CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

METHODS AND TECHNIQUES OF EDUCATION
AS APPLIED TO NUTRITION

A thesis submitted in partial satisfaction of the requirements for the degree of Master's in Public Health in Community Health Education by

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The thesis of Nida N. Saavedra is approved:

California State University, Northridge
DEDICATION

To my very dearly loved parents
Isidoro and Alfreda
Brother and Sister
Doring and Amy
and
to
Eddie and Zandy

This thesis is gratefully and affectionately dedicated
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ABSTRACT

EDUCATIONAL METHODS AND TECHNIQUES AS APPLIED TO NUTRITION EDUCATION

by

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This literature study attempts to re-examine the methods and techniques of education as applied to nutrition education. It is designed for use by nutritionists and educators in the Philippines concerned in the propagation of nutrition education. In this study they may find suggestions for selecting the best educational methods for their programs.

The study presents underlying concepts and content of the accepted principles of learning and motivation. Also discussed are the values and limitations, as well as concrete applicability, of a variety of methods and techniques of education.

Each method or technique presented has its own peculiar and characteristic nature. The effective use of
each requires skill in planning, selecting, preparing, adapting, utilizing and appraising. It likewise involves a functional understanding of the "why" as well as the "what" and the "how."

From the discussion presented in this study, a nutritionist or educator should be able to gain a good perspective in developing an appreciation and insight as to appropriate educational methods and techniques for nutrition education.

Fundamental criteria have been discussed for choosing the most appropriate educational method.
CHAPTER I
INTRODUCTION

Ignorance is the ally of hunger. Today, the satisfaction of hunger is the major task of three quarters of humanity. When the day ends, a large part of the world still remains hungry. Virtually every case of malnutrition comes from a combination of hunger and poverty. In countries where food supplies are inadequate, existing resources are generally badly utilized. Yet, if all problems of food supply and consumer purchasing power were solved, millions still would be unable to enjoy the benefits of good nutrition because of their ignorance on the relationship between food and health.

The past decade has seen years of rapid and widespread technical, social, and political development, yet good nutrition for a large proportion of the world's population is still a remote goal. Under-nutrition and malnutrition resulting from too little food and insufficiency of nutrients remain prevalent in the poorer countries. There is evidence too, that prosperous countries are increasingly affected by ill-health and disease caused by excess consumption.
A variety of studies have been done in the area of nutrition. Some have been concerned with the relation of nutrition to health. Others have examined how knowledge enables consumers to better use present and potential food resources. Still others have examined ways of eliminating the misguided customs, prejudices, conservatism, ignorance and inertia which are often serious obstacles to improvement of nutrition (62).

Nutritionists in the Philippines have been concerned with the relationship between nutrition and health, and overcoming barriers on food prejudices, and food faddism which are so common in many rural as well as urban areas of the country.

Many agencies in the Philippines have developed nutrition programs, all of which have been geared towards the objective of improving the nutritional status of the population. The Department of Health, Department of Education, Department of Agriculture and Natural Resources, and the National Science Development Board are agencies working hand-in-hand to uplift the nutritional status of the country. Still, there are other private and voluntary agencies working towards the same objective. These are the Nutrition Foundation of the Philippines, the Catholic Relief Services, Church World Service, Seventh Day Adventist and the CARE.
The National Nutrition Program, under the Department of Health, has been concerned with the following objectives (41):

1. to protect the growing child, aged 0-6 years, against malnutrition, and to extend such protection to other vulnerable groups such as the pregnant and lactating mothers;

2. to educate mothers on the wonders of correct feeding in nation building through the mothercraft approach;

3. and, to develop facilities in collaboration with regional training centers or centrally for the training of staff and other paramedical allied professions, such as the nurses, midwives, sanitarians, agriculturist and home extension workers.

Attainment of objectives two and three is the concern of this study. However, a variety of questions are being raised. What factor or factors can motivate or hinder learning? What methods or techniques of education are most suited to rural mothers, and staff nutritionists? By the same token, what methods or techniques are best suited for staff training, and for training of allied professionals? And, what methods of techniques can be employed in solving problems that arise from work or field assignments? These and many more, are questions which tend to call for an answer as to the best educational approach or approaches to use.
Educational programs properly planned and executed are the key factors towards the solution of the aforementioned questions.

But, education programs, if not supported with the basic knowledge of the concepts and contents of education, of motivations, of behavioral characteristics, of the various methods and techniques of education may prove to be a wasted effort.

Certain methods, procedures and techniques of instruction are vitally needed to ensure that learning has taken place. For example, it has become increasingly apparent that concepts and ideas are more easily and firmly grasped when presented to a target group in more than a single way. Instructions which supplement verbalization with something projected on a screen, and resolved through group deliberation or played on a recording machine, are often infinitely more effective. Learning becomes more meaningful if the learner can see or actually participate in a given task. It also is evident that each method or technique has its own peculiar advantages and limitations.

It follows then that a nutritionist should attempt to select the method or technique most appropriate for a particular situation, insure its compliance with established program objectives, and apply a proper evaluative device in appraising the result.
It should be emphasized that teaching methods, procedure and techniques are not an end in themselves, but rather a means by which the learner can be assisted to solve individual or group problems.

There are many methods and techniques of education. What are presented in this literature study are those methods and techniques which the author feels are important to nutrition and applicable to the Philippines situation. Secondly, some examples given in this literature study were used in other countries, but nonetheless can be adopted in the Philippines.

Purpose of the Study:

1. For nutritionists or educators to be able to properly select or elucidate methods or techniques most appropriate for a particular setting and for a particular target group, in compliance with established program objectives;

2. And, for nutritionists or educators to be able to apply an evaluative device as to the best educational method based on criteria and conditions of learning, it is necessary to reexamine methods and techniques of education as applied to nutrition taking into consideration the social, cultural, and technical level of the target population.
Definition of terms used:

The following operational definitions of terms have been adopted:

**Applied Nutrition Programmes:** "coordinated educational activity by agriculture, health, education, and other interested agencies with the aim of raising the levels of nutrition of a local population" (43:177).

**Health:** "the quality resulting from the total functioning of the individual in his environment, that empowers him to achieve a personally satisfying and socially useful life" (25:10).

**Kwashiorkor:** "a condition of extreme protein malnutrition in which oedema is the outstanding feature" (40:160).

**Malnutrition:** "the faulty nutrition due to inadequate or unbalanced intake of nutrients or their impaired assimilation or utilization" (38:51).

**Mothercraft:** "teaching mothers the elementary facts of nutrition" (11).

**Mothercraft Nutrition Centers:** "centers established in strategic areas in the provinces to show community development workers and leaders the improvement of health through correct feeding using food materials available in the community and where mothers at the same time develop skills in the preparation, selection, handling, cooking,
and serving of food under menu schedule and under the supervision of trained nutritionist for a certain period of time" (60:99).

Nutrition: "the sum processes concerned with growth, maintenance and repair of the living body as a whole or its constituent parts" (33:49).

Nutrition Education: "process by which beliefs, attitudes and understanding about food lead to habits that are nutritionally sound, practical, and consistent with individual needs and available food resources" (58:8).

Nutrition Teaching Aid: "any resource or device used to make nutrition education effective" (36:82).
CHAPTER II
REVIEW OF LITERATURE

"Quality teaching is purposeful. It moves toward the development of a mature person and recognizes the learner as an insightful participant in his own learning. It formulates convictions, and it fosters willingness to act by these convictions. Without such learning, man could stand eternally hungry in the wet cold of the cave in which he began" (13).

The Need For Nutrition Education

World population, currently about 3.4 billion people, is expected to double itself in the next 30 to 40 years. The food-population ratio is presently in such imbalance that it could result in disaster within the space of a single generation (4).

The Philippines is a part of this gloomy picture, having the third highest birth rate in the world. Of the total population of 39.9 million (1973), 62.34% fall within the age groups of 24 years and younger. In addition 43.11% (of the total population) belong to the low production, high consumption group of 0-14 years. This predominance of the younger age groups is the result of a high rate
(3.01%) of population growth. This high rate of growth coupled with poor eating habits has led to undernourishment and underdevelopment of children. There is some concern that there may be eventual starvation of the entire population in the future because of the inability of food production to keep up with the demand. Because 70% of the total population live in the rural area, the problem of distribution is a contributing factor (11).

Apart from this problem, the Philippines is a country of varied cultural practices which have been handed down from generation to generation.

It is a country that has strong beliefs for information transmitted by the older generation. Friends and relatives are still a significant source of information on nutrition. Much of this information includes food taboos, food fads or beliefs that do not have a scientific basis.

Lack of knowledge of the simplest facts of nutrition is at the root of a high proportion of the cases of malnutrition. Dogmatic statements, voiced by person(s) in authority, have often hindered progress of education in nutrition. For example, one hears statements like "the diet of a rural population is determined by the foods grown in the area", or "food practices are so deeply rooted in culture that they cannot be changed", or improved diets can result only from increased income" (45).
Such statements are not false but they are not necessarily true and may be due to certain traditional beliefs only. For example the argument that increased income will improve the nutritional health is indeed the basis for generally excluding nutrition as a variable among the social, political, and economic indications in development planning. There are, however, many indications that the argument has faults. The migration to the cities, a trend in all developing countries, is made by relatively illiterate young families in the quest for the better life and the higher income. Even though income may be higher, it does not necessarily follow that nutritional health will improve. As a matter of fact, the reverse usually happens. Because such a young mother is generally poorly educated, she often substitutes bottle feeding for breast feeding in nourishing her infant. Being poorly educated, she cannot read the label so usually over-dilutes the formula being prepared. Further, she often does not understand the elements of sanitation so the formula fed is likely to be contaminated and lead to infections. Finally, since her reason for migrating was to find a better life much of her additional income goes for new clothes, furniture, and other affluent items in her new environment. Thus, increased income does not necessarily lead to better diets in a developing country like the Philippines.
Food fads and faddism are also factors contributing to a high proportion of malnutrition in the Philippines. It is because of these beliefs that the promotion of nutrition consciousness among the Filipino people is hampered. For example, there is a belief that, "Squash should not be eaten by conceiving mothers. It will cause 'dullness' to the baby" (15). This is not true, because squash is a rich source of the nutrient Vitamin A, which is needed by the expectant mothers. Another mistaken belief is that, "Eggplant, chicken and eggs should not be given to mothers who have just given birth" (15). Many people believe when both of these foods are given to mothers who have just given birth, they will cause itchiness. This is not true, as both are good sources of protein, are of high biologic value and will, therefore, help in replacing lost tissues. Still another belief is that, "Fruits and vegetables should not be given to infants as they are hard to digest" (15). There is an element of truth in this statement. If given in whole form these foods will cause stomach trouble. However, when given in pureed or mashed forms and in proper amounts, they are best for infants as supplements to their milk diets.

In order to clarify or overcome certain beliefs, nutrition education is of paramount importance. It is needed regardless of income, geographic location, cultural, social or economic pattern, or level of education.
Sadly, the word nutrition means little to the vast majority of the Philippine population. Generally, people elicit no real concern about nutrition, they read little about nutrition, and they pay little, if any attention to nutrition information disseminated by the various forms of mass media (42). Why is this so? Could it be indifference, ignorance, improper motivation, or unskilled handling of techniques, or methods? All of these are possible factors that may contribute to non-interest and non-participation of the prospective learner.

It is fairly generally accepted that the methods of education most likely to change behavior are those in which the learner takes an active part either as an individual or a member of a group (49). Among such methods are group discussion and decision, possible in clubs, clinics, public meetings, and workshops; group activities, such as in panel discussion or demonstrations of methods followed by discussion and practice; and community self-surveys, where community leaders are involved in the process.

Among the more modern techniques of education, are such methods as programmed instruction, brainstorming and the In-Basket technique. These have been found to be effective methods of education in the field of nutrition today. The mass media, including radio or television programs, newspapers, periodicals and popular magazines, have been found to be forceful instruments in reaching
target populations en masse. However, they are found to be more effective if used in combination with more personal methods of communication in which exchange of ideas is possible and in which audience participation is encouraged. Unless accompanied by discussion, the impersonal communication assumes, often unjustifiably, that the learner will understand, remember and act on the advice given to him.

Social research has drawn attention to the limitations of using mass media. The research has suggested that on the whole, media follows public taste rather than creating it (63). Household members are often more influenced by face-to-face contacts with opinion leaders. In spite of this, there is undoubtedly a place for mass media in a nutrition program, both as a supplement to the face-to-face teaching and other teaching aids.

Participants at the White House Conference on Food, Nutrition and Health believed that (61) neither mass media nor advertising can do the entire job of public education. In fact, the field of "informal" public education (outside of the mass media and the formal curriculum of schools) is so vast and so filled with activity, and works through so many channels (both governmental and non-governmental) that it is probable the most important phase of nutrition education will take place in those so called "informal" channels.
Certainly, the informal channels are vital in reaching the many who do not read, do not watch television, do not listen to radio, or who do not get the information they need through any of the standard routes. Many people can be reached through "informal media" such as cooking contests, cookbooks, carton books, street fairs, juke box records, supermarket displays, teenage social programs, church bazaars, women's clubs, stuffers in cereal boxes, and home study kits.

There is also some evidence that a message can be communicated as effectively through a mechanical aid such as tape recorder as by personal teaching, provided the former is combined with personal contact and friendly conversation with someone who is interested in, and not too far removed socially from the learner (17).

The methods and techniques of education are not an end in themselves, but rather a means by which an educator can achieve her program goals. And; education is more than teaching. It is more than constructing attractive visual materials, running complicated instructional equipment, or organizing group activities. Effective teaching requires a deep understanding of human nature, individual behavior, group interaction, and the phenomena of learning itself. It requires a knowledge of the concepts of motivation and the ability to identify barriers to learning.
No one measure or effort can, however, be adequate. Only multifaceted approaches through different channels, repetition and living examples can help effect the desirable results on a permanent basis.
Concepts of Education in Nutrition. The nutritionist, doctor, nurse, home economist, agronomist or other professional or auxiliary worker who hopes to contribute successfully to a nutrition education program must have not only competence in his particular profession but an understanding of how people learn and how they may be helped to do so.

The terms teaching and learning should not be confused nor used synonymously. Moreover, in programs aimed at changing behavior, information should not be confused with education nor should the terms be used interchangeably. Education in food and nutrition, as in health, means education to adopt better practices (6).

On the basis of 35 studies on learning and opinion change, mostly concerned with the adoption of new agricultural practices, Beal and Bohlen (2) have concluded that the process by which adults adopt new ideas and new practices involves several stages. Similar suggestions have been made by Rogers (52). The stages suggested by Rogers (52) are:

1. Awareness: a person becomes aware of a new idea or procedure.

2. Interest: being concerned enough to seek further information about it.

3. Evaluation: weighing its advantages and disadvantages.
4. Trial: trying out on a small scale to test usefulness.

5. Adoption (or rejection): the decision to accept the change and put into practice (or the decision to reject change).

Nutrition education cannot be considered complete until stage five is reached.

Learning is a personal matter and people learn only when they want to. They either learn in order to satisfy some need which they recognize consciously or subconsciously, or to avoid some nuisance or unpleasant situation which would occur if they had not learned (20). This applies to both adults and children. Adults learn and change to satisfy the basic needs for survival; to achieve their personal ambitions, and to avoid being left without the new benefits which progress brings to society. Children learn to do the things which they try out and find satisfying, whether this satisfaction comes from personal achievement, from the happiness of pleasing their parents, or from other reasons. They also learn to avoid adult displeasure or discomfort to themselves.

Learning is an active process and education is normally more successful when the learner takes part rather than looks on (8). People of all ages can learn and indeed are continually doing so according to their capacities and interest.
It seems to be easier for adults to learn to modify their practices when they are in their normal and natural setting of home, shop or farm (64).

The personal relationship between teacher and learner is of great importance. Methods of education based on good personal relationships are usually more effective than impersonal instruction (6).

Experiments (5) also have indicated that the reliability of the source of information may well affect willingness to change opinions on the subject. Success in improving food or nutritional practices, therefore, will largely depend on people's confidence in the educator, and this depends, in the long run, on the reliability and practicability of the advice being given.

Environmental conditions affect learning (5). For example, discomfort discourages learning. Care is needed to provide a relaxed atmosphere and comfortable surroundings.

When the learner can observe tangible results, his interest is increased and he is likely to maintain a prolonged effect. It is important, then, to make certain that the first activity in a program is some sort of success, however, small, and that those who have made the effort are encouraged to feel that the good results are theirs (6).
Experiments (7) have shown that group learning may sometimes be more effective than individual learning, provided the members of the group take an active part in the process. Also, it is fairly widely accepted that the more senses (ears, eyes, tastes, smell, touch) that are reached by the method of teaching used, the greater the learning is likely to be.

The need for improvement in the quality of learning rather than in the quantity was pointed out by Taylor (57). He suggested that educators must set forth the conditions under which learning takes place and then use their imagination and skill in providing those conditions for learning. Teaching methods, of course, provide the vehicle for meeting such obligations.

Content of Nutrition Education. Platt (46) has emphasized that "we ourselves have the heavy responsibility of ensuring that the introduction of the new knowledge leads to improvement of health and well-being and does not, in fact make matters worse". It is not, of course, possible for nutritionists, doctors, home economists or agronomists to be experts on all aspects of food and nutrition and each must rely on the help and cooperation of other professional workers.

When various agencies give different advice about the same subject the recipients become confused and understandably reluctant to trust or to follow any of it. It is
obvious, therefore, that the content of any program must
to be discussed jointly by the members of the various disci-
plines concerned, so that the advice is good and not con-
fusing.

Consideration of the following criteria is of outmost
importance in conducting nutrition education (49):

1. **Advice must be practical.** Solutions to nutrition
problems must be within the practical possibilities of the
local economy and resources of the people for whom educa-
tion is intended. A long term view must be taken in decid-
ing what to advise.

It is useless to start with a project which is beyond
people's income. For example, current incomes should not
be confused with ownership of property, as property owners
may have in fact, very little cash to spend. Any innova-
tion recommended for home improvement should be carefully
examined from the economic standpoint. Similarly, it is a
waste of time to tell a woman to cook a separate meal for
her young children when she possesses only one cooking pot
for the staple food and one for the side dish. It might
be better to teach her to modify her cooking procedures
slightly, such as serving the young children before the
spices are added.

To advise mothers to feed foods to their young child-
ren which they cannot afford is likely to antagonize or
humiliate them and discourage them from returning to the
clinic. Through discussion one can find out from the mothers the improvements which could be possible in their personal circumstances, and to which they are more likely to respond.

Another practical point which must be borne in mind is the need to balance food supply with demand. If people are asked to buy fish, they will be discouraged if they cannot find fish in the market. Conversely, if retailers have been encouraged to sell fish, and have paid the wholesalers for supplies which are then wasted for lack of buyers, it is unlikely that their collaboration in the program will continue.

2. The changes suggested should be minimal. Many people who have tried to improve the nutrition of populations, among them Platt (47) and Jeliffe (26), have emphasized that attempts should not be made to change practices unless they are really having a detrimental effect on health and welfare. Traditional practices which are good should be encouraged, and those which are harmless should be left as they are. The aim of the educator should be to change only those which are harmful.

The changes suggested must be acceptable or potentially acceptable. If a food is unpopular, the educator must look for the reason why. Having discovered the reason, he may be able to suggest a satisfactory compromise. It is
dangerous, socially as well as nutritionally, to suggest changes before there is a satisfactory substitute.

It seems to be most satisfactory to base education on the foods and practices which people use at present and to suggest the minimum changes necessary to correct faults in their diets. Every diet has its good points and these should be praised. As far as possible, changes should be built around these good points.

On the whole, it is usually simpler to introduce foods or practices which are closely related to traditional habits. Educators must always bear in mind the contradictions and anxieties which arise when modern science conflicts with traditional thought and practice and must therefore help people reconcile the new information with the old (27).

3. Advice must be useful and comprehensible. A common mistake in the teaching of food and nutrition is to try to include some general nutritional science which has no application to the country or target population involved. For example, it is useless to teach Moslems to eat pork.

Mead (37) believes that it is important to give people the reasons for changes recommended. Even people of limited education should be given reasons for the recommendations that are made, and they should be encouraged to choose what they think is right for them.
The Methods and Techniques of Education.

The various methods and techniques of education being considered in this study may be categorized as follows:

A. Group Oriented Techniques
   1. Group Discussion and Decision
   2. Programmed Instruction
   3. Brainstorming
   4. Panel Discussion
   5. Workshop

B. Individual Oriented Techniques
   1. Laboratory Experimentation
   2. Community Self-Survey
   3. In-Basket Technique

C. Educator Initiated Techniques
   1. Demonstrations
   2. Current Events

D. Equipment Centered Techniques
   1. Tape Recordings
Group Oriented Techniques.

Group Discussion and Decision - Evidence suggests that group discussion leading to a decision may be one of the best ways to modify social behavior (30). When attitudes and prejudices are brought into the open by discussion, a person is obliged to acknowledge them honestly and to recognize them in the light of other people's comments.

The pressures which build up within a group help to influence the individual members, and the feeling of belonging and the support of others makes it easier for a person to resolve to change his attitudes and to adhere to his resolutions. In making a group decision, the members are jointly supporting one or another conflicting alternative. For these reasons, decisions taken by a group after full discussion are more likely to be carried out than those made by individuals (19).

In a series of classic experiments conducted at the Child Welfare Research Station of the University of Iowa, the efficacy of discussion-decision technique was compared with those of other educational methods. The experiments included a controlled study of the responses of 120 women from various economic levels in Iowa to different ways of encouraging them to overcome their prejudice against serving kidneys, brains, and heart for their family meals. The results seemed overwhelming. Housewives who were involved in group discussion and group decision-making process about
the importance of eating the "undesirable" foods used them much more than those who heard a lecture on the same topic. The process of discussion and arriving at a decision were considered to be the major factors in influencing the decision.

A well conducted group discussion according to Lewin (29) should leave much of the initiative to the group, although it is important that expert advice be available as needed. No attempt should be made to force a decision on the members.

Among the advantages of group discussion are: fostering of growth in leadership; providing opportunities to work as a contributing member of a group; encouraging creative investigation, critical thinking and independent observation; providing an opportunity to develop skills in working with people, which is valuable as a common element of group interaction in modern society; and allowing learners to become aware of opinions other than their own or the educator.

Several problems may be encountered when using this method. The chairman or a leader may have to provide direction for the group especially when arriving at a decision. Hostilities may sometime develop between individuals within the group or cliques may form which impede group effort and cooperative action. There may be unnecessary domination by one or several members to the exclusion...
of others. Also, it may be difficult for shy members to participate in the group. Finally, group discussion may not be profitable unless members have adequate background or information.

Programmed Instruction - is defined as "a reproducible sequence of instructional events designed to produce a measurable and consistent effect on the behavior of each and every acceptable learner" (35). Unlike other media such as films and television, programmed instruction can more appropriately be described as an aid to the learner in learning rather than to the educator in teaching (54). It is a device suited for individual or groups.

A good program provides the learner with all the information that a conventional lecture would contain and in addition presents the material in a carefully-prepared logical sequence (9). The essence of programmed learning is that the learner is presented with a continuing series of a programming processes. The form of the presentation is such that it ensures that progress from one step to the next is achieved. The learner proceeds at his own rate of assimilation, and following his response to each question, the learner is immediately shown the correct response. An attempt is made to maximize the probability of success as a means of reinforcing the learner (16).

Programmed instruction as a technique of education in nutrition, may still be unheard of in the Philippines.
However, this does not mean it is a remote method to consider. For example, programmed instruction can be an effective and efficient means of instructing mothers on the elementary facts of nutrition. Too, a programmed instruction manual can be designed for mothers on how to prepare basic menus using locally available ingredients known to the mothers or which could potentially be produced in the community.

There have been many reports in the United States, evaluating the use of programming materials as a means of instruction (56). In the majority of subject matter areas, programmed instruction resulted in a higher level of knowledge in comparison to conventional classroom instruction while in others it proved no more effective.

Programmed instruction has emerged as an effective means of coping with the increasing number of students, and concomitantly the lack of qualified teachers, and the increasing demand for opportunities for independent study.

A study conducted by Studdiford (56) to assess the effectiveness of a programmed presentation of the basic principles of nutrition in an elementary course for college students proves by way of the student responses that programmed materials helped them understand the text better, facilitated learning, identified important concepts, and helped them to organize the materials.
On the negative side, students expressed concern that the method became boring when programmed instruction was quite long; that some aspects of the process were repetitive and too simple.

The writing of programmed materials entails thorough knowledge of the subject matter, critical thinking in dissecting facts and, as a result, may be overly time consuming.

**Brainstorming** - this is a technique valuable for the stimulation and generation of ideas and the facilitation of their expression. The purpose of the procedure is to promote a quantity of ideas bearing upon a particular subject by identifying all possible aspects related to it. Brainstorming involves the cooperative thinking by groups toward the solution to a specific problem (14).

No literature study has been found that has applied brainstorming as a technique in nutrition. Nevertheless, this is a valuable technique in solving problems encountered in the field or in the office.

Under proper conditions, the following questions might be illustrative of the nature of possible topics or problems for brainstorming: In what ways can malnutrition among pre-schoolers; among pregnant and nursing mothers be eradicated? What methods or techniques of education are most suitable for rural populations; for the urban populations; for the rural health personnel; and for staff
nutritionists (new recruits)? How can the high rate of turnover among nutritionists be reduced? In what ways can the efficiency of nutritionists working in the field; in the headquarters be increased?

Brainstorming technique encourages staff suggestions without fear of being criticized. Greater participation of group members is provided thus making the technique a very useful training device.

The essential elements of a "brainstorming" session are (39):

1. The chairman or group leader writes the problem for which solutions are sought. The question should be brief, specific, and stimulating.

2. The reason for the question should be made clear to the group. The group leader should provide all pertinent background information as well as information regarding how the ideas will be used.

3. The ground rules for brainstorming should be clearly explained.
   a. Every idea is acceptable (even if it sounds silly).
   b. No evaluation of ideas is permitted by the group during the brainstorming session. This includes both verbal evaluation and non-verbal expression of approval or disapproval.
c. The quantity of ideas is the main goal—quality ideas will normally follow. This is called freewheeling.

d. Building on the contribution of others, referred to as hitchhiking, is encouraged. Some of the best suggestions result from the stimulation provided by the ideas of others.

e. A time limit for the brainstorming stage should be set.

4. The chairman or group leader lists each idea, as quickly as possible. It is written exactly as given. Hesitation in recording the idea sometimes gives the impression of disapproval.

Usually the session begins with an initial spurt of ideas and then slows down. At this point, a new flow of ideas may be stimulated if the group remains silent for several minutes and thinks about the problems and the ideas previously suggested.

5. The follow-through. Once ideas are expressed, something must be done with them. The group can evaluate the suggestions or, as an alternative, the group can divide into sub-groups. Each sub-group can select ten of the most promising suggestions. The groups report their results to the reassembled group which attempts to arrive at a group consensus. The method of evaluating and utilizing the ideas resulting from brainstorming depends upon the
area of freedom of the group, the nature of the problem, and the time available.

Brainstorming, as a technique of education, has the following advantages. It stimulates interest, the power of association, a spirit of competition, free use of imagination, and active participation. It develops an understanding and appreciation for the thoughts and points of view of others. It is relatively economical in terms of time, does not necessitate any elaborate arrangements, and can be effectively used with both small and large groups. Brainstorming, eliminates time-wasting arguments during discussion and encourages participation by all participants without the possibility of destructive or cynical criticism by others.

There are some limitations. The enthusiasm of individual members could cause the group to get out of hand or monopolize discussion and necessitate certain control measures. Little evaluation and constructive criticism of individual ideas takes place during the discussion. And, an efficient skilled qualified person is needed to handle the procedure.

Panel Discussion - The panel discussion is a conversational exchange of ideas by selected participants on a topic, problem, question, or issue. It is a relatively informal oral process which brings together individuals who possess
differing points of view concerning a subject of mutual interest (39).

There are variety of topics, problems or issues that can be deliberated upon by way of panel discussion technique. Many of these can be useful in inservice training of staff. Some examples are: How can absenteeism be minimized among nutritionists? How can training facilities be improved with limited budget and resources? How can you deal with a supervisor who has an antagonistic attitude towards some nutritionists? What foods can you substitute for meat that are a good source of quality protein? How can children be taught to eat vegetables? There are a thousand more topics that one can think of, or which can be solved, deliberated, or discussed by the panel discussion technique. The main essence of panel discussion is the exchange of ideas.

A panel discussion technique was used among mothers who were leaders in their own community. The issue deliberated upon was: How can we deal with high food prices, but still maintain a good quality meal for our families? An exchange of ideas was carried on with the mothers, with the nutritionist acting as a facilitator. Among the varieties of ideas presented were the following: A massive campaign for backyard food gardening; the development of community gardens for those who did not have a piece of land to plant their own vegetables; the intensification of
animal production; and, finally, the finding of meat substitutes (such as dried fishes, dried legumes, shells, and soybean curds) that would give the same or equivalent nutrient content. The panel discussions led to the development of two kitchen tested recipe booklets which are now being used in mothercraft centers in the Philippines. These recipes were designed from locally available foods in the community, and experimentally formulated to meet the daily requirement of the pre-school age group.

The advantages of panel discussion as a technique of education can be summed up as follows: It enables participants to exchange ideas and to become aware of other points of view. It allows for interaction among the panel members. It provides an opportunity for evaluation and an effective means of solving group problems.

There are, however, limitations. The technique may only be useful to a select group. Participants must possess adequate knowledge to carry on a discussion. One or two panel members may dominate the discussion. Finally, excessive discussion of irrelevant topics may take place with this technique.

Workshop - The workshop is a form of group meeting which is based on the belief that people can solve their own problems provided they have access to the necessary technical know-how. In a workshop, all the members, in groups or individually, actually plan and prepare programs or
activities to be carried out in their own community. It is a technique more suitable for training staff than for educating the public.

The workshop method has proved useful in several countries. For example, in Puerto Rico (49) a nutrition workshop, organized in 1943 by the Home Economics Department of the University of Puerto Rico, not only provided orientation training for 66 participants, including the heads and staff of federal and local agencies and other professional workers, but was the beginning of planning for the Puerto Rico nutrition program and the start of an active interdepartmental committee and of a series of regional and local conferences. In the Philippines, a series of dietary surveys and studies in different parts of the Islands have been followed by postsurvey workshops. The purpose of the dietary surveys were to assess the nutritional state of the population. Findings of the results of the surveys were discussed in these workshops. This later paved the way for the development of the much publicized regional recipes. The workshops have also proved valuable in arousing interest and enlisting professional cooperation in field programs.

The workshop, as a method of education, has the following advantages. It allows for some in-depth study on a particular health problem or issue. It provides an opportunity to organize and present comments on a particular
subject. It offers an opportunity for gifted or verbally inclined participant to express himself orally.

These are some of its limitations. Workshops may be boring to some participants if knowledge of the subject matter is too unequal. It may be uneconomical in terms of time spent in the achievement of specific instructional objectives. Also, it may result in misconceptions and inaccurate information if participants are not thoroughly prepared for the workshop.

**Individual Oriented Techniques.**

**Laboratory Experimentation** - In the field of nutrition, the bioassay technique has been employed as a tool of education as well as in research. It is actually a method of analyzing the nutrient content of an entire diet by means of animal growth. It is, in simple terms, used as a mobilization of educational resources to teach youth "that food makes a difference" and that each person is the product of his life's situation (18).

As an educational technique, laboratory experimentation has the following advantages. It provides a clear visual picture and first hand experience which helps to facilitate the retention of learning. It allows opportunity for working independently or in groups, or with the teacher, thus providing a common ground of experience leading to the development of responsibility and initiative. The process of experimentation can usually be conducted at
any desired pace which facilitates questions and answers as the work proceeds and insures greater understanding of the whole experiment. Lastly, it gives opportunity for the student to be exposed to laboratory experiments and the scientific method which might result in an increased understanding and appreciation for science.

Some of the limitations and problems to this technique are: Experiments conducted at advanced levels may not provide an easy facilitation or comprehension by all students; some experiments are extremely time consuming, requiring a good deal of careful planning and preparation, and may actually take weeks, months or even years to accomplish; proper equipment, supplies, and facilities may be expensive, difficult to handle, and hard to store; and, safety hazards may be inherent in certain experiments, especially involving the use of sharp instruments, high concentration of acids and similar substances or chemicals.

Community Self-Survey - This is an educational technique which makes use of the people of a community in order to study the problems which exist among them and to work out solutions to these problems (59). It has been found out that when people participate in such a study they become much more aware of the problems and are much more prepared to play an active part in overcoming them.

A comprehensive weight survey conducted by the National Nutrition Program, Department of Health, Philippines,
with the support of the Rural Health Units of the province and participation of community leaders, revealed that of the 6 million children, aged 0-6 years, 3 million or 52% of the total child population were found to be suffering from malnutrition in one form or another. In city slum communities, 10-15% of all pre-school children suffer severe or third degree malnutrition and may otherwise require hospitalization for nutrition rehabilitation (11).

The results of the survey helped determine the magnitude and severity of malnutrition problem in the country. This led to an invitation from the Secretary of Health and the USAID to implement a comprehensive program of national nutrition with the aim of eradicating malnutrition among children below pre-school age and pregnant and nursing mothers. The program was primarily concerned with overcoming existing clinical malnutrition in these groups and to establish a low cost effective preventive nutrition service against malnutrition in early childhood.

A crash program with multi-agency participants was formed as a result of this comprehensive weight survey. The Department of Health, Department of Agriculture and Natural Resources, and the Science Community through the National Science Development Board, pledged their support to the program goals.

The help and guidance of one or more experts is needed throughout the whole procedure in the community
self-survey, but these experts should remain in the background as far as possible, encouraging and helping the local participants to take responsibility for the program (1).

The advantages of this technique are many. It provides a face-to-face relationship with public opinion about specific nutritional health problems. It discloses local needs and problems which provide insights into community affairs and the responsibilities and obligations of the citizenry. It provides for meeting individual differences by virtue of the variety of possible assignments inherent in obtaining survey data. Survey technique also helps illustrate the importance of making sound observations, judgements and conclusions. And, it serves to provide a valuable source of information and service to the community if properly conducted, analyzed and reported.

This method, although it has many advantages, does have limitations too. Survey results are sometimes influenced by individual biases, prejudices and other human expressions which may distort findings. Considerable energy is required over extended period of time. Much of the success of a community survey depends upon other techniques, such as interviews and questionnaires, for its accomplishments. And, there is a need for careful judgement as to what aspects are to be publicized or reported back to the community.
In-Basket Technique - The "In-Basket Technique" may be used as a teaching and evaluation device in nutrition education. This technique has been used primarily in training management personnel, but now has gained access into clinical therapeutic situations, including the training of dietitians (24). It can be utilized in the training of a variety of nutrition personnel. A good example of this, is in the in-service training of nutritionists where the supervisor can present series of problems and nutritionist reacts or make decisions based on her personal judgement as to the best answer for the problem. What action should a nutritionist take if participant mothers in a nutrition class lose interest to continue participation in the program? Justify your actions. Another problem could be: How will you deal with the problem of bringing together community leaders of different political factions and of which you think are the key people to obtain resources and help implement the program?

Briefly, the "In-Basket" is a tool which may be adapted for day-to-day classroom sessions or used as an evaluation technique (32). The "In-Basket Problem" presents a series of situations, letters, memos, phone calls, or notes that might logically be the contents of one's incoming letter-box on a certain day. Each time in the basket requires a decision to be made concerning its disposition. Appropriate action is then taken. If a letter is to be
written, someone writes it. If a conference is to be held, arrangements for the meeting are made including who will participate and what the agenda will be. If a patient is to be seen, the approach to be taken will be noted along with background information needed in this situation. The value of the technique is that the participant is committed to writing the decisions that need to be made. A justification for all actions must also be recorded.

It is essential that the "In-Basket" decisions be discussed so that the participant receives feedback on the appropriateness of decisions, is made aware of alternate avenues of action, and receives support for insights and appropriate decisions (53).

This educational technique serves the following advantages. It contributes to the development of reflective thinking, creative expression, critical analysis, and logical reasoning. It capitalizes on the natural interest possessed by the participant in dealing with concerns that are commensurate with her abilities, and it may provide valuable carry-over benefits with respect to future individual and group problems.

The "In-Basket Technique" presents some problems or limitations. A great deal of imagination, and skill in arriving at the best decision in a short time is demanded. The process can be highly confusing and frustrating unless
the procedures are carefully defined and understood by the participants.

Educator Initiated Techniques.

Demonstration - The demonstration is a process of graphic explanation, object manipulation or actual presentation of models which help to enhance and increase verbal explanation. The demonstration generally is utilized with a group of observer-participants by someone who is an expert on the given subject. It often is used to set a goal of activity or to define standards of performance (57).

The Philippine National Nutrition Program designed mothercraft as a demonstration technique to show mothers the practical approach of what could be done to improve the nutritional status of malnourished children in the Philippines. The approach is concurrently used as the main tool for educating participating mothers in the correct selection, preparation, menu-making, cooking and serving of food to children. With professional nutritionists as leaders and instructors, the learning by doing is achieved with the least effort, time and expense (10).

Meals prepared by the mothers were the same meals fed to their children, who were chosen to be subjects at the demonstration center. The children were selected on the basis of a weight survey conducted prior to the implementation of the program. The weight responses of the children
served as a visual aid to the participant mothers thus providing concrete analysis of the value of correct feeding.

As a result of the demonstration centers, a national awareness on the value of nutrition in daily life influenced civic sectors, voluntary agencies, the Philippine Medical Association, and the Welfare Agencies including the Social Action Program of the Administration to commit to support the program with material input. The Association of Medical Schools, in its conference in March, 1972 solicited the assistance of the National Nutrition Program for technical assistance in improving the curriculum of instruction and the method of teaching dietetics and nutrition, to medical undergraduates. It was foreseen that the medical graduates would be called upon to render effective service at the community level, in the field of dietetics and nutrition.

Some relevant pointers should be considered in conducting demonstrations. The demonstration should be easy to see, hear and understand, and interesting enough to keep the attention of the observers. The demonstrator should involve the observer, and provide opportunity for the observers to repeat the procedure themselves. Locally available materials should be used and the demonstrators should relate the procedure to the problems and actual resources of the audience. This is particularly important when dealing with foods and menu preparation.
Demonstration, as a technique of education provides the following advantages. A high degree of attention, concentration and interest which can be further exploited by other techniques is created. The technique can be performed by the educator or any member of the audience and is particularly valuable in learning specific skills. A concrete and realistic visual picture of what is being presented is provided that supplements word image and usually results in a more lasting impression. Demonstrations are usually less time consuming than individual experimentation and can be used with large or small groups of any age or target group under controlled conditions. And, they can be repeated in part or total, slowed down or speeded up, and easily adapted or adjusted to the condition of the target group.

Some of the disadvantages of this method are: It requires careful planning, detailed preparation and considerable skill to be effective; there is a tendency for the observer to concentrate upon the aid and ignore the lesson itself; and the expense can be great because it is often necessary to use special supplies, equipment, or materials so as to make the demonstration meaningful and real.

Current Events - Current events are concerned with immediate or recent happenings which may be expressed through various means of communication. These include the newspapers, periodicals, popular magazines, radio and television.
Authorities (12) believe that these forms of mass media are a forceful instrument for attacking nutrition education problems of pressing priority and for reaching target population in the shortest time possible.

A personal interview conducted by this investigator with a Jamaican nutritionist revealed that there are very few people in Jamaica with a specialized knowledge of nutrition who can form the apex, as it were, of the pyramid of nutrition education. Coupled with this, is an extreme shortage of sufficient numbers of trained workers, teachers, public health nurses, agricultural extension workers, and home economic officers, who can apply their knowledge to educating the people as a whole.

Nevertheless, this did not dampen the means to impart nutrition education by the few who had this knowledge.

A committee was formed who explored the possibilities of extending programmes of nutrition education through the newspapers, periodicals, radio and television. These media of communication were used to its fullest advantage.

The Jamaican Information Service and the Jamaican Broadcasting Corporation were asked to deliver nutrition information to the public. The Committee on Nutrition Education arranged a series of broadcasts related to food and nutrition and other related matters.

The report revealed (44) that before this massive media campaign, native Jamaican fruits were hard to find.
Following the campaign nearly every road was lined with small fruit stalls selling guavas, papayas, mangoes, bananas, pineapples, avocados, ackees and other fruits in season. Figures for production and consumption showed a greater use of nutritionally superior food – local fruits, breadfruit, squash, dried beans, dried fishes and many other local foods gained prestige.

Local newspapers carried daily articles on nutrition including recipes using locally grown Jamaican foods, questions and answers related to nutrition, pointers and hints on how to preserve, prepare and cook certain foods.

As a tool of education, current events increases the power of discrimination, comprehension, critical analysis and thinking of some individuals. Potential opportunities for concomitant learning are enriched. Material can be easily obtained, compiled, and consolidated individually or in groups and skills developed in locating and reporting. It acquaints the reader or listener with a variety of reliable sources of up-to-date information and, the events described can provide for an increased understanding and appreciation for happenings in one's own daily life and the everyday world. Perhaps the greatest contribution is reaching a large number of people in a relatively short period of time. The ability to arouse awareness in large population groups is greater than any other educational method.
The use of current events requires a strong background, thorough understanding, and up-to-date preparedness by the educator. An understanding and appreciation of the past may be neglected if current events are overemphasized or too frequently used as a basis for fashion which lead to misunderstanding and distortion of facts.

**Equipment Centered Techniques.**

**Tape Recordings** - Tapes are recorded materials that can be amplified so that an individual or a group can hear the materials (14).

In basic training, or in refresher courses, tapes are excellent bases for group discussion and can arouse or rekindle interest of the listener. Tapes which include the comments of patients or members of a community, accompanied by pictures of the person or the situation, make valuable illustrative material for training or teaching.

One good example of the use of tape recorder nutrition was in an experimental study designed by Roberts, Mico and Clark (51), on three groups of women in a maternity hospital receiving dietary advice from a nutritionist, but utilizing three different approaches. Two experimental groups and one control group were selected. The first experimental group received a planned interview in which the nutritionist gave dietary advice directly to the women. The second experimental group received the same advice, but through the combined personal planned interview and
the use of a tape recorder. A control group, which received only the usual staff advice, was also followed. No difference was found between the two experimental groups. In both cases 28 to 30% of the women followed the recommended advice after discharge from the hospital; only 13% of the controls did so; a significant improvement in dietary care was found equally in both experimental groups when compared with the control. Roberts and her colleagues believed that use of a tape recording if combined with personal contact will make learning more effective (16).

Tape is a useful device because a talk presented this way can be produced with great care, rehearsed, erased, polished, illustrated with diagrams, photographs and slides. When it is perfect it can be used over and over again. Tapes provide a vast amount of information without interference from other stimuli when earphones or individual listening stations are utilized.

However, there are some limitations in using tapes as an educational technique. Their use requires experience, equipment and facilities which sometimes may not be available. They may be ineffective for those who have difficulty hearing through audio experiences. They also may be ineffective when vocabulary used are inappropriate for a particular maturity level. Also, tapes may be ineffective when the recorded materials are of poor quality.
Criteria for Selecting the Best Educational Methods

The following criteria may be used by nutrition educators as a guide for choosing the appropriate methods and techniques to be used in a nutrition education program.

1. WHO. Determine the character of the population to be taught. Provide for individual differences. Consider the capabilities of the group or individual to be taught. And, involve the target population.

2. WHY. Establish the program's objectives, both from the learner's and educator's standpoints. Which tool, techniques or methods of education will afford the greatest opportunity of reaching program objectives within the budgeted limits.

3. WHAT. Organize the content of the program in relation to the objectives.

4. WHERE. Decide on the location best suited to the target population and for the attainment of the program objective. The method or technique used may determine this criteria. Examine compromise solutions to overcome restrictions in time, energy, manpower, resources and cost.

5. HOW. Plan the program's implementation as completely as possible. Proper use of the various methods of education will require administrative attention to the scheduling of resources; the preparation, purchase, and distribution of educational aids; and setting up of suitable facilities and arrangements.
6. WHEN. Provide for methods or techniques to conform with all known elements in the educational process. Watch out for that "psychological moment."

The professional nutrition educator should always be concerned with these cardinal principles. She needs to maintain her perspective as to the full range of tools, techniques and methods of education available. She should base her judgement and make her choice according to which method or technique will accomplish the learning tasks most economically and effectively. And finally, the skilled nutrition educator should plan well in advance the program she hopes to accomplish.

By following these guidelines, the ultimate objective of making nutrition education more forceful and effective can be achieved.

In any health education program, objectives can be classified in any of the three major domains or classifications: Cognitive; affective; and psychomotor (29).

Cognitive. The cognitive domain is concerned with objectives which emphasize remembering or repeating something which has presumably been learned. The objectives also involve the solving of some intellectual task for which the individual has had to determine the essential problem and then reorder the given material or combine it with ideas, method, or procedure previously learned. Cognitive objectives vary from simple recall of material learned to
highly original and creative ways of combining and synthesizing new ideas and materials.

Some examples of these objectives as related to nutrition for professional staff are:

1. Identifying barriers of learning that can be detrimental to the development of a sound nutrition education program.

2. Producing a special food diet prepared from inexpensive local ingredients and to promote its use as a supplementary infant diet for weaning.

3. Identifying agencies which can help promote nutrition education of the public, and also to determine the extent of services and responsibilities these agencies will cover.

4. Developing programmed instruction manual on basic nutrition for high school students.

Affective. The affective domain is concerned with objectives which emphasize a feeling tone, an emotion, or a degree of acceptance or rejection. Affective objectives vary from simple attention to selected phenomena to complex but internally consistent qualities of character and conscience. Such objectives are usually expressed as interest, attitudes, appreciations, values and emotional sets or biases.

Examples of these objectives as related to nutrition education are:
1. The arousal of interest of parents in their children's food needs and the relationship of poor food to sickness through the mothercraft approach.

2. To increase appreciation of locally grown foods and to develop awareness of its contribution to good health.

3. To develop an interest in strengthening and expanding a school feeding program that will upgrade the nutritional health of school children.

4. To make people concerned about the need and importance of food production in relation to good nutritional health.

Psychomotor. The psychomotor domain involves objectives which emphasize some muscular or motor skill, some manipulation of materials and objects, or some act which requires neuromuscular coordination.

Examples of nutrition-related objectives for this domain are:

1. Improving the skills of nutritionists in developing teaching materials which are easily understood and used, and which suit conditions in the Philippines.

2. Developing skills in children in manipulating simple laboratory equipment used in nutrition and related matters.

3. Developing skills of prospective educators in preparing charts, posters, models on food and health that can be used as visual models for nutrition education.
4. Teaching home extension workers how to operate and manipulate audio visual apparatus that can supplement the teaching of basic nutrition to rural mothers.

Table I provides a visual relationship of the different methods and techniques of education as they are related to the technical level of the target population, and the three domains of objectives. The number of X's represents the degree of effectiveness of the educational media, one X (X) being the least effective, and three X's (XXX) being most effective.
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<tr>
<th>EDUCATIONAL TECHNIQUES</th>
<th>LESS EDUCATED</th>
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<td>Cognitive Domain</td>
<td>Affective Domain</td>
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<td>A. Group Oriented</td>
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<td>Techniques</td>
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<td>3. Brainstorming</td>
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<td>4. Panel discussion</td>
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<td>B. Individual Mental</td>
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<td>Techniques</td>
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<td>experimentation</td>
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<td>2. Community self-</td>
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<td>3. In-basket technique</td>
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<td>C. Educator Initiated</td>
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<td>Techniques</td>
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<td>1. Demonstration</td>
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<td>2. Current events</td>
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<td>D. Equipment Centered</td>
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<td>1. Tape recording</td>
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X - Least Effective
XX - Effective
XXX - Very Effective
CHAPTER III
SUMMARY AND EVALUATION

The author has identified and briefly discussed a selected number of teaching methods and techniques used in education. It should be apparent that those techniques and methods are vitally dependent upon fundamental understanding of the teaching-learning concept. As an educator or a teacher, one is professionally and morally obligated to exert every effort towards a clear understanding of this concept. It is generally recognized that no one method or technique can be effective in all situations. Certain fundamental instructional criteria also must be considered before any single technique can be operationally implemented. The selection of any method should adhere to the following educational principles (48).

Any instructional procedure should be regarded as an educational tool and not merely for the purpose of entertainment.

The technique should be suited to the readiness and the maturity of the subject field, the purposes of the program, and education in general.

Adequate time, space and equipment should be available to insured effective implementation.
The procedure should provide for sequential growth and development through a planned progression of activities and concepts.

There should be adequate planning and preparation on the part of the educator or teacher in the use of any instructional approach.

The procedure should be of interest and appeal to the learner and considerate of his problems and needs.

The method should utilize or incorporate experiences that assure significance in the thinking and behavior of each learner.

In all instances, the technique or procedure should be a vehicle by which to facilitate definite learning.
Evaluation of Teaching Methods, Techniques and Aids.

Methods, techniques and aids used in nutrition education programs should be evaluated for potential effectiveness and later, for results. Evaluation saves time and effort on future activities. Two main aspects of a method need to be examined: the results it brings about; and its cost in time and effort to produce these results (50).

The following questions may serve as helpful hints in assessing the effectiveness of teaching methods, techniques and aids.

1. Is it bringing about desirable changes in practices in line with the objectives of the program?

2. Is it bringing about changes in attitudes in line with the objectives of the program?

3. Is it bringing awareness of the food and nutrition problem?

4. Is it increasing people's knowledge about food and nutrition?

5. How efficiently is it accomplishing the above, compared with other methods, in terms of expenditure of time and effort?

6. Is it reaching people not easily reached by various other methods?

7. How much does the method, techniques or aid contribute to, or obstruct, good public relations?
Results should be measured in relation to the objectives of the program. They involve the scientific collection of facts and valid evidence, of an objective nature as far as possible, although changes in opinion can also be enlightening (48).

The interest the method arouses, for example, the number attending a demonstration and the response of the audience provide some easily obtained evidence of success. The number of people who listen to a radio program or the number of people who read newspaper recipes can be counted from a sample of the population. The real test, however, is whether people actually change their behavior patterns and whether it is the result of one method or another, or a combination of the methods used in the program. Such changes can often be discovered by observation. There remains, nevertheless, the problem of obtaining satisfactory evidence as to which method or approach was responsible for the change, or whether it was the result of some factor completely unrelated to the program.

Wilson and Gallup (64) in a study, pointed out that the personal interview survey is a practical and scientific device for measuring the success of a teaching effort and is also useful in evaluating the relative effectiveness of the method or techniques used.

It is important to pretest methods, techniques or aids of teaching under representative conditions or with
representative audiences in the early stages of a program and before they are widely adopted. Early objective assessment of strengths and weaknesses can enable alterations to be made quickly, cheaply and before harm has been done or time wasted. Pretesting does not measure program results but rather increases the likelihood of successes by eliminating hazards and providing favorable conditions.

Knutson (28) suggested that in health education programs the following conditions, which have been identified as necessary for the effectiveness of the program, may be used as criteria in pretesting:

**Exposure.** How many persons will be reached physically (taking into consideration the audience or group for whom the program or method is intended)?

**Attention and interest.** How many persons reached physically will be reached psychologically?

**Motivation.** For how many of those reached will the program offer the means of satisfying a want or achieving a purpose?

**Pattern of behavior.** For how many will the action that satisfies a want be in accordance with the way people usually behave?

**Comprehension.** How many will understand the words, concepts and illustrations used?

**Understanding of purpose.** How many will readily understand the point of the message?
Learning and retention. How many will acquire and retain the information and attitudes essential for action?

Among the techniques which may be used to answer such questions are: questionnaires; interviews with samples of intended audience; checks on the number of people who can be reached by a certain method; counts of people who stop to look at a public exhibit or demonstration and of how long they look; tape recordings of conversations and discussions between members of the audience who have been exposed to the teachings; tests of comprehension and retention of the information taught; and tests of legibility, audibility and clarity of meaning of materials used.

The proper selection, preparation and utilization of methods and techniques of education have been vital in any nutrition education program in the Philippines. It supplements the teaching process that permits learning to be more effective. It is the medium by which a wide range of audiences of different levels can be helped to acquire a fundamental knowledge of nutrition, and a clearer understanding of nutrition concepts. The proper selection, preparation and utilization of methods and techniques of education can also facilitate training, improvement of staff services and evaluation of staff performance or activities.
This paper addresses itself to nutritionists and educators in the hope that they be able to use this as a guide for future planning for better nutrition education programs.
BIBLIOGRAPHY


