are consistently directed toward the redistribution of resources in order to enable every individual to provide himself/herself with sufficient nutrients, . . . the goals of education are to teach people how to best utilize the resources that will increasingly be made available." In an economically stratified society, on the other hand, the role of nutrition educators is much more complex and may include teaching "the skills or tactics for appropriating power in order to gain access to resources."

You may wish to define nutrition education broadly or more narrowly. It is our assumption that in whatever way you may wish to define the role of nutrition education in your situation, curriculum development is an important part of nutrition education, but only a part, of other health promotion strategies.

2. The nutrition curriculum must be relevant to local needs--"local needs" here referring to the felt and real needs of learner groups, whether at the school, community, state, or national level. The building of a local nutrition curriculum will also provide a unique contribution to the present and future students in the school, to the community in general, and to the field of nutrition education.

3. Nutrition practices, being multifaceted in origin, cannot be studied within the isolation of the school. Family customs and resources, community organization, availability of health care, as well as the economic and food distribution systems of the country all contribute to the nutritional status of school-aged children. Nutrition education cannot be successful, therefore, if in-school learning is not linked with out-of-school problems, activities and resources.

4. The nutrition curriculum is designed to encourage learners to develop skills in critical thinking, wise decision-making and problem solving rather than to encourage the memorization of facts. The manual through needs assessments will identify problems, analyze contributing factors and assist educators and students to address the needs as they perceive them.

In addition, there is increasing recognition that nutrition education must result in more than cognitive learning--even of a problem-solving sort. Fostering desirable attitudes and values towards nutrition, as well as healthful eating practices must be emphasized. Consequently, this manual is designed to assist curriculum developers identify and address those psycho-social, environmental, economic factors that influence eating habits in the given community.

5. The value of integrating nutrition into other subject areas is controversial in some countries. Those who support integration note that the school curriculum is already very crowded and that many teachers do not feel that they have the time to teach an "extra" subject. Also, some argue that by making the teacher of every subject teach nutrition, a greater sense of responsibility for the well-being of all the students is achieved. Those who are against integration, on the other hand, argue that most teachers would not feel competent to teach nutrition as well as their "main" subject and so would concentrate on teaching their own subject to the neglect of teaching nutrition. Consequently, in actual practice, very little attention would be paid to nutrition. (See UNESCO: Asian Programme . . . for greater discussion of these issues.) Our assumption is that the decision to integrate or not should be made by
curriculum developers on the basis of local needs and context. The manual will assist its users to develop a curriculum which can be taught as a separate subject or can be integrated into other subject areas as desired.

6. The development of a local nutrition curriculum is not to be seen as an end-product, but rather as a beginning step from which additional curricular components could develop focusing upon various elements which may arise and affect local nutritional practices.

7. Finally, this manual will be rooted in the concept of "sharing"—sharing of knowledge between nutritionists and educators, between teachers, students, and parents, and between all of these and members of other sectors of the community and nation.

The inclusion of the inquiry approach to curriculum development and nutritional content will facilitate the personal involvement of the teacher and student in actually producing and analyzing nutritional information rather than just devouring "pre-packaged" materials. That is, the individual teacher and student would not just be "consumers of knowledge" but would be "producers and sharers of knowledge."

Conceptual Framework

In all curricular decisions, the underlying questions are: who should learn what, when, how, why, under what circumstances, governance, and cost (Foshay, 1975).

These same questions were put into a more formal format by Tyler (Tyler, 1949):

1. What are the purposes that an educational program should seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences or activities be organized?
4. How can we evaluate whether these purposes are being attained?

He laid out a rationale or system by which curriculum developers and educators could answer these questions. This system was based on that proposed by Dewey many years before The Sources of a Science of Education (Dewey, 1929).

In this manual Tyler's model is modified to provide for the following five steps. Each step is then developed and applied to the topic of nutrition education:


Step 1: Assess needs and interests

What are the sources of information that provide a basis for making decisions about goals, objectives, content, and learning activities for a particular educational enterprise? Tyler, following Dewey, suggested three groups whose needs and interests must be assessed in order to provide educational objectives:

- Learners themselves--Who are the learners? What are their nutritional needs and interests? What are the specific nutritional problems of the target group? What nutritional knowledge and skills do they already possess? What are their eating practices? What are their attitudes to food, health, and nutrition? What are their
educational needs? What are their needs in terms of their physical and cognitive developmental level? Considerations of all these questions and more will suggest objectives for the curriculum.

- **Society or the milieu**—What does the nation need in terms of the nutritional health of its citizenry? What are the stated national, educational, health, and nutrition goals of the country? What are the needs and interests of the community, the school, the class? the family?

- **Subject specialists**—What are the needs of the discipline of nutrition? What do nutritionists think people should know? should be able to do? What does the topic of nutrition contribute to the general education of the lay person (i.e., the student)?

- **Teachers**—Though not delineated by Dewey and Tyler, the needs and interests of the teachers are suggested as a source of objectives by Kepler-Zumwalt (1981): the experience and knowledge they possess, the time and resources they have and their interest in teaching nutrition, their educational philosophy, teaching style(s), their values, and, perhaps, their own nutritional knowledge, attitudes, and practices.

**Step 2: Selecting a framework for the curriculum: Articulation of your educational philosophy and psychology**

The previous step will generate many more needs and interests than can be used to guide a given educational curriculum. Thus, as you begin thinking about determining goals and objectives based on these needs and interests, they will need to be screened by your philosophy about education: In what way(s) do you think nutritional well-being contributes to the quality of life? To what extent is education important in improving the nutrition situation in your country? If it is important, what role do you think nutrition education in the schools should play? Should it affirm values in the home? in the culture? or should it attempt to transform the home and society? What role does individual behavior play in maintaining health? What is the relationship between individual behavior and societal institutions in promoting health and preventing disease?

The needs and interest generated in Step 1 must also be subjected to the screen of your view of the nature of the learner and the learning process. Knowledge of educational and child psychology, for example, will assist the curriculum developer to distinguish goals and tasks that are feasible for different age groups from those that are not. Different psychological frameworks will also suggest different kinds of strategies for bringing about learning, skills development and desirable eating behavior. For example, do you adopt one of the following traditional stances: behaviorism (Skinner, 1953), developmentalism (Piaget, 1970), maturationism (Neill, 1960)? or some other social or psychological framework from your own country?

It is important to note that the screening process is not totally objective because, in fact, your answers in Step 1 are themselves shaped to some extent by your educational philosophy. But, in the curriculum development process it is important to touch base repeatedly with, clarify, and articulate one's philosophical and psychological stands. Reflect and articulate your philosophy and psychology and then analyze whether or not your curriculum components are compatible with them.

**Step 3: Select appropriate content and determine goals and objectives**

Once you have clearly stated your beliefs about the aims of nutrition education, about the role of the school in meeting these aims, and your understanding of how people learn and the nature of the learning process, you are ready to select content and develop goals and objectives for the curriculum which are consistent with the theoretical framework you are choosing to use.
By the end of this step you should have a set of clearly articulated goals, a supportive set of behavioral objectives, and a list of generalizations representing key content considerations.

**Step 4: Design and sequence learning experiences to reach objectives**

A variety of activities or learning experiences can now be designed to bring about the desired changes in students' knowledge, attitudes and practices or behavior with respect to food and nutrition.

These learning experiences must then be organized into some sort of coherent program. That is, they must be sequenced in some fashion that makes educational sense.

**Step 5: Evaluate if objectives have been met through the learning experiences and if not, analyze and redirect by going back to step one and regenerating the process**

Finally, the effectiveness of the learning experiences that were designed must be evaluated. In addition, the program as carried out must also be evaluated. Without evaluation, we cannot know whether the nutrition education program was effective, or why it was or was not. If you find that your curriculum objectives have not been met, you will want to analyze: (1) whether your objectives were too narrow or too broad or were otherwise inappropriate; (2) whether you need to reorder your sequence of learning experiences; (3) whether your objectives and learning experiences are compatible; (4) whether your assessment of the needs and interest of the learner, society, the subject of nutrition, and the teacher were, in fact, accurate; and (5) whether your evaluation strategies were appropriate.
HOW TO USE THIS MANUAL
HOW TO USE THIS MANUAL

The curriculum development process is not linear. You can begin anywhere and you will find that you often shift back and forth between steps as the process evolves. We are providing an adaptation of Tyler's model because it provides a useful framework from which to proceed; however, use and adapt it to your own needs and style. There are other approaches to curriculum development which you may want to combine with Tyler's. One such approach which can complement Tyler's model is the "emergent" model of Thelan (1970). In this model, the students themselves stimulate topics for inquiry and the teachers respond by facilitating further inquiry into the issues raised. Depending upon your instructional time, resources, philosophy and style, you might adjust a preplanned curriculum to permit the investigation of such tangents when deemed appropriate. Our adapted form of Tyler's model encourages such creative tangents.

WE SUGGEST THAT YOU READ THROUGH THE ENTIRE MANUAL, INCLUDING THE APPENDIX, BEFORE YOU BEGIN THE WRITTEN EXERCISES. THIS WILL PROVIDE YOU WITH A CLEAR OVERVIEW OF THE PROCESS AND WILL ENCOURAGE YOU TO TAKE A NON-LINEAR, DYNAMIC APPROACH TO THE DEVELOPMENT AND REFINEMENT OF YOUR CURRICULAR UNIT. ESPECIALLY NOTE THE CONCLUDING CHECKLIST AND THE CUMULATIVE CROSS-REFERENCE CHARTS IN THE LAST TWO SECTIONS OF THE MANUAL. THEY WILL PROVIDE YOU WITH AN IDEA OF THE SCOPE AND SEQUENCE OF THE CURRICULAR DEVELOPMENT PROCESS.

The manual can be used by an individual or a group. It is designed for you to write in and to use as a record. We suggest that if the curriculum process is being developed by a team, each team member have a copy and keep an individual record. In such cases, a group record should also be kept to reflect the negotiations and decisions reached through collaboration of team members.

A most effective form of nutrition education is one which is on-going and involves multi-grade levels and longitudinal evaluations. This requires considerable coordination of effort. This manual will provide a starting point for either single unit or multiple unit development.

The exercises have been designed to help you to create an effective nutrition curricular unit of approximately 6 weeks' duration and involving an estimated 18 learning experiences. In this manual we will be using a particular process of curriculum development. We recognize that following this manual will take considerable time. Clearly, readers will have different needs and you should adapt the materials provided to meet your own particular needs. Also make the necessary adjustments with regard to time constraints, unit duration, grade levels, and resources.

If you are preparing a curriculum for a wide range of grade levels, you will probably need to repeat aspects of the process for each developmental cluster: grades 1-3; 4-6; high school.

Also, if you are designing a curriculum for an area in which students do not go on to higher grades in school, put the most essential information in the lower grade levels so that students are exposed to the knowledge and skills before leaving school.

Wherever a box appears, record answers. An arbitrary number of "2," "3," or "5" has been used to itemize some answers. Do not feel bound by this. Attach extra sheets of paper wherever necessary. On the other hand, if after thinking about a
question it does not fit your needs or situation, go on to the next question.

Periodically, you will be asked to REFLECT on your research and experiences. This is an essential part of the curriculum development process. If after reflection, you feel that revisions are needed, by all means make the necessary adjustments to your previously written answers.

When completing the exercises, planning calendar, and charts, do so in pencil. Part of the curriculum process involves continuous revisions and refinements of the product. You may also find it helpful to make copies of the charts and calendars prior to making entries on them.

Some pages are designed to be "torn out" so that you will conclude the process with a mini-book containing your curriculum.

There are no right or wrong answers in this manual. It has been designed to encourage local input and a diversity of responses, needs, and perspectives. IT IS YOUR MANUAL.

Begin immediately to develop a network of resource persons. There may be people beyond your team whose advice you will want to seek. Perhaps you can form a formal or informal advisory council made up of public health personnel, nutritionists, teachers, administrators, students, and parents.

Finally, enjoy the curriculum development process. It is a dynamic and challenging process which allows for the creative expression of your expertise in nutrition and your educational talents.
Nutrition Education

Curriculum Development Process

1. Assess Needs and Interests.
STEP 1: THE ARTICULATION OF A RATIONALE STATING
WHY YOUR CURRICULUM GUIDE IS NEEDED AND IMPORTANT
BASED UPON A NEEDS ASSESSMENT

Where to begin?

As you develop your curriculum guide, always consider it from the vantage point
of the reader. The first, most immediate questions the reader wants answered are:
"Why should I take the time to read this curriculum guide? How, when, and why should
I use it? How will it help me and my students? What makes it different from other
curricular guides? What problems, issues, and needs does it address? What is the
target population of the curriculum?" It is important for the curriculum developer to
address these questions in a clearly stated succinct rationale located in the front of
your guide.

At this point you probably have a general topic and a target population in mind
for your curriculum guide. However, this is a possible pitfall because you may be
overlooking other topics of more importance. As you work through this first step of
the manual, you will examine how your topic fits into the context of the four general
areas from which curricular goals are derived: The needs and interests of the society
and the milieu of the learner; the needs of the discipline or subject matter specialists;
the felt and real needs of the learner; and the needs of the teacher who is to
implement the curriculum. Basically you will conduct a needs assessment or problem
identification process. And, you will conclude this step by writing a brief rationale
which will satisfy the reader's immediate questions.

Scenario
A nutrition educator has been asked to design a five-session program on
"nutrition" for parents of adolescents in a small village. She chooses as her
first session a lecture on carbohydrates, protein, and fat. She is in the
middle of it (explaining the topic rather well to this lay audience, she thinks
contentedly) when a member of the audience blurts out: "Do you have
recipes for making good, healthy snacks for my child to eat after school?"
This is followed by an avalanche of questions from others on how to select
and prepare foods--and NONE on the topic of the lecture.

What is going on here? The nutrition educator believes that her talk is
appropriately directed at what the audience wants or should know about
nutrition. How did she come to that conclusion? She was newly out of
graduate school. She thought that this was what people should know when it
came to "nutrition" and teaching as she was taught was what she knew how
to do. In this case, she did an informal "needs assessment" or "problem
solving" in her head, which probably went something like this: "people should
become more knowledgeable about the principles of nutrition science if they
are to be able to make wise food choices and a lecture is the quickest way
to get a lot of information to the audience."

Comment
This is a very common practice. Very often food and nutrition
education programs are based upon what the nutrition educators believe the
target population wants, must know, or should be able to do. This kind of
informal needs assessment works well when the nutrition educators have long
and direct experience with the community or target group for which the
program is designed. However, there is something to be gained from a more formal process of problem identification or needs assessment, which we will now discuss.

Key Questions in Developing Your Needs Assessment

1. What food and nutrition education needs will your curriculum guide address?
2. How do we find out whether your guide is needed?
3. Who should participate in needs/wants assessment or problem diagnosis?
4. What kinds of information should be collected?
5. What target groups should be served by your curriculum guide and what are their needs?
6. On what basis should needs/problems/wants be prioritized?
7. What food and nutrition goals for your curriculum can be derived from this needs assessment?

Why a Needs Assessment?

A needs assessment will enable you to determine what are the most important topics to be covered in your curriculum and what instructional methods will be most valuable for the learner and appropriate for the teacher. A needs assessment quite simply is a way to put limitations on the focus and range of your curriculum guide. One of the most difficult elements of the curriculum development process is not to try to cover too much territory in one guide. The needs assessment, if done carefully, will help to avoid this common pitfall.

Through the needs assessment, you may find out that: Your original topic is the most appropriate; your topic needs to be adjusted; or your topic should be replaced by one of more value or immediate importance; or the instructional methods you plan to employ should be modified; or the target population changed.

What You Will Look for in the Needs Assessment

Within the four areas of concern [society and milieu, the discipline or subject area, the learner, and the teacher], you will want to examine relevant needs, interests, problems, and wants.

A **NEED** is a "pressing lack of something essential"; or a lack of something which, to the best current information, is necessary for the improvement of quality of life or nutritional well-being.

An **INTEREST** is "a feeling of intentness, concern, or curiosity about something."

A **PROBLEM** is a "source of perplexity, distress, or vexation," or a state of affairs that is unsatisfactory.

A **WANT** is a "need," a "desire"; or the desire for something which is not supported by current data as being essential for the improvement of quality of life or nutritional well-being but is perceived as desirable. Sometimes wants are referred to as "perceived needs" or "felt wants."
These definitions (Webster, 1977) are not the only ones. Those who will conduct the needs assessment or problem diagnosis will need to define these terms for themselves.

Successful food and nutrition education programs are those which are directed at the real needs, perceived needs or wants, and problems of the community, target group, or individual. And, inclusion of the interests of the society, discipline, learner and teacher adds not only a strong motivational element but also can make the curriculum immediately more "marketable" among a variety of audiences.

Who Will Participate in the Needs Assessment?

The entire curriculum development process is best performed as a collaborative effort drawing upon the knowledge, skills, talents, and experience of a number of individuals. Division of labor and collective negotiations will enrich the curriculum guide and enhance efficient use of time. No matter what level you are working on, be it a national curriculum guide or a local school curriculum project, consider the four areas of concern when selecting individuals to serve upon your curriculum committee. Draw upon individuals who will be able to address with some degree of expertise the needs and interests of society, the subject of food and nutrition, the learner, and the teacher.

List here the members of your committee. (It is assumed that at least one nutritionist and one educator will collaborate on this curriculum. If at all possible draw upon other individuals who have a stake in the curriculum process and product.)

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The Collection of the Information for the Needs Assessment

Reliable information forms the basis for any needs/wants assessment or problem diagnosis. Many different kinds of information can be collected and many different methods for collecting it are available. It is often most helpful to begin a comprehensive needs assessment by collecting the objective data first and then supplementing it with the subjective information. Both objective and subjective data are important to the needs assessment process. Examples of objective data about the learner might include information such as nutritional status, medical or biochemical data, age, sex, general socioeconomic status, or educational level. Subjective information might include the learners' attitudes, values, social and cultural norms, or their perceived needs. It is important to collect, if at all possible, more than one kind of information and to use several methods for each kind of information within each area of the four areas of concern.
Methods of Collection of Information

The more diverse the methods you employ, the more well-rounded your collection of information will in all likelihood be. You will be most familiar with the reliability of the sources you tap. Weigh all data information appropriately. Among the myriad of methods you will employ consider the following:

1. Review of documents; international, national, local, public, and private.
2. Review of clinical or agency records.
3. Review of indirect nutritional status indicators: public health statistics and social indicators; rates of utilization of nutritional services and programs.
4. Review of the research literature, both educational, and food and nutrition related.
5. Review the results (and the methods) of surveys: national surveys and direct surveys of your target population.
6. Interview and survey key individuals such as: parents, nutrition educators, teachers, program coordinators, local doctors, nurses, public health officials, members of consumer groups, school administrators, and, of course, members of the targeted student population.
7. Hold a local community meeting to stimulate discussion of the proposed topic. This can include selected key individuals or can be a much broader group. Often through the stimulation of group discussion, new important information will surface.
8. Review of other curriculum guides to determine areas of overlap, reinforcement, etc. [Remember that all too often, curriculum developers "re-invent the wheel."] Make sure that your topic has not already been adequately and appropriately covered. In reviewing other curricula, analyze their relevance to your own country's needs and interests. Do not be tempted to adopt whole cloth curricular foci or materials that are not suited for your own country or community.
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<td><strong>A SUMMARY OF NEEDS ASSESSMENT OR PROBLEM-IDENTIFICATION PROCESS</strong></td>
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<td>1.</td>
<td>Identify the people who will participate in needs/wants/interests assessment and form a task force or committee with them.</td>
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<tr>
<td>2.</td>
<td>Task force or committee chooses areas of concern and determines the needs assessments goals.</td>
</tr>
<tr>
<td>3.</td>
<td>Gather information about the needs, problems and wants of:</td>
</tr>
<tr>
<td></td>
<td>- Society</td>
</tr>
<tr>
<td></td>
<td>- national and local educational needs</td>
</tr>
<tr>
<td></td>
<td>- national and local nutritional needs</td>
</tr>
<tr>
<td></td>
<td>- Subject area of nutrition</td>
</tr>
<tr>
<td></td>
<td>- concepts</td>
</tr>
<tr>
<td></td>
<td>- skills</td>
</tr>
<tr>
<td></td>
<td>- practices</td>
</tr>
<tr>
<td></td>
<td>- Student or learner (target group)</td>
</tr>
<tr>
<td></td>
<td>- nutritional needs/wants</td>
</tr>
<tr>
<td></td>
<td>- behavioral needs/wants in terms of eating practices and behaviors</td>
</tr>
<tr>
<td></td>
<td>- knowledge and skills, and motivating and reinforcing factors</td>
</tr>
<tr>
<td></td>
<td>- facilitating conditions</td>
</tr>
<tr>
<td></td>
<td>- needs and wants as perceived by the target group</td>
</tr>
<tr>
<td></td>
<td>- Teacher</td>
</tr>
<tr>
<td></td>
<td>- relevance to mission of the school</td>
</tr>
<tr>
<td></td>
<td>- resources available</td>
</tr>
<tr>
<td></td>
<td>- professional and personal needs of the nutrition educator</td>
</tr>
<tr>
<td>Methods:</td>
<td>- review of existing records: direct measures</td>
</tr>
<tr>
<td></td>
<td>- review of existing records: indirect indicators</td>
</tr>
<tr>
<td></td>
<td>- review of research and professional literature</td>
</tr>
<tr>
<td></td>
<td>- direct surveys of the target group</td>
</tr>
<tr>
<td></td>
<td>- formal and informal interviews of key individuals</td>
</tr>
<tr>
<td></td>
<td>- group meeting with members of target group</td>
</tr>
<tr>
<td>4.</td>
<td>Set priorities on the basis of which ones are most important nutritionally; which are considered most desirable by the participants; and which can be appropriately addressed by educational means.</td>
</tr>
<tr>
<td>5.</td>
<td>Determine the feasibility of meeting the needs</td>
</tr>
<tr>
<td></td>
<td>- Estimate resources available</td>
</tr>
<tr>
<td></td>
<td>- Examine administrative structure</td>
</tr>
<tr>
<td>6.</td>
<td>Write out program goals based on above (Step 3)</td>
</tr>
</tbody>
</table>
ASSESSMENT OF NEEDS AND INTERESTS
Area of Concern: Society and Milieu of Learner

WORKSHEET #1

Determination and Articulation of the Societal Needs and Interests
To Be Addressed in Your Curriculum Guide

Most human problems have such complex historical and social determinants that they do not lend themselves readily to tidy planning or to study by the methods of the natural sciences. Their complexity comes from the fact that they involve not only man's biological needs in the here and now, but also his past, his potentialities, and his limitations.

Rene Dubos, So Human An Animal, pp. 232-233

Why

This needs assessment will help you to select a topic of prime importance. Then you will be able to determine and articulate the primary societal needs and interests which the topic and methods of your curriculum guide will address. It is essential that your guide's content and instructional methods be set within a meaningful societal context--a context which considers the historical traditions, the present realities, and the future hopes of the society in which the learner will grow. The curriculum must view the learner not only as an individual who will improve his own nutritional well-being but also as a contributing member of a larger society. Thus, the guide should reflect a set of needs and interests drawn from the learner's milieu--the global society, the nation, the region, the local community, and even the school. Addressing such needs in concert, the curriculum should enable and encourage the learner to make positive and lasting changes not only in his or her own life but also to improve the quality of life in the society as a whole.

Key Questions:

1. Why will your curriculum guide be important in terms of the needs/interests/demands of
   a) the nation or territory (or, more broadly, global needs/interests)
   b) the community
   c) the school including the particular target grade level?

Exercise:

Answer the above key questions for your curriculum guide on the following page. Use some or all of the methods tested on pages 11 to 12 of this manual, such as reviews of relevant documents or discussion with key individuals and community members.
<table>
<thead>
<tr>
<th>Society</th>
</tr>
</thead>
<tbody>
<tr>
<td>What Information</td>
</tr>
<tr>
<td>National Educational Goals</td>
</tr>
<tr>
<td>National Health/Nutritional Goals</td>
</tr>
<tr>
<td>Community Nutrition Needs</td>
</tr>
<tr>
<td>School Health/Nutrition Needs</td>
</tr>
</tbody>
</table>

**Note:** Use additional copies of this page if you require more space
ASSESSMENT OF NEEDS AND INTERESTS

Area of Concern: The Subject Matter--Food and Nutrition Education

WORKSHEET #2

Determination and Articulation of the Needs and Interests
from the Point of View of Nutritionists
To Be Addressed by Your Curriculum Guide

Food and nutrition as a field of knowledge can be structured around three main questions: What is food? how is it provided? and why and how is food important? The steps in the nutrition education process involve three stages of perception, evaluation and action. Perception leads to the recognition of the evidence related to the problems. Evaluation involves analysis of the new evidence related to the problem which in turn provides information for planning and decision making to establish priorities for action to solve problems.


Why

This aspect of the needs assessment will enable you to select a topic which is of prime value to the field of food and nutrition. You will then be able to determine and articulate why the topic you have selected is valuable to study within the needs and interests of the subject area itself. The topic selected should have an inherent worth and be of importance to the body of knowledge which embodies the field of food and nutrition. The topic should reflect the needs and interests of current research and should be drawn from the historical traditions of the field. The content in the curriculum should have a "fit" and "feeling" of importance within the broader topics of the study of nutrition and food.

It is important to keep in mind that in all likelihood your goal is not to produce nutritional specialists only. You probably want your target population to be able to use the knowledge and skills they learn through your curriculum in their everyday life no matter what careers they may eventually pursue. Thus, it is important for you to keep in mind that your topic must also fit into the student's general education.

Key Questions:

1. Within the broader context of the body of knowledge that defines the field of "food and nutrition," what is it that makes the topics and content areas focused upon in your curriculum so important?

2. Do the topics you have selected represent the body of knowledge of food and nutrition that nutritionists think students should know?

3. Has the topic already been adequately covered in other curriculum guides being used in your country? If so, you might consider reducing or eliminating your coverage, or your might consider what it is that makes your approach to the topic unique and of particular value to the field.
Exercise:

On the next page, gather information to identify the following:
a. What are the basic nutrition topics nutritionists in your country believe should be taught to school-age children (e.g., basic food groups)?
b. What recent research findings are relevant (e.g., cancer risk-reducing dietary patterns)?
c. What local dietary and food-preparation practices are considered by nutritionists in your country to be desirable or undesirable?
### Worksheet #2

<table>
<thead>
<tr>
<th>Subject Area/Specialist</th>
<th>What Information</th>
<th>Methods Employed to Gather It</th>
<th>Your Key Findings</th>
<th>Resources Used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nutrition Topics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Historically important within the field (e.g., food groups)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on relevant, recent research (e.g., calcium and bones)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desirable and undesirable local practices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: Use additional copies of this page if you require more space*
ASSESSMENT OF NEEDS AND INTERESTS
Area of Concern: The Learner

Worksheet #3

Determination and Articulation of the Needs and Interests of the Learner to Be Addressed by Your Curriculum Guide

Abandon the notion of subject-matter as something fixed and ready-made itself, outside of the child's experience; cease thinking of the child's experience as also something hard and fast; see it as something fluent, embryonic, vital; and we realize that the child and the curriculum are simply two limits which define a single process. Just as two points define a straight line, so the present standpoint of the child and the facts and truths of studies define instruction. It is continuous reconstruction, moving from the child's present experience out into that represented by the organized bodies of truth that we call studies.


Why

Determine and articulate how your curriculum, both in content and instructional methods, will address the real and felt needs and interests of the target learner population. The curriculum must address topics which are of nutritional importance to the learner while at the same time the method by which the content is presented must engage the student in real learning. In an area such as food and nutrition education, it is essential to recognize that you really want to change attitudes and habits as well as increase knowledge. To promote long-lasting changes, the curriculum must be motivational, rewarding, and consider other factors in the student's life which will either reinforce or inhibit positive growth.

Key Questions:

1. Why will your curriculum be important in terms of:
   a) meeting the student's developmental needs (cognitive, affective, psycho-motor, and social)?
   b) addressing the special nutritional or other specific deficiencies of the target group of learners?
   c) enhancing the special interests of the learners?
   d) reflecting the needs and interests of the familial group in which the learner spends so much of his or her time?
   e) addressing the reinforcing or inhibiting factors that affect changes?

Exercise:

Answer the above key questions on the following pages. Use some or all of the methods described on pages 11 and 12 of this manual, such as reviews of relevant documents or discussion with key individuals, including students.
### The Learner

<table>
<thead>
<tr>
<th>What Information</th>
<th>Methods Employed to Gather It</th>
<th>Your Key Findings</th>
<th>Resources Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental Needs/Interests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Age Group of Learners</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Physical Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Emotional Needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Social Needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Cognitive Needs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Use additional copies of this page if you require more space
### The Learner

<table>
<thead>
<tr>
<th>What Information</th>
<th>Methods Employed to Gather It</th>
<th>Your Key Findings</th>
<th>Resources Used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Educational Needs/Interests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Level/Range of Nutritional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge/Skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Academic Skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.g., reading levels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Motivational Factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.g., instructional formats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Special Needs or Interests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.g., learning disabilities,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>physical ailments</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Use additional copies of this page if you require more space
Exercise:

On the following page, identify the nutritional problems found in your target population. You may do this by examining appropriate nutritional or medical statistics, talking with health professionals or using other methods listed on pages 11 to 12 in this manual.

Now, for each nutritional problem listed, analyze what are some of the causes in the following categories: (Enter these in the appropriate columns on the following pages.)

- Facilitating conditions--money or other resources that make access to food or food production possible; time and energy for food preparations, etc.
- Dietary practices or behaviors--eating high-fat foods; not enough green vegetables, etc.
- Behavioral capabilities--knowledge and skills (both cognitive and affective) needed to solve nutritional problems.
- Motivating factors--attitudes, values, cultural beliefs, or other factors that help or hinder healthy dietary practices.
- Reinforcing factors--the extent to which peers, teachers, family, and community members reward or discourage healthy eating practices.

Enter in the appropriate columns, your findings in each of these categories of causes, the methods you used to obtain these findings, and any resources you used.
| The Learner                                      |  |
|------------------------------------------------|  |
| **What Information**                           | **Methods Employed to Gather It** | **Your Key Findings** | **Resources Used** |
| **Nutritional Needs/Interests**                | **Nutritional Problems**           | **e.g., Iron deficiency, poor health** |  |
|                                                 | **e.g., National and local statistics, observations, interviews** | 1. |  |
|                                                 |                                   | 2. |  |
|                                                 |                                   | 3. |  |
|                                                 |                                   | 4. |  |

**Note:** Use additional copies of this page if you require more space.
NUTRITIONAL PROBLEMS AND THEIR CAUSES

(See Step 2 for more detailed explanation of this chart)

![Diagram showing the relationship between nutritional status or problem, food practices or behaviors, behavioral capabilities, motivating factors, reinforcing factors, facilitating conditions, and causes and effects.]

**Problem**

**C A U S E S**

**FACILITATING CONDITIONS**

- Nutritional status or problem
- Food practices or behaviors

**BEHAVIORAL CAPABILITIES**

- Behavioral capabilities

**MOTIVATING FACTORS**

- Motivating factors

**REINFORCING FACTORS**

- Reinforcing factors

**ASSESSMENT RESULT FROM STEP 1**

- e.g., Iron deficiency
  - Student doesn't eat available black beans
  - Meat is too expensive

**KNOWLEDGE, SKILLS NEEDED TO SOLVE PROBLEM**

- Student doesn't know black beans contain important substances ("nutrients")

**ATTITUDES, VALUES**

- Student believes beans are for "poor" people

**PEER & COMMUNITY SUPPORT**

- Community "looks down on" beans

**YOUR KEY FINDINGS**

- Methods used to gather information

**RESOURCES USED**

Note: You will need to make a copy of this sheet for each nutritional problem upon which your curriculum will focus.
ASSESSMENT OF NEEDS AND INTERESTS
Area of Concern: The Teacher

WORKSHEET #4

Determination and Articulation of the Needs and Interests
of the Teacher to Be Addressed by Your Curriculum

Curriculum change is most effectively implemented when the community
understands and supports it, when facilities are available for desirable school
organization and learning activities, when appropriate materials are at hand,
and when supportive personnel assist teachers. But it is the classroom
teacher who is the key to curriculum implementation, for in the last
analysis, in plain terms, the curriculum is what the teacher makes of it.

for Elementary Curriculum and Instruction, p. 459

Why

Determine and articulate the needs and interests of the teacher who will use your
curriculum guide. If you want your curriculum to be implemented, and implemented in
a manner which you desire, then you must consider the teacher. Far too many
curricula sit on dusty shelves because the teacher was overlooked in the curriculum
development process. A curriculum guide must be relevant to the teacher's
instructional needs, must be motivational to the teacher if use is to be spirited and
continuous, and must be practical. It must reflect the range of resources, skills,
training, and general educational philosophy and psychology of the targeted user or it
must provide compensating elements.

Key Questions

1. Why is your curriculum guide important in terms of:

   a) what are the knowledge and skills related to food and nutrition
      education held by the teacher?
   b) what is the level of training of the teacher?
   c) what are the practical needs (time, resources, supports) of the
      teacher?
   d) what is the philosophy of education and psychology of learning of the
      teacher?
   e) what are the special interests, such as a personal interest in
      nutrition, of the teacher?
   f) what instructional and evaluation are most frequently used and/or
      preferred by the teacher?

Exercise:

Answer the above key questions for your curriculum guide on the following page.
Use some or all of the methods listed on pages 4 to 5 of this manual, such as review
of relevant documents or discussion with key individuals and community members.
Assessment of Feasibility

Many practical considerations will influence the kind of curriculum you can create. This is a good time to start examining some of these.

a. What is the proposed duration of your curriculum?

b. What is the specific target population? Will there be a pilot program with a representative population?

c. How do you see the curriculum being used in the school? Will it be taught as a separate subject or integrated into other subject areas?

d. How often do you see the curriculum being taught? How long will each instructional session be?

e. Will it be taught by the regular classroom teacher or by a subject-matter specialist? Will your teachers require special training or assistance?

f. Will any resources or materials be essential to the curriculum? Which?

g. What are your budget, time constraints, duplication, dissemination, and training systems? Note: Be creative when viewing constraints. Are there strategies for overcoming them?

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Strategies for minimizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e.g., low budget)</td>
<td>(e.g., fund raising campaign)</td>
</tr>
</tbody>
</table>

---

Note: In some curriculum development modes, these factors are not considered until later in the process. They are positioned here in the manual to save you time and to sharpen your focus.
Determinations of Needs/Interests Priorities

By now, you have given a great deal of thought to the needs and interests of your target learners, teachers, milieu, and to the topic of nutrition itself.

You may find it helpful at this point to establish a set of priorities that you will address in the curriculum. It is tempting to try to cover everything in a curriculum. However, it is, of course, impractical. It is best to sharpen your curriculum focus, limit your topic, and provide opportunities for in-depth exploration of the topic. This delimitation is often the most difficult phase of the curriculum development process.

To assist you in this process, on the next page list the three most important issues/concerns/factors for each category that you want to keep in mind as you proceed. Try to place them in priority order. Then, rate each factor in terms of its nutritional or medical consequences; its perceived desirability from the point of view of the participants; whether the problem is solvable by educational interventions; and whether it is feasible given the time and resource limitations imposed on this curriculum.

Note: Do not feel limited by this priority list. Refer to additional issues if you want, but keep your focus clear.
Exercise:

List three important needs or concerns from the previous page for each category below. Then go back through the list and rate the needs according to the rating scheme below. For each need, interest or problem, enter a score on a scale of 1 to 5, for each of the following criteria:

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Moderately</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) How important is the need or problem in terms of its nutritional, medical, or physiological consequences?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) How desirable is it to the participants to solve the perceived need or problem?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) How amenable is the problem to solution by an educational intervention?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) How feasible is it in terms of time and resources to develop a program to meet the needs or to solve the problem?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>(1) Importance</th>
<th>(2) Desirability</th>
<th>(3) Modifiability</th>
<th>(4) Feasibility</th>
</tr>
</thead>
</table>

a. The needs and interests of the society/milieu:

1. 

2. 

3. 

b. Curriculum needs and interests arising from the subject area of nutrition or from the concerns of nutritionists:

1. 

2. 

3. 

<table>
<thead>
<tr>
<th>Criteria</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
<td>Desirability</td>
<td>Modifiability</td>
<td>Feasibility</td>
<td></td>
</tr>
</tbody>
</table>

c. The real and felt needs and interests of target learner population (nutritional, behavioral, motivational, developmental, and in terms of knowledge and skills):

1. 

2. 

3. 

d. The needs and interests of the teacher

1. 

2. 

3. 

Final Prioritizing to Set Curriculum Focus

From a careful review of the checklist on the previous pages, select three to six high-priority needs and interests that this curriculum will address, depending on its nature and scope. These will provide an initial focus for the development of your goals and objectives in Step 3. To do this, you may want to total the scores for each need. However, in the end you or your needs assessment committee will have to make a subjective judgment about priorities. For example, even though a need may have a low feasibility score, it may have a high enough medical score that you would want to include it as a focus of your curriculum.

1.

2.

3.

4.

5.

6.

(tear-out)
Step 1 Checklist

BEFORE YOU PROCEED TO THE NEXT STEP, you should have...

— A "tear-out sheet" on your list of three to six most highly rated needs and interests to be addressed by this curriculum.
Nutrition Education

Curriculum Development Process

1. Assess Needs and Interests

2. Select Theoretical Framework
STEP 2: FRAMEWORK FOR THE CURRICULUM: ARTICULATION OF YOUR EDUCATIONAL PHILOSOPHY AND PSYCHOLOGY

**Note:** Although the curriculum development process has to be laid out in this manual in a linear fashion, all the steps are closely related to each other. You can work on the various steps simultaneously, or in a different order. Write in each of the spaces and worksheets in pencil at first. You will want to revise what you have written in each step as you complete the other steps. When you think that what you have written is the final version, write it in ink.**

Scenario

A long-time educator argues that nutrition education is a very practical art and that she doesn't believe all this about the importance of nutrition education "theory." She is then asked to describe how she would work with a class of nine year olds. She says she would have them actively participate in a variety of food-preparing and food-tasting activities. Why would she do that? Answer: "Because children should become familiar with a variety of foods and they learn best by being actively involved in something." What about with diabetic adults? Answer: "Oh I would give them a list of foods they should and should not eat and really try to scare them into complying." Why? "Because their health and maybe even their lives are in danger and they must change their ways of eating."

What's going on here? She does have both a philosophy of education and a psychology of learning. She believes that the role of food and nutrition education is to shape or change behavior. Her educational philosophy is that children learn best through hands-on activities and that adults with a nutritional problem are best motivated by using fear tactics.

Comment

We usually have some kind of educational philosophy or psychology that undergirds our educational practices, but we are not often called upon to articulate them. Bringing to consciousness our philosophy and psychology is a useful activity and may expose any inconsistencies between our hidden assumptions and our practice.

In the previous step, you completed the process of identifying the needs, wants, problems, and interest which this curriculum should address. You also prioritized these needs, problems and interests so as to select a few which this curriculum can focus on. However, the same needs and interests can be satisfied in many different ways. How you will go about addressing these needs and interests depends to a large extent on what you think nutrition education can and should accomplish. Thus, before you design the activities and select the content to answer the problems and interests you identified, it is important to stop and think:

What do you think should be the overall aim of food and nutrition education in your school or school system? Or, what do you wish for it to accomplish?

The answer to this question will greatly influence the nature of the content and strategies you choose to use in this curriculum because there are two major—and differing—approaches to this question: some believe that the overall aim of food and nutrition education is to bring about behavioral change in people so that they will eat in ways that are conducive to health. Another group, on the other hand, believes that the aim of FNE is to provide the knowledge and skills necessary for people to be able
to make their own informed choices. While both groups of nutrition educators may have as their ultimate goal the improved nutritional well-being of a given population, the first group believes that nutrition education is "a form of planned change which involves a deliberate effort to improve nutrition by provision of information and other education interventions" (Sims, 1980). The second group sees a less active role for the nutrition educator in the process. The nutrition educator's job is done when the information and skills have been imparted. It is up to the consumer or student (or whoever is the target population) to make his or her own decisions. Thus the Council for Agricultural Science and Technology stated in its 1976 report, Significant Issues in Nutrition: "Since freedom of choice in the selection of foods is part of our way of life, nutrition education is a high priority issue because the public must be provided with the information that will encourage good nutritional practices and will combat the spread of misinformation (CAST, 1976).

Food and Nutrition Education (FNE) in the Context of Nutritional and Economic Problems. Marian Zeitlin, in another UNESCO publication (UNESCO: Zeitlin, 1983), has suggested an interesting way to think about this issue. The overall aim probably depends to a large extent on the severity of the health and economic problems of the target group. She points out that learner groups can be sorted out on two dimensions as shown in Figure I. The first dimension is the degree of socioeconomic and resource restrictions. This dimension is shown on the X-axis and includes food availability and price, the time and facilities for food preparations, and literacy skills. Most industrialized population groups tend to have few economic and availability restrictions on food choice and thus generally fall on the low end of this scale. Most populations in the developing countries, on the other hand, fall at the other end. The second dimension is the extent of short-term to medium-term nutritional risk and is shown on the Y-axis. Affluent children and young adults, as well as adult males and non-child bearing females in poor populations, are at low risk for short-and medium-term nutritional problems and would fall at the low end of this scale. Adult males in affluent communities with diet-related degenerative diseases, such as heart disease, and vulnerable groups in poor communities, such as low-income pregnant mothers, infants, and young children would fall at the high end of this scale. The overall aim of food and nutrition education, then, will depend on the category in which your student population falls.

You may find this scheme helpful in thinking about the nature of your curriculum. However, use it only if it is consistent with your country's national educational policy. Note too that whether the curriculum will be directed at urban or rural populations may influence your choice of approach. So, as you think about the overall aim of nutrition education in your school system, you should look at the nature of the majority of the students in the system, if this is appropriate. Thus, if the majority of the students in your school(s) fall within the first quadrant (low in health risks and economic restrictions on food choice), the overall aim may be to provide the knowledge and skills so that the learners will become nutritionally literate consumers who will be able to make informed choices. Some nutrition educators argue that while young students may not be at risk for short-term nutritional problems, they may be at risk for developing long-term nutrition-related problems such as heart disease and cancer. Thus it may be appropriate for FNE with this age group to emphasize behavioral change strategies that are conducive to long-term health.

If the students are relatively affluent and thus have few economic restrictions on their food choices but are high in nutrition related short and medium nutrition-related risk factors and disorders (such as obesity, hypertension, diabetes, or heart disease), then the overall aim of FNE may need to be different: to bring about behavioral
Figure 1

TARGET POPULATIONS FOR NUTRITION EDUCATION BY

HEALTH RISK AND SOCIOECONOMIC PROBLEMS

QUADRANT 2

HIGH

People with diet related
degenerative and other
diseases

QUADRANT 3

HIGH

Vulnerable age groups

RISK

in poor communities

QUADRANT 1

HIGH

Well nourished; healthy
with respect to short and
medium term risk; affluent

QUADRANT 4

HIGH

Adult males and nonchild-
bearing females in poor

RISK

populations

FEW

MANY

SOCIOECONOMIC PROBLEMS OR RESTRICTIONS

- Food Prices
- Food availability
- Food preparation time and facilities
- Literary skills

From UNESCO: Zeitlin (1965).
change and improved nutritional status. That is, you will want this group to develop improved eating practices.

If the majority of your students are relatively poor and are also high in nutritional risk (i.e., if such nutritional problems as anemia, protein-calorie malnutrition, and stunted growth are common or if resources are limited and/or parents are overworked and do not have the time and energy to prepare foods for the children), the aim of FNE may again be that of behavioral change, coupled, of course, with improved economic resources if at all possible.

If the majority of the target students are poor but are not at nutritional risk (probably a more rare combination of conditions than the other three groups), then FNE directed at affirming current eating practices and providing information and skills for informed choice may be appropriate.

Now we can go back to the question we asked above: What will be the overall aim of this FNE curriculum, given YOUR school population? Do you think that changing the students' eating practices should be the primary aim of this curriculum, or educating students to make informed choices? Why? Write your answer in the space below:

Food and Nutrition Education in the Context of the Overall Aim of Education in Your Setting.

Food and nutrition education in your school(s) does not occur in a vacuum. It occurs in the context of the educational philosophy of your school or country. So another question to ask is:

How does FNE fit in with the overall aim of education or educational philosophy in my school or country? How does it relate to the development goals of the country?

There are of course many different—and conflicting—educational philosophies that can be used to guide educational practice. One classic U.S. curriculum text by Tanner and Tanner (1980) provides an excellent summary of these. Simplifying their scheme, we can point to three major schools of thought—essentialism, progressivism, and romanticism. We will describe each of these briefly. Later we will ask you to review your own philosophical statements you made above and to compare them with the major schools of thought we identify here.

1. Essentialism—the conservative or traditional vision

From this point of view the main tasks of education are to perpetuate the best of the cultural traditions and ideas of the past and to cultivate the minds of the younger generations. Accumulation of knowledge is an important preparation for life. The emphasis is on academic excellence through studying the liberal arts and the disciplines
of science, mathematics, foreign languages and so forth. Abstract studies are valued over direct experience. Such an approach, according to its proponents, prevents schools from being buffeted by fads at any given period of time about what is considered "relevant." The following quote exemplifies this position:

"For all children, the educational process must be one of collecting factual knowledge to the limit of their absorptive capacity. Recreation, manual or clerical training, etiquette, and similar know-how have little effect on the mind itself. To acquire such knowledge, fact upon fact, takes time and effort. Nothing can really make it "fun."" (Rickover, 1959)

Much of FNE in most countries fall within this educational philosophy even when nutrition educators don't realize it and regardless of our rhetoric. For example, we often will teach about the role of nutrients in the body and the various food sources of nutrients because such information seems to us to be "useful" or "important" to teach. We tend to do this especially when we do not conduct a needs and interests assessment to find out what a given group specifically needs to learn about.

2. The progressive vision

From the progressive point of view, education is viewed as something dynamic, a process of growth and not just a process of cultural transmission. The mind is part of the biological being, not a thing to be trained. The interest of the learner as well as social conditions must be considered in developing a curriculum. There are two subcategories, the experimentalists and the reconstructivists.

(a) The experimentalists, exemplified most notably in the West by Dewey, are committed to educational methods that emphasize reflective thinking or problem-solving; the holding of beliefs as tentative until they can be verified; the testing of ideas through action of the intelligence. For Dewey, the outcome of such methods is the liberation of individuals by enabling them to see new problems and devise new solutions so that the existing social order can be analyzed and transformed into a better one. "Acquisition of skill, possession of knowledge, attainment of culture are not ends: they are marks of growth and means to its continuing" (Dewey, 1956). Individual growth is seen as vital for the social growth of a democracy. As Bode noted:

"The purpose of education is not to fit the individual for a place in society, but to enable him to make his own place. . . . We put shoes on a child to protect his health, not to bind his feet." (Bode, 1927)

Food and nutrition education based on this educational philosophy would emphasize teaching problem-solving skills so as to enable students to make informed food choices.

(b) The reconstructionists see the experimentalists as too neutral. Instead, they view the school as an important means for social reconstruction or building a new social order. Schools should address the social problems of the times, develop a new vision of human or national destiny, and provide the new generation the means of realizing this vision. Although reconstructionism says that democracy is an appropriate goal of education, it usually does attempt to inculcate certain prescribed beliefs in the learner--such as beliefs based on Utopian visions, economic philosophies (Marxist, capitalist, other), or national and other ideologies. To the experimentalists, this approach is antithetical to education for a democratic society.

The role of food and nutrition education within this philosophy is to facilitate other development goals of the country.

3. The romantic vision

The child is seen as a flower, which will naturally unfold into fruition if given a permissive and supportive environment, according to this view. It derives from the
philosopher Rousseau's notion of the child as "noble savage" whose inherent goodness should not be corrupted by adult society and for whom instruction should be based on direct experience. Summerhill school in England, which was founded on these notions, is described by its founder, A.S. Neill thusly:

"Well, we set out to make a school in which we should allow children to be themselves. In order to do this, we had to renounce all discipline, all direction, all suggestion, all moral training. . . . All it required was what we had—a complete belief in the child as a good, not an evil being. For almost 40 years, the belief in the goodness of the child has never waivered; it rather has become a final faith.

My view is that a child is innately wise and realistic. If left to himself without adult suggestions of any kind, he will develop as far as he is capable of developing." (Neill, 1960)

An illustration of this philosophy for FNE in the schools is to believe that children have an innate impulse to do that which is healthy for them. They can and will choose foods appropriately as long as a wide range of foods are available to them and the adults around them are noninterfering.

Now that we have reviewed these various educational and social philosophies, within what tradition does your school's or school system's educational and social philosophy fall? Maybe it doesn't fall into any of the three we have discussed or perhaps it encompasses more than one category. What is the educational philosophy that best describes the one you will use to guide this FNE curriculum? Compare your FNE philosophy with that of your school(s). Are they consistent with each other? Will it be possible for you to implement your FNE in this context? What compromises will or may be necessary? Make some notes on this issue in the space below. You will find these notes helpful when you write out the rationale for your curriculum at the end of Step 2.

------------------------------------------------------------------------------------------------------------------------

Food and Nutrition Education in the Context of Beliefs About the Nature of the Learner and Learning Process

Now that you have made clear the aim of FNE in the context of the nutritional and economic problems of your students and have reflected on the role of FNE within the context of the educational and social philosophy of your school or school system, you are ready for the next steps in the curriculum development process: determining specific objectives and strategies to address the needs, problems and interests identified in Step 1. However, the same needs can be addressed by many different KINDS of strategies. For example, will you teach the students through lecture-discussion methods
or will students be physically actively involved in learning activities? Do you think students learn best if the teacher provides carefully structured sets of experiences or lectures for the students or do they learn best if they are allowed to freely and actively explore what they want to learn? Are certain types of activities more suited to the aim of providing the knowledge and skills needed to make informed choices while others are better suited to the aim of changing students' eating practices?

Thus, your ideas about the nature of the learner and the learning or behavioral change process (in addition to your educational and social philosophy) will influence your selection of objectives and activities for food and nutrition education. In this section we assist you to reflect on:

How do you think students best learn about food and nutrition? What do you think motivates them to adopt (or NOT to adopt) various nutrition-related behaviors considered desirable by nutritionists?

As we survey the various theories or theoretical frameworks about how people learn, they appear to fall into three categories. Tanner and Tanner (1980) describe the first two of these categories: In the first, the learner is viewed as an autonomously thinking as well as socially responsible individual who is capable of controlling his or her own destiny. In the second, the learner is viewed as an organism that is conditioned to respond in an externally controlled and predictable way. A third viewpoint may be added in which the learner is viewed as being strongly influenced by thoughts, emotions, and values arising from within as well as by his/her environment. These three broad categories are shown in Figure 2.

Although we are focusing on the educational process in this manual, we must not forget that this process occurs in the context of cultural and economic factors, which are the major determinants of what people eat.

1. Learner as autonomous individual (The humanist theoretical framework).

This conception of the learner is derived from humanistic and cognitive theories of psychology. There are two subcategories which correspond to the romantic and the progressive educational philosophies described earlier.

(a). The self-actualization (or "romantic") school views the learner as inherently good and the learning process as one of allowing the growth of the "whole person" in whatever direction the person values or chooses. The environment's role is limited to one of providing the necessary "nourishment." Self-actualization is a central concept. Friere proposes a similar concept which he calls humanization (Friere, 1970). However, since he worked primarily with rural people in the Third World, for him humanization represents liberation from dependence to self-reliance and the ability to participate effectively in decisions affecting their personal lives.

The underlying assumption of this approach, which is relevant for nutrition education, is that people are basically good and rational, acting in their own best interest as they perceive it. Given acceptance and freedom of choice, they will adopt those behaviors that are healthy and self-actualizing. The goal of nutrition education, if you subscribe to this framework, is to make available relevant information and activities in an accepting, nonjudgmental manner to allow for active choices on the part of the participants. Considerable autonomy is given to the student. This approach is used quite widely in non-formal education with adults in many parts of the world, as described by Srinavasan (UNESCO: Srinavasan, 1982). Discovery-learning approaches in the schools are also examples of this approach.
<table>
<thead>
<tr>
<th>Psychological Frameworks</th>
<th>Humanist Framework</th>
<th>Humanist to Behaviorist Continuum</th>
<th>Behaviorist Framework</th>
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<tr>
<td>&quot;Autonomous Individual&quot;</td>
<td>More concerned with</td>
<td>Concerned with the interactions between</td>
<td>External environment</td>
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<th>Self-actualizing School</th>
<th>Developmentalists</th>
<th>Consistency</th>
<th>Expectancy</th>
<th>Social learning</th>
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<td>Kohlberg</td>
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<td>behavioral</td>
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| Key Notions              | "unfolding" of inner motivation for self-direction | person-environment interactions | Attitude & Decision-making, Cognition | stimulus, response, reinforcement |
|                          | people construct their world through "constructivism" |                      | attitude change involving + | + |
|                          |                                                      |                      | theories, expectations, behavior ↔ environment |

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<tr>
<th>Derived Educational Theories</th>
<th>More concerned with</th>
<th>More concerned with guided teaching &amp; learning</th>
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<tr>
<td></td>
<td>Self-actualization</td>
<td>Information/skills transmission</td>
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<td></td>
<td>&quot;Romanticism&quot;</td>
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<td></td>
<td>A. S. Neill</td>
<td>Thorndike, Skinner</td>
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<td></td>
<td>Carl Rogers</td>
<td>Achievement of externally prescribed skills &amp; knowledge</td>
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<td>Student-centered learning</td>
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<td>Dewey</td>
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| Underlying Assumptions    | People basically good, rational. Given freedom, will adopt healthy behaviors. | People respond to cognitive representations of the environment; thus behavior is influenced by cognitions as well as emotions and environmental factors such as stimuli and reinforcement. These factors all interact. | People's behavior determined by environment. Not truly free to adopt healthy behaviors when so many factors reinforce unhealthy behaviors. |

| Goal of Nutrition Education | To provide information in an accepting manner to make complex food/nutrition decisions | To improve the quality of decision-making; or to change behavior by influencing beliefs, values, expectancies, attributions and other motivations and by improving cognitive, behavioral management, and other relevant skills. | To shape or change behavior through appropriate stimulus and reinforcement arrangements. |
(b). The developmentalists (or progressives) also emphasize the learner as an autonomous individual and the learning process as one of growth of the individual. However, encouragement of development towards the more complex reasoning or cognitive skills is seen as important (Piaget, 1970), and social development is linked to participation in democratic processes and social progress. So that education is about intellectual growth in the context of social responsibility. The cognitive and moral development of the child are thus of prime concern to the educator. If you subscribe to this approach to learning and the learning process, then the aim of nutrition education is to encourage people's problem solving skills so that they will be able to make more complex decisions about food which require not only nutrition information but also moral judgments in the context of social responsibility.

Information on cognitive development is very important to those who design nutrition education curricula for school-aged children. As we saw in Step 1, it is very important to assess the cognitive levels of the children towards whom this curriculum is directed so that the activities and content of the curriculum are understandable to them.

The influences on people's food choices according to this school of psychology is shown in Figure 3. This school of philosophy is especially useful if your have decided that the overall aim of nutrition education for your school or school system is to assist students to become capable of making informed food choices. As always, of course, food choices are determined not only by people's voluntary food choices but by many environmental forces such as food availability and economic resources (Figure 3). The role of the cultural context is taken into account by some and ignored by others.

2. Learner as controlled by environment (The behaviorist framework).

This view of the learner is based on behaviorist theory whose leading proponent, Skinner, argues that an experimental analysis of behavior gives us no reason to believe that there is such a thing as an "autonomous inner being." Feelings, attitudes, intentions, and ideas simply accompany or follow behavior; they do not cause behavior. Instead, behavior is determined by environmental stimuli or by the consequences or reinforcement (or rewards) of behavior. That is, those behaviors that are reinforced or rewarded by the environment are more likely to be performed again. Since both stimuli and reinforcement occur in the outer environment, it is the environment that shapes and changes behavior. Consequently, Skinner rejects autonomy-oriented or self-actualizing practices in education, arguing that their claimed advantages are an illusion. "To refuse to control," he states, "is to leave control not to the person himself but to other parts of the social and nonsocial environment" (1971, p. 84).

Education based on this view is designed to transmit particular sets of knowledge and skills or to produce particular behavioral outcomes, e.g., knowledge and skills desirable from the point of view of national development goals, or specific vocational skills. Competency-based education, behavioral objectives, mastery learning, and programmed instruction are examples of educational strategies based on behaviorist principles.

The underlying assumption relevant for nutrition education is that, since people's actions are largely determined by the environment, people are not truly free to adopt healthy behaviors. The influence of the many environmental forces in society must also be considered. If you subscribe to this viewpoint of the learner and the learning process, then the aim of education is to structure (or change, if necessary) social conditions and/or to change or shape students' behavior by using the principles of behaviorism.
Factors influencing nutritional well-being and the role of nutrition education

- Environmental factors (concurrent infections/drugs, climate; physical activity; alcohol)
- Nutritional status (e.g., serum Fe, vitamin A)
- Risk factor status (e.g., serum cholesterol, BP, Ht./Wt.)
- Biological factors (e.g., age, gender, heredity)
- Foods eaten (Dietary practices or behavior)
- Non-behavioral factors or facilitating conditions (access to food or means of food production; time & energy resources for food preparation)

Figure 3.

Humanist School
FACTORS INFLUENCING NUTRITIONAL WELL-BEING
AND THE ROLE OF NUTRITION EDUCATION

Environmental factors
(concurrent infections/drugs, climate; physical activity; alcohol)

Nutritional status
(e.g., serum Fe, vitamin A)
Risk factor status
(e.g., serum cholesterol, BP, Ht./Wt.)

Biological factors
(e.g., age, gender, heredity)

Foods eaten
(Dietary practices or behavior)

Non-behavioral factors or facilitating conditions
(access to food or means of food production; time & energy resources for food preparation)

(Public health & community development programs)

Behaviorist School

Figure 4.
The influences on people's food choices according to this theory is shown in Figure 4. This school of psychology is especially useful if you have chosen behavior change as the overall aim of nutrition education in your school or school system.

3. Learner as controlled by person-environment interactions (The humanist to behaviorist continuum).

In the area of health education, other theories from the field of social psychology are now also used. In essence, these theories combine elements of both of the viewpoints described above. They suggest that people's behavior is determined by internally derived motivations, attitudes, beliefs, values, expectations, etc., as well as by their perceptions of their environment and its reinforcements. Objective social and political conditions as well as culture are internalized and interpreted. It is these interpretations that influence behavior. People thus make choices or decisions on the bases of all of these influences.

There are dozens of theories and models within this humanist to behaviorist continuum, which we cannot describe here because of lack of space. For our purposes they can be simplified and grouped into three broad categories as shown in Figure 5. Below is provided a VERY brief and somewhat over-simplified description of these categories.

(a). According to attitude change theories people become troubled by inconsistencies between their attitudes and new knowledge, between their attitudes and those of significant others, and between their attitudes and their behavior. The discomfort caused by such recognition sets in motion cognitive processes that attempt to restore consistency. Behavior change can thus be brought about by changing people's attitudes. Attitudes in turn can be changed by changes in opinions or beliefs, which in turn can be changed by providing nutrition information in the right way (persuasive communication). This is the so-called knowledge-attitudes-behavior (or practices) or KAB (KAP) model.

The aim of nutrition education, if you are using these theories, is to provide nutrition information in a way that will change attitudes, which in turn will lead the person to eat a more healthful diet.

The persuasive communication process works as follows: a health message is sent by the sender (e.g., a nutrition educator or teacher) this is received by the receiver (e.g., school student), who must understand or comprehend the message; remember it; yield to the message or change his/her attitude to accept cognitively and emotionally the object of the message; make a decision to act; and then finally take the action suggested by the message (i.e., change behavior).

Message --> Reception --> Understanding --> Retention --> Yielding or attitude change --> Action or behavioral change

Many nutrition education programs, especially those using the mass media directed at entire communities, have been based on the above approach. For example, in the Philippines the radio was used to broadcast the message to add oil, fish oil, and green
vegetables to the weaning foods of infants (Zeitlin and Formacion, 1981). The campaign was successful in bringing about not only the needed knowledge but also the desired attitudes and behavior. The only problem was that the mothers did not add enough of the foods so that infant malnutrition was not reduced as much as had been hoped for.

(b). However, what kinds of factors within the person actually bring about attitude change? And what are "attitudes" anyway? Many social psychologists argue that the term "attitude" is too vague. Instead, they propose that there are many different cognitive and affective factors coming from within the person that influence behavior, such as: Beliefs about the consequences of taking a given action or behavior (e.g., eating a locally available high-vitamin A food such as sweet potatoes will prevent blindness), the value of those consequences (not being blind) for the person; what the culture says a person should or should not eat; the importance of the beliefs of friends and family (e.g., about sweet potatoes or blindness) to the person; the person's willingness to ignore culture or social opinion; the person's sense of self-efficacy or empowerment; the person's sense of what is appropriate to do for a person having his or her role (e.g., as a "mother," or as a community "leader"); and a person's religious or moral values. Theories based on these ideas suggest, in essence, that people choose among possible behaviors on the basis of some kind of cost-benefit analysis of the consequences of each choice—consequences not only on health but on his or her status, standing with significant others, religious and moral beliefs, etc. These theories are often referred to as "value times expectancy" models because they involve consideration of values and expectations about the consequences of behaviors.

These theories of human motivation suggest that the aim of food and nutrition education is EITHER to bring about the desired decisions by manipulating people's beliefs, values, perceived sense of empowerment or their social, cultural, moral norms, etc. OR to improve the quality of people's decision-making skills by making them aware of the influence of these various factors in their decision-making about food and nutrition.

(c). Finally, social learning and cognitive behavior theories include all the above considerations and incorporate as well the behaviorist concepts of environmental stimuli and reinforcement. Like behaviorism, these theories state that both stimuli and behavioral consequences (that is, rewards and punishments) influence behavior. However, unlike behaviorism, they argue that people think about and interpret environmental forces such as stimuli and rewards and it is to these interpretations that people respond, not necessarily to the environmental forces themselves. For example, children have to interpret that being given a candy is a reward, and it is to this interpretation that the child responds. Presumably if a child does not like the taste of candy, being given a candy MAY not be interpreted as a reward. Consequences or rewards can also be anticipated both from a person's own past experience and by observing how the actions of others are rewarded. So that learning can take place in the social context by observing the actions of others and whether these actions are rewarded. This is called modeling. This process is considered especially important for how young children learn.

Clearly in this approach, personal cognitive skills or methods of interpreting the environmental information (e.g., cultural and societal expectations, values, beliefs, etc.) and behavioral skills (or the ability to perform specific behaviors) are centrally important in determining people's behavior.

The aim of nutrition education if this approach is used is to provide students with the behavioral capabilities (knowledge and skills), models of the desired behavior, and peer, parental and teacher support to enable them to carry out the behaviors that are conducive to health.
Factors Influencing Nutritional Well-Being

And the Role of Nutrition Education

Environmental factors (concurrent infections/drugs, climate; physical activity; alcohol)

Nutritional status (e.g., serum Fe, vitamin A)

Risk factor status (e.g., serum cholesterol, BP, Ht./Wt.)

Foods eaten (Dietary practices or behavior)

Behavioral capabilities (knowledge, skills)

Motivating factors (beliefs; values: personal, social, cultural & moral; affect, norms, roles; self-efficacy; perceived consequences of behavior)

Reinforcing factors (inherent rewards; peer & community support)

Non-behavioral factors or facilitating conditions (access to food or means of food production; time & energy resources for food preparation)

(Public health & community development programs)

Figure 5.

Psycho-social Model

(Based on Irlandis, 1980; Green et al., 1981, & Wallston, 1985)
In some ways this approach represents a "behavioristic humanist" approach to FNE. Students themselves choose which behaviors they want to change or to maintain. That is, they set their own behavioral goals. The teacher provides guidance on the process of achieving these individual goals using behaviorist principles.

Many nutrition education curricula for schools in the United States are now based on theories in this last category. Students are assisted in making good quality decisions about food and nutrition using the theories described in 2(b) above (canvassing among alternate choices, estimating cost benefit of each, etc.). Once students have made their choice, cognitive behaviorist or social learning models are used to assist students to implement their decision: Monitoring current eating practices; identifying behaviors to be changed; setting realistic objectives for behavior change; developing strategies to change the behaviors; make the desired behavioral changes; and monitor progress towards the objective including managing obstacles and setbacks for change.

The above three views of the learner and the learning process are quite different from each other. One emphasizes the importance of internal factors; the second, the importance of environmental forces; and the third considers both beliefs, attitudes, perceptions AND environmental reinforcing and discouraging forces to be important.

How you will write your curriculum goals and objectives in the next section (Step 3) will depend greatly on which of these three views of the learner and learning process you choose to guide your curriculum.

At the end of Step 1, write out the rationale for this curriculum in language suitable for the user. In this rationale, state the aims and purposes of the curriculum, explaining what it is that you want your curriculum to accomplish based upon the priorities you established in Step 1 in terms of the nutritional and educational needs and concerns of your target population, the needs of society and the subject matter of foods and nutrition and the needs of the teacher. Also, the theoretical framework you are using to describe how students learn and what motivates them to adopt healthful eating habits, relating both the aim and the framework to the educational and social philosophy of the school system in which the curriculum will be implemented. Spend some time on this assignment because it will guide your determination of goals and objectives, your design of learning experiences, and your selection of evaluation strategies. You will tear out this sheet to use as the foreword to your curriculum when you give the curriculum guide to teachers to use. Add extra sheets if necessary.
THE RATIONALE FOR THIS FOOD AND NUTRITION EDUCATION CURRICULUM
( THE "FOREWORD" TO THE CURRICULUM)

Title of Curriculum:

Target Population:

Duration:

Aims/Purposes and Philosophical/ Psychological Framework:

The following narrative will explain to you, the user of the curriculum, WHY this curriculum guide is of prime importance to our society, the subject of "food and nutrition," the target population of learners (developmental, educational, and nutritional) and the practical need of the teacher. It will also explain to you the educational philosophy and psychology guiding this curriculum.
Step 2 Checklist

BEFORE YOU PROCEED TO THE NEXT STEP, you should have...

____ A "tear-out" sheet on your rationale (or "foreword") for the curriculum including the overall aims and purposes for food and nutrition education with the target group, and the theoretical framework (about how students learn and are motivated to adopt healthy eating habits) you will use to guide this curriculum.
Nutrition Education

Curriculum Development Process

1. Assess Needs and Interests
2. Select Theoretical Framework
3. Select Content and Write Goals
STEP 3: SELECTING CONTENT AND DETERMINING GOALS AND OBJECTIVES

Scenario
An elementary school has invited a nutrition educator to speak to a
group of fifty students about "the importance of good nutrition." The
nutrition educator prepares and delivers a sweeping lecture that appears to
embody everything she has ever learned about nutrition. She opens the
lecture with a brief statement about eating frequency and follows up with
successively briefer statements about calories, vitamins, solids versus liquids,
sugar, proteins, body types, malnutrition, cancer-prevention diets, weight loss,
and the relationship between diet and emotional well-being. At the end of
the lecture a student approaches her with a puzzled and frightful
expression. "Will we be tested on what you just said?" he asks breathlessly
and then whispers, "I couldn't keep up with what you were saying and I'm
confused."

That evening, the nutrition educator reflected upon the day's work but
the child's comment kept haunting her. The next day she approached a
colleague and described the events. The colleague asked, "What were the
goals of your presentation?" Startled, she responded, "I had no specific
goals. I just wanted the students to become more aware of the importance
of good nutrition. I thought I'd give them the benefit of everything I know
and then it is really up to them to use this information wisely."

What happened here? The nutrition educator thought she had no goals,
but in fact she did have a goal, which was much too broad to cover in one
session. Her lecture needed more focus, less content, more depth, and
better communication with the audience.

Comment: All too often we find ourselves with good intentions trying
to cover too much in too little time. Lacking limited and sharp goals, our
efforts result in confusion and frustration. Also without clearly stated goals
and objectives, evaluation is almost impossible.

Now that you have completed the needs assessment for your target group and
have chosen the philosophical and psychological frameworks that will guide your
curriculum, you are ready to begin the process of selecting an appropriate content and
determining goals and objectives. (Remember, of course, that the steps are closely
intertwined, so that you will in actuality be going back and forth between various
steps.) In section A, we will discuss several criteria involved in the selection of an
appropriate content. In section B, we will discuss the writing of goals and objectives.

A. The Statement of Content and Generalizations

The Criteria for Selecting an Appropriate Content for the Curriculum
You cannot cover the entire subject of foods and nutrition in one curriculum.
You will need to be selective. On what basis will you select the content?
FIRST, your selection of what to include and what to leave out should be very
closely related to your goals and objectives (next section), which in turn are based on
your needs/interests assessment and the philosophical and psychological frameworks you
have chosen in Step 2 to guide your curriculum.
SECOND, the content you select should take into account the developmental level
of the target student population and the prerequisite knowledge and skills that they
possess.
THIRD, the selection and limitation of content will reflect your understanding of the overall aim of nutrition education, as it incorporates and attempts to address the needs of society as well as the needs and interests of the learner, the discipline of nutrition education and the teacher. Using the example given in Step 1 where iron deficiency was uncovered as a major nutritional problem of the target student group, one goal of the curriculum would presumably then be to reduce iron deficiency. You can address this issue in several ways. You can recommend that students:
-- Eat more meat;
-- Eat more black or red beans;
-- Take iron pills;
-- Eat iron-enriched white bread;
-- Organize the community to grow local varieties of iron-rich green leafy vegetables.

Which content would you emphasize and why? They all satisfy the needs of the learner (by reducing iron deficiency), the needs of the discipline (the foods are all nutritionally sound sources of iron); and teaching about these sources is equally easy for the teacher to do. The sources differ, however, in other ways: (1) in their general effect on overall health; and (2) in their effect on several aspects of society. Let's discuss each of these briefly.

(1) Effect on overall health:

To solve the iron deficiency problem, all of these sources are effective (although not equally so). However, an iron-containing pill is a technical solution that will solve only the iron deficiency problem. It does not have other beneficial effects on health. Another example would be the use of imitation egg products or sodas sweetened with artificial sweeteners by those who need to reduce the cholesterol and sugar content of their diets. In both these examples, technology may help with the specific problem, but is not necessarily useful for maintaining health in general.

In recent years there has been increasing recognition that overall health requires the cooperation of many nutrients and the appropriate proportions of these nutrients to each other are relatively unknown. In addition, there may be many non-nutrient components in food that are also very important to health (as is currently suspected for cancer, where vegetables of the cabbage family appear to contain non-nutrient components that seem to reduce cancer risk). There may also be trace nutrients in various foods whose importance we do not yet know about. For all these reasons, nutritionists are increasingly recommending that people eat FOODS of the minimally processed kinds. Such a diet, for example, would not only be helpful for iron deficiency, but would have beneficial effects on other body functions. From this point of view, both meat and beans on the list above are more desirable sources of iron than are pills and enriched white bread. In countries where degenerative diseases such as heart disease, cancer and diabetes are more prevalent than nutrient deficiencies, people are especially recommended to eat minimally processed foods that are low in fat and high in complex carbohydrates such as whole grain cereals, beans, and fruits and vegetables. If fat in the diet is a concern for a given group, then the use of meat as a source of iron should be in moderation and should involve only lean varieties. As you can see, the dietary recommendations of nutritionists call for people to solve nutritional problems by eating whole foods rather than by relying on technical solutions in the form of pills or man-made products. Indeed, many countries have produced an OFFICIAL set of "dietary guidelines" for their people. These "guidelines" usually recommend that people eat a variety of different types of less processed foods;
decrease consumption of high-fat foods and increase consumption of fresh fruits and vegetables, and whole grains and other high fiber foods. Such guidelines also usually call for people to maintain desirable weight and to drink alcohol only in moderation.

For some people, such recommendations may mean that they should change their eating patterns while for others it may mean NOT changing theirs! For example, the person in the U.S. who has been told to cut down on fat and sugar in his diet can be told to eat exactly the same KINDS of foods but to use low cholesterol (imitation eggs) and low sugar (artificially sweetened sodas) substitutes instead of the regular food products. Such a solution to his nutritional problem is a technical one and calls for no changes in his eating patterns. On the other hand, he could be told to eat different KINDS of foods altogether—e.g., fewer eggs, more whole grain cereals to reduce cholesterol and to drink water or some other non-caloric natural drink instead of sodas. This second way of eating requires a change in eating habits and is more highly recommended by nutritionists for all the reasons given above. For other people, such dietary guidelines may mean that the traditional local diets are preferable and that they should NOT change their diets to the more "modern" variety. Often traditional fruits and vegetables such as mangoes and sweet potatoes may be more nutritious than imported ones such as apples and iceberg lettuce, especially if vitamin A deficiency is a problem. And the traditional menus using black or red beans are good sources of iron and protein that are higher in fiber and lower in cholesterol and fat than is meat.
(2) Effect on society:

Clearly, then, in addition to differing effects of the food sources of iron listed earlier on overall health, they also differ in the effect of their consumption on society--e.g., on cultural practices and on the economics and environment of the country. For example, when nutritionists recommend that a given group take iron pills or eat iron-enriched white bread, both of which are foreign to the traditional culture, rather than the traditional food source of iron--beans, they are participating in the process of changing that culture. There may be situations where traditional practices need to be changed in order to solve an urgent nutritional problem in the population. But often changes occur because of marketing influences of those wishing to sell particular products, and not because of nutritional needs. Therefore, as you are selecting the content for your curriculum, you need to examine carefully the impact of your content on the cultural practices of the target population.

Your choice of content may also affect the economics and environment of the country. For example, vitamin pills and enriched white bread may be made outside the country. For some countries, the consumption of imported products by large numbers of the population may contribute to a country's balance of payment problems and undermine local employment. Eating locally produced beans, however, may be better for the local economy. Growing the needed vegetables in community gardens may also be useful to the local economy by making accessible, at minimal cost, a source of iron, releasing the money saved for other local investments or expenses. Growing a community garden would thus facilitate the implementation of a desired behavior taught in the classroom. More importantly, eating in certain ways rather than others helps to foster an agriculture that is "sustainable"--that is, one that "uses human and natural resources to produce food and fiber in a manner that is conservative, that is in a manner that is not wasteful of such finite resources as top soil, water, and fossil energy" (Gussow and Clancy, 1986). Meat is a good source of iron. But it has been calculated that as produced in the US, it takes over 29,000 kilocalories of energy to bring 375 kilocalories of beef from the farm to the table. In addition, cattle feeding is very stressful to the environment. Even cattle grazing, which is less environmentally stressful than raising cattle in feed-lots, can turn rangelands into near-deserts and in many countries forests are being cut down to create pastures for beef--also contributing to soil erosion. Thus from the point of view of economics and the environmental impacts of dietary practices, black or red beans and dark green vegetables may be a better source of iron than meat for the target group in our example above.

We are suggesting that these are factors that you should also consider as you select the content for your curriculum. No matter what content you choose, it will affect the general health of students and it will carry important considerations for the culture, economy and environment of your country—even if you are not aware of that fact. Thus as you choose the content, make sure it does the following:

-- addresses the needs and interests of the learner, teacher and school;
-- relates appropriately to your goals and objectives;
-- has a desirable effect on your country's culture, economy and environment; and
-- takes into account the cognitive and educational level of the students and what they already know and can do.

The Articulation of Content Generalizations

To be useful in the curriculum, the content you have selected needs to be converted into broad statements. These statements, often called generalizations, provide a backbone for the content of the curriculum. The articulation of these
generalizations along with their supportive related main ideas sharpen and delimit the focus of the curriculum and will help you later to design learning experiences that introduce, develop, and reinforce such content (Tyler, 1949).

It should be noted that generalizations may often contain value judgments. Curriculum developers should be aware of this and make appropriate adjustments and disclosures to the learner to avoid an unintended "hidden curriculum."

The number of generalizations upon which your curriculum will focus will depend upon the age of your students, the duration or length of your unit, and the breadth and depth of the content to be developed. In some instances, such as with very young students, it is appropriate to focus upon only one generalization. Yet, in instances where the content should reveal more sophisticated complexity, you may want to include several generalizations each with related main ideas. Again, a caution: Be wary of shattering your curriculum focus by overloading the unit with too many generalizations.

**Examples of Food and Nutrition Generalizations**

**Generalization:** A balanced diet, which must include iron-rich foods, is important for one's general health.

**Related Main Ideas**

--Without sufficient iron-rich foods in the diet, one may suffer from iron deficiency anemia, a condition that may cause one to be pale, weak, tired, faint, breathless, and suffer heart palpitations.

**Generalization:** In many societies, black beans provide an immediate and convenient source of iron for the diet.

**Related Main Ideas**

--The traditional belief or taboo that beans are a staple of the "poor man's" diet have discouraged popular consumption of iron-rich black beans.

--Black beans can be easily incorporated into highly nutritious and attractive menus.
Exercise:

Write a few generalizations (1-4) and several related/supportive main ideas for each generalization.

Generalization #1:

Related Main Idea:

Related Main Idea:

Generalization #2:

Related Main Idea:

Related Main Idea:

Generalization #3:

Related Main Idea:

Related Main Idea:

(Tear-Out Sheet)
Generalization #4:

Related Main Idea:

Related Main Idea:

(tear-out)
Food and Nutrition Concepts

As you are developing and refining your generalizations, you may want to list concepts and terms to be introduced and reinforced in your unit. Examples extracted from the above sample generalizations and main ideas would be:

- Concepts/terms
  - balanced diet
  - iron-rich
  - general health
  - iron-deficiency anemia
  - vitamin supplements
  - meats
  - vegetables
  - black beans
  - "poor man's" diet
  - attractive menus
  - nutritious meals
  - traditional food beliefs

Exercise:

Consider your own list of generalizations and main ideas. Are there concepts and terms that warrant clarification and reinforcement in your curriculum? Are there any concepts and terms that you now believe you should add to your generalizations and main ideas? List them on the next page for easy reference for the teacher.

B. The Articulation of Goals and Objectives

The process of curriculum development is to be viewed as much more than just "the sum of its parts." The writing of goals and objectives are merely one part, a tool, within the process; they are not the heart and soul of curriculum development. The heart and soul of the process is drawn from the spirit, the creativity, the energy, and the interest in the nutritional well-being of your students, which you bring to the process.

This curriculum development manual is designed to facilitate the creation of diverse and relevant curricula. As you work through the manual, adapt it to your needs and interests. Do not follow it rigidly or mechanically. This is especially important to keep in mind when you translate your goals into objectives with varying degrees of specificity. The degree of specificity required will depend upon your own curricular needs and interests.

In the past decade, the writing of goals and objectives has often taken upon a singular importance and dominated the process. Unfortunately, the objectives were often seen to be more important than their original intent. They were viewed as absolutes, ends in themselves, and rigid. At worst, objectives were churned out mechanically, produced with excruciating detail, rigidly adhered to in the classroom to the neglect of opportunities for spontaneity and valuable serendipitous learning experiences.

Basically, the purpose of goals and objectives in a nutrition curriculum are:

1. to give a focus or central aim to your teaching about food and nutrition;
2. to clarify your educational priorities relevant to the field of nutrition and the real world of the learner;
3. to articulate and to act upon your beliefs of what is of greatest value to young people in your society with regard to the study of foods and nutrition.
Food and Nutrition Concepts
Remember:
.. Your goals and objectives must be based upon the needs assessment you conducted in Step 1.
.. They must also be consistent with what you stated in Step 2 as the theoretical frameworks you have chosen to guide your curriculum.

Whether you are aware of it or not, we always have goals and objectives. Sometimes these are hidden and for the purposes of this manual, we would like you to make these goals as explicit as possible. For example, in Step 2 you may have chosen romanticism as your educational psychology and hence believe that you need not, and indeed should not, write goals and objectives. However, even saying that "the learner should become an autonomous individual" is a goal. Or, if you believe that the learner already is an autonomous individual and just needs experience to become a good decision maker, then "becoming a good decision maker" is your goal. The role of the teacher becomes to provide the right environment or learning experiences to enhance this skill. In both Rogerian "student-centered learning" (Rogers, 1969) and Thelen's "emergent model" (1980) of the curriculum, in which the curriculum emerges from students' interests and needs, the goals, objectives and content arise from the students themselves. These approaches require considerable skill and work on the part of the teacher to elicit from the students the goals and objectives and to assist them in wording them in forms that are usable as blueprints from classroom activities. That is, those approaches are not short cuts to curriculum development requiring less work. They require greater resources and skills on the part of the teachers to shape the curriculum around students' requests. For these reasons, we believe that you will be writing the goals and objectives, regardless, even if they are for your teacher to shape students' requests into goals and objectives!

1. Goals and Objectives from the View of the Educator

Educators categorize learning tasks, and hence goals and objectives, as falling into three domains: the cognitive domain, the affective domain, and the psychomotor domain. Within each domain the learning tasks can be further arranged into hierarchical categories. The descriptions of each category within each of the three domains can be found on the following pages.

The psychomotor domain is probably most relevant when you are designing a food nutrition curriculum for young children and those who are physically impaired. Goals and objectives involving the motor coordination needed for food preparation--such as cutting and cooking--may be important. For older children with normal physical development, where psychomotor abilities are probably not limiting, goals and objectives in this domain may be minimal.

The cognitive domain tends to be emphasized in nutrition education because the content of that domain is easy to teach and the results of instruction are easy to evaluate. However, in the field of nutrition education, the affective domain is of paramount importance. And, it is often the most overlooked domain by curriculum developers. In designing your curricular unit, it is important to pay particular attention to this domain because:

1. many nutritional problems are not due to lack of information but rather to a lack of personal conviction and commitment that a change in routine practices will affect positively the quality of one's life;
2. many nutritional practices are rooted deeply in habits that need to be raised to the level of consciousness and feeling in order to be recognized and changed;

(text continues on p. 65)
<table>
<thead>
<tr>
<th>Major Categories in the Cognitive Domain of the Taxonomy of Educational Objectives (Bloom, 1956)</th>
<th>Illustrative General Instructional Objectives</th>
<th>Illustrative Behavioral Terms for Stating Specific Learning Outcomes</th>
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</thead>
<tbody>
<tr>
<td>1. Knowledge. Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from general facts and concepts to complex theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.</td>
<td>Knows common terms</td>
<td>Defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states</td>
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<td>Knows specific facts</td>
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<td>Knows methods and procedures</td>
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<td>Knows basic concepts</td>
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<td>Knows principles</td>
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<td>2. Comprehension. Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another, by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.</td>
<td>Understands facts and principles</td>
<td>Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes</td>
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<td></td>
<td>Interprets verbal material</td>
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<td>Translates verbal material to mathematical formulas</td>
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<td>Estimates future consequences implied in data</td>
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<td>Justifies methods and procedures</td>
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<td>3. Application. Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.</td>
<td>Applies concepts and principles to new situations</td>
<td>Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses</td>
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<td>Applies laws and theories to practical situations</td>
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<td>Solves mathematical problems</td>
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<td>Constructs charts and graphs</td>
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<td>Demonstrates correct usage of a method or procedure</td>
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<td>4. Analysis. Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.</td>
<td>Recognizes unstated assumptions</td>
<td>Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides</td>
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<td></td>
<td>Recognizes logical fallacies in reasoning</td>
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<td>Distinguishes between facts and inferences</td>
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<td>Evaluates the relevancy of data</td>
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<td>Analyzes the organizational structure of a work (art, music, writing)</td>
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<td>5. Synthesis. Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (scheme or proposal) or a set of abstract relations (scheme-classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.</td>
<td>Writes a well organized theme</td>
<td>Categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes</td>
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<td>Gives a well organized speech</td>
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<td>Writes a poem or a short story (or poem, or music)</td>
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<td>Proposes a plan for an experiment</td>
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<td>Integrates learning from different areas into a plan for solving a problem</td>
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<td>Formulates a new scheme for classifying objects (or events, or ideas)</td>
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<td>6. Evaluation. Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to purpose) and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgments based on clearly defined criteria.</td>
<td>Judges the logical consistency of written material</td>
<td>Appraises, compares, concludes, contrasts, criticizes, describes, discriminates, explains, justifies, interprets, relates, summarizes, supports</td>
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<td>Judges the adequacy with which conclusions are supported by data</td>
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<td>Judges the value of a work (art, music, writing) by use of internal criteria</td>
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<td>Judges the value of a work (art, music, writing) by use of external standards of excellence</td>
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<thead>
<tr>
<th>Descriptions of the Major Categories in the Affective Domain</th>
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<tbody>
<tr>
<td>Receiving. Receiving refers to the student's willingness to attend to particular phenomena or stimuli (classroom activities, textbook, music, etc.). From a teaching standpoint, it is concerned with getting, holding, and directing the student's attention. Learning outcomes in this area range from the simple awareness that a thing exists to selective attention on the part of the learner. Receiving represents the lowest level of learning outcomes in the affective domain.</td>
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<tr>
<td>Responding. Responding refers to active participation on the part of the student. At this level he not only attends to a particular phenomena but also reacts to it in some way. Learning outcomes in this area may emphasize acquiescence in responding (reads assigned material), willingness to respond (voluntarily reads beyond assignment), or satisfaction in responding (reads for pleasure or enjoyment). The higher levels of this category include those instructional objectives that are commonly classified under &quot;interests&quot;; that is, those that stress the seeking out and enjoyment of particular activities.</td>
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<td>Valuing. Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon, or behavior. This ranges in degree from the more simple acceptance of a value (desires to improve group skills) to the complex level of commitment (assumes responsibility for the effective functioning of the group). Valuing is based on the internalization of a set of specified values, but clues to these values are expressed in the student's overt behavior. Learning outcomes in this area are concerned with behavior that is consistent and stable enough to make the value clearly identifiable. Instructional objectives that are commonly classified under &quot;attitudes&quot; and &quot;appreciation&quot; would fall into this category.</td>
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<td>Organization. Organization is concerned with bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. Thus the emphasis is on comparing, relating, and synthesizing values. Learning outcomes may be concerned with the conceptualization of a value (recognizes the responsibilities of each individual for improving human relations) or with the organization of a value system (develops a vocational plan that satisfies his need for both economic security and social service). Instructional objectives relating to the development of a philosophy of life would fall into this category.</td>
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<tr>
<td>Characterization by a Value or Value Complex. At this level of the affective domain, the individual has a value system that has controlled his behavior for a sufficiently long time for him to have developed a characteristic &quot;life style.&quot; Thus the behavior is pervasive, consistent, and predictable. Learning outcomes at this level cover a broad range of activities, but the major emphasis is on the fact that the behavior is typical or characteristic of the student. Instructional objectives that are concerned with the student's general patterns of adjustment (personal, social, emotional) would be appropriate here.</td>
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<thead>
<tr>
<th>Illustrative General Instructional Objectives</th>
<th>Illustrative Behavioral Terms for Stating Specific Learning Outcomes</th>
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</thead>
<tbody>
<tr>
<td>Listens attentively</td>
<td>Asks, chooses, describes, follows, gives, holds, identifies, locates, names, points to, selects, sits, erect, replies, uses</td>
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<tr>
<td>Shows awareness of the importance of learning</td>
<td>Participates in class discussion</td>
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<td>Shows sensitivity to human needs and social problems</td>
<td>Completes laboratory work</td>
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<td>Accepts differences of race and culture</td>
<td>Volunteers for special tasks</td>
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<td>Attends closely to the classroom activities</td>
<td>Shows interest in subject</td>
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<tr>
<td>Enjoys helping others</td>
<td>Illustrates commitment to social improvement</td>
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<tr>
<td>Demonstrates belief in the democratic process</td>
<td>Completes, describes, differentiates, explains, evaluates, forms, initiates, invites, joins, justifies, proposes, reports, selects, shares, studies, works</td>
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<tr>
<td>Appreciates good literature (art or music)</td>
<td>Accepts responsibility for his own behavior</td>
</tr>
<tr>
<td>Appreciates the role of science (or other subjects) in everyday life</td>
<td>Understands and accepts his own strengths and limitations</td>
</tr>
<tr>
<td>Shows concern for the welfare of others</td>
<td>Formulates a life plan in harmony with his abilities, interests, and beliefs</td>
</tr>
</tbody>
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| Source: Cronlund, 1978 | |
### Affective Taxonomy

#### ORGANIZATION

<table>
<thead>
<tr>
<th>VALUING</th>
<th>CHARACTERIZATION BY A VALUE OR VALUE COMPLEX</th>
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<tbody>
<tr>
<td>1. conceptualization of a value</td>
<td>1. generalized set</td>
</tr>
<tr>
<td>2. organization of a value system</td>
<td>2. characterization</td>
</tr>
</tbody>
</table>

#### RESPONDING

<table>
<thead>
<tr>
<th>REceiving</th>
<th>Valuing</th>
<th>Characterization by a Value or Value Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. awareness</td>
<td>1. acceptance of a value</td>
<td></td>
</tr>
<tr>
<td>2. willingness to receive</td>
<td>2. preference for a value</td>
<td></td>
</tr>
<tr>
<td>3. controlled or selected attention</td>
<td>3. commitment</td>
<td></td>
</tr>
<tr>
<td>no position taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>willingness to receive or attend to information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>will not avoid stimulus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>favored stimulus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>selected --&gt; stays on target</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHARACTERIZATION</td>
<td>0.0 GENERALIZED SET</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>1.1 ATTITUDES</td>
<td>1.0 RECEPTION</td>
<td></td>
</tr>
<tr>
<td>1.2 VALUE</td>
<td>1.2 RECEIVED</td>
<td></td>
</tr>
<tr>
<td>2.1 INTEREST</td>
<td>2.1 RECEIVED</td>
<td></td>
</tr>
<tr>
<td>2.2 SATISFACTION</td>
<td>2.2 RECEIVED</td>
<td></td>
</tr>
<tr>
<td>2.3 RESPONSE</td>
<td>2.3 RECEIVED</td>
<td></td>
</tr>
<tr>
<td>3.0 WORTH</td>
<td>3.0 RECEIVED</td>
<td></td>
</tr>
<tr>
<td>3.1 PREFERENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 ACCEPTANCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0 ORGANIZATION</td>
<td>4.0 ORGANIZATION</td>
<td></td>
</tr>
<tr>
<td>4.1 CONCEPTUALIZATION</td>
<td>4.1 CONCEPTUALIZATION</td>
<td></td>
</tr>
<tr>
<td>5.0 CHARACTERIZATION</td>
<td>5.0 CHARACTERIZATION</td>
<td></td>
</tr>
</tbody>
</table>

The range of meaning typical of commonly used affective terms measured against the Taxonomy continuum.
## Taxonomy for the Psychomotor Domain: Classification Levels and Subcategories

<table>
<thead>
<tr>
<th>Taxonomy Continuum</th>
<th>Levels</th>
<th>Definitions</th>
<th>Behavioral Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.10 Segmental</td>
<td>1.00</td>
<td>Actions elicited without conscious volition in response to some stimuli</td>
<td>Flexion, extension, stretch, postural adjustments</td>
</tr>
<tr>
<td>1.20 Inter-</td>
<td>Reflex</td>
<td>Required: 1.00 Inherent movement patterns combining reflex movements, and are the basis for complex skilled movement</td>
<td></td>
</tr>
<tr>
<td>segmental</td>
<td>Movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.30 Suprasegmental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10 Locomotor</td>
<td>2.00</td>
<td>The outcomes of perceptual abilities are observable in all purposeful movement.</td>
<td></td>
</tr>
<tr>
<td>2.20 Non-</td>
<td>Basic-</td>
<td>Required: 1.00 Interpretation of stimuli from various modalities providing data for the learner to make adjustments to his environment</td>
<td></td>
</tr>
<tr>
<td>locomotor</td>
<td>Fundamental</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.30 Manipulative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.10 Kinesthetic</td>
<td>3.00</td>
<td>The outcomes of perceptual abilities are observable in all purposeful movement.</td>
<td></td>
</tr>
<tr>
<td>Discrimination</td>
<td>Perceptual Abilities</td>
<td>Required: 1.00 Interpretation of stimuli from various modalities providing data for the learner to make adjustments to his environment</td>
<td></td>
</tr>
<tr>
<td>3.20 Visual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discrimination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.30 Auditory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discrimination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.40 Tactile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discrimination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.50 Coordinated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxonomy Continuum</td>
<td>Levels</td>
<td>Definitions</td>
<td>Behavioral Activity</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------</td>
<td>-------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>4.10 Endurance</td>
<td>4.00</td>
<td>Physical Abilities</td>
<td>Functional characteristics of organic vigor which are essential to the development of highly skilled movement</td>
</tr>
<tr>
<td>4.20 Strength</td>
<td></td>
<td></td>
<td>All activities which require muscular exertion—Examples: weight lifting, wrestling</td>
</tr>
<tr>
<td>4.30 Flexibility</td>
<td></td>
<td></td>
<td>All activities which require wide range of motion at hip joints—Examples: touching toes, back bend, ballet exercises</td>
</tr>
<tr>
<td>4.40 Agility</td>
<td></td>
<td></td>
<td>All activities which require quick precise movements—Examples: shuttle run, dodgeball</td>
</tr>
<tr>
<td>5.10 Simple</td>
<td>5.00</td>
<td>Adaptive Skilled Movements</td>
<td>A degree of efficiency when performing complex movement tasks which are based upon inherent movement patterns</td>
</tr>
<tr>
<td>5.20 Compound Adaptive Skill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.30 Complex Adaptive Skill</td>
<td></td>
<td>These activities are obvious in sports, recreation, dance, and fine arts areas</td>
<td></td>
</tr>
<tr>
<td>6.10 Expressive Movement</td>
<td>6.00</td>
<td>Non-discursive Communication</td>
<td>Communication through bodily movements ranging from facial expressions</td>
</tr>
<tr>
<td>6.20 Interpretive Movement</td>
<td></td>
<td>Communication through sophisticated choreographies</td>
<td></td>
</tr>
</tbody>
</table>

Harrow, 1972.
3. long-term changes in nutritional practices require a person to value the need for changes, to be committed to the change, and eventually to internalize a set of ideas, beliefs, and attitudes to form and live by a daily "nutritional philosophy;"

4. changes in personal and societal nutritional practices requires that one be able to overcome various levels of frustrations; and

5. changes in nutritional practices require that the individual develop the attitudes of patience and perseverance in order to recognize both short-term and long-term benefits.

In other words, the degree of acceptance or rejection of many changes in nutritional practices inherently involves attitudinal and emotional factors.

Examples of General Affective Goals/Objectives at Various Levels of the Affective Taxonomy

Level #1: Receiving or Attending (At this level the student is sensitized and demonstrates a willingness to attend to or receive certain stimuli.)

a. The student realizes the importance of eating vegetables.

b. The student develops a consciousness of the political and economic influences on the availability and distribution of food.

c. The student is sensitive to the dynamics of social situations that influence nutritional practices.

d. The student recognizes that some situations require him/her to say "no" to temptations.

e. The student listens to the teacher discuss nutritional issues.

Level #2: Responding (The student is actively involved in attending.)

a. The student is willing to comply with basic nutritional guidelines.

b. The student voluntarily practices recommended and nutritionally sound food preparation skills.

c. The student displays an interest in improving his/her own eating habits.

d. The student accepts the responsibility for his/her own health and for sharing health information with others.

e. The student uses the record of his/her food intake to improve dietary plans.

f. The student takes personal satisfaction in using sound consumer skills when purchasing food.

g. Because of orders from his/her parent, a student says "no" if a friend tempts him/her to go off a diet.

Level #3: Valuing (The student assesses something as having worth and uses his own criteria in this judgment.)

a. The student desires to take steps to add vitamin A sources to his/her diet.

b. The student writes letters to local politicians to alert them of local nutritional needs.

c. The student initiates a community-action organization to improve local sanitary conditions.

d. The student is loyal to the position that it is a community responsibility to see that fresh, pure water is available to all citizens.
e. The student brings to the attention to the local shop owners food that is spoiled, overpriced, or not on the shelf but required for a balanced diet.
f. Because a student values his/her health, he/she voluntarily says "no" when a friend tempts him/her to eat high fat "junk" foods.

Level #4: Organization (The student internalizes and relates relevant values and establishes dominant values or systems of values.)

a. The student forms judgments as to the responsibility of society for improving the health of all individuals.
b. The student incorporates sound nutritional practices into the traditional methods of food preparation.
c. The student weighs various social policies that permit only a few to have access to broad food selection against standards prescribed for sound nutritional practices.
d. The student develops and employs techniques and strategies to enable him/her to exercise patience and to exercise perseverance in order to surmount frustrations.

CAUTION: DO NOT WRITE ALL YOUR OBJECTIVES AT THE LOWER END OF THE TAXONOMIES (E.G., "KNOWLEDGE" OR "RECEIVING") WHICH TENDS TO LEAD TO LEARNING BY ROTE. BE SURE TO WRITE OBJECTIVES AT ALL LEVELS OF THE TAXONOMY. THIS WILL ENCOURAGE DIVERSE INSTRUCTIONAL STRATEGIES AND WILL BE MORE LIKELY TO RESULT IN CHANGES IN ATTITUDES AND BEHAVIOR.

2. Goals and Objectives from the Point of View of the Nutritionist or Health Educator

While educators talk about goals and objectives in the cognitive, affective and psychomotor domain, health/nutrition educators use a slightly different vocabulary. While for educators in general, "behaviors" refer to all learning tasks (e.g., adding $2 + 2 = 4$ is a "behavior"), nutritionists tend to reserve the term for "dietary practices," "foods actually consumed," etc.--i.e., observable physical actions connected with food. Thus "behavioral objectives" for nutritionists refer to objectives such as "student will add green vegetables to his/her diet," NOT "student will be able to state the nutrient content of green vegetables."

While the ultimate goal of nutrition education is to improve "dietary practices" or "eating behavior," most health educators acknowledge that it is too much to expect that school curricula with children will necessarily result in "behavioral" changes at the time that the curriculum is taught. Its effects may come later. Thus, nutrition education curricula should aim to: (a) provide the necessary knowledge and skills for children, now as later, to be able to make needed dietary changes as needed; (b) bring to awareness the various influences on children's current eating practices and to instill the value of healthful eating in order to motivate them; and (c) provide reinforcing experiences for healthful eating.

Goals and objectives are often also stated in terms of the various factors that influence dietary practices--such as "behavioral capabilities: knowledge and skills in both the cognitive and affective domains"; "motivating factors: values: personal, social, cultural and moral"; affect, norms, roles, self-efficacy, etc.; and "reinforcing factors, including peer and community support." See figure on the next page and text in Step 2.
<table>
<thead>
<tr>
<th><strong>Nutrition Educator's Vocabulary</strong></th>
<th><strong>Educator/Curriculum Developer's Vocabulary</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dietary practices</strong> (healthy or unhealthy)</td>
<td>Valuing to the level of carrying out the value (whether healthy or unhealthy eating pattern)</td>
</tr>
</tbody>
</table>

| **Behavioral capabilities** needed to solve nutrition problem(s) | | |
|---------------------------------------------------------------|---------------------------------------------------------------|
| **a) knowledge** | Knowledge, comprehension, application |
| **b) skills** | Application, analysis, synthesis, evaluation |
| | Valuing ability to make decisions, be assertive, express needs, problems, satisfactions; to set goals, make plans and implement them |

| **Motivating factors** (attitudes, values, cultural and social norms, appropriate role, etc.) | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Satisfaction in responding, valuing particular dietary practices to the level of acceptance or commitment |

| **Reinforcing factors** (peer, family and community support) | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Values reinforcements for healthy eating |
3. Goals and Objectives from the Point of View of This Manual

In this manual we will use a synthesis of the approaches of both the educator and the nutritionist. Thus, goals and objectives will be directed at:
- nutritional status or problem;
- eating practices or food behaviors that lead to the problem;
- facilitating conditions;
- behavioral capabilities—the knowledge and skills needed to solve the nutritional and behavioral problem;
- motivating factors—cultural and social expectations, attitudes, values, perceived consequences of a given eating practice, etc.;
- reinforcing factors—inherent reinforcements from the foods themselves, peer and community support.

For each of the above factors, goals and objectives can be set in the cognitive, affective or psychomotor domains. An example for how this can be done for the hypothetical iron deficiency case we discussed earlier is shown in the next pages.

4. Writing Goals and Objectives

We have discussed at length goals and objectives; however, it is important to see them on a continuum. Goals are, in fact, drawn from even broader, more generic educational purposes, often referred to as "aims." As one moves along the continuum, one can articulate goals and objectives with increasing levels of specificity. Different terms are used by different educators for these different levels of specificity in the continuum. In our view, the NAMES given the different levels are not important. ("A rose by any other name is just as sweet!") Here we have chosen to use the simplest scheme. But keep in mind that a pyramid structure evolves in which for each aim, there are related goals; for each related goal there is a related general objective; for each general objective there are supportive specific objectives, etc. You should strive for an inter-relatedness among your objectives so that they support more than one goal at a time:

![Diagram of goal hierarchy]

The degree of specificity to which you want to develop your goals and objectives will depend upon:

1) your time;
2) your professional needs and bureaucratic requirements;
3) the level of detail of your curriculum; and
4) your evaluation needs (the more specific your objectives, the easier will be your evaluation process).
FACTORs INFLUENCING NUTRITIONAL WELL-BEING
AND THE ROLE OF NUTRITION EDUCATION

Non-behavioral factors or facilitating conditions
(access to food or means of food production; time & energy resources for food preparation)

(Food eaten)
(Dietary practices or behavior)

Environmental factors
(concurrent infections/drugs, climate; physical activity; alcohol)

Nutritional status
(e.g., serum Fe, vitamin A)
Risk factor status
(e.g., serum cholesterol, BP, Ht./Wt.)

Nutritional health outcome

Behavioral capabilities
(knowledge, skills)

Motivating factors
(beliefs; values: personal, social, cultural & moral; affect, norms, roles; self-efficacy; perceived consequences of behavior)

Reinforcing factors
(Inherent rewards; peer & community support)

Biochemical factors
(e.g., age, gender, heredity)

Psycho-social Model

(Based on Triandis, 1980; Green et al., 1981, & Wallston, 1985)
## Goals and Objectives Directed at Nutritional Problems and Their Causes

![Diagram showing relationships between nutritional status, food practices, and behavioral capabilities.](image)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Causes</th>
<th>ES</th>
<th>Reinforcing factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Result from Step 1</td>
<td>Knowledge, skills needed to solve problem</td>
<td>Attitudes, values</td>
<td>Peer &amp; community support</td>
</tr>
<tr>
<td>e.g., Iron deficiency</td>
<td>Student doesn't eat available black beans</td>
<td>Meat is too expensive</td>
<td>Student doesn't know black beans contain important substances (&quot;nutrients&quot;)</td>
</tr>
<tr>
<td></td>
<td>Student believes beans are for &quot;poor&quot; people</td>
<td>Community &quot;looks down on&quot; beans</td>
<td></td>
</tr>
<tr>
<td>Goal To reduce iron deficiency</td>
<td>Student will describe iron deficiency symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Objectives Cognitive</td>
<td>Student analyzes own diet and plans menus high in iron (skills)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective</td>
<td>Student will request black beans at home (value)</td>
<td>Student appreciates economic &amp; cultural importance of beans</td>
<td>Student demonstrates black bean recipes to community</td>
</tr>
</tbody>
</table>

Continued on next page...
### Goals and Objectives Directed at Nutritional Problems and Their Causes

#### Nutritional Status or Problem

- **Facilitating conditions**
- **Behavioral capabilities**
- **Motivating factors**
- **Reinforcing factors**

#### Problem

<table>
<thead>
<tr>
<th>Assessment Result from Step 1</th>
<th>Causes</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Iron deficiency</strong></td>
<td>Knowledge, skills needed to solve problem</td>
<td>Attitudes, values</td>
</tr>
<tr>
<td>Student doesn't eat available black beans</td>
<td>Meat is too expensive</td>
<td>Student doesn't know black beans contain important substances (&quot;nutrients&quot;)</td>
</tr>
</tbody>
</table>

| Psychomotor | Following oral instructions, the student cuts, slices, steams & serves vegetables for a tasty & alluring black bean dish |

| Nutrition Educator Objective | Will insist school lunch serves black beans | Teacher will model eating black beans |
Exercise:

Complete this exercise but do not belabor it at this time. It is easy to become so absorbed in the mechanics of writing goals and objectives that they seem distanced from the creative flair of curriculum development. Keep in mind that you can always come back to this section of the guide and refine your goals and objectives.

It is useful to readers of your curriculum to state goals and objectives so that (Tyler, 1949):

1. they are stated in terms of a single student;
2. they include an observable behavior;
3. they provide clarity of terms contained within them; and
4. they include content in terms of subject matter.

Aims, goals and objectives may be stated as follows for the example we have used before, where iron deficiency was identified as a nutritional problem for a hypothetical group of students. For easy reference, we have stated these in a linear fashion below and in table form on the next page.

Examples of the continuum of goals and objectives:

Aim: The student will be mentally and physically healthy.

Related Goal: The student will reduce the chances that he or she will suffer from iron-deficiency anemia.

A Related General Objective: The student will eat iron-rich beans on a regular basis.

Supportive Specific Objectives:

Cognitive: The student will describe symptoms of iron-deficiency anemia (knowledge level).

The student will analyze his or her own diet and plan menus high in iron-rich black beans (skills, analysis/synthesis level).

Affective: The student will request that black beans be served at home (valuing).

The student will form judgments about the economic and cultural importance of beans (organization).

The student voluntarily demonstrates black-bean recipes for other members of the community (valuing to point of commitment).

Psychomotor: Following oral instructions, the student cuts, slices, steams, and serves vegetables for a tasty and inviting black-bean dish (auditory discrimination, manipulative).
Note: If you feel that you need to make your objectives even more specific, you may want to add one or more of the following criteria: time, conditions, quality, quantity.

Example: Without assistance (conditions), the student will state without error (quality) three symptoms of iron-deficiency anemia within three minutes (time).

If you want to practice writing highly specific objectives, do so in the space remaining on this page.
Now, write your aims, goals, related general and specific objectives. (The number of goals and objectives will depend in part on the length/duration of your unit. Use extra sheets if necessary.) Complete as much of the following as you will be able to do at this time. You may not know what your specific objectives are until you start developing lesson plans and specific activities in Step 4. You may want to complete this later after working on Step 4. Recall that curriculum design is not a linear process and you want/need to make continual adjustments of the different "steps" as you proceed.

Aim(s):

#1.

Goal(s):

Note the # of the above aim(s)
each goal supports:

#1.

a.

#2.

b.

Related General Objectives:
(Note: These tell how you will accomplish your goals and are not specific to activities, but are general and relate to goals.)

Note the # of the above goal(s)
each objective supports:

#1.

a.

#2.

b.

#3.

c.

#4.

d.

(Tear-Out Sheet)
Supportive Specific Objectives:
(These specific objectives tell how you will accomplish each of your general objectives; they are often specific to one or more learning experiences.)
Note: After each specific objective, state the domain (cognitive, affective, psychomotor) and level within that domain.

#1. a.
#2. b.
#3. c.
#4. d.
#5. e.
#6. f.
#7. g.
#8. h.
#9. i.
#10. j.
#11. k.
#12. l.
#13. m.
#14. n.
#15. o.
#17. q.

Follow-up Exercise:
To ensure that your objectives sufficiently address the various causes of the nutritional problems identified, now place the objectives you have just written (by # or by short description) in the appropriate columns on the chart on the next two pages. You should find that the objectives span all the columns in the three domains. If they do not, you may want to make additions or revisions to your objectives at this time.

(Tear-Out Sheet)
<table>
<thead>
<tr>
<th>Nutritional problem(s) to be addressed in your curriculum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Result:</td>
</tr>
<tr>
<td>Goal:</td>
</tr>
<tr>
<td>Affective:</td>
</tr>
<tr>
<td>Cognitive:</td>
</tr>
<tr>
<td>Student Objectives:</td>
</tr>
</tbody>
</table>

### Causes
- Knowledge, skills needed to solve problem
- Attitudes, values
- Peer & community support

### Conditions
- Nutritional status of problem
- Food practices or behaviors
- Behavioral capabilities

### Motivating Factors
- Facilitating conditions

### Reinforcing Factors
- GOALS AND OBJECTIVES DIRECTED AT NUTRITIONAL PROBLEMS AND THEIR CAUSES
GOALS AND OBJECTIVES DIRECTED AT NUTRITIONAL PROBLEMS AND THEIR CAUSES

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>C</th>
<th>A</th>
<th>U</th>
<th>S</th>
<th>E</th>
<th>S</th>
</tr>
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<tbody>
<tr>
<td>Assessment Result from Step 1</td>
<td></td>
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<td>Nutritional problem(s) to be addressed in your curriculum:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Student Objectives (cont'd)

- Psychomotor:

Nutrition Educator Objectives:
Step 3 Checklist

BEFORE YOU PROCEED TO THE NEXT STEP, you should have...

____ A statement of your generalizations and related main ideas

____ A list of concepts and terms to be used in the curriculum

____ A list of aims, goals, general objectives, specific objectives (to the degree of specificity desired)
Nutrition Education
Curriculum Development Process
STEP 4: THE DESIGN AND SEQUENCING OF LEARNING EXPERIENCES

Introduction

Next, you will develop a series of learning experiences, which will be arranged sequentially, to enable the students to reach the goals and objectives you have set for them. These learning experiences will provide students with opportunities to explore the concepts and generalizations that frame the nutritional content upon which you have focused.

Scenario

In a village, a teacher observes a group of his students going to a coffee shop/canteen/tea house after school. One student orders the traditional dish of rice and black beans. The other students laugh at him. He barely touches his plate. The teacher decides to do something to change the students' attitudes. The next day he lectures to the class on the topic of "vitamins and minerals in black beans." The following week, the teacher returns to the coffee shop/canteen after school only to overhear the same student making fun of his own little sister when she now orders the black beans and rice dish.

What is going on here? The teacher selected a valid affective objective—to change students' attitudes about black beans. However, his learning activity, which was highly cognitive, was inappropriate to the goal. In addition, it did not relate to any other activities he had designed for the semester.

Comment: It is a common practice for nutrition educators to focus solely on traditional cognitive activities when in fact they are trying to accomplish affective goals and objectives. The instructional strategies and content when directed toward affective goals and objectives should emphasize motivating and reinforcing factors such as: beliefs; personal, social, cultural and moral values; emotions; peer pressures; and community norms.

Tyler (1949) reiterates Dewey's emphasis when he defines a curricular learning experience as: "the interaction between the learner and the external conditions in the environment to which he can react. Learning takes place through the active behavior of the student; it is what he learns, not what the teacher does." (p. 63)

Here Tyler makes a clear distinction between mere content presentations and actual learning experiences. The learner must be engaged in the experience. Mere teacher intentions will obviously not produce learning. This dynamic interaction or engagement of the child with the heart of the substance or content is essential.

This is where the true curriculum development challenge rests. It calls upon the curriculum developer not only to have a firm grasp of the topic but also to design creative, productive, and meaningful experiences for the student to interact with the content.

The curriculum developer must be able to translate his/her curricular dreams and ideals into reality. To do this, he/she needs to enjoy creative risk-taking. Introducing a new curriculum involves change. The set of learning experiences you design must be "teachable." The strategies must be within the reach of the classroom teacher's range of knowledge and skills. It is of significant consequence for the set of learning experiences to be not only engaging to the child but also appealing to the classroom teacher. All too often, curricula are designed without the input of those who will use
them. As you are designing learning experiences, discuss the designs with a sampling of the teachers who will use them.

CAUTION: Too many curricular units end up on the "dusty shelf." To minimize the chances that your unit will go that route, consider factors that have hindered curriculum implementation at the classroom level. Several such factors were identified in a 1977 international nutritional curricular study (UNESCO, Position of Nutrition Education Within Educational Systems, 1979). In response to a question asking what difficulties were anticipated in the implementation of nutrition education, the following responses were given:

1. Teachers unprepared in terms of subject-matter content (83% of respondents);
2. Lack of teaching facilities (67% of respondents);
3. Time allotment (65% of respondents);
4. Lack of governmental aid (40% of respondents);
5. Teachers unwilling to make this change (30% of respondents);
6. Public resistance to new or different subject matter (25% of respondents);
7. Students (children or adults) not interested (20% of respondents). [Table 19, p. 39]

Keep in mind these factors as you are designing the learning experiences. Determine if there are ways in which you can minimize such difficulties. These factors suggest that your learning experiences should be designed to:

1. be accompanied by any content preparation the teacher will need;
2. be set within a realistic teaching facility or environment;
3. make efficient use of teacher preparation and instructional time;
4. not be overly dependent upon external supports;
5. be appealing and inviting to the classroom teacher;
6. be understood and appreciated by the members of the community;
7. be of interest and meaningful to the students themselves.

Assumptions Undergirding the Design of Learning Experiences

As a curriculum developer, you must now turn your attention more specifically to the substance you will want the students to learn, the processes by which they will learn, and how they will learn it. The field of nutrition, in its fullest sense, is broad and encompasses elements of numerous related disciplines such as biology, chemistry, mathematics, the agricultural sciences, economics, history, political science, etc. It is complex. You must now design learning experiences that are inherently motivational, engaging and that enhance the content to be studied.

REMINDEER: YOUR LEARNING EXPERIENCES MUST BE SUPPORTIVE OF YOUR GOALS AND OBJECTIVES SELECTED IN STEP 3 AND MUST BE CONSISTENT WITH THE THEORETICAL FRAMEWORK YOU CHOSE IN STEP 2 TO GUIDL THIS CURRICULUM.

In designing learning experiences, it is helpful to keep in mind that:

1. the age level and developmental abilities of the target student population will shape to some degree the learning experiences;
2. identification of prerequisite knowledge, skills, and attitudes provides a baseline from which to develop effective learning experiences;
3. it is necessary to build learning experiences that: (a) introduce knowledge, skills and attitudes; (b) enable students to study, practice and master skills and contents; (c) reinforce the new knowledge, skills and attitudes;

4. it is important to impose limitations upon the range of topics to be studied to facilitate depth of exploration, comprehension, and appreciation. Therefore, continue to prioritize what you consider to be the essentials of the study;

5. some very important learning takes place serendipitously, and spontaneity in the classroom has its place. Such learning should be recognized and appreciated. Your curriculum will benefit by some built-in flexibility and enough resource material to encourage teachers to pursue important tangential topics and issues when deemed appropriate. Not all learning experiences need to be linked to objectives;

6. learning experiences, when challenging and enjoyable, stimulate increased interest and depth of study;

7. change of habits and attitudes require time, patience and persistence;

8. diverse learning experiences, which take place both in the class and community, contribute to social problem-solving skills and to the child's overall social, emotional, and cognitive development;

9. learning experiences that integrate social concerns and issues may also reinforce and develop basic skills; and

10. learning experiences should be stimulating and interdisciplinary. The study of nutrition can be enriched and strengthened by including opportunities for aesthetic expression, problematic approaches, and by drawing creatively from many fields such as: art, poetry, drama, mathematics, logic, music, and exploration of current events and controversial ideas.

The Design of Learning Experiences and Lesson Plans

Within this manual there are two important phases in the development of learning experiences and related lesson plans. They are:

Phase I: the consideration of practical organizational issues and the development of an organizational structure for the sequence of the learning experiences; and

Phase II: the creation of lesson plans that outline and describe your learning experiences in detail and depth sufficient for teachers to implement your plans. (Sample lesson plans, formats, and instructional strategies are presented for you at the end of this section.)

Now, you will first explore these two phases and then develop and sequence your own set of learning experiences. Thus, at the end of this unit you will be asked to:

1. develop a calendar that reflects the time span and sequence of your learning experiences; and

2. develop a full set of lesson plans for your teachers to implement.
A. Phase I: Organizational Considerations

Fundamental Design and Organizational Questions

Quite simply, before designing and sequencing your learning experiences you must consider a set of fundamental organizational questions. These questions refer to the general parameters of your curricular unit, some of which you thought about previously in this manual. You have considered some of these questions in Step 1 under "Assessment of Feasibility."

Exercise: Now you must make some firm decisions about the following:

1. What is the time frame for the implementation of the curriculum unit; a week, a month, several months, a semester, a year, etc.?

2. How often will the unit be taught: daily, weekly, bi-weekly, etc.?

3. How long will each instructional session be: 1/2 hour, 1 hour, 2 hours? (This will depend in part on your schedule and upon the attention-span and developmental level of the students.)

4. Will the curricular unit be taught as a separate subject or infused into other subject areas?

5. Will the curricular unit be limited to one class or grade level, or will it permeate simultaneously several grade levels or even a whole school community?

6. Will students be grouped by ability, interest, nutritional needs, and/or assigned committee work, or will the learning experiences be designed for individualized or whole-class instruction?

7. Will instruction involve resource people, such as specialists or guest speakers?

(Tear-Out Sheet)
8. Will learning experiences require or be enhanced by field trips?

9. Will learning experiences require or be enhanced by audio-visual resources?

10. Will teacher training be necessary and, if so, how will it be done?

11. Will you need to develop a budget to implement the curriculum? If so, describe the budget here.
The Construction of an Organizational Framework

For many curriculum developers, the greatest challenge rests in the identification of a logical, productive sequence for the learning experiences within the curricular units they are developing. Because learning experiences are related and build incrementally upon each other, it is best to consider such basic organizational factors from the outset.

To assist the curriculum developer with the organization of a curricular unit, it is helpful to view the development of a curricular unit much as an architect could view the design and construction of a building. A building and a curricular unit both require a sound foundation; vertical, or extending, structures; and horizontal, or solidifying, supports.

If the building metaphor is applied to curriculum development, then the foundation is parallel to the body of prerequisite knowledge, skills, and attitudes that a student must possess to successfully complete the unit. The vertical structure of the building is parallel to the incremental phases of study through which the student will progress within the unit. These vertical structures guide the student's study from learning experience to learning experience, from unit to unit, and often from grade to grade. And, the horizontal supports, much like the various apartment units that are repeated periodically at each level or floor of a high-rise building, are parallel to the elements of the curricular design, which are repeated and emphasized at every level of the unit. (Note: This is an adaptation from the Tyler model, which also refers to "horizontal" and "vertical" designs in curricular structures but with different meanings for the terms.)

The Vertical Organizational Structure

Common examples of the "vertical structures" of a curriculum unit, which lead to the overall sequence of the learning experiences, include:

a. a chronological development (e.g., the chronological portrayal of the history of major breakthroughs in nutritional research);
b. a development from the simple to the complex (e.g., a progression from the study of basic food groupings to the analysis of chemical elements within various foods);
c. descriptive experiences followed by analytical experiences (e.g., a description of consumer situations followed by analysis of the consequences of various consumer choices; description of various eating patterns followed by analysis of nutritional benefits/deficits);
d. expanding environments (e.g., a study that begins with the nutritional practices/concerns of the "individual" and moves sequentially to --> "family" --> school community --> the community neighborhood itself --> the town/city --> the state or region --> the nation --> the world --> the universe.

The range of "vertical structures" available to a curriculum developer is vast. Select or design the one that is the most appropriate to your topic, to your time constraints, and to the depth and range of study you desire.

The Horizontal Supports and Points of Re-emphasis

The "horizontal supports" that are repeated at each major level of the evolving curriculum construction are the major elements, themes, concepts, generalizations, values, and skills that are repeated or weave in and out of the learning experiences. They are reinforced regularly and bond together the learning experiences and add
clarity, depth, and strength to the curriculum unit. Often these horizontal supports are the curricular generalizations themselves.

Exercise: The identification of an organizational progression, or a vertical structure, and a pattern of emphasis and re-emphasis of key elements, or a horizontal support, is essential to the development of a logical and comprehensive curricular unit.

1. State how you will organize the "vertical" development of your unit (e.g., chronological, expanding environments, etc.):

2. State the key elements that will be repeated and reinforced with periodic regularity throughout the curriculum unit and that provide "horizontal support" to the unit (e.g., nutritional themes, concepts, generalizations, etc.):

The identification of these organizational factors may at first seem difficult. Be patient and persistent and it will be reflected in the unity that careful sequencing develops throughout your unit. You may find it helpful to analyze other curriculum and text books to determine how they have been organized. The tables of contents often provide obvious clues to the identification of such organizational factors.

B. Phase II: The Creation of Lesson Plans

In this section you will explore eight different considerations that will shape the development of your series of learning experiences and their related lesson plans. These considerations are:

1. a framework for the creation of a set of lesson plans;
2. the development and selection of a diversity of instructional strategies;
3. the importance of problem-solving and decision-making experiences in a nutrition education curriculum;
4. special projects and events;
5. the need for ready content resources for the teacher;
6. student worksheets;
7. the clarification of goals and objectives to simplify evaluation; and
8. preliminary designs for a set of learning experiences, i.e., a lesson plan.

I. A FRAMEWORK FOR THE CREATION OF A SET OF LESSON PLANS FROM WHICH A TEACHER CAN IMPLEMENT A SERIES OF COHESIVE LEARNING EXPERIENCES

When writing a lesson plan that is to be used by others, it is essential that there be:

a. clarity
b. sufficient resources (background information for the teacher)
c. sufficient detail for ease in comprehension

To help your teachers implement your ideas and plans, it is necessary to include sufficient specificity for each learning experience. For some curriculum developers, this will mean writing a detailed series of lesson plans. For others, it may mean simply presenting the teachers with a brief summary of learning experiences. The amount of detail depends on the experience and needs of the teachers.

Whatever your decision about the specificity required, bear in mind the following:

a. You want to stimulate creative input on the part of the teacher. Overly detailed or "teacher proof" materials can sometimes hinder this. On the other hand, lack of sufficient detail may lead to total distortion of your intended learning experiences and outcomes.

b. You want the local administrators and teachers to feel an "ownership" of the curriculum unit. Thus, build in enough flexibility for local adaptations.

c. If your are introducing new instructional strategies, ones with which many of your teachers may be unfamiliar, then you may want to include selected detailed lesson plans for those activities.

d. Many lesson plan formats exist. But again, we often become creatures of habit and re-use, year after year, a format that we learned years ago. There are times when teachers should be encouraged to develop innovative, yet comprehensive formats. See the set of diverse formats presented as examples at the end of Step 4. In addition, many interesting and innovative lesson plans can be found in various UNESCO documents, such as "Nutrition Education: Curriculum Planning and Selected Case Studies," Science and Technology Education Document Series, #3 (ED.82/WS/78) Paris 1982.

Exercise:

A Checklist for the Development of Your Learning Experiences

Use the following checklist as a guide for developing an integrated and cohesive set of learning experiences. Ask yourself if your lesson plans adequately describe a series of learning experiences that accomplish the following general purposes. The learning experiences must:

1. be connected and build incrementally upon each other;
2. be related in general to other aspects of the student's life and must not be isolated entirely from other subject areas;
3. provide opportunities for knowledge, skills, and attitudes to be introduced, practiced, and reinforced as the student proceeds from experience;
4. lead to realization of the goals that you intended; develop whenever possible a strong affective component for the study of nutrition;
5. lead to the student's grasp of the content generalizations and concepts that weave in and out of the learning experiences;
6. provide opportunities for appropriate satisfaction for the student by permitting him/her to recognize his/her own progress, and simultaneously to motivate him/her to pursue the study more broadly and more deeply;
7. provide the teacher with enough evidence to evaluate the degree to which students are learning and also to assess the student's evolving needs and interests;
8. be flexible enough to permit the infusion of student-developed ideas and to permit exploration of appropriate tangents should they arise in class discussions;
9. be developmentally appropriate for the students' ages and ability levels and attention spans;
10. provide for creative use of available instructional resources;
11. be consistent with your stated educational philosophy and psychology;
12. employ a diversity of instructional strategies; and
13. build upon the student's present knowledge and experience.

2. THE DEVELOPMENT AND SELECTION OF A DIVERSITY OF INSTRUCTIONAL STRATEGIES

Clearly, the development of learning experiences needs to be viewed creatively and openly. Such an approach not only affords the teacher with opportunities to design experiences to build students' learning, but it also provides the teacher with refreshing opportunities to expand/develop/refine/improve his or her own techniques.

Curriculum developers, supervisors, and teachers alike must ask themselves: Are you a creature of habit relying heavily upon just one or two instructional strategies? Do you find it to be "too much work" or "too much effort" to try new formats? Do you enjoy or avoid creative forms of instructional risk-taking in the classroom? Does the system encourage and support teachers who try innovative approaches to teaching? If not, why not? Do you encourage students to see the interrelationships that connect the disciplines?

The answers to this set of questions deserve careful, personally honest analysis and reflection. The attitudes that underlie the answers may well influence the design of the curriculum and the extent to which the teachers will use the curriculum in their classrooms. The issues that these questions raise extend far beyond the scope or intent of this manual; however, they are relevant and worthy of consideration before designing your learning experiences.

To encourage creative designs and to spark imagination, the curriculum developer should peruse the following list of instructional strategies. If there are some with which you are unfamiliar, find out more about them and discuss them with colleagues. Also, add other formats with which you are familiar and share your ideas with others.

NOTE: The strategies you choose must be consistent with the framework you have chosen; e.g., if your goals include changing specific behaviors, solely relying on lectures
is not appropriate. Some methods are better for communicating ideas, others for building skills, or still others for organizing schools and communities for social action.

A diversity of instructional strategies is essential to effective curriculum development. The classification of strategies by Green et al. is helpful here.

Consider the following:

---

**Suggested Instructional Strategies**

1. **Communication methods**
   - lecture
   - storytelling
   - computer-assisted instruction
   - panel discussion
   - programmed instruction
   - audiovisually-aided instruction
   - guest-speaker engagements
   - synectics (a) (b)
   - demonstration
   - peer-teaching
   - non-directive (a) (b)
   - individual instruction on independent student research project

2. **Skills**
   - open discussions
   - inquiry and experimentation
   - field trips to community resources
   - construction of models (e.g., gardens)
   - behavior modification
   - concept-attainment (a)
   - social problem solving
   - concept formation (a)
   - role-playing (a) (b)
   - debates
   - games
   - simulation
   - modeling of behaviors

3. **Organizational methods to bring about community-wide changes**
   - organizing schools or community groups for specific purposes
   - committee work (e.g., school nutrition committee)


(b) Sample lesson plans highlighting elements of these models are included at the end of this section.

For additional examples of creative ideas for learning activities and lesson plans that have been used in many parts of the world, see:

The Selection of a Range of Instructional Strategies

Clearly some instructional strategies are more appropriate to specific educational issues, topics, and circumstances than others. The following suggestions are drawn from Health Education Planning, Green et al. (1980, pp. 113-114), and are adapted to our psychosocial framework described in Step 2. Adapting their suggestions to health educators, the nutrition educator should:

1. Include a MINIMUM of three diverse educational strategies which, in health programs, often includes a combination of: lecture/discussion, small group discussions or inquiry 'learning experiences, and activities which utilize audio-visual aids. The combination of strategies must attend to:

   (1) the "motivating factors" (similar to Green et al.'s "predisposing factors") which encourage the students to act (such as beliefs, values, attitudes, etc.);

   (2) the "behavioral capabilities," which include the knowledge and skills necessary to adopt desirable eating patterns. These factors include: (a) relevant knowledge, and (b) the health-related cognitive and affective skills needed to perform the desired behavior;

   (3) the "reinforcing factors" which will provide support for the desired behaviors. These factors include: family, peers, teachers, employers, and health providers; and

   (4) the "facilitating conditions," which provide the resources (access to food, time, energy) necessary to perform the desirable eating practices.

2. Strategies that attend only to the motivating factors may have short-term effects. Strategies that attend to both motivating factors and reinforcing factors probably will have intermediate range effects. And, strategies that attend to all the factors (behavioral capabilities, motivating and reinforcing factors, and facilitating conditions) will have long-term effects.

3. There is a direct relationship between the length and duration of a curriculum unit and the range of instructional strategies to be employed. Quite simply, the longer the unit in terms of sessions or hours, the greater the diversity of the strategies. [Such diversity not only attends to various individuals' learning styles, but it also combats fatigue and boredom among all participants. Different strategies can also encourage different perspectives on content issues.]
4. For practical and pedagogical reasons, it is sometimes best to use simple, relatively inexpensive strategies first. If these strategies are unsuccessful, you may want to move toward more sophisticated strategies.

5. If the teacher is trying to address or change a health-related behavior which is rooted in complex causes, it is useful to employ a diversity of strategies.

Exercise

The selection of diverse learning experiences should be encouraged throughout the curriculum development process. However, you must use your own professional expertise to determine which strategies are the most effective given specific topics, costs, time, resources, and the need for teacher training.

Reflect upon and answer the following questions. Your answers may assist you in exposing the need for a diversity of instructional strategies in your own classroom communities.

(a) List the three strategies that you or your teachers use most frequently:

1.

2.

3.

(b) List three strategies that you know motivate and engage your target group of students:

1.

2.

3.

(c) List several teaching strategies with which you are not familiar and research them. Analyze if they would contribute to the design of your learning experiences.

1.

2.

3.

Now deliberately include several of these new strategies with the design of your learning experiences.

If your teachers rely heavily on one instructional format (e.g., lecture-discussion), be sure that your curricular units encourage alternative strategies.
3. THE IMPORTANCE OF PROBLEM-SOLVING AND DECISION-MAKING EXPERIENCES IN A NUTRITION EDUCATION CURRICULUM

As indicated in Step 2, many social-psychological theories which deal with why people do or do not embark on various behaviors which will prevent disease and promote health suggest that any action is preceded by a number of mental events occurring within the individual (changes in beliefs, perceptions, attitudes, values, etc.) and is enhanced by enabling factors (such as health-related skills and accessibility to resources) and reinforcing factors in the environment. Throughout the curriculum we have emphasized the importance of the affective domain in nutrition education. That is, with all the knowledge in the world, people will not act healthfully until they value acting healthfully and indeed, make a commitment to acting so.

Here we need to also emphasize the importance of decision-making skills. In the process of going from comprehension of new information on health to taking action on it, people, formally or informally, make some sort of cost-benefit analysis about the action. That is, people weigh the benefits of the action against some consideration of the costs (in terms of money and/or energy, convenience, whether it fits within the culture, etc.). In most countries young people are also bombarded by advertising, peers, etc. to act in certain ways. Being able to make good quality decisions about food is an "enabling factor" which should therefore be an important component of nutrition education in the schools. When you design learning experiences, be sure to include opportunities for students to gain experience in both individual and group decision-making.

There are many exciting ways to enhance students' decision-making skills. One such way is to present students with a hypothetical situation, a picture, or to role-play, and ask them to explore alternative solutions to problems and their consequences. Another way is to assign students to committees to explore specific problems. Older students, who are able to put themselves "in someone else's shoes" enjoy probing such hypothetical problem-solving situations. (See the sample lesson plan on "Role-playing" and the sample "Student Worksheet" at the end of Step 4.)

In all these activities, the purpose is to enhance the quality of decision-making—which is dependent upon the extent to which the individual:

1. canvasses a wide range of alternative solutions to a problem or courses of action;
2. surveys the values implicated by each choice;
3. weighs whatever s/he knows about the positive and negative consequences that could result from each alternative;
4. searches for new information relevant to each alternative prior to making a final choice;
5. makes plans to implement the chosen plan of action, including what s/he will do about the anticipated negative consequences.

For example, the class realizes that they may develop vitamin A deficiency (given that vitamin A deficiency is rampant in that community), the teacher can lead them through the above series of steps, resulting in the following:
For example,

<table>
<thead>
<tr>
<th>Alternative courses of action</th>
<th>Positive Consequences</th>
<th>Negative Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat vitamin A pill</td>
<td>Quick</td>
<td>Expensive</td>
</tr>
<tr>
<td>Eat mangoes</td>
<td>Tastes good</td>
<td>Expensive</td>
</tr>
<tr>
<td>Eat liver</td>
<td>High in other vitamins and iron</td>
<td>High in toxic metals Tastes bad to some</td>
</tr>
<tr>
<td>Eat dark green vegetables</td>
<td>Cheaper than other sources</td>
<td>Cannot always get</td>
</tr>
</tbody>
</table>

The students can also practice making decisions as a group. For example, the teacher can ask students to suggest health and nutrition problems which they all experience, e.g., the polluted water in the town. The students can be led through the process of inquiry and decision-making involving: puzzlement faced with this problem situation, exploration of alternative solutions for the situation, evaluation of the benefits and costs of each solution, selection of one or several of these solutions, development of more detailed procedures for implementation of the solutions, analysis of the progress toward resolution of the problem, reflection and revision of the process, and, finally, the resolution of the problem. The classroom becomes a microcosm of democracy in action, and the student constructs knowledge through experiential reflection in a social setting.

When the entire curriculum is carried out this way, it is called an "emergent curriculum," a term coined by Thelan (in Joyce and Weil, 1980, pp. 220-240). This approach requires a rather flexible and open-ended learning experience design and considerable skill on the part of the teacher. It is unpredictable what topics the students will suggest to be explored. And the teacher becomes a guide or facilitator helping students to organize information and experiences in response to their emerging inquiries. Not all teachers may have the necessary resources or time to guide such an emergent exploration of food and nutrition topics. However, those who do, should be encouraged to incorporate some such experiences within the context of this curriculum.

It is important to keep in mind that your curriculum unit should ultimately assist students to become independent, self-diagnosing and self-motivating individuals who are capable of exercising control over their own nutritional well-being.
Exercise:

As you are designing your learning experiences, analyze whether you have incorporated opportunities for students to develop decision-making and problem-solving skills.

List the experiences that do this, which you hope to include in your unit:

1.
2.
3.
4.
5.

NOTE: Some curricula can actually be designed solely for the purpose of developing decision-making and problem-solving skills.

4. SPECIAL PROJECTS AND EVENTS

The topic of nutrition lends itself to the involvement of students in community projects. Special projects and events can provide linkages of learning experiences. Special projects and events can be used to kick-off curriculum units; to generate on-going interests; or provide culminating events.

Most special projects and events are inherently motivational not only to the students but also to the teachers. And, they can build stronger ties between the schools, the students, the families, and the community.

Specific purposes of special projects and events include:

1. to bond learning experiences into action-oriented projects and events;
2. to bring diverse groups within the school or community together in a cooperative effort;
3. to exhibit and give recognition to students' work;
4. to make a permanent contribution to the community;
5. to create momentum within the development of a curricular program;
6. to encourage cooperative group work and spirit among students;
7. to revive old school traditions and create new traditions;
8. to increase the level of enjoyment within a curricular program; and
9. to provide concrete evidence of students' learning and changes in attitudes and behaviors.
Preliminary List of Special Projects for In-School Application

Students, teachers, parents, and community members can work individually or together to:

1. Survey of Community Nutritional Needs, Interests, Practices, Resources
   a. personal interviews
   b. group discussions/sharing of ideas, experiences, attitudes
   c. questionnaires
   d. recording data, analyzing, identification of specific problems for in-depth study
   e. sharing of findings with others, especially community leaders or legislators

2. Community Resource Mapping
   a. local, regional, national, international
   b. geographic, agricultural, economic, demographic factors affecting local nutritional practices

3. Development of a Vegetable Garden
   a. school
   b. community

4. Newsletter
   a. to share information, activities, problems and progress
   b. intra-school
   c. inter-school
   d. school-family
   e. school-community

5. Directory of Resources
   a. human
   b. man-made (e.g., journals, books, films, maps, farming equipment, etc.)
   c. natural

6. Parent Committee
   a. liaison
   b. sharing
   c. in-class contributions
   d. building school-community bonds needed to improve nutrition

7. Nutritional Diary
   For example, students can keep a diary of what they eat for 1 day per week or month. Bar graph can be made of information for individuals or for the group and posted in the classroom.
   a. personal practices, goals, needs, progress

8. Nutrition Fair (perhaps as part of other school functions such as school sports day)
   a. display information
   b. display students' work
   c. display/distribute nutritional information
   d. enjoyment/involvement
   e. cultural traditions that impact upon nutrition
9. Neighborhood Action Projects  
a. identification of needs and action to fulfill  
b. e.g., repair or build well; irrigation; help senior citizens or handicapped  
   community members satisfy their nutritional needs  
c. participate in political or other action projects to improve access to food or  
   means of food production for community members  

text continues...
17. For Fun--
   a. Create a class or school quilt in which each square depicts a nutritional theme--display in public location
   b. Write and perform a song with a nutritional theme
   c. Write a play dealing with nutritional traditions, practices, improvements
   d. Create wallhangings depicting nutritional themes--display!

18. Create a mural on a nearby wall (if that is acceptable) and paint a design that reflects the traditions, resources, and goals of the local nutritional program

19. Research and create a "book" on the history of regional practices which affected the quality of nutrition in the community. Include a chapter describing the present and another predicting the future

20. Create a nutritional "time capsule" depicting nutritional norms, practices, aspirations of the present day local community--to be opened in 50 years

21. Use bar graphs, pie graphs, etc. to reveal statistics gathered reflecting nutritional practices, resources, needs--display

22. Create a school market in which student-grown produce is sold for lunch, snacks, etc.

23. Create a "Nutrition" Career Network
   a. invite those in nutrition-related careers to speak to students about their jobs and training
   b. have panel discussions
   c. build networking capabilities

Exercise:

As you review the list of special events, or recreate your own, select three that you will try to incorporate into your curriculum unit. Do not hesitate to design or create special events other than those suggested.

List the special projects and events and if you intend that they be used for kick-off purposes, formative events, or a culminating project:

<table>
<thead>
<tr>
<th>Project or Event</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>etc.</td>
<td></td>
</tr>
</tbody>
</table>

_________________________________________________________________
Be sure to include these into your lesson plans when you write them. In addition, be sure they are not "add-ons" to your units without direct relationships to your learning objectives.

5. THE NEED FOR READY CONTENT RESOURCES FOR THE TEACHER

A major difficulty that hinders curriculum implementation at the classroom level is that teachers may not have the food and nutrition knowledge needed to teach this curriculum. As a curriculum developer, you have three choices: You can organize training workshops or courses for teachers; you can send in a specialist to teach the subject; or you can provide content and background material for the teacher in a convenient form within the curriculum guide itself or in the form of a separate teacher's guide.

To avoid providing teachers with a set of learning experiences that do not include the needed content, a curriculum developer may include content resources within or annexed to lesson plans. Consider the following:

1. Write brief summaries of the content required to teach the unit. These can be attached to the lesson plans, or can be in the form of a separate teacher's guide.

2. Include suggested background readings through reprints of originals (gain permission to reprint prior to inclusion).

3. Refer the teacher to specific chapters in readily available texts, journals, magazines.

4. Suggest local experts who will provide the teacher with sufficient background materials or training workshops.

5. Outline a suggested audio-visual resource list and bibliography for both teachers and students.

6. List community resources for the teacher. NOTE: Try to be specific rather than generic here. Include names, addresses, telephone numbers of individuals and organizations willing to assist in working with the teacher or students or willing to be a guest speaker or field-trip liaison.

6. STUDENT WORKSHEETS

For some learning experiences, you may want to include sample student worksheets. An outline of a worksheet format has been included on the next page.

NOTE: THE SAMPLE WORKSHEET FORMAT INCLUDES A SECTION CALLED SHARING AT THE BOTTOM OF THE PAGE.

This is most important and requires that the student take the information or skills learned in school, home with him. You may want to suggest that the student discuss the information with members of his family, or that the student and family members work together on an assignment. This differs radically from the idea that all homework should be done by the child alone. On the contrary, in such areas as nutrition, your
goal should be that the student share his new knowledge and skills with others. Thus, there are some assignments which should include an at-home component.

Exercise:

Look over the format of the student worksheet sample on the next page. As you develop your lesson plans, ask if you have any learning experiences that would benefit from the inclusion of worksheet(s). If so, practice designing one or two.

AN ENRICHMENT IDEA: If appropriate, you may want to create a "My Nutritional Folder" booklet into which each student can place all work. This provides students with a sense of accomplishment and the teacher with ready evidence to evaluate student progress/needs. Such booklets are also helpful in parent conferences when reviewing students' work.
SAMPLE WORKSHEET FORMAT

Directions for Student to Complete the Activity: (Make them clear, concise, complete, and sequential.)

Activity Presented: (Use graphics where appropriate. Be sure to actively engage the student. Allow enough space for the student to write or to respond directly to the activity.)

Conclusion: (Include within the worksheet a suggested follow-up activity which forces the student to summarize, to apply, analyze, synthesize, or evaluate.)

Sharing: (Use this section to suggest that the student take information or skills he has gained home and share them with members of his family.)
SAMPLE STUDENT WORKSHEET

Directions:

Read the following situation. Answer the questions. Discuss the situation with your classmates. Then role-play or analyze the situation.

Situation: John and Maria live in a small village. They go to the market with their mother every week. Their mother always tries to buy green vegetables for them. She knows that they should have them in their diet. But for one month, the green vegetables in the market have been scarce, expensive, and often not fresh. John's good friend Alphonse, who is the son of the principal, invites John and Mary to dinner at his house. They are served ample portions of green leafy vegetables. Alphonse's mother shows John the garden they have developed in their backyard. She asks him if he would like to take some vegetables home with him.

Questions:
1. If you were John, how would you feel?

2. What would you do? Would you take the vegetables home?

3. What would you tell your mother?

4. How do you think she will react?

5. What would you do next and why?

6. How could you work with others in the community to change a situation?

Conclusion: Do you know of anyone who suffers from food shortages? With your classmates, discuss how you can improve the quality of the food you eat through self-help strategies. Analyze what food is available at your local market. Are there community members who cannot afford the price asked for basic foods? What can you and your community do to change the situation?

Sharing: Take this worksheet home. Discuss it with your family. If there are problems of access to food in your community, discuss it with community members. Maybe you can help to design the solution.
7. EVALUATION: A CLARIFICATION PROCESS

If you anticipate experiencing difficulty in designing evaluation components for your lesson plans, you may find the following process helpful. (You may also now want to refer to Step 5, pp. 135-136, for a list of suggested evaluation strategies.)

Basic Steps for Making Goals/Objectives Clearer and Easier to Evaluate

Kepler-Zumwalt (1981-82) and Lippert (1981-82) recommend the following steps:

**Step #1:** Clarify unclear, vague terms.

**Step #2:** Place limits on the subject or content.

**Step #3:** Describe the desired behavior-specified objective through a range of other desirable behaviors that would provide evidence of the original desired behavior.

**Step #4:** Do a task analysis to determine what prerequisite knowledge and skills are needed for the student to successfully meet the objective. If you determine that the students lack some of the prerequisite skills and knowledge you may:

1. incorporate learning experiences in the unit that will provide students with the opportunity to master these skills and knowledge.

2. determine that the objective is not appropriate to the unit.

**Step #5:** Think creatively to design evaluation strategies to assess student progress. Try to develop several strategies to strengthen your findings.

The clearer, more specific a goal or objective is stated, the easier it is to evaluate. This has been discussed already in previous sections of this manual. In this section, we will examine three examples of how to make a goal/objective easier to evaluate.

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**Example #1.**

**Goal:** The student will increase his/her knowledge about vitamins.

**General Objective:** Using available resources, the student will report about the effects of vitamins.

**Steps to Enable You to Evaluate Whether or Not the Objective Has Been Met:**

**Step #1.** Clarify terms that remain vague, unclear or "fuzzy."

A. Define "resources."

Possible responses: (a) library references: books, magazines, journals, films, slides, computers, newspapers
B. Define "effects."
Possible responses:
(a) benefits
(b) harmful effects of overdoses
(c) symptoms if there is a deficiency

Step #2. Limit the subject.
For example, limit it to vitamin A. In such a case the effects might be limited to one or more of the following possible areas of effect; thus, the evaluation process becomes simplified as the focus is sharper.

(a) health of humans: general health, cell growth, mucous membranes, digestion, cancer prevention, reduction of bacterial and viral infection, eye health, respiratory tract health (or any combination of these possible factors)
(b) health of human fetus: prevention of multiple abnormalities
(c) health of canines: prevention of weak bones
(d) health of fowls: degeneration of egg production, fertility

Step #3. Define "report."
Possible responses: oral, written, video, film, photo essay, article for class newspaper, graphics, letters, etc.

Step #4. You may also do a "task analysis" to determine whether or not the students need prerequisite knowledge or research skills to be able to successfully meet the objective. For example, they must know what a vitamin is; they must know the basics of preparing a report; and they must know how to use the specified resources. If the students lack any of these skills or knowledge, then you will have to either include experiences to provide them with this in the unit, simplify the objective, or discard it.

Step #5. In this case, such evaluative strategies might include: a written report, a diary or log listing resources used, an individual conference to discuss the findings and resources used, a teacher checklist for observing use of in-class resources, etc.

Example #2.

Goal: The student will value good food-preparation practices.

General Objective: The student will appreciate good food-preparation practices for preparing local fruits and vegetables.

Step #1. Clarify unclear, vague terms.
A. Decide what you mean by "preparation"
   a. food storage
   b. cooking
   c. serving raw
   d. growing local fruits and vegetables
   e. drying
B. Define what you mean by "good"
   (Note: A variety of responses are appropriate here)

Step #2. Limit the subject.

A. Define which "local fruits" and "local vegetables"

Step #3. Make what you mean by "appreciate" more explicit. Ask what behaviors
   would imply that someone "appreciates." Then gather as much evidence from diverse
   sources as possible.

A. To "appreciate" may be indicated by/through evidence of:
   a. signs of enjoyment
   b. voluntary involvement in such practices
   c. enthusiastic response to such practices
   d. reading books independently about food preparation
   e. sharing information about food-preparation practices
   f. asking questions to improve one's own practices
   g. using such practices routinely in the home environment
   h. discriminating between good and poor practices
   i. modelling good practices for others
   j. explaining to others about or debating with others about what
      constitutes good food-preparation practices
   k. supporting others in their practice of good food-preparation skills

Step #4. A task analysis of this objective may show that before a student can meet
   this objective, he/she would need prerequisite knowledge and skills. For example, the
   student would have to know some basic food preparation skills and which ones are
   appropriate for specific fruits and vegetables.

Step #5. Appropriate evaluation strategies/measures might include: student conference;
   record of time spent independently employing such practices; a student diary, log, or
   checklist recording when such practices are used; a student list of books/articles read
   about food preparation; classification of good and poor practices; creation of recipes or
   menus that reflect such practices; role-play of a food preparation problem situation;
   a written test or quiz; a report, either oral or written, about food preparation of local
   fruits and vegetables; a meal prepared and served in the school by the student and
   observed by the teacher.

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Example 3.

Goal. The student will work with others to improve local nutritional conditions.

General Objective. With other community members, the student will work cooperatively
   to create a model garden.
Step #1. Clarify terms that remain vague, limit subject, and define verb in observable terms.

A. Define "community members."
Possible responses: (a) children in the class
(b) parents
(c) local farmers
(d) senior citizens
(e) students in other grade levels

B. Define "model."
Responses would vary depending on crops, area, local needs, etc.

C. Limit how many "others."
Possible responses would vary and may be classified by the group mentioned above. (with 3 students, 1 parent, and 2 senior citizens)

D. You may also want to limit the definition of "community" to some geographical area, social group, school, etc.

E. Limit what you mean by "garden."
Possible responses might include: a vegetable garden, a garden with one type of crop, or multiple crops, etc.

Step #2. Define what you mean by "create" in clear terms.

A. Design, plant, tend, gather crops, market; rehabilitate an existing garden; design in theory but not in reality, etc.

B. Articulate the behaviors that you will look for which will indicate evidence of "working cooperatively."
Possible responses: sharing information, sharing materials, assisting others, not fighting, not withdrawing, listening to others, being patient with others

Step #3. A task analysis may indicate the following prerequisite skills or knowledge that a student must possess before being able to meet the objective: basic gardening skills, the needs of certain plants, knowledge of the ability of others who will participate.

Step #4. Evaluation measures for this objective might include: anecdotal notes from teacher observations; checklists maintained by student or teacher; quality of the final product; a student log or journal; reports from other group members; sociometric systems of observation; etc.

8. PRELIMINARY DESIGNS FOR A SET OF LEARNING EXPERIENCES: A LESSON PLAN

Lesson plans can vary in format, detail, and depth depending upon the needs of your teachers and the nature of the content and instructional strategies. For ease in planning this unit, use the outline plan strips provided. They highlight components that all lesson plans must address. Use these strips for preliminary planning and sequencing of your learning experiences. Then review the sample alternative lesson plan formats
provided at the end of this section. For your final curriculum product, develop lesson plans that include depth, detail and a format that will be most attractive to and useful to your teachers.

The planning strips address the following lesson plan components:

**Title:** A caption for the experience; this can be used later in cross-reference charts or exercises to refer back to the particular learning experience.

**Goals and Objectives:** Include the goal(s) and their supporting general objectives. Keep plans focused. Do not use too many goals/objectives in the learning experience. One or two goals should suffice. Write goals and objectives to degree of specificity that is desired or appropriate.

**Brief Description:** Explain what is to be done, in sequence, within the learning experience. The detail here should be clear enough so that a teacher would understand it clearly. You may later on want to provide the teacher with a full lesson plan if you feel it to be appropriate. Include an introduction, development, and conclusion to each lesson. Remember that your learning experiences should support your goals and objectives. In nutrition it is especially important that the activities address motivating factors (values, beliefs, emotions, norms) and reinforcing factors (peer and community pressures).

**Evaluation:** Briefly describe the evaluation component(s) you will employ to determine if the objective(s) have been met.

**Sharing Components:** It is hoped that the student will share the knowledge and skills gained in the experience with community and/or family members. Give a brief description of such a "homework" assignment.

**Resources:** List all equipment, materials, books, human resources, etc., required for this learning experience.

**Time Required:** Estimate how long this learning experience will take in terms of hours or sessions.

**Related Special Event of Project (if relevant):** If this learning experience contributes to any planned special projects or events, make note of it. This will facilitate coordination of efforts.

**Exercise:**

Now you will sketch out, sequence, continually refine/revise a set of learning experiences. Do this in pencil and expect a number of revisions. The learning experience should reinforce your goals, generalizations, and concepts. They should integrate a variety of subject areas, instructional strategies, and resources. A planning calendar is included to help you to visualize the sequence of your learning experiences within the time frame of your unit.

On page 109 you will find two lesson planning strips. Copy them to make approximately 18 strips, which you should cut out. This will enable you in the next step to freely move them about as you determine an appropriate sequence of the learning experiences. (Depending upon the length of your unit, you may need fewer or more planning strips.)
On each strip, BRIEFLY outline your learning experiences. This constitutes a basic lesson plan. You need not fill out all of the categories contained on the strip at once. You will find that you may just want to first describe the learning experience you have in mind. And then gradually, as you complete this step in the manual and the subsequent sequencing and evaluation steps, the other sections of the strip will be completed.

The design and selection of learning experiences is a creative process. ENJOY IT!

Suggestions: Cut apart the learning experience strips provided in your packet. Place them on a table. Working from your planning calendar, continue to manipulate the strips until you are satisfied that the sequence of learning experiences is both logical and productive. It should reflect your vertical and horizontal structures. It should permit your generalizations and concepts to weave in and out of learning experiences for reinforcement. Also, the goals should be supported. (Remember that an objective can and often should support more than one goal.)

NOTE: Once completed, review your learning experience strips. If you determine that all or any of them require a more detailed lesson plan than the one outlined on the learning experience strip, then develop such plans. Remember, the strips are just to help you plan and sequence. In all likelihood, you will want your unit to contain more fully developed and detailed plans for the teachers.

CUMULATIVE CROSS-REFERENCE CHARTS

IMPORTANT!!

In the rear of this manual, you will find a section entitled "CUMULATIVE CROSS-REFERENCE CHARTS." They are included for a variety of reasons:

a. to spark your imagination
b. to provide a referential framework for the evolution of your curriculum
c. to provide a different perspective for analysis of your learning experience designs and sequence
d. to act as a reminder that goals need periodic reinforcement and assessment; that generalizations and content should weave in and out of your learning experiences; and that a host of creative possibilities exist for integrating learning experiences with diverse subject areas, special events/projects, etc.

HOW TO USE THESE CROSS-REFERENCE CHARTS:

1. SCAN THE CHARTS NOW.

2. GRADUALLY FILL THE CHARTS OUT AS THE SEQUENCE AND DESIGN OF YOUR LEARNING EXPERIENCES BECOMES CLEAR (Use pencil)

3. AFTER YOU ARE SATISFIED WITH THE DESIGN AND SEQUENCE, COMPLETE THE CHARTS
PLANNING/ANALYSIS CALENDAR: PRELIMINARY

Directions: In pencil, in each of the spaces below, map out your tentative schedule of activities. In each box, note briefly the learning experience which will take place and the time it will require. Then in a different color pencil mark the starting and culminating dates for special projects and events which you have planned. Continue to revise this plan until you believe it is appropriate and realistic.

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Note: If your curriculum unit is more than six weeks, add more pages.
PLANNING/ANALYSIS CALENDAR: FINAL

Directions: In pencil, in each of the spaces below, map out your final schedule of activities. In each box, note briefly the learning experience which will take place and the time it will require. Then in a different color pencil mark the starting and culminating dates for special projects and events which you have planned.

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Note: If your curriculum unit is more than six weeks, add more pages.
### Sample lesson plan outline

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Use these outlines for preliminary planning and sequencing of your lesson plans. Then create fuller, more detailed plans to meet the instructional needs of your teachers. Attach to each fully developed lesson plan all related content information for the teachers, student worksheets, resource lists, and evaluation materials specifically needed for the plan to be properly implemented.

NOTE: Please make additional copies of these lesson plan strips — one for each lesson plan in your curriculum unit. (Tear-out Sheet)
Supplementary Information

1). Alternative Lesson Plan Formats

2). Sample Instructional Strategies*
   a). Role-Play
   b). Behavior Modification
   c). Nondirective Model of Teaching
   d). Synectics


NOTE: Be sure to complete the "BEFORE YOU PROCEED...." exercise at the end of this step.
ALTERNATIVE LESSON PLAN FORMAT

If you want to express the design of your learning experience in more detail than provided on the learning experience strips, you may want to use the following form or one with which you are familiar in your own setting. Alternative formats and suggestions are referred to on the next pages.

Learning Experience #

Title:

Goal(s):

(Note: Objectives can and should support one or more goals.)

General Objectives:

Specific Objectives:

Generalization(s) to be introduced or reinforced:

Concepts to be introduced or reinforced:

Prerequisite Knowledge or Skills Needed to Do This Lesson:

Time Required:

Setting:

Materials/Resources Needed:

Procedures:
  Introduction:

   Steps in sequence:

   Focusing questions a teacher might ask to guide or nurture the lesson.

   Conclusion or transition to next lesson. (cont'd on next page)
Evaluation:

Follow-Up or Assignments:

Sharing Assignments:

Related Special Events/Projects:

Relevant Tangents to Be Anticipated:

Notes/Comments:

Attach all relevant teacher background readings/information, lists of resources, student worksheets, evaluation materials.
Topic: The Development of Strategies for Saying "NO" to Food Temptations

Purpose: The student will exercise willpower when under the stress of peer pressure.

Format: Role-play

Materials: A paragraph describing a problem situation (see attached)

Sequence:

1. **Language Arts**
   In group, students read the paragraph about the problem situation. They discuss if they have been in similar situations. They are asked to talk about how they felt and what they did in such situations.

2. **Nutritional Role-Play**
   Using the problem situation as a base, the students: 1. discuss each character and select roles to play. In the discussion, they discuss, in terms of each character: their feelings, their alternative actions to resolve the problem, the possible consequences of the action, and the motivations. Those not role-playing are assigned as observers to analyze the actions. The role-play takes place, is analyzed, participants changed, strategies altered and the role-play repeated.

3. **Social Studies**
   After each role-play, students use group problem-solving skills and discussion to think about the effects of peer pressure on an individual and to develop strategies for resisting such pressures.

4. After the final role-play, students try to develop a list of strategies and generalizations to resist negative forms of peer pressure. This may be repeated following a discussion through the development of an outline, an essay, or a poem.

Evaluation: Based upon the quality of the role-play; suggestions for resolution of the problem; and follow-up activities.

Note: This format for writing a lesson plan is adapted from one presented to a preservice class at Teachers College, Columbia University, by Carole Flick and Valerie Bang-Jensen in Spring 1983.
Problem Situation for the Role-Play

Characters: Tony, a 16 year old boy who is overweight
Mary, a very popular girl in class
Jose, a 19 year old boy in the neighborhood
Marguerite, Tony's 14 year old sister who is also overweight

Tony has been on a diet which was prescribed by his doctor. He is twenty-five pounds overweight. He believes that he would be more popular if he could lose weight; yet, he also wants to be seen as "one of the gang" at parties where food is in abundance. Mary often teases Tony in front of others. Jose has never had a weight problem and everyone "looks up to him" as being a very popular young man. Marguerite is also popular with the other young people in the neighborhood. She has no interest in a diet.

Jose has a party. There is plenty of cake, soda, and ice cream. Tony's doctor has told him not to eat any cake or ice cream nor to drink any kind of soda. Tony has been successfully dieting for four days. At the party, Jose offers Tony cake in front of Mary and Marguerite.

What will Tony do? What specifically is the problem he is faced with? What are possible actions and consequences?
Sample Lesson Plan: A Behavior Modification Strategy

Note: This instructional strategy is based on the work of B. F. Skinner.

Goal: The student will improve his daily diet.

Objective: The student will eat green leafy vegetables regularly.

Specific Objective: For a period of one month, the student will eat at least one portion of a green leafy vegetable every day that is served with the school lunch.

Prerequisite Behaviors: The student must: know what a "green leafy vegetable" is; and understand what is meant by the term "portion."

Materials/Resources: Rewards for the student when he exhibits the desired target behavior. These could be as simple as tokens or stickers placed on a chart showing his progress or they could be special privileges which the student enjoys such as visiting the library with the teacher, selecting a story to be read to the class, or assisting the teacher. The key is that the reward must be something which the student will want. And it also must be a reward that can give immediate and long-term recognition of progress. The reward may change incrementally over time. The reward process must also eventually be phased out gradually as the student assimilates the behavior into his routine.

Organization: This learning experience will involve an individual student and the teacher. They will meet periodically to discuss progress and negotiate upcoming rewards.

Lesson Outline: The teacher observes the student at lunch and analyzes what he eats and does not eat. (She has noticed that he never eats any of the green leafy vegetables on his plate. The teacher determines that the target behavior will be for the student to eat at least one portion of a green leafy vegetable each day it is served in school.) The teacher collects "baseline" data from which she will later measure the student's progress for one week to confirm that the student routinely omits this food from his in-school diet. The teacher analyzes the context of the lunch room behavior and asks:
1. Does the student eat alone?
2. Is the student in a rush to finish lunch and if so where does he go after leaving the table?

The teacher determines whether or not any aspects of the child's schedule or of the lunchroom setting may be altered to encourage the target behavior. The teacher also inquires with the parents as to whether or not the student has any food allergies.

The teacher selects and plans possible rewards for the student.

Student Conference: The teacher confers privately with the student. In the conference, the teacher: 1) states and focuses upon the positive target behavior (eating green vegetables) and avoids mentioning the observed negative behavior that the student does not eat the green vegetables during school lunch; 2) the teacher presents the contingency "When you eat a portion of the green leafy vegetables during school lunch a reward (specified) will be given to you (mention the required time span and regularity of the target behavior which must be observed); 3) the teacher may want to negotiate the rewards and frequency of the rewards with the student; 4) present a recording system to the student (either the student or the teacher, or both, may maintain the record).
Follow-through with the plan. Analyze the data record. And give the student their rewards as negotiated in the conference. Adjust the plan if necessary. Eventually phase out the rewards once the student evidences independence in maintenance of the target behavior.

Evaluation and Follow-Up: After a period of one month, determine if the student has been eating the green leafy vegetables when served at lunch. This can be determined by: 1) the records maintained by the student and/or teachers; 2) observation of food left on the plate; and 3) by individual conferences with the student where the record is reviewed and analyzed. Once the target behavior is realized and the rewards phased out, the teacher may determine another nutritional need upon which to focus.
A Sample Long-Term "Plan"
Based Upon the Non-Directive Model

Background:
The non-directive model of teaching is based upon the work of Carl Rogers' conception of the counseling relationship and upon A.S. Neill's famous school Summerhill. The model heavily emphasizes the affective development of the student. It can be used on an individual basis, for a group discussion, or for a whole class study to explore personal, social, or academic problems.

In the whole class application which will be presented in this plan, the teacher must: be flexible, act as a facilitator, be non-punitive, be non-judgmental, show warmth and responsiveness, be non-evaluative, and not dominate the process. The problem to be studied will be identified by the student, explored by the student, and evaluated by the student. The teacher will act as a guide, will creatively use focus questions to move the student along, and will locate and gather resources to aid the student.

The non-directive plan here has a basic goal and basic objectives; however, the development of the supportive objectives will emerge as the students design a plan for exploration and resolution of the problem. This calls for the teacher to be flexible in planning from the outset; to be resourceful as the student-generated plan evolves; and to take risks in nurturing student plans.

This is not an easy model. To do it well, it requires sensitive, flexible, and often immediate planning on the part of the teacher. It also requires many teachers to put aside "old roles" and "assumptions" while the students generate their own problem identification, plans, and evaluations. In this model, the problem is "owned" by the student, not the teacher. It is based upon the assumption that the student is willing and able to be responsible and to take action to improve his/her own life.

Teachers must develop sound questioning techniques to implement this model. They must be able to use questions basically to clarify ideas and to "move students" along in the process. Basically, the teacher tries to:

1. Help the students to identify the problem situation
2. Encourage students to explore the nature of the problem and factors which shape the problem
3. Develop insights about the problem and the students' abilities/responsibilities
4. Plan and make decisions about how the problem should be approached
5. Take positive action to resolve the problem
6. Integrate the insight's gained and skills acquired into other aspects of one's life

The following "plan" is a hypothetical projection of how a plan may be initiated and evolve.

Projected Plan

Generalizations: Individuals have a responsibility to gain control over their own diets and to improve factors which influence their nutritional environment.

2. To participate productively in most societies, citizens need to develop both individual and group problem-solving skills.

Concepts to Be Reinforced: control, diets, nutritional environment, factors, and problem-solving
Goals: The student will improve his/her own decision-making skills.

The student will work cooperatively with others to improve nutrition practices.

Role of Teacher: Facilitator

Role of Student: Initiator/Developer

Resources (Anticipated): books about nutrition; photos depicting foods, eating habits, etc.; graph paper, sketch pads, etc.; access to a local nutritionist; etc.

Procedure

Day #1: The teacher places nutrition books around the room and provides students with time to peruse them. (Or photos, slides, or a film may be used to stimulate thought.)

Day #2: The students may raise questions or comments about the materials they have looked at or about nutrition factors in their lives. If not, the teacher may raise the topic through open questions, e.g., "In looking through the books, did you find anything that aroused your curiosity?"; "When I say 'nutrition,' what do you first think of in terms of your own eating habits?"; or possibly "What do you think it means when someone says, 'You are what you eat?'" In the ensuing discussion, the teacher notes various topics which arise, especially those which apply to the students' own eating practices.

Day #3: The teacher asks a student to recap the highlights of the previous day's discussion. The teacher asks if the students would like to explore any particular nutritional problem in their own lives. [The remainder of the plan is based upon a hypothetical response that students want to study and improve their own eating habits.]

Day #4: The teacher asks the students to make a list of methods they could use to study their own eating habits. Each student then shares his/her ideas with the class. [They decide that the best way to gather data about their eating habits is to keep a personal record of what they eat each day.] The teacher asks them what categories they would want to have in their record. [As a group, the students make a list of categories and decide to translate their data onto a bar graph (see attached sample record sheet).]

Day #5: The students decide to practice using their recording method. They decide to reflect back on what they ate in the last 24 hour period and to enter it upon the graph/record. The teacher asks if any of them had difficulty with this task. The group makes any adjustments necessary in the graph/record to make it easier for everyone to use.

Day #6: The students determine that for the next week they will each record daily what they have eaten.

Days #7-14: The students work independently recording their food intake on the graph/record. The teacher is available to help anyone who is having difficulty either in categorizing foods or in developing bar graphs. Nutrition books, pamphlets, information is available in the room. And everyone is asked to bring in resources to share with the group. A question/suggestion box is built and placed in the room for students to offer ideas/ask questions/make comments anonymously.
Day #15: The students bring in their records/graphs. They share their findings. The class develops a group profile of their eating habits by creating a bar graph showing the average consumption of various foods per serving per day.

Day #16: The students study the cumulative class bar graph. They identify particular problems in their own eating habits:
   a. high consumption of sugar and fat
   b. low consumption of green and yellow vegetables
   c. low consumption of milk
   d. excessive consumption of soft drinks

Days #17-19: The students each select one of the four major problems to focus upon based specifically upon their own eating records. The students formed committees to study each of these problems. They were to study what the effects of the problem selected were upon their own health and basic steps they wanted to take to improve their diet in light of these findings. They identified environmental factors which could be adjusted/manipulated to help them in this endeavor. Each committee focusing upon one target problem, designed a series of "next steps" to be taken. The teacher facilitates and questions. The four committees shared with the whole class the following suggestions:

Committee #1, High consumption of sugar and fat:
   - to design a nutrition unit on "healthful snacks"
   - to ask the school cafeteria staff to provide alternative snacks
   - to eliminate cakes/cookies from their snacks (moderation as desserts okay)

Committee #2, Low consumption of green and yellow vegetables:
   - to design and present to the class a session on the importance of green and yellow vegetables
   - to write an article for the school paper on the benefits of green and yellow vegetables
   - to invite parents to attend their session on the importance of green and yellow vegetables
   - to meet with the school cafeteria personnel to tell them what types of green and yellow vegetables students like the most and the least (this involves a student survey) and to request that those they like the most be served more frequently

Committee #3, Low consumption of milk:
   - to have a "milk break" every morning along with snack
   - to design posters to remind students of the benefits of milk!

Committee #4, Excessive consumption of soft drinks:
   - to invite a nutritionist to speak to the class about additives in many soft drinks
   - to ask the school personnel to make fruit juices readily available to the students at snack, lunch, and for after-school activities

Days #20-30: The student committees follow through with their plans; the teacher assists them and helps them to gain resources and make appointments; the students continue to record their food consumption on their personal graphs.
Day #31: The students analyze their progress; create another class record/graph to analyze group progress. They identify factors which hindered their progress. They reflect upon what they have learned.

Follow-Up: Students could make adjustments in their strategies; identify new problems to be explored; and continue to maintain and analyze their food consumption records/graphs
Sample Lesson Plan: Synectics

Note: This plan draws upon but adapts the model of teaching called synectics which was developed from the works of William J. J. Gordon (Gordon, W.J.J., in Joyce, B. and Weil, M., 1980, pp. 165-186). Synectics is a creative model of teaching in which students probe familiar concepts to discover new ideas about them.

Goal: The student will appreciate the meaning of "nutrition" in their own lives.

General Objective: The student will describe his or her own feelings about nutrition and why nutrition is important or not important in their day-to-day lifestyle.

Specific Objective: Following teacher instructions, the student will express in writing feelings about the concept "nutrition"; use metaphors to explain those feelings; participate actively in a group discussion about such metaphors; and finally write his or her thoughts and feelings again about "nutrition" for comparison with his or her initial feelings/thoughts; students will discuss new insights gleaned from this process about "nutrition."

Procedure: The teacher reads and follows all steps carefully. The teacher records all responses on the board for the students to see. Do not erase anything from the board until the process is complete.

1. For 5 minutes students write their own thoughts about the concept of "nutrition."
2. Students discuss and share their thoughts and feelings. The teacher writes key words/ideas on the board based upon the students' discussion.
3. The teacher leads students to suggest and justify similes about nutrition (e.g., Nutrition is like a tree because it is rooted in the earth and the earth's resources allow it to develop.)
4. As a group, the class votes on the best simile that was suggested. If it was "tree," then they describe a tree (what it looks like, how it functions, smells, etc.). Note: You want the students to now distance themselves from the concept of "nutrition" so do not mention it directly again until the later steps in this process.
5. Now the teacher asks the students to become (act out) the simile selected as the best in step #4. Focus on just that simile and ask students to describe how they, as a tree, would feel, look, act, think, move, etc. (e.g., How do you feel as a TREE? If you were a tree, what would you hope for and what would you fear?) Record the students' responses on the board as they are saying them.
6. The teacher now asks the students to look at all of the words recorded on the board (from steps 4 and 5) and see if there are any words which seem to contradict, conflict, oppose, or "fight" each other (e.g., a TREE can be both powerful and deteriorating.) The teacher lists on the board all of the students' suggestions for such conflicting pairs of words.
7. The class as a group now votes on one pair of words which seem to have the greatest conflict.
8. The teacher asks the students to suggest a new direct simile based on step #7 (e.g., a bridge can be simultaneously both powerful and deteriorating.) List the new suggested similes on the board. The class votes for the best.
9. Explore as a group the new simile and record on the board the words the students use to describe it (e.g., explore "bridge").
10. The students now use the new simile to rethink ideas about "nutrition" (How is nutrition like a bridge?).
11. Finally the teacher asks the students to rewrite their ideas and feelings about "nutrition." They should share with the group their new ideas and feelings and insights which have been stirred or developed by this metaphorical process which forces the student to explore a familiar concept in new and creative ways.
Evaluation: There are no right or wrong answers in this process. And, some students may gain many new insights about "nutrition" while others do not. Collect the students' before-and-after comments about nutrition and review them. But it is best to keep the entire process non-judgmental and non-evaluative so that students feel that they can openly express their ideas. Also try to keep students from making critical comments about each other's responses. This process is useful for students of most ages [sometimes the younger students can naturally respond to metaphorical thinking more easily than adults].

Follow-Up: The teacher can ask students to use the words recorded on the board to write a creative story or poem about the importance of nutrition in their own lives. Students can make posters about the importance of nutrition based upon their class discussions. Students may want to express their new ideas and feelings about nutrition in a variety of media including dramatic presentations, clay modelling, movement, etc.

* Note: When asking students for a simile, encourage them to think in terms very different than the concept itself. For example the teacher might ask, "Can anyone think of an animal or a machine which is like "nutrition"? This helps the student to gain a creative distancing from the original concept.
Step 4. Checklist

BEFORE YOU PROCEED TO THE NEXT STEP, you should have...

___ The answers to the Fundamental Design and Organizational Questions

___ The statements that articulate the rationale for your organizational framework: the extending vertical structure or progression and the repetitive horizontal supports

___ Considered a diversity of instructional formats and an inclusion of problem-solving and decision-making experiences

___ The complete set of learning experience strips arranged in a logical and productive sequence which also conforms to the requirements enumerated on the checklist (pages 86-87) or a sequenced set of more fully developed and detailed lesson plans

___ Developed and attached to the lesson plans; worksheets or background content resources for the teacher

___ The final completed curricular calendar

___ Completed the cross-reference charts at the end of the manual
Nutrition Education

Curriculum Development Process

1. Assess Needs and Interests
2. Select Theoretical Framework
3. Select Content and Write Course
4. Design Learning Activities
5. Evaluate Curriculum
Scenario

An American Peace Corps volunteer came to Malawi to work in an under-fives' clinic. There he saw malnourished children and started trying to convince mothers to enrich their babies' food. He finally wrote and recorded a song with the following message: put pounded peanut flour in your baby's maize porridge and feed it to him three times a day if you want your children to weigh a lot. The song was a success; it became number one on the national radio hit parade. Did this very original and apparently successful approach to nutrition education change the mothers' behavior and improve the nutritional status of children in Malawi? Unfortunately we shall never know.

Comment

Reading about nutrition education, one is amazed at the large amounts of dedication, creativity, and resources which have been invested in programs and at how little we know about the effects they have produced.

B. Schurch, in "Evaluation of Nutrition Education in Third World Communities"

The topic of evaluation is an emotional one. It affects our present and our future and gives shape to many memories drawn out of our educational pasts. It opens doors and it closes doors. It often affects how we see ourselves and how others see us. It can be a formal process. It can have informal dimensions. It can be overt or it can be subtle.

Much as we all agree that evaluation of nutrition education is important, there are many obstacles to carrying it out in any systematic way. When time, energy and resources are limited, we are hesitant to take them away from the learning activities, which seem to us clearly beneficial to learners, and to spend them on something whose value is less obvious. Political considerations also influence the evaluation process. The survival of a school nutrition education program may depend on many political forces as well as government or other funding agencies. For those who are working on the program, it may seem better not to evaluate it at all than to obtain evaluation results that fall short of the expectations of these people and agencies. This is especially so since the results of school nutrition education are so difficult to determine and may take a long time to become apparent.

However, if we do not ask: what worked? what did not work? we will not learn from our experience. As Dewey once noted, we do not learn from our experience; we learn from reflections on our experience. We must therefore examine the fundamental questions that mold the process of evaluation.

Take a moment then to reflect on the following questions about your curriculum. We will then address each of them in this section:

1. Evaluation: What is it and when is it?
2. Evaluation: Why?
3. Evaluation of what?
4. Evaluation for whom, by whom?
5. Evaluation: How?
   A. Impact and outcome evaluation:
      preparing for the evaluation;
      designing appropriate strategies;
      recording the evaluation;
      forming judgments;
   B. Process or program evaluation

6. Evaluation: Any feedback?
   If so, how and when?
   If not, why not?

Also reflect on the following:
--After evaluation, what next?
--Evaluation: An end, a beginning, or a continuum?

QUESTION 1. EVALUATION: WHAT IS IT? WHEN IS IT?

Evaluation is a process for finding out to what extent the learning experiences as planned are actually producing the results desired. Without such evaluation we cannot determine whether the curriculum plans are effective, let alone how to design them to be more effective. That is, evaluation is not just finding out whether students are now producing the desirable behaviors, but identifying the strengths and weaknesses of the curricula plans as well.

You have already carried out some preliminary or diagnostic evaluation. The extensive needs assessment you carried out in Step 1 is really a form of diagnostic evaluation. In the process of designing the curriculum you checked (or evaluated) your goals and objectives against your social and educational philosophy and you checked your learning experiences against your goals and objectives. So you will consider the issue of evaluation more fully and design strategies for evaluating more systematically and formally how well the curriculum as a whole is performing.

The evaluation phase is not the end of the curriculum development process; rather it is part of a continuum and completes the "loop" in the process. The curriculum developer returns to phase one and repeats each phase refining the process along the way.

If the evaluation is on-going, then it is important to gather evaluative information that will reveal needs, progress, and mastery (Tyler, 1949). To assist you in reviewing and designing evaluation procedures, view evaluation in three forms:

1. **Diagnostic Evaluation:** to determine the nutritional needs and interests of the students. This evaluation can be done prior to the beginning of the unit, such as a needs assessment, or it can be done in learning experiences primarily in the early phases of the unit.

2. **Formative Evaluation:** to determine the progress of the student toward reaching the desired goals/objectives; this is in-process evaluation.

3. **Summative Evaluation:** to determine the extent of progress toward or realization of the goals at the completion of the curriculum unit.
QUESTION 2: EVALUATION: WHY?

Each of the three phases of evaluation may produce information that can serve the following functions. These functions vary in relative importance depending on the educational and philosophical approach used in the curriculum as well as on the bureaucratic needs of teachers and school systems.

1. to determine whether or not your curricular objectives have been met;
2. to clarify your objectives;
3. to assess the range, frequency, and nature of your learning experiences;
4. to reflect upon the teacher’s instructional style and strategies in relation to the needs and interests of the students;
5. to use evaluative information as a diagnostic tool or resource;
6. to provide feedback to the student;
7. to provide data/information for school records to enable administrators and teachers to assess not only the needs and progress of an individual student but also of the whole school;
8. to inform parents about the progress of their children;
9. to provide a learning experience in itself. (Many forms of evaluation act as a motivational factor for students and teachers; students learn skills, such as test taking, research, etc., through executing evaluation procedures); and
10. to judge whether the curriculum has contributed to the health of students.

When you design and review the evaluation procedures within your curriculum, occasionally refer back to the multipurpose nature of the evaluative process. Ask: "Will my procedures facilitate other purposes besides the assessment of goal realization and objectives clarification?"

QUESTION 3: EVALUATION OF WHAT?

Evaluating the effects of nutrition education is more complex than some other areas of the curriculum. It is quite straightforward to evaluate whether a given set of learning experiences has resulted in greater knowledge about, say, the history of the country. Using pre and post pencil-and-paper tests suffices. It is more difficult to do in practice, but still conceptually easy, to evaluate whether students have acquired the ability to analyze complex issues in history or to synthesize ideas. In the area of nutrition education, however, as we saw in Step 2, the overall aim is to lead to the nutritional well-being of people.

These considerations suggest that there are many levels at which a nutrition education program can be evaluated. For the theoretical framework we have used in this manual, these levels are as follows:
Nutrition Education Program → Behavioral capabilities Motivating factors Reinforcing factors Facilitating conditions → Dietary practices or behavior → Nutritional status → Nutritional health outcomes

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Process or Program Evaluation → Impact Evaluation → Outcome Evaluation

That is, programs can be evaluated in terms of:

**Process:** which is how well the curriculum as planned was carried out; the strengths and weaknesses of the curriculum in the teachers' and students' views.

**Impact:** which is the effect of the curriculum on students' eating practices or eating behavior; on their behavioral capabilities or knowledge and skills; on motivating factors such as values—personal, social, cultural and moral; norms; role expectations; affect; etc.; on reinforcing factors such as peer and family support; and on facilitating conditions, where this has been possible.

**Outcome:** which is the effect of the curriculum on students' nutritional or physiological status such as on their serum iron or cholesterol; or on their nutritional health, such as on iron deficiency.

These different levels differ in their importance to society or to a country's development. For example, we would all like for the curriculum we have written to bring about changes in eating practices and nutritional status, thus contributing to the development of healthy children.

However, many nutrition educators argue that it is neither possible nor even desirable for schools to aim for impacts on nutritional status or eating practices; that to use nutritional status or behavioral criteria for evaluating nutrition and health education is inherently unfair. For example, language teachers are not evaluated by whether those who leave school ever read another book. Nor are civic or social science teachers and curricula judged by whether the students vote or otherwise participate in their country's political processes. Why then should changes in food behavior and practices or, worse yet, nutritional status, be used to evaluate nutrition education?

By what criteria will we evaluate nutrition education then? Does it mean that a nutrition education curriculum should not be judged as successful if it does not result in improved nutritional status even if its goals and objectives are achieved?

Changes in nutritional outcome occur only after the passage of time, are generally small, and are often difficult to measure. In addition, it is often impossible to prove that the changes that you do see are due solely to the educational intervention since so many other factors may have intervened in students' lives in the meantime. On the other hand, the impacts that we see immediately at the conclusion of teaching the curriculum may be large, easily measured and more clearly due to the educational intervention. Examples of such impacts would be gains in curriculum-specific knowledge. Unfortunately, these impacts are not as socially desirable because the relationships between them and the nutritional well-being of students are complex, indirect, and unclear.

There appears to be some consensus among nutrition educators and health educators that school-based programs should be primarily directed at, and hence
evaluated in terms of PROCESS and IMPACT of the curriculum. This represents a compromise between social relevance and what we can demonstrate as resulting from education in the schools.

Exercise:

Where do you stand on this issue? That is, do you think that this curriculum should be evaluated on the basis of impact changes (i.e., changes in knowledge, beliefs, attitudes, etc.; eating practice), or on improved nutritional status, or on both? (These are your criteria for evaluation.) Write your opinions below:

________________________________________________________________________

________________________________________________________________________

Is this position consistent with the position you took on the overall aims and purposes of the nutrition education curriculum that you chose in Step 2 and with the goals and objectives you stated in Step 3?

If not, what changes do you wish to make in your aims and purposes, or in your goals and objectives, or in the criteria for evaluation? Make them now in the appropriate locations.

QUESTION 4: EVALUATION FOR WHOM, BY WHOM?

Many people are interested in the information generated by an evaluation and these people may have different opinions about what should be indicators of effectiveness. For example, policy planners are usually more interested in the final outcomes and summative evaluation than in the impact of nutrition education and formative evaluation. Thus, a fair evaluation must take into account the different needs of the various groups of people involved.

Curriculum Developer:

For the curriculum developer (that is, YOU), evaluation may serve the following functions:

1. Provides information about what worked, what did not, and why. For example, were the goals and objectives appropriate? Did the lessons or learning activities achieve the goals and objectives of the curriculum? Were they implemented as planned? If not, why not? For most curriculum developers, this type of information is the main function of evaluation.

2. Demonstrates to the public, to government or other agency sponsoring the curriculum development project that the resources were well spent and the job was well done.

3. Provides information to justify continuing to use this nutrition education curriculum in the schools.

Curriculum developers are thus interested in both formative and summative evaluations of both impact and outcome of the curriculum. They are also extremely interested in program or process evaluation results.
Why are YOU interested in evaluation? What roles do you want the evaluation to serve for YOU?

1.

2.

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Teachers or Others Providing Nutrition Education in the School

For teachers or others who may actually teach the curriculum (such as the school nurse or community health worker), evaluation:

1. Provides information about whether the goals and objectives of the curriculum were achieved.
2. Provides information as to whether the time and effort were worthwhile.
3. Provides information as to what did or did not work and what could be changed to improve the curriculum.
4. Provides a sense of accomplishment in assisting students to become healthier, if goals and objectives have been achieved.
5. Provides insights into needs and interests of the learners.

Why would your teachers want to carry out the evaluation procedures you have planned? What roles does evaluation serve for them? or What's in it for them?

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1.

2.

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The Beneficiaries or Learners

The students or learners are the ones with most stake or interest in the results of an evaluation. For them, evaluation:

1. Provides information on whether they have acquired the knowledge, skills, and motivation that would enable them to eat healthfully.
2. May be fun to do.
3. Gives them a sense of achievement, or identifies areas in which they need to improve.
Why would your students want to participate in the evaluation process? What functions does evaluation serve for them?

1. 

2. 

The School

For the school, evaluation may have the following roles:
1. Demonstrates to parents and others in the community that it is concerned about the children's nutritional well-being.
2. Determines whether the curriculum was worth the time and effort of the teacher(s).
3. Determines future courses of action.

For the schools that will use this curriculum guide, what are their evaluation needs?

1. 

2. 

The Parents

For parents, evaluation:
1. Builds school-community support.
2. Provides opportunities to learn from the child's school experience.
3. Identifies areas in which they can help their child.

Why would evaluation be important to the parents of your students? What functions does it serve?
Policy Planners, Politicians, or Funding Agencies

For policy planners or those who sponsored (and perhaps funded) the curriculum project, evaluation serves:

1. The need to know that resources it allocated (e.g., teacher time or funds) served useful or desirable ends.
2. The need to verify that the actual use of time or funds conforms to that originally agreed upon.
3. The need to determine future courses of action in the area of school nutrition education.
4. The need to demonstrate to the public that they are interested in the health of children and are doing something tangible or concrete about it. Policy planners and funding agencies are usually primarily interested in summative evaluations of program impacts and outcomes. They are also very interested in program evaluation.

What information do they want from an evaluation that will be useful from their point of view?

Who Should Conduct the Evaluation?

In the next section, we shall see that some evaluation procedures will be included as part of the various learning activities of the units of instruction. Those would of course be conducted by the classroom teacher. A more formal approach to evaluation is to gather data at the beginning and end of the curriculum units using knowledge tests, attitude questionnaires or assessments of eating practices (i.e., pretests and posttests). These can be administered either by the classroom teacher, by the curriculum developers, or by someone else. Assuming you have designed such pretests and posttests and that they are available to the teacher of your curriculum, who should administer them depends on:
(a) the need for objectivity; and
(b) the resources available.

It is the simplest if these instruments are administered and the results analyzed by the classroom teacher. However, the teacher may have time to administer the instruments but not to analyze them. Furthermore, the objectivity of the results may be called into question. If the curriculum developers administer the instruments and analyze the results, the classroom teacher may feel very threatened as the results will be seen as a reflection on her or his performance. Objectivity may also be an issue. An outside evaluator may be costly in terms of money or time and may be threatening to both curriculum developer and teacher, but may provide the kind of objectivity that school administrators, funding agencies, policy planners and others want. Some kind of compromise is usually reached, taking into account the needs of the various people involved.

Exercise:

Who will evaluate your curriculum? Why?

QUESTION 5: EVALUATION: HOW?

A. Evaluating the Impact or Outcome of the Nutrition Education Curriculum

Thoughts to Keep in Mind as You Design Evaluation Procedures

1. Design your evaluation measures to be consistent with your goals and objectives, their levels on the taxonomies, and the learning experiences you designed, and the overall theoretical framework guiding this curriculum.

2. Remember, you want your curriculum to be realistic and welcomed by classroom teachers. Evaluation can become time consuming and expensive. You do not want your teachers to be swallowed up by record keeping. Try to keep evaluation simple, relevant, and effective.

3. Perhaps most important, in many areas, is to encourage teachers not to overuse written tests and exams as evaluative formats. Many goals/objectives simply cannot be accurately evaluated by written exam. Your evaluative strategies must be designed to measure your particular goals/objectives. This means that the evaluation format must address various levels of the three taxonomies (cognitive, affective, psychomotor). The employment of diverse evaluation formats to assess even a single objective is recommended. The more relevant evidence of student growth that is gathered, the more accurate a picture you will get of progress, achievements, needs, and interests.
The need for employment of diverse strategies, assessment of affective and behavioral goals, and measurement of objectives beyond the lower levels of the taxonomy was highlighted by a set of responses in a 1977 study (UNESCO, Position of Nutrition Education within Educational Systems, 1979). In response to a question about nutritional curriculum evaluation practices, it was revealed that student learning is still measured predominantly by assessment of recall at the knowledge level; this hints that written examination and recitation may still be the most popular evaluative practices. The respondents from nations in Africa, Arab State, Asia, Oceania, Europe, Latin America, and North America indicated that:

1. 80% employ measurement of knowledge recall;
2. 58% employ measurements of weight and height of students;
3. 37% employ measurement of behavioral change;
4. 35% employ records of food selection and purchase;
5. 35% employ student self-evaluation;
6. 32% assess the control of absences due to infectious disease;
7. 28% measure parents' impressions (Table 18, p. 38).

The following pages will provide ideas to encourage you to employ a combination of these evaluation strategies plus design new formats.

4. As you design and review your evaluative strategies, it will be helpful to the teachers who will ultimately use your curriculum if you clearly define how and when these strategies are to be employed. Many of the evaluation formats will be woven into the very structure of your learning experiences. However, there may be some formats that warrant physical placement as ready resources in an Appendix to your curriculum. Such materials would include: pretest or needs assessment materials; sample worksheets; sample quizzes or formative tests; final exams; a sample student log or diary; a sample teacher observation checklist; sample student conference formats and questions; etc.

**THE EVALUATION PROCESS IN ACTION**

Evaluation procedures generally involve:

1. preparing for evaluation;
2. designing appropriate strategies for gathering evaluative information;
3. designing a system for recording and reporting the evaluative information;
4. forming judgments based upon the evaluative information to use in future decision-making.

Each of these steps will now be discussed in greater detail.

1. **Preparation for Evaluation**

1. Review existing evaluative materials in the field of nutrition for ideas if they are available. However, before you adopt or adapt any existing materials or formats, determine:

   a. whether or not the strategies accurately reflect your own curriculum philosophy and psychology of learning stated in Step 2; and
b. whether or not they would enable you to evaluate attainment of your particular curricular goals/objectives.

2. Review what you recorded in Step 1 as the teachers' comments about their evaluation preferences, needs (time and resources) and interests.

2. Designing Appropriate Strategies for Gathering Evaluative Information

Many strategies can be used for evaluating your curriculum. As indicated earlier:
(a) Some of these can be built into the learning experiences to assess whether specific objectives have been met. They can be used as diagnostic, on-going or formative, or summative evaluation.
(b) Other strategies can be designed to be administered separately from the learning experiences to provide a more formal assessment of the overall effectiveness of the curriculum. To do this, one would gather data at the beginning and then at the end of the curriculum units, using, among other evaluation strategies, written tests of knowledge, questionnaires of beliefs, attitudes, values and interests, and inventories of food practices.

As you consider evaluation strategies, consider the following:
First, since you should have goals and objectives directed at eating practices, as well as at behavioral capabilities, motivating factors and reinforcing factors in all three domains--cognitive, affective and psychomotor--you will want to make sure that your evaluation devices are also directed at all these factors in the three domains.
Second, you will want to confirm that within your sequence of learning experiences you have incorporated opportunities for diagnostic (what students know or need before beginning and at the beginning of the unit), formative (in process evaluation of progress and how/to what extent students are integrating information or developing skills), and summative (at completion of curriculum) evaluation to determine whether or not the students are reaching or have reached the goals and related general objectives.
Remember, several goals/general objectives can be evaluated in a single learning experience or pretest-posttest instrument. Also, be aware that not all learning experiences can be used, or should be used, for evaluation purposes.
Third, your evaluation strategies will need to be consistent with the stated overall aims of your curriculum as well as with the theoretical framework you have chosen to guide your curriculum. For example, if one aim is to encourage the adoption of specific desirable eating practices, then performance on tests of general nutrition knowledge would not be an appropriate basis for evaluation. Likewise, if the development of decision-making skills is one of your main goals, tests of nutrition knowledge may also not be appropriate unless carefully written to be directed at the decision-making process.

(a) Evaluation as Part of Learning Experiences:

On the following pages we have provided you with a list of suggested evaluation strategies. We hope this will stimulate your own imagination to think of others.
A Diversity of Suggested Evaluation Strategies

How will you gather information to evaluate the progress toward or realization of your proposed objectives? The following list of strategies and techniques may spark your own imagination. Remember, you will want to include a diversity of evaluation strategies, covering all three domains, directed at your goals and objectives, and consistent with your theoretical framework.

### Suggested Strategies for Diagnostic, Formative, and Summative Evaluation

<table>
<thead>
<tr>
<th>D</th>
<th>F</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behaviors</strong></td>
<td><strong>Suggested Evaluation Methods/Formats/Target</strong></td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>a. individual conferences with students</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>b. teacher-designed tests or quizzes</td>
<td></td>
</tr>
<tr>
<td>x x</td>
<td>c. participation in Special Projects/Events</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>d. daily food-intake record and analysis</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>e. teacher observation of food eaten in school</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>f. participation in class discussions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. quality of participation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. quality/frequency of participation</td>
<td></td>
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<tr>
<td></td>
<td>3. topics suggested/raised by individuals</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>g. participation in group projects</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. selection of a topic/project/problem</td>
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<tr>
<td></td>
<td>2. working cooperatively with peers toward the resolution of the project</td>
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<tr>
<td></td>
<td>3. quality/quantity of input into the project</td>
<td></td>
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<tr>
<td>x x x</td>
<td>h. observed resiliency and perseverance when met with nutritional setbacks, temptations, or frustrations (recorded by teacher or by student)</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>i. teacher's anecdotal records of student's behavior with respect to food and nutrition</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>j. examination and analysis of all of student's written work (a folder for each student is recommended)</td>
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<tr>
<td>x x</td>
<td>k. written and oral reports about nutrition issues made by individual students and/or small groups of students</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>l. final examinations (written or multi-media)</td>
<td></td>
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<tr>
<td>x x</td>
<td>m. teacher-designed checklists of skills to be met (through extended observation—remember to include affective as well as cognitive skills)</td>
<td></td>
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<tr>
<td>x x x</td>
<td>n. conference/interviews with parents to discuss at-home nutritional practices</td>
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<tr>
<td>x x x</td>
<td>o. record of the books/documents/articles about nutrition issues read by the student (or checked out of library)</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>p. evidence of student's sharing of nutritional information with members of family, community, and peers</td>
<td></td>
</tr>
<tr>
<td>x x x</td>
<td>q. entries in a personal &quot;Nutrition Diary&quot;</td>
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</tr>
<tr>
<td>x x x</td>
<td>r. questionnaire about student's and family's nutritional practices, problems, interests, beliefs, values, norms, etc. (i.e., attitude questionnaire)</td>
<td></td>
</tr>
</tbody>
</table>
s. action taken by students to inquire about or improve nutritional conditions/practices: letters written, interviews, field trips or visits to nutrition-related sites (student or teacher maintains record)

t. student-written "experience summaries" in which each student writes in his/her own words what he/she learned from a given experience or series of experiences

u. student-maintained checklist of own eating habits

v. teacher record/observation of food eaten, left, or discarded at lunchtime (school lunch or food brought from home)

w. student statement of personal nutrition goals and periodic statements as to whether goals are being met or not

x. teacher's review of student's previous nutritional needs/progress:
   1. school reports
   2. public health records
   3. interview former teachers
   4. confer with parents
   5. confer with student

(Note: Be sure to add updates to these records for future references)

y. measurement of student's absence

z. student self-evaluation of nutritional needs, interests, practices

aa. record (longitudinal) of physical changes (e.g., height, weight, eye health, blood analysis, urine analysis, symptoms of specific nutritional problems)

bb. analysis of nutritional-related student constructions, drawings, photo-essays, poetry, speech writing, etc.
Exercise:

Now that you have read the list of diverse evaluation strategies, reflect upon your list of learning experiences. Do they include in them a diversity of strategies that can be used for evaluation purposes?

If not, list several strategies that you will want to incorporate into your curriculum:

1.

2.

3.

4.

You may want to go back now and incorporate these strategies into your learning experiences (Step 4).

As you design, review, and revise your evaluation strategies, enter them onto your curriculum calendar (p. 106). Periodically, analyze this calendar and make necessary adjustments in your curricular plans as necessary.

Also, turn to the Cross-Reference charts at the end of the manual. Enter your evaluation strategies. Does the chart reflect a diversity of strategies?

(b). Designing Instruments to Be Used Apart from Learning Experiences

You may wish or need to find out and report on more formally the overall effectiveness of the nutrition education curriculum you have designed. You can use some of the evaluation components of the regular school activities and learning experiences, e.g., final examination; questionnaire of student interests, beliefs and attitudes; food intake record for one or three days, or observation of amount and type of food eaten in the cafeteria or brought from home.

However, you may also wish or need to develop specific instruments to be administered apart from the learning experiences, perhaps before and after the curriculum units have been taught. Such instruments can measure behavioral capabilities such as knowledge, skills, attitudes, perceptions, values, or actual eating practices. Designing such instruments is not easy, and how much time and effort you spend on such instruments depends on the purpose of evaluation and the degree of measurement accuracy you wish.

All evaluation instruments need to pay attention to the two attributes described below, but they need to be established to a greater or lesser degree depending on the degree of accuracy required.
VALIDITY: This is the degree to which the instrument actually measures the target behavior(s).

Instrument developers need to consider the following aspects of validity:
(a) Are the items on the test/questionnaire representative of the goals and objectives set forth, the content covered, and learning experiences carried out? You may wish to determine this or you may wish to have an outside group of "experts" evaluate the items for relevance, depth, and breadth.
(b) Are the language, formats and procedures of the instruments reasonable from the students' points of view?
(c) Does the score on the test/questionnaire correlate well with what it is meant to measure? For example, do one-day food records measure overall eating habits?
(d) Do you lay out clearly the construct you say you are measuring, e.g., some value or some specific knowledge content?

RELIABILITY: This is the degree to which the instrument (test, questionnaire) used by different people, at different times, with the same people, will give the same result.

This can be estimated by giving the same test twice to the same group and seeing whether you get the same scores. However, in this method there may be a learning effect, which carries over from taking the test the first time to the second time.

Reliability can also be estimated by constructing the test such that it has two questions on each objective or content area (in an odd-even format or as two halves of the test) and computing the correlation between the two parts of the test.

There are other ways of estimating reliability. In addition, the difficulty of the test or questionnaire items can be estimated and should be appropriate for the grade level of the students.

Examples:

Cognitive:
One example of the procedure for a nutrition knowledge test is described in some detail by Dwyer in the September, 1981, issue of JNE (Dwyer, et al.). In this case, the test developers generated 100 questions they considered representative of the concepts they wished to measure. From the comments of 30 outside "experts," these were reduced to 74 items. After various tests of validity and reliability were performed, only 27 test items remained. That is, of 74 items judged by nutritionists to be valid, only 27 satisfied the various psychometric criteria.

Affective:
Another example in the affective domain is provided in the same issue of the journal (Rosander and Sims, 1981). They designed an instrument to evaluate an affective-based nutrition education unit designed for low-income women enrolled in a government food program. The instrument measured knowledge, attitudes as well as food practices. The part measuring changes in the affective domain started out with three constructs and 14 items, and ended up, after validity and reliability considerations, with two constructs and nine items. These are shown below.
### Items in Attitude Scales after Factor Analysis

<table>
<thead>
<tr>
<th>Scale</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Control Over Eating Habits</td>
<td>Nutrition is not so important as long as I am eating a lot of food. I eat whatever I want and never think about it later. I like to make my own decisions about what I eat, but often I eat what everybody else is eating. I've been eating the same way for years and, at this point, it would be impossible for me to change.</td>
</tr>
<tr>
<td>Food's Effects on Health and Feelings</td>
<td>If I take a vitamin pill in the morning, I don't have to worry about what I eat. If I'm not eating well, surely my health will suffer. The food I eat has nothing to do with the way I feel. I feel best when I eat nutritious food. I would really like to change my eating habits.</td>
</tr>
</tbody>
</table>

Rosander and Sims, 1981.

**Eating Practices:**

Foods actually eaten or dietary practices can be evaluated by asking students:

--to report what they ate during the previous 24 hours and scoring them by your national Food Group System (or some other system);

--to rate how often they eat a list of foods that were the special targets of your curriculum;

--to complete checklists of food practices such as eating breakfast, or eating dark green vegetables, etc.

**Exercise:**

While in Step 4 you planned evaluation strategies specific to each lesson or learning experience, here you will design evaluation strategies for your goals in general. Evaluation items from the various lesson plans designed in Step 4 may be used as part of this overall evaluation, but you may need to design new instruments. Thus, you may want to use some of the strategies listed on page 135, which were part of classroom activities. Or you may want to design pre and post tests of nutrition knowledge, or cognitive and affective skills; surveys of values, interests and attitudes; or inventories of eating practices. Any evaluation instrument or component needed by your teachers must now be developed by you and included into the curriculum guide you give to the teachers. Information about these items should be entered on the charts on
the following pages and on the cross-reference charts found at the end of this manual. Remember that your evaluation strategies should address behavioral capabilities, motivating and reinforcing factors, and facilitating conditions (where appropriate) as well as dietary practices.

On the charts on the following pages:

1. List an abbreviated form of the goals of your curriculum in the appropriate column.

2. Describe the procedures you will use to gather diagnostic, formative and summative evaluation information for each goal. Remember that each evaluation component (e.g., a given test, questionnaire, or dietary record) can be used to evaluate one or more goals.

3. If a given evaluation component is related directly to a specific lesson plan, note the number of the lesson plan in the column provided.

After you complete this exercise, review to determine if there are any goals/general objectives that have not been adequately evaluated. You may then want to go back to your learning experiences and make adjustments or additions.
Chart I

OVERALL EVALUATION, GOALS, AND RELATED LEARNING EXPERIENCES

DIAGNOSTIC

GOALS
Note briefly the goals of your curriculum. Check (√) the goals which are assessed by each listed evaluation procedure.

1.  2.  3.  4.  5.  6.  etc.

EVALUATION PROCEDURES
List all of the evaluation procedures your curriculum will employ for each type of overall evaluation. Refer to the suggested evaluations listed on pp. 147-148. (e.g. tests, anecdotal notes, eating records, etc.)

1. DIAGNOSTIC Evaluation Procedures
   In the beginning of the unit or before the unit begins, how will you determine what the students needs, previous knowledge, interests are in relation to each goal?

   a.
   b.
   c.
   etc.

RELATED LEARNING EXPERIENCES
(Note: Not every learning experience will be used for overall evaluation.)
Identify the learning experiences, in sequence, that will contribute overall evaluative information or data. Simply identify the learning experiences by title or number.

Develop and attach to your curriculum any evaluation materials/formats/instruments that your teachers will need to implement diagnostic evaluation.
**Chart II**  
**OVERALL EVALUATION, GOALS, AND RELATED LEARNING EXPERIENCES**

<table>
<thead>
<tr>
<th>GOALS</th>
<th>FORMATIVE EVALUATION PROCEDURES</th>
<th>RELATED LEARNING EXPERIENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note briefly the goals of your curriculum. Check (√) the goals which are assessed by each listed evaluation procedure.</td>
<td>List all of the evaluation procedures your curriculum will employ for each type of overall evaluation. Refer to the suggested evaluations listed on pp. 147-148. (e.g. tests, anecdotal notes, eating records, etc.)</td>
<td>(Note: Not every learning experience will be used for overall evaluation.) Identify the learning experiences, in sequence, that will contribute overall evaluative information or data. Simply identify the learning experiences by title or number.</td>
</tr>
</tbody>
</table>

2. **FORMATIVE Evaluation Procedures**

   In process evaluation. How will you determine what progress toward the goals has been made as the students proceed through the unit?

   a. 
   
   b. 
   
   c. 
   
   etc. 

Develop and attach to your curriculum any evaluation materials/formats/instruments that your teachers will need to implement formative evaluation procedures.
Chart III
OVERALL EVALUATION, GOALS, AND RELATED LEARNING EXPERIENCES

SUMMATIVE

GOALS
Note briefly the goals of your curriculum. Check (✓) the goals which are assessed by each listed evaluation procedure.

1.  
2.  
3.  
4.  
5.  
6.  
etc.

EVALUATION PROCEDURES
List all of the evaluation procedures your curriculum will employ for each type of overall evaluation. Refer to the suggested evaluations listed on pp. 147-148. (e.g. tests, anecdotal notes, eating records, etc.)

3. SUMMATIVE Evaluation Procedures
At the end of the unit, how will you determine if the goals have been met?

a.  
b.  
c.  
etc.

RELATED LEARNING EXPERIENCES
(Note: Not every learning experience will be used for overall evaluation.) Identify the learning experiences, in sequence, that will contribute overall evaluative information or data. Simply identify the learning experiences by title or number.

Develop and attach to your curriculum any evaluation materials/formats/instruments that your teachers will need to implement summative evaluation procedures.
3. Designing a System for Recording and Reporting the Evaluative Information

Much of the evaluation information will be recorded as part of your lesson plans. You will need to devise a system of abstracting out the evaluative components so that you can analyze and report in some overall way how well the goals and objectives have been met. For example, test results; a system in which the teacher records overall quality/quantity of student participation; a card for each child on which is recorded anecdotal information about his or her eating attitudes and practices; students' own food diaries; etc. The system or format should provide the information you and others will need to evaluate the effects of the curriculum but at the same time keep record-keeping a minimal burden for the classroom teacher.

The pre and post tests, survey instruments and eating practices inventories should be designed so that recording and scoring will be easy to do. You may need to provide to the teachers materials needed for record-keeping, including pre and post tests.

Teachers may want to report student progress for the curriculum through several of the following formats:

1. Written and oral comments about students' classwork and homework, grades, scores, marks derived from quizzes, tests, projects, reports, etc.
2. Reports of pre-measurements and post-measurements of students' knowledge, attitudes, values, and eating practices
3. Conferences with individual students or groups of students
4. Report cards
5. Parent/teacher conferences
6. Parent/child/teacher conferences
7. Parent/teacher/specialist/principal conference
8. Permanent health and school records
9. A teacher visit to the student's home

4. Forming Judgments Based on the Evaluative Information to Use in Future Decision-Making

If your evaluation shows that the curriculum reached its goals and objectives, congratulations to all for a job well done! If your evaluation indicates that you have not reached your goals, then Tyler (1949) implies that you must analyze:

1. if the goals and objectives are appropriate;
2. if the activities actually lead toward the realization of the goals;
3. if the sequence of the learning experiences actually was effective;
4. if the evaluative procedures and measures were appropriate; and
5. if the time frame and organizing structure for the curriculum were adequate for development of the expected in-depth study of content, affective growth, mastery of skills, and changes in eating practices.

Based on your answers, you may want to change any, some, or all of the components of your curriculum.

CHECKLIST FOR FORMING JUDGMENTS

Review your evaluation strategies described in the charts on the previous pages and ask yourself if they provide for:

1. a direct relationship to your general objectives and goals
2. consistency with your educational philosophy and psychology
3. diverse strategies to gather a sufficient and wide variety of evidence
4. individual differences among the students' abilities and learning styles
5. adequate systems for observing, recording, providing feedback, and reporting student progress
6. diagnostic, formative, and summative evaluation
7. enough information in a form that will facilitate: student conferences, writing report cards, entering data on permanent records, parent conferences, communications with specialists, and reports to relevant government and other agencies
8. enough and adequate information to form honest, fair, and objective evaluative judgments
9. information to be easily translated into the grading system required by the school
10. adequate information for the teacher to transmit records to future teachers or a child; to administrators; and to health officials (when appropriate) so that a longitudinal record of a student's progress can be maintained and analyzed
11. evaluation of behavioral capabilities, motivating and reinforcing factors, and facilitative conditions as well as dietary practices

You may want to make more revisions. Do so now.

Note: Revise or complete any unattended sections to parts of the cross-reference charts.

B. Process or Program Evaluation

A second level of evaluation addresses the overall quality of the curriculum program itself.

Questions to be answered are:

1. Was the curriculum implemented as planned at the classroom level, and if so:
   (a) How many teachers used the curriculum?
   (b) How often did they use the curriculum?
   (c) Was the curriculum used whole or in part?
   (d) What was the extent to which students shared their nutrition knowledge and skills with members of the family and community?
   (e) What school, community, and national factors made it easier to implement the curriculum as planned?
2. If the curriculum was not implemented as planned, why not?
   
   (a) What school factors (teachers, students, administrators, etc.) hindered the implementation of the curriculum as planned?

   (b) What national factors hindered implementation?

   (c) Other factors

QUESTION 6: EVALUATION: ANY FEEDBACK?

As you design strategies for evaluating students' progress toward the realization of the curricular goals, consider how the teacher will report this information to the student, the parent, the school administration, and/or some government or other agency. Given certain political, economic, and social factors associated with schooling, the way in which a teacher is able to report student needs and progress can directly affect the support ultimately given for the program within the community.

The design of your evaluation component should provide the teacher with sufficient forms of evaluative information to:

1. articulate the goals/objectives of the curriculum to parents, administrators, students
2. report evidence of the individual students' work (a folder for each student containing all work is helpful)
3. relate/justify the importance of the curriculum to the student's general education
4. build good will and cooperation between the school and the home
5. articulate progress so that it is simple and comprehensible to all parties
6. provide information pertaining to the student's social, emotional, physical, and academic progress, needs, and interests
7. provide the student with realistic, objective, constructive information about his/her progress
8. provide government or other agencies that funded or sponsored the program with evidence of overall effectiveness of the nutrition education curriculum

Perhaps you think that feedback is not necessary. If not, why not?
REFLECTION

Now that you have completed the evaluation process, breathe a sigh of relief and reflect on the following:

Evaluation: What next?

Evaluation: An end, a beginning, or a continuum?
Step 5 Checklist

BEFORE YOU PROCEED, you should have...

___ The completed diagnostic, formative, and summative evaluation charts for assessing achievement of your goals

___ A copy of each of the instruments you have designed to be used apart from the learning experiences (e.g., pretests, posttests, food inventories, attitude questionnaires, etc.)

___ The completed checklist for forming judgments

___ The instruments and descriptions of procedures you will use for process or program evaluation
CUMULATIVE CROSS-REFERENCE CHARTS
SAMPLE CROSS-REFERENCE CHARTS

The following pages provide a set of sample cross-reference charts which may be useful to you. They are only samples, and you must adapt them to meet your own regional and professional needs and interests. Many of the sub-categories listed are offered merely as suggestions: some sub-categories will apply and others will not apply to individual development needs. Additions, deletions, adaptations are encouraged.

You, the curriculum developer, should:

1. Write in sequence the title and brief description of each learning experience in the boxes which run down the left-hand column of each page. Be sure to reproduce sufficient copies of each page so that all learning experiences may be included.

2. Write in all of your goals, general objectives, generalizations, main ideas, concepts, supportive vocabulary, and any additional or alternative information required within each of the suggested categories. On some pages, you will have to create your own expanded charts to provide enough space for this. The number of spaces or items provided on the sample charts are not to be seen as limiting. Remember these are only sample pages.

3. Place a check mark in each column which relates to or is supported by the corresponding learning experience. Patterns will emerge. Overlap in some areas is most appropriate. (Remember that different learning experiences can and should support different goals, general objectives, generalizations, concepts and terms. This will build a cohesive design for your curriculum.)

4. Study and analyze completed charts. The charts will afford you a graphic perspective of curricular sequences, areas of reinforcement, gaps, strengths, and weaknesses. The charts should be completed as you are developing the curriculum and reviewed periodically. Complete the charts in pencil so that you can erase and alter the entries as the curriculum evolves. Note: Clearly, not all suggestions offered within the categories on the charts will apply to all units. You do not want to check all areas, only those which apply to your unit.

5. Do not hesitate to use the charts to generate ideas, to provide reminders of areas of the curriculum development process which require attention, to provide useful reference as an evaluative tool to assess progress during the curriculum development process. The charts can provide diagnostic, formative, and summative information about the process itself.

6. Continue to create your own additional charts, adapt the ones provided, and design supplementary sub-categories to meet your own curriculum development needs.

7. If working as a curriculum development committee, discuss and analyze the patterns which appear on the charts with fellow committee members. Make adjustments in the curriculum where deemed necessary.

Note: These charts have been adapted and expanded from techniques developed by Professor Karen Kepler-Zumwalt, Dr. Margaret Lippert, and Dr. Kathleen Morin at Teachers College, Columbia University.

TEAR THEM OUT TO ENCLOSE IN YOUR TEACHERS' CURRICULUM GUIDE, MINI-BOOK OR KIT.
<table>
<thead>
<tr>
<th>Title:</th>
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<table>
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<tr>
<th>LEARNING EXPERIENCES:</th>
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<tbody>
<tr>
<td>(in sequence)</td>
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<table>
<thead>
<tr>
<th>CLASSROOM ORGANIZATION</th>
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<tbody>
<tr>
<td>Independent Study</td>
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<tr>
<td>Whole Class</td>
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<tr>
<td>Small Group</td>
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<tr>
<td>Individual</td>
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<tr>
<td>Club or Committee</td>
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<tr>
<td>Student With Family Members</td>
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<td>Student With Community Members</td>
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<tr>
<td>Other:</td>
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<table>
<thead>
<tr>
<th>TYPE OF STUDENT TASK</th>
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<tbody>
<tr>
<td>Written</td>
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<tr>
<td>Oral/Speech</td>
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<tr>
<td>Listening</td>
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<tr>
<td>Construction</td>
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<tr>
<td>Dramatics</td>
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<td>Field Experience</td>
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<td>Reading</td>
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<td>Calculations</td>
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<td>Research</td>
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<td>Interviewing</td>
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<td>Surveys</td>
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<td>Observation</td>
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<tr>
<td>Experimentation</td>
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<td>Other:</td>
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<tr>
<td>Title:</td>
</tr>
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<td>-------</td>
</tr>
<tr>
<td>LEARNING EXPERIENCES:</td>
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<td>(In Sequence)</td>
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<table>
<thead>
<tr>
<th>INTEGRATION WITH OTHER SUBJECTS</th>
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<tbody>
<tr>
<td>Mathematics</td>
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<td>others:</td>
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<td>urban issues</td>
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<tr>
<td>local history</td>
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<td>world history</td>
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<td>INTEGRATION WITH OTHER SUBJECTS</td>
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<td>Health/Safety</td>
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<td>Library/Reference Skills</td>
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(Tear-Out Sheet)
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<th>RELATED SPECIAL PROJECTS/EVENTS</th>
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<td>Survey of Community</td>
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<td>Nutritional Needs</td>
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<td>Nutritional Practices</td>
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<td>Nutritional Resources</td>
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<td>Assembly Programs-nutrition theme</td>
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<td>Garden</td>
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<tr>
<td>Nutritional Newsletter</td>
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<td>Community Directory of Resources</td>
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<td>Parent Committee</td>
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<tr>
<td>Nutritional Personal Diary</td>
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<td>Nutritional School Fair</td>
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<td>Neighborhood Needs Project</td>
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<td>Local Problem-Oriented</td>
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<tr>
<td>School Service Club</td>
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<tr>
<td>senior citizen assistance</td>
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<td>disabled person assistance</td>
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<td>Guest Speakers Program</td>
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<td>local farmers</td>
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<td>doctors &amp; nurses</td>
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<td>veterinarian</td>
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<td>parents</td>
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<td>merchants</td>
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<td>community elders</td>
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<td>Nutritional Information Center</td>
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<td>Class Cookbook</td>
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<td>Nutrition Career Network</td>
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<td>Other:</td>
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<tr>
<td>EVALUATION STRATEGIES/TECHNIQUES</td>
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<tr>
<td>Test/Exam/Quiz</td>
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<tr>
<td>Individual Conference</td>
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<tr>
<td>Participation* in Special Project</td>
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<td>Daily Food-Intake Record</td>
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<tr>
<td>Teacher Observation: Food-Intake Participation in Discussions</td>
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<tr>
<td>Participation in Group Work</td>
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<td>Observed Resilience</td>
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<td>Observed Perseverence</td>
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<td>Anecdotal Records</td>
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<td>Analysis of All Written Work</td>
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<td>Analysis of Oral Reports</td>
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<td>Teacher Checklists of:</td>
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<td>Eating Habits</td>
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<td>Food Preparatory Skills</td>
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<td>Nutritional Communications</td>
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<td>Parent Conferences</td>
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<tr>
<td>Record of Nutritional Readings</td>
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<tr>
<td>Evidence of Sharing Info.</td>
</tr>
<tr>
<td>Entries in Diary, Log, Journal</td>
</tr>
<tr>
<td>Nutritional Questionnaire</td>
</tr>
<tr>
<td>Action Taken By Student:</td>
</tr>
<tr>
<td>letters written</td>
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<tr>
<td>visits/field trips</td>
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<tr>
<td>interviews of specialists</td>
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<tr>
<td>Experience Summaries</td>
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<tr>
<td>Student Checklists of:</td>
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<tr>
<td>Nutritional Habits</td>
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<tr>
<td>Eating/Food Prep. Practice</td>
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<tr>
<td>Efforts to Share Info.</td>
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<tr>
<td>Other:</td>
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</table>
CONCLUSION AND NEXT STEPS
CONCLUSION AND NEXT STEPS

1. A Reference List for Your Curriculum
2. Next Steps
3. A Concluding Checklist
REFERENCE LIST FOR YOUR CURRICULUM

Complete and tear out to include in your curriculum mini-book. This will provide your teachers with a list of the references and resources which you have used and which you recommend for the implementation of the unit.

I. Texts

II. Nutrition Journals

III. Internal Publications

(Tear-Out Sheet)
IV. Public Documents

V. Newspaper Articles

VI. Interviews (provide dates):
VII. Relevant Curricula

VIII. Background Material/Books

(1) For the teacher

(2) For the students

(Tear-Out Sheet)
IX. Films/Slides/Video/Computer Programs (provide information for locating)

X. Recommended Guest Speakers (and how to contact them)

XI. Recommended Field Experiences (and how to make arrangements for class visits)

(Tear-Out Sheet)
Next Steps

You will need to design a format (be it a kit, a book, a guide) for the distribution of your curriculum unit to teachers.

The tear out sheets and attachments will constitute the basic structure of the curriculum. You may want these typed or printed.

Basically, you will want to make sure you have the following features:

1. Front and back covers (if a book—to protect it); an envelope or box (if a kit)
2. A title page
3. A Table of Contents
4. An introductory statement as to purpose (rationale)
5. A "How to Use This Curriculum" section
6. A statement of the overall aim of nutrition education
7. A statement of the relevant philosophy/psychology/need for the curriculum
8. Articulation of goals and objectives
9. A statement explaining the organization of the learning experiences (if not obvious)
10. A set of fully developed and sequenced learning activities
11. Sufficient background/content materials for the teacher
12. Brief descriptions of special projects/events
13. A list of necessary resources
14. Evaluation materials (other than those integrated within learning experiences)
15. A bibliography or reference list

You will also want to develop plans for piloting the curriculum and subjecting it to revisions and expanded field tests.

The Full Development Process

This manual has focused upon the design and development phases of curriculum development. Basically, there are three broad components (Saettler, 1968) which are essential to the systematic development of instructional materials. The three components are:

1. the design component
2. the development component
3. the evaluation component

This systems approach to curriculum product development can be translated into seven phases: (1) initiation of the project based upon determination of a need, (2) research, (3) planning, (4) development of the experimental product, (5) the pilot program, (6) revision of experimental product, (7) expanded field tests and revisions until the product is perfected.

Note: BREATHE A SIGH OF RELIEF: You have now completed the first 4 phases of the 7-phase process!!!

CONGRATULATIONS! ENJOY THE PRODUCT.
CONCLUSION AND NEXT STEPS

Review the steps you have covered. Place a check next to each item to indicate that you have completed it to your satisfaction.

Step 1: The Assessment of Needs and Interests

___ 1.Needs assessment
    ____ a. Who will participate
    ____ b. Needs and interests of society/milieu
    ____ c. Needs and interests of the subject area of food and nutrition
    ____ d. Felt and real needs and interests of the learner
        ___ (1) Developmental needs/abilities/interests
        ___ (2) Educational needs/abilities/interests
        ___ (3) Nutritional/behavioral needs/interests
    ____ e. Needs and interests of the teacher

___ 2. Assessment of feasibility

___ 3. Determination of priorities and foci of curriculum

Step 2: Framework for the Curriculum: Articulation of Your Educational Philosophy and Psychology

___ 1. Selection of aim based on health risk and socioeconomic problems

___ 2. Articulation of your educational philosophy

___ 3. Statement of the rationale of the curriculum

Step 3: Selecting Content and Determination of Goals and Objectives

___ 1. Statement of content
    ____ a. Stating generalizations
    ____ b. Stating related main ideas
    ____ c. Stating reference terms and concepts

___ 2. Articulation of goals and objectives as expected student outcomes
    ____ a. Aims
    ____ b. Related goals
    ____ c. Related general objectives
    ____ d. Supportive specific objectives
    ____ e. Relationship between above

___ 3. Ensured that goals and objectives relate to theoretical framework
    ____ a. Written goals directed at nutritional status or problem and their causes
    ____ b. Written goals in all three domains, paying special attention to the affective domain
    ____ c. Written goals and objectives at various levels on the taxonomies
Step 4: The Design and Sequencing of Learning Experiences

A. Phase 1: Organizational considerations
   __ 1. Stating fundamental design and organizational issues
   __ 2. Articulation of vertical organizing structure
   __ 3. Articulation of horizontal supports

B. Phase 2: The creation of lesson plans
   __ 1. Designing a set of learning experiences
      ___ a. Relate to goals and objectives
      ___ b. Consistent with overall aim of nutrition education
      ___ c. Consistent with educational philosophy and psychology
      ___ d. Incorporate and reinforce generalizations, related main ideas, and concepts
      ___ e. Uses a diversity of instructional strategies
      ___ f. Emphasizes importance of decision-making experiences
      ___ g. Pays attention to behavioral capabilities, motivating factors, and reinforcement factors with special attention to affect and enabling skills
      ___ h. Integrates special events/projects
      ___ i. Integrates a variety of subject areas
      ___ j. Are described in sufficient detail for use by teacher
         ______ (1) Use lesson plans (learning experience strips or other fuller formats)
         ______ (2) Have provisions for giving teacher content background if needed
         ______ (3) Have opportunities to share/integrate learning with family and community
      ___ l. Includes appropriate student worksheets
      ___ m. Clarifies goals and objectives to make evaluation easier
      ___ n. Builds evaluation components related to objective
   __ 2. Provisions for continuity, sequence, and integration within the set of learning experiences
   __ 3. Placed all learning experience strips in sequence and mapped them out on the Planning Calendar

Step 5: Evaluation

Consider the following:

   __ 1. Why evaluate?
   __ 2. What will you evaluate?
3. For whom?
   a. Curriculum developer
   b. Teachers
   c. Learners
   d. The school
   e. Parents
   f. Policy planners, politicians, or funding agencies

4. Who will evaluate?

5. How?

   A. Impact evaluation:
      a. Employed a diversity of strategies for evaluating impact of curriculum
      b. Designed and tested any evaluation instruments needed
      c. Provided for diagnostic, formative, and summative evaluation
      d. Evaluated dietary practices, behavioral capabilities, motivating factors, reinforcing factors, and facilitating conditions
      e. Evaluated goals/objectives in all three domains: cognitive, affective, and psychomotor
      f. Designed appropriate systems for recording and reporting evaluative information

   B. Designed procedures for overall program or process evaluation

Other:

1. Completed all "tear-out" sheets

2. Completed and analyzed all cross-reference charts

3. Completed "Reference List" for your curriculum

4. Reviewed the entire process. Made necessary adjustments.

5. Discussed curriculum with teachers/administrators

6. Compiled all the "tear-out" sheets into a teacher's curricular guide, kit, or book

7. Prepared for piloting the curriculum and revising it as a result of pilot and/or expanded field testing
REFERENCES FOR MANUAL
REFERENCES

Bang-Jensen, V., & Fick, C. Lesson plan format developed for preservice class at Teachers College, Columbia University, New York, 1983.


Lippert, M. D. Lectures on curriculum development and evaluation delivered to TY4124, a preservice class. Teachers College, Columbia University, 1981-1982.


