

THE GAP IN THE EFFECTIVENESS OF NUTRITION EDUCATION
DELIVERY TO SELECTED POPULATIONS: POLICY MAKERS,
AVERAGE ADULT LEARNERS AND SOCIALLY/ECONOMICALLY DEPRIVED
ADULT LEARNERS

by

VICKIE STARK DIESEL

B. S., Southwest Missouri State University,
Springfield, Missouri, 1982

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Foods and Nutrition

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1988

Approved by:

Maudie Smith

Major Professor

LI
2/6/81
FN
1988
2.51
C.2

A11208 201431

ACKNOWLEDGEMENTS

Appreciation and thanks to Dr. Meredith Smith for acting as my major professor and to Dr. Kathleen Newell and Dr. Karen Penner for their support as my committee members.

For all of their time, caring and support thanks to my friends. Bill and Emmi Aiken sincere gratitude for taking me in, drying my tears and caring. To Patti, Helen Wanda, Pam and Cooki special thanks for being there when you were needed most.

To Mom and Dad a big thank you for coming through when help was really needed I could not have made it without you. For Missy thanks are not enough for all the help and support you gave.

My special thanks to my husband Harry for all the love, support and flowers you gave me.

To my daughters for their help, patience, love, and support thank you, Momma loves you both--this report is dedicated to you.

Table of Contents

1.	Introduction	1
2.	Historical Review.	3
3.	Hierarchy of Participants.	8
3.1	Definition of Adult Learners	9
3.1.1	Policy Makers	9
3.1.2	Average Adult Learners	11
3.1.3	Socially/Economically Deprived Adult Learners	11
3.2	Characteristics of Adult Learners.	12
3.2.1	Characteristics of Policy Makers	12
3.2.2	Characteristics of Average Adult Learners.	13
3.3.3	Characteristics of Socially/Economically Deprived Adult Learners	17
4.	Education Theories and Variables of Adult Learning	20
4.1	Androgogy.	20
4.2	Pedagogy	23
4.3	Cooperative Learning	25
4.4	Contract Learning.	26
5.	Impact on Adult Education Theory- Selected Individuals	30
5.1	Paulo Friere	30
5.2	Peter Jarvis	33
5.2	Alfie Kohn	33
5.4	Wolf J. Rinke.	34

5.5	Victor Vroom	36
6.	Variables Effecting Adult Learning	38
6.1	Barriers to Adult Learning	38
6.2	Levels of Learning Progression	43
7.	Selective Review of Nutrition Education Methods.	45
7.1	Methods of Education-Policy Makers	45
7.2	Methods of Education-Average Adult Learners	48
7.3	Methods of Education-Socially/ Economically Deprived Adult Learners	53
8.	Impact of Culture on Nutrition Education Methods	58
8.1	Language/communication	58
8.2	Marketing Perspective.	63
9.	Conclusions and Recommendations.	69
10.	References	73
11.	Abstract	ii

List of Tables

Table I. Racial/Ethnic Differences in Education
Achievement Among 65-74 Year Old Adults . . . 15

List of Figures

Figure I. Hierarchy of Nutrition Education	
Information Delivery	10
Figure II. Gaps in Nutrition Education	
Information Delivery	73

THE GAP IN THE EFFECTIVENESS OF NUTRITION EDUCATION
DELIVERY TO SELECTED POPULATIONS: POLICY MAKERS,
AVERAGE ADULT LEARNERS AND SOCIALLY/ECONOMICALLY DEPRIVED
ADULT LEARNERS

1. INTRODUCTION

Nutrition education may be defined as "a form of planned change that involves a deliberate effort to improve nutritional well-being by providing information or other types of educational behavioral interventions (1)." Nutrition education may fail to create these changes because the methods are inappropriate for the individuals or groups being addressed. This report will explore educational methods that assist nutritionists in the dispensing of nutritional information to achieve changes in attitude and behavior.

The target groups addressed by this report are those most frequently encountered by the community nutritionist; 1) Policy Makers, 2) Average Adult Learners, and 3) Socially/Economically Deprived Adult Learners. Understanding the needs and characteristics of these groups will lead to the selection of effective educational methods that can promote optimal nutritional status. Knowledge of the

inter workings between these groups, as they relate to community and society, may encourage continued research into appropriate methodology and provision of pertinent nutrition information.

Past and current nutrition education methods, especially multidisciplinary methods will be reviewed to show the progression and efficacy of traditional methodology during the previous eighty years. Within the hierarchy of these adult groups addressed by nutrition educators gaps in information may result from use of methods which are inappropriate for the needs of the learners. The effect of the hierarchical gap and the cultural influences on the nutritional attitudes and behaviors of Policy Makers, Average Adult Learners, and Socially/Economically Deprived Adult Learners will be examined.

2. HISTORICAL REVIEW

In this section nutrition education methods most frequently used with the target groups: Policy Makers, Average Adult Learners and Socially/ Economically Deprived Adult Learners will be reviewed. Dr. W. R. P. Emerson is credited with having started the first nutrition class in Boston, MA. in 1908 (2). His methods, as discussed by Whitehead (2), included group discussion, participation, and lecture. While nutrition education during the early part of the century was centered around food preservation and safety, Emerson taught the first nutrition education classes on dietary support of the underweight child. As the century progressed and more was discovered about the nutrient content of foods the nutrition education emphasis gradually shifted to food groups and specific nutrients.

From 1900 to 1940, according to by Whitehead (2) and McKenzie and Mumford (3), other studies were conducted to determine the most effective method of nutrition education. During the second decade of this period the Cooperative Extension Service was formed under the 1914 Smith-Lever Act. The charge to Cooperative Extension was to disseminate information to the population of the United States about agriculture and home economics, including nutrition education. Food preservation and production were the first

topics addressed by the Extension Service (4). The methods of education which were used included one-on-one demonstrations and small group meetings (4). Lewin's (2) studies (1942, 1943) dealt with the comparison of a lecture and group discussion with a lecture and group decision making to increase the consumption of non-traditional foods such as organ meats. The results of these studies indicated that individuals involved in making decisions about their food intake increased their consumption of the non-traditional foods, more than individuals who participated in lecture and discussion only.

A shift in research priorities from food intake to scientific nutrition occurred during the next decade (1940-1950), but did not halt nutrition education methodology research. At this time emphasis was placed on changing behaviors by understanding why people react differently to nutrition education. Also, professionals from other disciplines began to study the interrelationship of food, culture, and human behavior (2). Whitehead (2), in a four year investigation (1944-1948) in Louisiana, reported that the method of education was as important to behavior change as the information.

During the 1950s studies were undertaken to determine the relationship of learning retention to a variety of methods used to provide nutrition information. Several

reviewers (2,3,5,6) concluded that nutrition education alone could not produce significant changes in nutrition awareness and (or) food habits. However, many of these studies did not deal specifically with food habit changes so the true impact of nutrition education was difficult to determine.

The following decade (1960-1970) brought many changes in national outlook and emphasis on nutrition education. Scientific knowledge was emphasized in all segments of the community. The development of educational methodology was an important part of research during this period. In 1964, a pilot project in Alabama became the basis for the Expanded Food and Nutrition Education Program. Participant involvement was utilized to determine the level of nutrition education needed and the educator best qualified to provide this service (7). Using principles of learning and acceptance strategies from sociology, trained program aides were found to have a positive effect on overall nutrition methods of education remained within a "show and tell" framework with the emphasis on demonstration and verbal information (7).

During the 1970's world nutrition leaders realized that prevailing nutrition education methods had very little impact on nutritional status (8). These concerns were complicated by increased global unrest and famine. The con-

cern of the global community was voiced in several food and nutrition related conferences of the early 1980s (9,10). The charge to nutrition educators was for increased government involvement and use of applied behavioral science in nutrition education (8,10). In the seventies, various forms of nutrition education were investigated by Lappe (8), Drummond (11), and others. They concluded that the entire physical, social, and political environment must be considered if nutrition education is to produce optimal effects (8,11).

Nutrition education, which came of age as a segment of nutrition science in the 1980s, is now faced with demonstrating not only the degree of effectiveness, but how and why it is effective. The reasons why nutrition education is effective become more important as nutritionists look to the future of nutrition education in practice and research (1). "Focus on Issues, Improving Nutrition, Diet and Health" is the guide of the Cooperative Extension Taskforce for the next decade of nutrition education (12). The goals set forth by this guide reflect the need to create long term nutritional well-being. Established in the guide are educational objectives which will carry Extension Nutrition Service into the 1990s (12). Johnson and Johnson (4) state that the impact of nutrition education has been proven over the last eighty plus years but what is needed

currently are methods which consider the needs of the learner as well as the material to be taught. The current focus of nutrition education research is to develop methods that can provide a pragmatic framework for successful change in nutrition behavior (4).

New programs are being developed using many of the methods shown to be successful in past reviews (2,3). One of these, "Focus '91; 'Understanding Nutrition in Human Development' (13), incorporates participant involvement and multi-disciplinary perspective in nutrition education planning. "Nutrition education is no longer merely a matter of the facts of nutrition (14)." There must be more impetus placed on how and why the program is effective and on the program variables. Haughton, et al. (15), in their review of the Basic Four Food Groups Guide found that teaching about basic nutrients was not enough. Education recipients must be taught to make informed dietary choices founded on nutrition based environmental factors, such as, ". . .food supply, food habits and taste, nutrient needs, and economics" (15).

Researchers and practitioners are beginning to develop nutrition education models that incorporate education theories and methods proved to be effective. A recent review by Nitzke and Pathens (16) of on-going nutrition education research projects indicated that 56% were de-

signed to measure behavior change, 49% to measure change in knowledge, and 44% to measure change in attitude. While the majority of the models or theories identified in the review were acceptable, those the authors believed were useful in nutrition education included meaningful learning, reasoned action, social learning, and communications. However, only 19% of projects investigated had a definable theory or model design, a proportion and Nitzke and Pathens (16) felt that this was not acceptable.

Nutrition education methodology has changed markedly since Dr. Emerson's first nutrition education class in 1908. Methods of conveying nutrition education effectively so that individuals have both the information and positive attitudes to make wise nutrition choices will be the focus of the next decade of nutrition education and of this report.

3. HIERARCHY OF PARTICIPANTS

Beginning with Emerson's child nutrition classes in 1908, which were requested by school systems across New England after results showed improved weight gains and academic progress, nutritionists have been educating in two directions: upward to the policy makers describing needs and reporting results to gain further support or funding; and downward to the participants of programs sanctioned by the policy makers for provision of information and assistance in food and nutrition. Nutrition educators are at the center of the hierarchy of the community nutrition information delivery system (Illustration I). The description of the groups comprising the hierarchy will be covered in this section. Also, characteristics of these groups will be explored as they relate to learning ability.

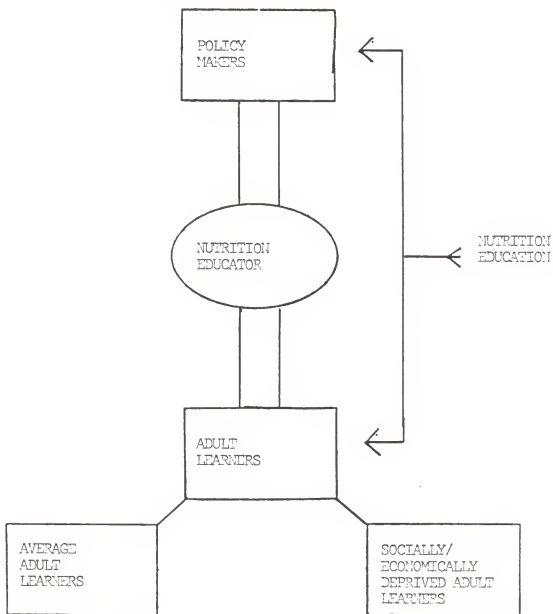
3.1-Definition of Adult Learners

3.1.1 Policy Makers

Egan (17) defined policy as "a course of action based on a set of values and put into effect through collective effort." Policy Makers, as defined in this report, are individuals directly involved in decisions which affect nutrition education through fiscal and public health

Figure 1

HIERARCHY OF NUTRITION EDUCATION INFORMATION DELIVERY



Nutrition educators form the center of the hierarchy of nutrition information delivery.

policy. These include administrators and officials from local to international organizations in both the public and private sector responsible for implementation of nutrition policy.

3.1.2 Average Adult Learners

Community nutritionists deal primarily with adults in nutrition education programs. Average Adult Learners are learners with social/academic skills and beliefs indicative of society as a whole which provide them with an opportunity for increased earning power and greater social status.

3.1.3 Socially/Economically Deprived Adult Learners

Numerous nutrition education programs on the local, state and federal levels deal with Socially/Economically Deprived Adult Learners or those persons whose social, academic and (or) cultural skills or beliefs are not compatible with mainstream society. These adults have less earning power, lower social status, and greater difficulty in learning than any other group of adults. They are more likely to receive benefits from society than to make contributions.

3.2 Characteristics of Adult Learners

3.2.1 Characteristics of Policy Makers

Demographic characteristics of Policy Makers seem to have very little effect on their learning. Race, sex and age vary from setting to setting. Their educational attainment is usually above the average learner in the community. Residence and work site are most often in urban areas.

Policy Makers are both self-directed and societally directed. Nutrition knowledge may not be a personal goal. Previous experiences with nutrition education or educators may influence their attitude toward to new ideas and their behavior. Knowles (18) states that "the adult brings a life-centered or task-centered orientation to learning." Policy Makers bring this same orientation to nutrition education. How learning fits into policy making is defined by the policy decision being made.

Characteristics of Policy Makers are specifically different from the other participants in the hierarchy of nutrition education. First, Policy Makers have the power to make decisions which affect themselves and others. Second, nutrition information acquired by Policy Makers is used in the decision making process. Finally, Policy

Makers may seek nutrition knowledge in order to change personal attitudes or behaviors change as a goal.

3.2.2 Characteristics of Average Adult Learners

Each of the groups discussed in this report are adult learners. This section addresses general characteristics of adult learners, applicable to all adults while profiling the Average Adult Learner. Knowledge of the characteristics of the adult learner is necessary in selecting appropriate nutrition education methods.

The adult learner is defined as age 17 or older. Although the greatest percentage of learners is in the 17 to 34 year age group, older adults, 65 plus, also are encountered in non-formal educational settings. The ability of adults to learn is affected by their age, race, sex, education, socio-economic level and area of residence (rural/urban) (19). Educational experiences must be designed to consider these factors and meet the needs of all adults (20).

Cross (19) reported on studies compiled by the National Center for Education Statistics (Washington, D.C.), of adults returning to instructional settings for vocational and/or academic training. These demographic surveys describe adults interested in learning and acquiring new information as "voluntary learners". Results

of the National Center for Education Survey also indicated that older adults are under represented in education programs (19). Twice as many white individuals as blacks participate in adult education programs (19). Blacks, Hispanics and non-whites are more likely to have lower income and lower educational attainment leading to a lack of participation in adult education (21). Johnson (21) found marked racial/ethnic differences in prior educational levels among 65-74 year old individuals (Table I). Cross (19) reported that the highest percentage of participants in adult education (27%) had four or more years of college while adults with fewer than four years of high school comprised only 3.5% of learners. Data from socio-economic surveys indicated that individuals with incomes of greater than \$25,000 participated in adult learning 18.3% more often than those with incomes of less than \$5,000 (19).

The sex of the participant is an important characteristic affecting adult education programs. Males participate in adult learning less frequently than females. Nutrition education is often oriented towards the female who is seen as the primary food/nutrition caretaker. Of the nutrition education papers reviewed for this report, only 44% described programs which were directed at both males and females; none were directed solely at males.

Table I - Racial/Ethnic Differences in Education
Achievement Among 65-74 Year Old Adults 1.

Racial/Ethnic Origin	Years of Schooling	
	≤ 5 Years	High School
White	6 %	46%
Black	28%	20%
Hispanics	40%	18%

1 Johnson, H. Education in an aging society. National Forum, The Phi Kappa Phi Journal, 62(4):19-21, 1982.

Urban and (or) rural residence affects adult education programs. Adults in rural area tend to be older with less formal education and lower incomes than urban adults. They are often isolated from adult education opportunities (22). Urban learners also may have low incomes and little formal education, but they are easier to reach with education.

Each of the following characteristics contribute to the demographic profile of the "average" adult learner found in an organized continuing learning situation (19):

1. Female
2. Between the ages of 17-34
3. Urban dweller
4. Caucasian
5. Greater than 4 years college
6. An income of greater than \$25,000

This learner is easy to reach. Materials and education methods are easy to develop for this learner. The question is - -is this the audience most in need of nutrition education?

How adults learn and what they bring to the learning experience are equally important in adult education. Adult learners are voluntary learners, with a few exceptions as described in section 3.2.2. The following five factors are listed by Knowles (18) as characteristics of the adult

learner that nutrition educators should address in program planning and when determining educational methods:

1. The adult is self directing.
2. The adult brings life experiences to the learning situation.
3. The adult becomes ready to learn when he perceives a need in his life to know.
4. The adult brings a life-centered or task-orientation to learning.
5. The adult responds best to internal motivation (i.e., self-direction).

Methods of education for adults should consider these general characteristics of adult learners as well as the demographic profile of the participants. The choice of methods should be based on current research and the research of adult educators for the most effective nutrition education program.

3.2.3 Socially/Economically Deprived Adult Learners

Myths surround the association of learning with race, sex, age, educational attainment and residence of the Socially/ Economically Deprived Adult Learner. All races are represented and neither sex, age, nor urban/rural residence are significant characteristics of this group (23). Educators should consider the additional burden placed on this group by their low socio-economic status (24).

As previously stated, conditions for learning of Socially/Economically Deprived Adult Learners have been shown to provide greater obstacles than for other adult learners (19). Lack of transportation, child care, funds for education programs and lack of motivation to learn are all conditions that the educator should be aware of when developing instructional methods. Physical conditions of the learning environment, such as, buildings with numerous stairs or class sites far from public transportation should be considered.

Barriers to learning for Socially/Economically Deprived Adult Learners are related to situational stress such as difficulty in receiving vouchers, medical treatment or food that is dependent on attending a class, or choices to be made between buying food, paying the heat or rent. Nutrition educators faced with participants who are not willing learners need to have information on motivation techniques.

Compulsory learning increasingly is being forced on this group by government programs such as work fare, (welfare programs where the recipients are required to work or attend training classes in order to receive benefits) and The Womens, Infants and Childrens Supplemental Food Program (WIC) (supplemental food program in which nutrition education is a component). For example, the State of

Missouri WIC Program requires that clients attend two nutrition education sessions for each six months participation in the program in order to receive benefits.

Compulsory education is not an effective system of teaching adults. When the decision to learn is taken from people, they resent the implication that, like children, they must learn. The resentment interferes with optimal learning. Nutrition educators faced with compulsory classes consider the needs and characteristics of the group. Nitzke (26) reported positive results after developing materials which expressed, in the groups own language, their anticipated positive outcomes. The challenge to the compulsory adult educator is to make basic messages interesting and to repeat the message in a variety of ways.

Basic skills of the Socially/Economically Deprived Adult Learners are low (19,23,25,26). Nitzke (26) reported that "Nutrition materials for the general public typically require tenth-grade or higher reading proficiency, a level that is beyond . . . half the adults in the United States." Nutrition educators' awareness of this barrier should lead to the development of nutrition education materials suitable for adults with limited reading skills. Nitzke et al. (24), developed effective materials on suitable snacks and menus for children for use in classes for women with

4. EDUCATION THEORIES AND VARIABLES OF ADULT LEARNING

This section will examine four major theories of adult learning; 1) Pedagogy, 2) Androgogy, 3) Cooperative Learning and 4) Contract Learning. Each theory will be defined and examined as it applies to nutrition education.

4.1 Androgogy

"The body of theory and practice on which self-directed learning is based has been labeled "Androgogy" from the Greek word aner (meaning adult) - thus being defined as the art and science of helping adults (or, even better maturing human beings) learn." Knowles' (28) Androgogy theory recognizes the individual as a human being capable of directing his or her life in an independent manner. Each of the groups identified in this report are adults with life experiences, needs, and goals for their individual lives.

Malcom Knowles (18), often called the "Father of Androgogy", describes the five assumptions of androgogy theory as a process model for the elements upon which the educator may base instruction methods. They were used to assist in building the profile of the adult learner presented in section 3.2. Cross(19) and Knox (29), both respected researchers in adult education, have written

texts based on the Androgogy Theory as described by Knowles which are used in training adult educators . Conti and Welborn (30) conducted a study to test teaching-learning styles of 256 adults, 20 to 65 years of age. The non-traditional adult classes examined in this study were taught by 18 different instructors. Teaching-style of each instructor was determined by the Principles of Adult Learning Scale this "44-item summative rating scale which is based on the principles that are advanced in the adult education literature (30)." Learning-style of each student was determined by the Canfield Learning Style Inventory. This "30-item instrument conceptualizes learning style as composed of the elements of preferred (a) conditions, (b) content and (c) mode of learning and of the (d) expected level of success (30)." The researchers concluded that the learner-centered teaching style had a significant effect on learning outcomes. This study demonstrated the importance of practicing a teaching style which treats adults with dignity (30). Boyer (25) employed androgogy in his work with the "economically poor", both in teaching and teacher training, by reinforcing the need for treating the individual with dignity and recognizing the need for instruction methods which create positive motivated learning.

Knowle's (18) assumptions are provided here (with elaboration) to provide insight into the Theory of Androgogy. The assumptions are:

1. The learner is self-directing. He has a concept of being responsible for self. This concept is reinforced by the adult educator through orientation to self-directed learning by planning the learning outcome and steps toward that outcome.
2. The learner brings his life experiences to the learning process. This reflects the learners self-identity which may make learning new knowledge difficult if it conflicts with the original identity

"This principle is especially important in working with under-educated adults, who after all, have little to sustain their dignity other than their experience (18)."

3. The learner is ready to learn when he perceives a need to know or do a new task more effectively.
4. The learner brings a task-oriented or life-skills oriented approach to learning. Learning must be seen as meaningful in the present tense.
5. The learner is internally motivated. Self-esteem, self-actualization, and a better quality of life are prime motivational modes.

The process elements upon which educators base the application of education programs using androgogical theory are:

1. Maintain a positive learning climate;
 - a) physical climate - the room arrangement, decor, and temperature.
 - b) psychological climate - to help people feel respected, part of a team, supported in learning--to increase individualization.

2. Involve learners in mutual planning to make the learner feel more committed to learning.
3. Involve learners in assessing their own needs-now and in the future.
4. Involve learners in translating needs to learning objectives.
5. Involve learners in designing learning plans to assist in the identification of resources and strategies to meet objectives.
6. Help learners carry out their learning plans.
7. Involving learners in evaluating their plans.

Nutrition educators have used to the Theory of Androgogy in developing instruction methods. Spitze (31) observed two groups of learners, one taught by lecture and the other by participant planning and involvement. The participant planning and involvement group using the assumptions and elements of androgogy demonstrated better results. Nitzke (26) used this theory to reach low-literate adults by providing materials they requested as they perceived a need. Use of the Theory of Androgogy in education recognizes the needs of the in-dividual to acquire knowledge according to his life experiences and attitude.

4.2 Pedagogy

Pedagogy is defined in Webster's New World Dictionary Second College Edition as "the art and science of teaching (32)." The word comes from the Greek pais meaning child and

again to lead and is frequently defined by adult educators (18,19,29) as the teaching of children.

The assumptions of the Theory of Pedagogy are (18):

1. The learner is dependent. The teacher directs the learner in what, when, and how a subject will be learned.
2. The learner's previous experiences have little or no worth as a resource to learning. The teacher provides knowledge and has the only experience of worth.
3. The learner becomes ready to learn only when told what to learn.
4. The learner has a subject-orientation. Subjects are learned in sequence so that the learner may progress to the next level.
5. The learner has an external motivation to learn. Pressures to succeed, good grades, and the possibility of failure are the learning motivations.

This theory is in direct contrast with Knowles belief that adults are independent, self-directing, and self-motivated to learn(18). Pedagogy makes no effort to involve the learner in any phase of the planning or implementation process. Reliance is on lecture method of education. Sorcinelli and Sorcinelli (33) showed that the use of lecture in adult education to be beneficial in presenting overviews and new information. Conti and Welborn (30) reported that learners responded best to teaching styles that were moderately learner-centered using some formal lecture with learner centered activities. Adults need to

have some direction, but they also need to maintain control of their environment.

Nutrition education research has shown that, although other methods may be used, lecture is still the predominate method and is used 75.7% of the time (4). International studies on instruction methods showed that lecture is utilized 50% of the time (6). Studies have indicated that when the content and methods are dictated by the instructor, nutrition education may not meet its goals (34,35). Leverett et al. (34), reported that when using the word "diet" was used on materials in a nutrition education program for low-income participants in Buffalo, N.Y., participation was limited by lack of understanding of the terminology. Ip and Betts (35) described a study of food demonstrations for Cambodian refugees which included a component taught as nutrition information. This component was more successful when it was renamed as a topic the participants felt was more important to their lives. Pedagogy, as described here, would not be the best theory for nutrition educators to use as a basis for their choice of instruction methods.

4.3 Cooperative Learning

Johnson and Johnson (4,36), noted for their work in cooperative learning, have developed a model for effective

use of this technique. Although, normally used with children or students in structured education situations, cooperative learning may be used with adults.

"Cooperative learning situations are structured so that participants work together to achieve mutual learning goals (4)."

The Assumptions of Cooperative Learning are as follow (4):

1. Learners are positively interdependent. Learners become committed to each others' learning.
2. Learners have face to face interaction.
3. Learners are accountable in the learning situation.
Learners are accountable for the assigned materials.
4. Learners must master small groups and interpersonal skills.
5. Learners must have group processing time.
Learners must have time to process the information of the learning process.

Nitzke (26) showed that small group learning could lead to effective cooperation and positive learning. Cooperative learning in nutrition education may be a theory which works best when there is a structured learning plan and an educator with good group facilitation learning skills (36).

4.4 Contract Learning

"A learning contract is a plan for acquiring specified knowledge, understanding, skills, attitudes, or values by a learner (37)." Knowles (37) lists the contents of a learning contract as follows:

1. The specific learning objectives to be accomplished.
2. The resources and strategies to be used in accomplishing the objectives.
3. The evidence that will be collected to indicate the extent to which the objective has been accomplished.
4. How this evidence will be judged or validated.
5. The target date for completing each objective.

Knowles (37) cited several examples of his Principle of Contract Learning (applied to the health professions) as effective ways of maintaining continuing education.

Contract Learning makes the following assumptions (37):

1. Each learner translates his needs into a learning objectives that state the terminal behavior.
2. Each learner, with facilitator's help, identifies resources and strategies for accomplishing objectives.
3. Each learner specifies what evidence will be collected to indicate the extent that the objective has been accomplished.
4. Each learner specifies how this evidence will be evaluated.
5. Each learner determines a target goal for completion.

Contract learning has been reported to be effective in professional learning and continuing learning situations (18,37). Drawbacks associated with contract learning are the fear of a new experience, freedom in learning (learning does not take place in a structured classroom) and need for a support team including facilitator and peers.

Contract learning has been utilized with the professional nutritionist and (or) educator. Contracts for 6 month and 3 year self-planned working experience programs, resulting in professional registration eligibility, are being phased out by the American Dietetics Association (ADA) in favor of tighter control over the content of the learning experience. Contract learning in professional nutrition education continues in other areas. Continuing education is the responsibility of each nutritionist who is a member of ADA. Nutritionists must contract to complete 75 hours of continuing education every 5 years to maintain registration status.

Contacts made with public and private policy makers where informal contracts may be made to supply accurate nutrition information, can be a positive way to influence policy. For example, the nutrition educator who makes contact with policy makers becomes an informal resource for information through repeated contacts. The nutrition educator acquires new sources of information and contacts

which may lead to greater involvement in policy making,
thus affecting nutrition delivery service.

5. IMPACT OF ADULT EDUCATION THEORY - SELECTED INDIVIDUALS

The contributions of the following individuals are examined in this section: Paulo Friere (11) -views on learning by the socio-economically disadvantaged, Peter Jarvis (38) - alternative theory to Androgogy, "Education of Equals", Alphe Kohn (39) -current work on the effects of competition on learning, and Wolf J. Rinke (40) -concept of "Holistic Education". Victor Vroom's (41) motivation theory will be discussed as it applies to adult instruction.

5.1 Paulo Friere

Paulo Friere (11), explained his Theory of Traditional Education as a "pedagogy of the oppressed", a method of teaching that dictates to and dehumanizes the learner who is perceived as someone who has no decision-making powers and whose learning is controlled by the teacher. Friere (11) describes two types of education:

1. The Banking Concept which supposes that the learner is empty of knowledge and deposits are made with only that knowledge that the teacher wants the learner to have.
2. The Problem-posing Concept which accepts that the teacher is an equal with the student so that they "teach each other, mediated by the world."

Friere's (11) method begins with the educator going to the student, not as an educator, but as a learner to learn about their culture, habits, and lives. The educator and the student form a team of equals to pose problems from the learning situation within their own socio-cultural system (11,38).

Friere has been criticized for having an Utopian outlook on learning. Jarvis (38) feels methods of allowing the learner to pose problems within the socio-political frame would not work outside Third World countries due to the high literacy levels and ease of communication found in developed nations. However, Friere's theory is useful in adult education because it facilitates thinking beyond the factual knowledge into the social and cultural impact of that knowledge.

Examples of Friere's theories used in nutrition education are found in Drummond's (11) study which concludes that the method is best used in the interim until people demand their rights to a decent human life and human living conditions. An example by Spitze (31) describes the teacher as observing the students and learning with them to teach others. Spitze, although relating a dehumanizing experience, shows that Paulo Friere's work deserves consideration in nutrition education planning.

5.2 Peter Jarvis

The Education of Equals Theory, posed by sociologist Peter Jarvis (38), takes a broad view of education, including society in general. This theory is based on the following points:

1. Individuals should be encouraged to achieve their full potential.
2. Needs of the individual should be met.
3. An expressive objective should be utilized to meet individual needs.
4. Education content should be selected from the culture of the learner in accordance with his interests and relevance to his life style.
5. Content problems should be based on integrated knowledge rather than structured knowledge.
6. Facilitative methods should be used.
7. The teacher seeks no control over the learning outcomes.
8. The teacher's role is not clearly defined and is not seen as essential.
9. Self assessment is done by the learner.
10. Peer assessment should be conducted.
11. Assessment with emphasis on learning should be conducted.

Jarvis (38) contrasts this approach with an "education from above" method which resembles Pedagogy as defined by Knowles (18) or the Banking Method described by Friere (11). The Education From Above theory as seen from a sociological framework helps mold individuals so they

conform to the order. The more education helps them conform to the order, the less it is producing individuals who are critical of the order (38). Education as Equals may be viewed as a theory that helps individuals develop and mature and form a critical awareness of society, so that they are able to help create and recreate the social system, thereby exercising some control over it.

Jarvis' (28) sociological theories of education might best be used in the area of nutrition education research to pose questions between practicing nutritionists and academic nutrition researchers. He describes the same sociological view of education in his second theory as Allan Bloom (42) describes in The Closing Of The American Mind. Bloom (42) views American education as having become closed and posing no questions for which answers must be found. The same concept is hinted at by Sims (1) when she states that research in nutrition education may have taken the easy way out through greater use of survey and statistics and less use of observation and qualitative evaluation.

5.3 Alfie Kohn

No Contest. The Case Against Competition takes issue with the traditional method of learning used in Western culture; competition is used as a teaching tool and measure of learning ability. Competition, as seen by Kohn (39),

fails to promote learning because "trying to do well and trying to beat others are two different things." Competition in school may be seen in all facets of adult life. Inability to compete well may set up individuals for failure throughout life.

When adults see themselves as failures in education, nutrition educators need to take a look at Kohn's (39) work in terms of competitive life experiences which adults bring to learning. Elimination of testing, winning nutrition games (no matter how instructive), or giving prizes for academic success may help nutrition educators to succeed with Socially/Economically Deprived Adult Learners.

5.4 Wolf J. Rinke

Wolf J. Rinke (40), Department of Clinical Investigation, Walter Reed Army Medical Center, Washington, D.C., has proposed the Theory of Holistic Education. Holistic Education is defined as; "A functional, integrated and generalized model of education which focuses on the whole teaching/learning situation, and varies the teaching/learning strategy to meet the needs of the learner, the teacher, and the situation, in an effort to attain educational outcomes which are greater than the sum of the parts." (40)

Designed to incorporate elements from business,

management, holistic medicine and Knowles' Androgogy Theory (18), holistic education contains two primary characteristics and four secondary characteristics.

Primary characteristics:

1. Educators vary their teaching/learning strategies to meet the needs of the learner, the educator and the situation.
2. Educators promote learning as a lifelong process and help learners to reach their unique potential.

Secondary characteristics:

1. Educators structure the learning environment to promote the creative and insightful potential of the human mind.
2. Educators accept that the learners retain ultimate responsibility for the learning process.
3. Educators place primary emphasis on holistic evaluation strategies,
i.e., "learners should have the opportunity to evaluate the teacher, the program and themselves whenever they are evaluated (38)."
4. Educators adhere to a "growth" curriculum metaphor, i.e., learning as a foundation for further learning throughout the lifetime of the individual.

Rinke (40) provides a theory of learning which is focused on lifelong learning to create positive changes and "to provide learners with the capacity to think creatively and innovatively." Nutrition educators strive to create positive and lasting behavior change (1). Petre and Gatto (43) reporting on the LIFESTEPS: Weight Management Program (National Dairy Council Program) stated that success of the

program (79% of those beginning the fourteen week session completed with an average weight loss of 10 pounds) was in part due to the use of adult educational methods designed to consider the lifelong learning required for successful change.

5.5 Victor Vroom

Effective nutrition education requires that the learner be motivated to learn. The nutrition educator has little nutrition theory or research available for participant motivation. Griffin (41) states, "Most theories of motivation read as if they were formulated during and for times of economic and psychosocial stability. Few, if any, of them are concerned with times of stress and insecurity."

Vroom (41) developed a Theory of Expectancy which may be used in forced learning situations. The assumptions are based on the individual's expectations of outcomes. Education must be communicated as having a valued outcome for the individual. The assumptions of Theory of Expectancy are:

1. Behavior is determined by a combination of forces in the individual and forces in the environment.
2. People make their own decisions about their behavior in organizations.
3. Different people have different types of needs, desires and goals.

4. People make decisions among alternative plans based on their perceptions of the extent to which a given behavior will lead to desired outcomes.

Without positive outcome, the individual will attend a nutrition education session, but motivation to learn will not be present. Learning and behavior change will not happen.

6. VARIABLES AFFECTING ADULT LEARNING

Variables affecting learning abilities and choice of education theory will be reviewed in this section. These include: 1) learning conditions, 2) psychological barriers, 3) memory difficulties, 4) poor study habits, and 5) basic skills.

Attention will be focused on two major variables affecting adult learning. Problems inhibiting adult learning and levels of learning progression-how adults learn will be discussed.

6.1 Barriers To Adult Learning

Lenz (22) has identified the following as problems which inhibit adult learning:

1. Learning Conditions
2. Psychological Barriers
3. Memory Difficulties
4. Poor Study Habits
5. Basic Skills

A brief discussion of these areas follows.

1) Learning Conditions refer to the reality in which the adult lives, especially in the amount of free time available for learning. Adult learners are making time, energy and priority decisions to participate in a learning

situation. Time for education must be made after a busy day or even within the day, e.g., lunch time. Adding a new time commitment to the adults day necessitates allocating energy to the program. Priority to education is given if the adult perceives the learning experience as important or necessary.

The learning conditions surrounding the target audience must be considered. Groups that have limited time, small reserve of energy, or other priority commitments will need education methods applicable to these conditions. Lenz (24) suggests that educators adopt short sessions, tasks or activities with immediate meaning, and participant input into program planning to maximize learning conditions.

2) Psychological barriers are the fears adults have of entering a learning situation (22). Past experiences may play a role in creating the barriers. Prior experiences in school or peer meetings create a fear of participation in education activities because the answers or questions the adult learner provides may be seen as "wrong" or "stupid". Family and work site conflicts due to priority time given to education may produce fear and guilt. "Mindset" (the way adults view a problem based on previous experience), a common problem for adult learners, may interfere with nutrition education (24). Previous poor experiences

with science courses, for example, may convince the adult that any nutrition science education will be a failure before it begins. This "mindset" barrier is one of the most difficult to overcome (22).

Suggestions for breaking through these barriers include creating educational situations where rewards are attainable, reinforcing learning goals with positive feedback, and promoting interaction between students and between students and educator. Adult's lack of participation may be due to feelings of isolation. Interaction with other adults who are experiencing the same barriers may help to alleviate fears and provide support (16).

3) Memory difficulties create "one of the most inhibiting factors for adult learners (24)". Participation in structured learning decreases with age. The number of years of formal education completed by older adults is frequently less than that of younger adults (19); this may play a role in memory/learning fears. The American educational system is based on the ability to memorize and recite information. Failure to succeed in earlier education programs may lead to a highly resistant barrier against learning.

Methods recommended for overcoming memory difficulties include reinforcement of ideas in visual and verbal

presentations, creating a student paced learning situation, and providing information to each student in a form (i.e., pamphlet, listing main ideas) that makes memorization unnecessary. Stereotyping plays a role in memory difficulties by promoting the belief that people are too old to learn. Using a method such as group exchange of information based on life experiences will reinforce self-worth and may help overcome low self-esteem.

4) Poor study habits are not generally a problem in non-formal education settings where testing is not a component of the learning process. However, inability to process information beyond the education setting may lead to dysfunctional implementation. Appropriate study habits provide the framework through which the adult processes knowledge and stores the information for further use. Study involves gathering, organizing, summarizing, and storing information (29). Each component is a part of learning. Nutrition education should be designed to provide knowledge or information which leads to change. Methods to encourage positive study habits are; 1) use of group decision methods to encourage information gathering, 2) self-evaluation to measure knowledge retention and 3) group discussion to encourage organization and summary of information. Poor study skills may affect the ability of an education program to promote long term change because

of the inability of the participant to sustain interest in learning.

5) Basic skills, are those skills required to function in an educational setting of any type - the ability to read, write and do simple mathematics - basic literacy in the language and culture of mainstream society. Absence of skills may lead to disinterest in educational programs (18). Faulty skills, resulting from non-usage or lack of basic skills can lead to reluctance to participate "for fear of revealing inadequacy" (24).

Methods for use in overcoming barriers created by limited basic skill include the following:

1. Repetition and review - focus on only one or two main points.
2. Reinforce progress - encourage group participation and invite participants to provide information requiring the use of gathering skills.
3. Referral - put adults in contact with community groups or classes designed to improve basic skills.

Basic skills are required for all levels of nutrition education. If a target group lacks these, they may not participate in nutrition education programs and therefore will fail. Methods selected for education should consider the level of basic skills of the target group.

6.2 Levels of Learning Progression

Knox (29) lists the progression of learning developed from education research as:

1. Fragmentary Learning
2. Comprehension
3. Understanding of Relationships
4. Inclusive Understanding

Nutrition education methods designed with learning progression in mind would develop ideas from facts to concepts and then to the integration of the two, allowing the adult to interpret new situations from past learning experience. Spitze (31) describes the progression of learning as "helping students learn to think". She reported that two classes given the same factual assignment to make muffins showed different end learning results. Class One was given a factual demonstration of the lesson and evaluation sheets were used to rate the muffins made by class members. When asked what they had learned, the most frequent reply was "how to make muffins". Class Two was given a factual demonstration by a member of the class. The teacher acting as group facilitator initiated a series of question ranging from "What difference does beating time make in muffins?" to "Can a woman be a successful homemaker without ever making muffins (31)?" Students of Class Two were then asked what they had learned. The answers were

more comprehensive reflecting the inclusive understanding phase of learning (31).

7. SELECTED REVIEW OF NUTRITION EDUCATION METHODS

This section highlights a range of methods illustrating possible routes for nutrition education other than knowledge dissemination. Methods of nutrition education will be reviewed in relation to 1) the target groups defined in section 3.1., Policy Makers, Average Adult Learners, Socially/Economically Deprived Adult Learners, and 2) the success of the hierarchy of the nutrition information system. Also, the effect of cultural influences on education method and selection will be examined.

7.1 Methods of Education-Policy Makers

Little research has been conducted on educational methods for Policy Makers. How to reach Policy Makers, however, has been addressed in viewpoint or current issues sections of professional nutrition journals.

Cross (44) cited involvement in policy making as part of the duties of nutritionists to influence Policy Makers in power positions. Cross (42) states that the lack of nutrition input into Policy Maker's decision making processes has resulted in an unfocused national nutritional policy. The United States Senate Select Committee on Nutrition and Human Needs during its eight year existence

was responsible for developing many policies and nutrition programs that are still in effect. It was tragic that less than four percent of the witnesses seen by the committee were nutrition professionals (44).

Kerwin et al. (45), in April, 1988, reported on a survey conducted by the Public Health Nutrition Practice Group (PHNPG) of the American Dietetics Association. More than 50% of this group is directly or indirectly employed or involved with government nutrition programs. This survey found the level of participation of members in policy making was limited to reading the newsletter and voting in the PHNPG election. Dietetic Practice Groups are designed to meet the needs of the group and to form a focus point to influence policy within the ADA and in governmental program planning. Worth noting, in light of the intended function of PHNPG, is that 55% of members agreed with the statement, 'I really don't understand what's going on in PHNPG', ...54% agreed with 'I don't have much to say about what PHNPG does'... (and) 47% stated that the size and complexity of PHNPG makes it difficult to know where to turn for information (45)." Chapman (46) expressed a need for nutritionists to become involved in marketing ideas to the Policy Makers. "The voice of the nutrition expert, if trained in the legislative vernacular, provides the factual arguments and can set the agenda for debate on nutrition

and public health." The focus of Chapman's (46) address was marketing techniques and an understanding of the compromises necessary for the Policy Maker to make decisions for all society using limited fiscal resources.

Communication media (i.e., video tapes, television, and radio) can be used by the nutritionist utilizes to effectively educate the Policy Makers effectively, either directly or indirectly. Policy Makers are concerned with knowledge (47). Communication to them as noted by Chapman (46) must be on a level that is practical and makes sense. Kroger (47) lists seven Cs of communication the nutrition educator can use in a media situation, adapt to a lobbying message, or use as a framework for a witness presentation. The seven points are (47):

1. Care - honest, sincere presentation
2. Confidence - be ready, do your homework
3. Concentration - center on ideas, not self
4. Control - take time before you answer, do not be rushed
5. Comfortable - know your material, be comfortable with it
6. Conversational - get ideas across in a pleasant manner
7. Concise - do not overwhelm with words

Professional journals encourage individual nutrition educators to lobby Policy Makers (influence their decisions

through expression of opinion on a policy point), and to combine forces to create unified power. Mays (48) focused on the gap in the hierarchy of nutrition information "...individuals (Average Adult Learners and Socially/Economically Deprived Adult Learners) depend on organizations (e.g., professional nutrition groups) to impact on policy makers for analysis of issues and setting of standards."(48)

7.2 Methods of Education-Average Adult Learners

In a review of nutrition education research Sims (1) stated that surveys were the predominate method of investigating differences between methods. Survey research provides basic information on the needs and knowledge of a specific group and (or) population. Hertzler et al. (49), surveyed 46 office workers to identify their nutrition needs. The study was designed to determine existing knowledge, information contacts, and information communication. They found that only one-half of the participants were interested in any one specific nutrition topic and the researchers speculated that enhancing information sharing could be an effective method of increasing nutrition awareness (49).

Crockett (50), examined the attitudes of 64 adults toward in relation to attending nutrition education

programs. The results of this cross sectional study (n=40 would attend, n=24 would not attend) showed significant difference between groups based on perceived benefits ($p \leq 0.001$). Of interest to nutrition educators, were findings that although both groups felt that the class would make them feel "guilty" about diet, the non-attendees belief that the guilt feelings would be severe were significant at $p \leq 0.05$.

The Threat- versus Benefit-Appeals Method has been used in other health related sciences to change attitudes and behaviors. This strategy also has been used in mass communication to change purchasing habits. The two studies reviewed here indicate that the effects of the appeals were equal. Looker and Shannon (51) completed a mail survey of 365 adult subjects, which included pre- and post-tests of nutrition knowledge and a treatment brochure. The design included control, threat-appeal, and benefit-appeal groups. The nutrition knowledge post-test scores of the treatment group did not differ significantly. However, the control group scored ($p \leq 0.001$) lower at post-test. Further research, using the same technique with a different type of presentation, i.e., media or personal contact was suggested.

Shannon and Rowan (52), used a Threat- versus Benefit- Appeals Method in study of 55 adult subjects enrolled in a

weight-control class. Mailings of both threat- and benefit-appeal materials were made to encourage class enrollment. In agreement with the previous research (51), no significant differences were found between treatment groups.

Newell et al. (53), compared the effectiveness of sender-oriented and receiver-oriented messages to influence the nutrition behavior of working mothers. This regional study included Kansas, Iowa, Nebraska, and Wisconsin. Sender-oriented messages are "messages that are not particularly concerned about the receiver's response, but rather about the image of the sender." (27) Receiver-oriented messages are "attempts to consider the receiver's predispositions and orient the message to meet their wants and needs." (27) A "Q" sort method was used to determine the nutrition orientations of the mothers in Kansas, Nebraska, and Wisconsin and formed the basis for the receiver-oriented messages. The effectiveness of the sender-oriented messages was assessed in Iowa. Control groups were included in all populations except Iowa. In this study sender-oriented messages were more effective in influencing nutrition behavior than receiver-oriented messages.

Gillespie (27) criticized the study conducted by Newell et al. (53), stating that in reality the researchers compared two receiver-oriented messages that used two

different methods of assessing receiver predispositions. However, Gillespie (27) reached the same conclusion as did Newell et al. (51) that mass communication reaches more people than either individualized or small group instruction. The processes of providing nutrition information need to be refined and messages more accurately designed to meet the needs of the target group.

Nutritionists often employ behavior modification as an effective tool in weight reduction programs. Petre and Gatto (43), reported success with a weight-loss method based on Adult Learning Theory and behavior modification. The program combined individual self-directed education methods, group discussion, self-evaluations, individual counseling, and individual instruction.

In a 5 year follow-up, study Kuks and Hughes (54) explored active parent involvement in nutrition education as a behavioral change element at the elementary school level. Three hundred fifty-two students were assigned to one of three groups; 1) parent/student nutrition education, 2) student (only) nutrition education, and 3) control. Results from the 5 year follow-up, which included 111 of the original population, indicated that the participant's reported food choices reflected the effects of early nutrition education only if the parents concomitantly received nutrition education. The research did not compare

adult nutrition behavior. But, the investigators reported that adult learning and discussion/demonstration within the family increased the effectiveness of the knowledge presented and resulted in positive behavioral change and improved food choices by children in the 5 year follow-up study.

Cognitive, or knowledge based programs, may result in changes in knowledge (4), but programs based on affective and cognitive education have been shown to be the most successful with behavior change (2,3,43). Brush et al. (55) reported that when participants were allowed to plan objectives for self and group (Cooperative Learning Theory) a positive relationship was found between attitudes and behaviors. The population was divided into control (n=58) and treatment (n=59) groups. Results of pre-, post-, and retention-tests administered to the treatment group following 10 hours of nutrition instruction showed no significant changes in attitude. However, changes in behavior were significantly higher in the treatment group after testing. There were no significant differences in nutrition knowledge between groups at baseline, but knowledge assimilation was found to be significantly higher in the treatment group between testing periods. These results demonstrate that while knowledge is necessary to change attitude and behavior, individuals make choices independent

of knowledge. Brush et al. (55), suggested that social science methodology may be needed to determine what variables, beyond the knowledge component, effect behavior change.

Average Adult Learners constitute the majority of participants in nutrition education. Nutrition education research has focused on methods to improve the nutritional status of this population through behavior and attitude change. The literature reviewed suggests that nutritionists must become more familiar with behavioral sciences and ways to adapt messages to the target audience in order to bridge the gap between the intended use of nutrition information and the actual effects of nutrition education on behavior and attitude.

Nutrition education programs which incorporate both a cognitive and behavioral learner theory offer the best approach to changing nutritional status through long-term behavior change. Studies by Brush et al (55), Kuks and Hughs (54) and Petre and Gatto (43) offer models to be followed for planning nutrition education.

7.3 Methods of Education - Socially/Economically Deprived Adult Learners

Leverett et al. (34), reported on a two-phase campaign to help low-income residents obtain optimal nutritional benefit from Food Stamp dollars in a multi-ethnic section

of Buffalo, N. Y. Subjects were predominantly Caucasian, female, and 55 years of age or older. The total number of participants was 294 in Phase I and 175 in Phase II. The education session was held in local community centers and all subjects participated in programs, which included lectures, video tapes, demonstrations, and materials from the United States Department of Agriculture (USDA) and National Dairy Council. Bi-lingual materials were made available. However, the researchers reported that the project did not reach the majority of ethnic groups represented. They speculated that there was insufficient contact within the ethnic communities for project success. Follow-up on intended positive nutrition behavior reported by participants was not done and discussion with participants revealed that diet was of low priority in comparison to utility bills and rent.

Nitzke (26) compared the efficacy of a receiver-assisted pamphlet that was developed using the Language Experience Approach, with that of a sender produced pamphlet "written in a standard method by nutrition educators incorporating techniques to test readability". The Language Experience Approach employs small groups of the target audience who state in terms they understand, the concepts presented by nutritionists. In this study nutrition educators presented snack information in 4 mini

lectures with the Language Experience Approach, then potential users translated the concepts presented by nutritionists into terms they understood. These were followed by a group discussion in which the participants stated the concepts in their own words (26). The researchers concluded that the receiver-assisted pamphlet was preferred by the low-income audience and suggested that "...the... poorest readers... may be accustomed to oral rather than written language (26)."

The Womens', Infants, and Childrens Supplemental Food Program (WIC) has been the focus of numerous nutrition education studies. Differences between the effect of nutrition education and supplemental food on nutritional status are difficult to determine. Giuffre (56) developed an education method for WIC participants using a series of cassette messages, posters, and hands-on experiences. The concepts addressed by this method are "Self-concept, self-responsibility, learn-by-doing, and learning-by discovery (56)." Both staff and participants reported positive results from discussion feedback between clients and between clients and staff. Giuffre's (56) program was based on the adult learning variables identified by Lenz (23) of 1) learning conditions, 2) psychological barriers, 3) memory difficulties, 4) poor study habits, and 5) basic skills.

The Expanded Food and Nutrition Education Program (EFNEP) has been effective in changing nutrition attitudes and behavior (7). Amstutz and Dixon (57) investigated dietary changes resulting from EFNEP intervention. Two groups of homemakers were studied; 1) 129 participants who had completed the EFNEP curriculum and 2) 194 recent enrollees who had received no nutrition instruction. Program aides taught the basic core of nutrition education and evaluated the participants who had completed the EFNEP curriculum with standard EFNEP forms including a food-record and 24-hour re-call. Comparison between the initial food-records and 24-hour recalls of the recent enrolled EFNEP participants with those who had completed the EFNEP curriculum showed no significant change in the area of dietary habits had resulted from the EFNEP education. However, there were indications that completion of EFNEP did produce positive nutrition knowledge changes. The Expanded Food and Nutrition Education Program uses the Androgogy and Cooperative Learning Theories to reach the program participants. Amstutz and Dixon (57) speculated that the lack of behavioral change may have been due to the food supply conditions which exist for this Socially/Economically Deprived Adult Learner group, rather than the use of incorrect learning theory.

Nutrition education programs for Socially/
Economically Deprived Adult Learners are successful when
the physical conditions of the learning site and the basic
skills of the group are considered. Nitzke (26) and
Giuffre (56) best illustrate the type of education which is
effective with this group.

8. IMPACT OF CULTURE ON NUTRITION EDUCATION METHODS

Culture is the sum of unique characteristics of a group. It is affected by individual and mass media communication, by dominant groups who decide what is "right" for sub-groups, by political and economic climates, as well as pressures from other cultures. How these factors affect nutrition education of cultural groups will be examined in this section. communications theory and marketing perspectives will be explored as they relate to current cultural attitudes in nutrition education.

8.1 Language/communication

Gillespie and Yarbrough (58) presented a conceptual model of communication for nutrition education which was based on 4 perspectives from research in the fields of psychology and sociology; 1) individual differences, 2) social categories, 3) social relations, and 4) pragmatism. This model deals with the way individuals and groups look at nutrition education in relation to socialization and culture. Gillespie (27) explored the use of Communication Theory developed earlier by Gillespie and Yarbrough (58) in nutrition education. The individual makes decisions based on knowledge and culture during the interaction phase of the model. Cultural climate is the

learner's view of his world "...unless the change (proposed by communication) is compatible with the receivers understanding (it) is unlikely to be successful (27)." Gillespie (27) concluded that education input (concepts, methods, knowledge, etc.) into the communication should be the last step in designing nutrition education. The inputs (comments, ideas, needs, etc.) of the intended audience, based on their perceptions of their society or culture, should be the deciding factor in communication message development (27,58).

Anthropological methods have been used in designing health/nutrition education programs using communications theories, incorporating interaction of the individuals within a culture and between cultures (59). Observation of a culture or the groups within a culture will identify the existing attitudes of the target group in order to avoid developing a message which may be perceived as trivial or conflicting with cultural beliefs. Nutrition education has used both good and bad communication design. An example of bad communication design would be the use of nutrition education materials written for high literacy levels (26) in a program for participants with low literacy levels. The most effective methods consider the cultural and social beliefs of the learner (26,35).

Ip and Betts (35) studied the effectiveness of demonstration in addition to active participation as a method of nutrition education for Cambodian refugees. The purpose was to encourage substitutions of nutritious American foods in traditional Cambodian recipes. Dietary interviews taken at baseline and after 4 months of demonstration implied an increase in the use of typically American foods; i.e., eggs, milk, and orange juice. Ip and Betts (35) concluded that "not much interest was shown in nutrition information per se, (but) the parents expressed strong beliefs about the need to maintain and improve health ..." The Nutrition education method used in this study was a good example of Androgogy. Task-oriented and (or) life-centered learning was stressed and participation was encouraged.

Buchholz (60), described a nutrition education program designed by a nutritionist from Hong Kong, who worked in San Francisco's Chinatown, She stated that in an attempt to adapt American foods to traditional Asian diets she identified two important concepts:

1. "Nutrition education may seem far down the list of things (to) learn".
2. Direct translation of materials designed for one group may be unrealistic for another group.

These 2 points are stressed in Psychological Barriers to Learning variables in Section 6 (specifically for Socially/Economically Deprived Adult Learners).

Communication between the nutritionist and the Socially/Economically Deprived Adult Learner can play an important role in the success or failure of nutrition education. Farkas (61), reported on the communication differences between the Euro-North Americans and Native Canadian Americans. She found many differences in attitudes between the two cultures in relation to verbal and non-verbal communication. Failure to note communication differences could lead to failure of the educational method. Recommendations of this study were that nutrition educators (61):

1. Examine their own cultural background and regional speech patterns to become aware of how they send or receive messages.
2. Through participation, observation, and inquiry become aware of differences between their own culturally specific language patterns and those of their clients.
3. Tape dietary interviews, review the tapes, and read transcriptions of the interviews for increased understanding of communications differences (55).

Leverett et al. (34) found that when the language of the communication did not coincide with the language of the learner, only a limited number of learners were reached. Socially/Economically Deprived Adult Learners may accept a more complex message if that message is designed with the cultural attitudes of the group in mind (26).

Policy Makers often send messages which clearly show the need to analyze the beliefs and attitudes of the audience before speaking. On August 30, 1982, United States Secretary of Agriculture John Block, delivered a message which created an opposite effect from the intended ("good") message concerning a hands-off government nutrition policy. He stated "Hogs are like people. You can provide protein and grain to a hog and he will balance his ration. People are surely as smart as hogs. I am not sure the (Federal) Government needs to get so deeply involved in telling people what they should or should not eat". The message communicated the idea that if people, in general, were not eating properly they were not as smart as hogs. Even supporters of hands-off government were not pleased at being compared to hogs. The Secretary's message did have a positive effect when the interaction occurred with the audience, nutritionists, and other health professionals received media attention which focused on the benefits of nutrition and nutrition programs.

All adults are affected by communications, either positively or negatively, as a result of their perception of the message in accordance with their cultural beliefs. Nutrition education programs should consider the recommendations of Gillespie and Yarbrough (58) and "...set realistic goals for success; do not expect 100% effective-

ness of the message..." and should remember that "...impact on some people is better than non-impact on many people." Communications will reach the target audience if it adheres to the idea that the nutrition information contained is accurate and current.

8.2 Marketing Perspectives

Marketing techniques can be applied to nutrition education of all groups. Groups may be educated in nutrition through marketing primarily used in three forms: 1) classic marketing techniques (the 4 Ps), 2) social marketing and 3) human interest. Understanding of the goals of the group is essential in creating the right Product with the right Promotion in the right Place at the right Price. John Block, did not see nutrition education as a good product to promote because it might conflict with the interests of the meat, poultry, and dairy lobbies. These groups did not want to promote a message that encouraged consumers to eat less meat and fat and more fruits and vegetables. Nutritionists had to find the right product (same message) but with a different promotion that had the right place and price (worth and cost) for the buyer, i.e., the (Reagan) Administration. The 1990's Nutrition Goals changed the promotional message to "eat less saturated fat" and put goals in health benefits terms

giving them an attractive price of reduced health costs. One method of educating all groups is with product perspectives that relate to their own interests.

Social marketing applies the techniques of marketing to social issues, ie., education, food supply, medical care, housing, etc., as a product. Survival and success of a product in the market depends on successful marketing of product ideas and services. Manoff (14) believes that current marketing practices overwhelm education with innovative approaches designed to initiate an "off with the old, on with the new" attitude. Dominant mainstream literacy levels (the predominate literacy level for a society) and cultural ideas are marketed to all groups of society everyday through mass media and role models. Nutrition education appears to share this concept. A United States Department of Education survey found that "20% to 30% of adults in the United States are severely limited by their lack of everyday consumer literacy skills" (26). Typical nutrition education materials were written at tenth grade level. Dominant groups in a culture market their ideas to others based on their perceptions of the other groups' needs. The classic example of poor nutrition marketing is the shipping of infant formula to under-developed countries without regard for cultural/ social practices or sanitation conditions (6,14). Friere's (11)

theory of education (Problem-posing) is a rejection of dominant mainstream marketing. Problem-posing (11) presents the idea of equality between the teacher and the student in solving problems and education, dominant mainstream marketing only provides solutions to problems and education appropriate for the dominant mainstream marketing group. Manoff (14) calls for nutrition educators to take on greater responsibility for the education information marketed and for the effect of public policy on individuals as a result of new dietary goals, information or proposed dietary intake changes. Gussow (6) goes a step further stating that nutrition education has a responsibility "...to concern itself not only with what people eat, how they eat and how what they eat affects them, but indeed with whether they have anything to eat at all-and if not, why not."

Nutrition educators must use market research in selling nutrition education. Eating habits and behaviors of special groups may be perceived incorrectly by the nutrition educator. Ethnic food choices which form the basis for nutrition education should be examined before accepting the current assumption ie., all Asian American groups eat rice for every meal. Grivetti and Paquette (60) found that food choices of first-generation Chinese Americans in California were as diverse as those of any

other Americans. Food frequency data indicated that 67% of first-generation Chinese Americans (n=30) consumed tortillas twice monthly. The authors concluded that nutrition educators should examine what their clients actually eat as opposed to the diet assumed by their ethnic or racial background. Studies of middle class Caucasians and middle class Blacks in the South showed no regional or racial differences. However, there were significant differences when socio-economically disadvantaged Caucasians and Blacks were compared (63). Research in "given" (information accepted without proof) information may be needed before marketing nutrition education to Policy Makers, Average Adult Learners and Socially/Socially/Economically Deprived Adult Learners.

Berg (64) cites the Indonesia Nutrition Development Project as an example of marketing for social purposes. The Nutrition Communication and Behavior Change Component (64) was designed as a social marketing program. The project was a collaborative effort between The World Bank and the Government of Indonesia to address three specific objectives: 1) to improve nutritional status of the population, specifically children, 2) to train personnel to teach nutrition in rural and urban areas, and 3) to establish a governmental framework to continue the efforts beyond the project.

This project addressed highly specific objectives based on the four P's of marketing. Product - messages were based on what the people would and could do, were examples of receiver-oriented messages described earlier by Gillespie (27). Promotion - classes were taught by native village instructors and messages were reinforced by radio broadcast. Place - classes were held in the villages and areas easily accessible to the clients. Price - the classes and information were free, the information was focused at both groups and individuals (increasing the value to the individual).

Success of the program was attributed to: "1) thorough marketing-type research, 2) carefully conceptualized media strategy, 3) good implementation of initial phase and 4) evaluation from the onset" (64). Berg (64) stated that the social marketing used in this project built on existing resources to achieve success. The principles of social marketing could apply to any nutrition education program focus.

Human interesting or anecdotal testimony, which describes conditions or problems is often presented to legislators by the media and private agencies (44,65). Human interest marketing of nutrition problems with human interest presentations produces a positive effect by creating interest in the general public (who influence policy

makers) and on policy makers themselves. Educators must become marketing wise in order to gage the market for new nutrition needs and to market these to groups who "must develop innovative education and service programs that meet the challenges of the profession and its consumers" (66).

9. CONCLUSIONS AND RECOMMENDATIONS

The hierarchy of a nutrition information delivery system is outlined on Figure I (p. 10). This report has explored the system and concludes that gaps exist in the system between the nutritionist and participants (Figure II, p. 73). The author feels that based on a review of education and nutrition education research/commentary the reasons for the gaps in the delivery of nutrition information are:

1. Limited understanding by nutritionists and (or) use of identified education theory in program planning.
2. Limited knowledge by nutritionists and (or) effort to understand the learning characteristics of the program participants of nutrition education.
3. Limited understanding by the nutritionist of the culture, language or needs of the participants.
4. Ineffective use of mass media by nutritionists in meeting the needs and skills of program participants.
5. Lack of training by nutritionist in planning program to meet the needs of specific groups of adult learners.

An essay by Nancy W. Axinn (67) illustrates the conclusions of this author that nutrition educators have created a gap in information delivery systems. The work deals with the use of the biscuit as a teaching method. Axinn's mother, an Extension Home Economist in 1923, taught homemakers how to make biscuits to reinforce the learning

of food preparation, nutrition and sanitation. The biscuits were easily made from ingredients found in every home "...-flour, lard, a pinch of salt, milk, perhaps an egg." and baked in the wood cook stove present in every home of the decade. Axinn, some fifty years later, was working in Africa when she discovered that native women were spending time building an oven (women of the area cook over and open fire), walking miles to purchase scarce and expensive ingredients to make biscuits, and then learning to make an unfamiliar food, a source of carbohydrates (unnecessary in light of the normal diet high in fruits and vegetables) and using "tinned milk because there is no fresh...and perhaps use their precious egg-so badly needed as protein for the children (67)" on a food many did not like. The idea of teaching nutrition by using the biscuit, which had worked so well in 1923 in the United States countryside, was still being used to teach in Africa of the 1970,s with no changes in method in fifty years. Nutritionists, as Axinn (67) points out, had continued to teach "what (we) think they need, not ...what they think they need, and to our surprise, they don't need it!"

Changes must occur to close the gap in the hierarchy of nutrition education information delivery system. Or, to paraphrase Axinn (67), to our surprise our clients will not need or want us or our knowledge, because it will have no

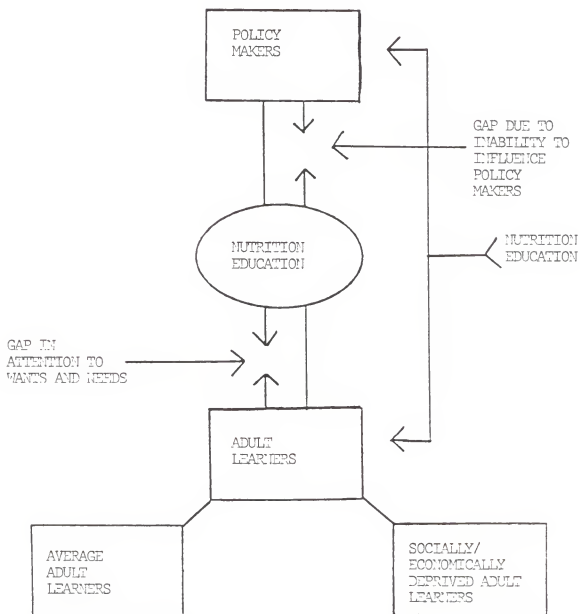
bearing on the reality in which they live. The author recommends the following means of closing the gaps in the hierarchy of nutrition education information delivery systems, as defined in this report. The recommendations are:

1. Education programs for Policy Makers should focus on providing information which is readily understandable and easily assimilated. Nutrition educators must become more involved in the advocacy process and learn to give priorities to nutrition programs in line with Policy Makers decisions based on limited resources.
2. Nutrition education for the Average Adult Learner should be based on both the cognitive and behavioral learning theories. Combinations of these theories have been shown to be the most successful.
3. Socially/Economically Deprived Adult Learners should be addressed by nutrition education programs which consider 1) the physical conditions under which they live and attend classes and 2) the basic skills (learning abilities) of the group. Programs which address these two points as well as nutrition have been shown to be more successful.
4. Rinke's Holistic Education Theory (Section 5.4, 34) should be used in program planning. It is suggested as a starting point for developing a nutrition education theory.
5. Nutritionists should have training in adult education. Professional organizations should encourage nutritionists in the field to remain current on new methods and ideas of reaching the adult in all programs.
6. Course work for future nutritionists should include nutrition education both on the undergraduate and graduate level to provide a foundation to start from and grow as educators.

Every nutritionist/dietitian is an educator, whether in a community center, endocrinology department, work site clinic, or as a lobbyist. Each of us has a responsibility to convey the information of our discipline in the most effective manner for the benefit of the participants in all nutrition programs. Continued lack of ability on the part of nutritionists to bridge the gaps in the information system may lead to a lack of credibility in the profession of nutrition. Nutrition education, as stated in the first sentence of this report, is an effort to provide knowledge to produce positive change. Nutritionist must take the definition home and use the knowledge available to make positive changes in their education delivery and attitudes.

Figure II

GAPS IN NUTRITION EDUCATION INFORMATION DELIVERY



REFERENCES

1. Sims, L., Nutrition education research: Reaching toward the leading edge. Journal of the American Dietetics Association 87:S10-S18, 1987.
2. Whitehead, F., Nutrition education research project: Report of feasibility study. Phase I (literature review). Agency for International Development, Technical Assistance Bureau, Office of Nutrition. Washington, D.C. 1970.
3. McKenzie, J., and P. Mumford. The evaluation of nutrition education programs: A review of the present situation. World Review of Nutrition and Dietetics. 5:21-31, 1965.
4. Mortordt, M. Purpose, Background and Programs of Home Economics Extension. Extension Services, Kansas State University. 1979. 1-17.
5. Johnson, D., and R.T. Johnson. Nutrition education: A model for effectiveness, a synthesis of research. Journal of Nutrition Education, 17 (Sup):1-21.
6. Gussow, J., and I. Contento. Nutrition education in a changing world. A conceptualization and selective review. World Review of Nutrition and Dietetics. 44:1-56, 1984.
7. United States Department of Agriculture, Science and Education Administration. The Expanded Food and Nutrition Education Program - Historical and statistical profile. Synectics Corporation Program Aid No. 1230. Washington, D.C., Government Printing Office. 1979. 27-100 pp.
8. Lappe, F. Diet For A Small Planet. Tenth ed. New York:Ballantine Books, 1982.
9. Brown, K., and T. Cooke. The general public. Journal of Nutrition Education, National Conference on Nutrition Education: Directions for the 1980s, 12:S117-120, 1980.
10. Olson, M., and A.H. Gillespie. Highlights of the Discussions. Journal of Nutrition Education, Proceedings of the Workshop on Nutrition Education Research: Applying Principles from the Behavioral Sciences, 13:S76-S79. 1981.

11. Drummond, T. Using the method of Paulo Freire in nutrition education: An experimental plan for community action in Northeast Brazil. Cornell International Nutrition Monograph Series 3. Cornell University, 1975.
12. Cooperative Extension System, National Initiatives, Focus on Issues. United States Department of Agriculture. Extension Services. January, 1988. 16-17 pp.
13. Wagner, P. Focus '91: Understanding nutrition in human development. Nutrition News and Reviews. Institute of Food and Agricultural Sciences, University of Florida, Gainesville, Florida. 11(2):1-4. 1987.
14. Manoff, R. New directions in nutrition education. Journal of Food and Nutrition, Commonwealth Department of Health, 40(2):60-66. 1983.
15. Haughton, B., J.D. Gusscow, and J.Dodds. An historical study of the underlying assumptions for United States Food Guides from 1917 through the Basic Four Food Group Guide. Journal of Nutrition Education, 19:169-174. 1987.
16. Nitzke, S., and S. Pathens. A snapshot summary of nutrition education research in progress. Journal of Nutrition Education, 19:266-267. 1987.
17. Egan, M. Nutrition public policy-The process and the challenges. Journal of Nutrition Education, 18:246.1986.
18. Cross, K. Adults As Learners, Increasing Participation And Facilitating Learning. San Francisco:Jossey-Bass Inc., 1981, 300 pp.
19. Schlenker, E. Development of nutrition education, In: Nutrition In Aging. St.Louis: Times/Mirror Mosby, 1984, 230-245.
20. Johnson, H. Education in an aging society. National Forum, The Phi Kappa Phi Journal, 62(4):19-21, 1982.
21. Barker, B. Understanding rural adult learners: Characteristics and challenges. Lifelong learning: An omnibus of practice and research, 9(2):4-7. 1985.

22. Knowles, M. *Androgogy In Action Applying Modern Principles of Adult Learning*. San Francisco:Jossey-Bass Inc., 1984, 468 pp.
23. Morris, L., Ed., *Extracting Learning Styles From Social/Cultural Diversity, A Study Of Five American Minorities*. Southwest Teacher Corps Network, 1978, 115 pp.
24. Lenz, E. *The Art Of Teaching Adults*. New York:Holt Rinehart, and Winston, 1985, 123 pp.
25. Boyer, J. *Teaching The Economically Poor (the Disadvantaged), Poverty and Learning Relationships*. Kansas:Ag Press Publishers, 1979, 75 pp.
26. Nitzke, S. *Reaching low-literate adults with printed nutrition materials*. *Journal of the American Dietetics Association*. 87 (Supp.):S73-S77. 1987.
27. Gillespie, A. *Communication theory as a basis for nutrition education*. *Journal of the American Dietetics Association*. 87 (Supp.):S44-S52. 1987.
28. Knowles, M. *The Modern Practice of Adult Education*. Chicago:Association Press, 1980. 1-20 pp.
29. Knox, A. *Helping Adults Learn*. San Francisco:Jossey-Bass Inc., 1986. 44 pp.
30. Conti, G., and R.B. Welborn. *Teaching-learning styles and the adult learner*. *Lifelong learning: An omnibus of practice and research*. 9(8):20-24. 1986.
31. Spitze, H. *Helping students learn to think or the purpose of the muffin lesson*. *Illinois Teacher* 29:123-124. (Originally published- *Domestic Science*. Essex, England: Fearon Publishers Inc. Hornchurch, 1964.)
33. *Webster's New World Dictionary Of The American Language, Second College Edition*. Cleveland:William Collins + World Publishing Co., 1974. p. 1046.
33. Sorcinella, G., and M. D. Sorcinella. *The lecture in adult education environment:Teaching strategies*. *Lifelong learning: An omnibus of practice and research*. 10(4):8-10. 1987.

34. Leverett, M., D. Miller, D. Wegenast, M. Yepes-Baraya, and W. Scheider. Governor Como's Nutrition Education Campaign in a low-income urban setting. *Journal of Nutrition Education*. 18:247-250. 1986.
35. Ip, S., and N.M. Betts. Food demonstration as a means of nutrition education for Cambodian Refugees. *Journal of Nutrition Education*. 18:104-106. 1986.
36. Johnson, D., and R.T. Johnson. Using cooperative learning strategies to teach nutrition education. *Journal of the American Dietetics Association*. 87(Supp.):S55-S61. 1987.
37. Knowles, M. S. Enhancing HDR with contract learning. Training and development. *The American Society for Training and Development*. 41(3):62-63. 1987.
38. Jarvis, P. *The Sociology of Adult and Continuing Education*. New Hampshire:Croom Helm, 1985, 1-45.
39. Kohn, A. *No Contest:The Case Against Competition*. Boston:Houghton Mifflin Co., 1986, 278 pp.
40. Rinke, W. Holistic education: A new paradigm for Nutrition Education. *Journal of Nutrition Education*. 18:151-155. 1986.
41. Griffin, R. *Management*. Boston:Houghton Mifflin Co., 1984. 394 pp.
42. Bloom, A. *The Closing of the American Mind*. New York: Simon and Schuster. 1987. 382 pp.
43. Petre, K., and J. Gatto. LIFESTEPS:Weight Management Program. *Journal of the American Dietetics Association* 87(Supp):S26-S29, 1987.
44. Cross, A. T. Politics, poverty and hunger. *Journal of the American Dietetics Association*. 87:1007-1010. 1987.
45. Kerwin, D.R.,A. Dolney, and D. Sthale. Member characteristics, participation, and interests: Public Health Nutrition Practice Group. *Journal of the American Dietetics Association*, 88:483-486, 1988.

46. Chapman, N. Marketing to legislators. Abstract-address at American Dietetics Association 69th Annual Meeting, New Orleans, Louisiana, October 10, 1985.
47. Kroger, M. Communicating science to the public. *Journal of Nutrition Education* 18:274-276, 1986.
48. Mays, W. W. Economics and ethics: Let them eat cake. Abstract-address at American Dietetics Association 69th Annual Meeting, New Orleans, Louisiana, October 8, 1985.
49. Hertzler, A. A., J. C. Robbins, and S.W. Walton. Assessing nutrition education needs of office workers. *Journal of Nutrition Education* 18:207-210. 1986.
50. Crockett, S. J. Adults attitudes about attending classes on healthy eating. *Journal of Nutrition Education*. 19:101-103. 1987.
51. Looker, A. and B. Shannon. Threat vs Benefit Appeals: Effectiveness in adult education. *Journal of Nutrition Education*. 16:173-176. 1984.
52. Shannon, B., and M. L. Rowan. Threat vs Benefit Appeals for motivating adults to participate in a weight-control class. *Journal of the American Dietetics Association*. 87:1381-1383, 1987.
53. Newell, G.K., H.M. Fox, W.D. Brewer, and N. E. Johnson. Strategies to improve nutrition knowledge and food behavior of mothers. *Journal of Nutrition Education* 17:10-14, 1985.
54. Kuks, B., and C. Hughes. Long-term behavioral effects of parent involvement in nutrition education. *Journal of Nutrition Education*. 18:203-206, 1986.
55. Brush, K.H., D.M. Woolcott, and G. Kawash. Evaluation of an affective-based adult nutrition education program. *Journal of Nutrition Education*. 18:258-264, 1986.
56. Giuffre, J.V. A self-care approach to WIC education. *Journal of Nutrition Education*, 16:18D, 1984.

57. Amstutz, M.K., and D.L. Dixon. Dietary changes resulting from the Expanded Food and Nutrition Education Program. *Journal of Nutrition Education*, 18:55-60, 1986.
58. Gillespie, A.H., and P. Yarbrough. A conceptual model for communicating nutrition. *Journal of Nutrition Education*. 16:168-172, 1984.
59. O'Rourke, T. How can the health professions use anthropology? The health education perspective. In: *Clinical Anthropology. A New Approach to American Health Problems?* Maryland:Shimkin and Golde University Press of America, 1986. 293-303 pp.
60. Buchholz, M. Special help for Southwest Asian Refugees. *Food and Nutrition Service. United States Department of Agriculture. Food and Nutrition*. 14(2):4-6, 1984.
61. Farkas, C.S. Ethno-specific communications pattern: Implications for nutrition educators. *Journal of Nutrition Education*. 18:99-102, 1986.
62. Gunetti, L.E., and M. B. Paquette. Nontraditional ethnic food choices among first generation Chinese in California. *Journal of Nutrition Education* 10:109-112, 1978.
63. Fitzgerald, T. K. Southern folk's eating habits ain't what they used to be if they ever were. *Nutrition Today* 14:16-21, 1979.
64. Berg, A. The Indonesia Nutrition Development Project. Malnutrition: what can be done? Published for The World Bank, 1987.
65. Edwards, K. Marketing - Use human interest to tell your story. *Adult and Continuing Education Today*. 15(9):154, 1985.
66. Park, S. C., and D. L. Moody. Marketing: A survival tool for dietetic professionals in the 1990's. *Journal of the American Dietetics Association*. 86:33-36 1986.

67. Axinn, N. W. Inappropriate technology transferred or biscuits be damned. Responding to the Needs of Rural Women, Appendix, Proceeding of a conference sponsored by the Center for Women in Development, the South-East Consortium for International Development, and the United States Department of Agriculture, May 4 and 5, 1981. Eloise Murray, Editor.

THE GAP IN THE EFFECTIVENESS OF NUTRITION EDUCATION
DELIVERY TO SELECTED POPULATIONS: POLICY MAKERS,
AVERAGE ADULT LEARNERS AND SOCIALLY/ECONOMICALLY DEPRIVED
ADULT LEARNERS

by

VICKIE STARK DIESEL

B. S., Southwest Missouri State University,
Springfield, Missouri, 1982

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the
requirements for the degree

MASTER OF SCIENCE

Department of Foods and Nutrition

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1988

Abstract

Nutrition education strives to improve nutritional attitudes and behaviors through delivery of information. A review of historical trends from 1908 to the present shows a shift in emphasis from education related to food intake to nutrition behavior education.

Adult learners comprise the majority of clients addressed by the community nutritionists. The selected adult learning groups reviewed in this report are: Policy Makers, Average Adult Learners, and Socially/Economically Deprived Learners. Current adult education theories and methods are reviewed to illustrate methods and theories which may be used effectively. Variables that inhibit adult learning, barriers to adult learning and levels of adult learning are discussed to demonstrate factors which may create gaps in effective nutrition education.

Policy Makers have not been adequately addressed by nutrition educators, the resulting gap affects the other populations reviewed. Nutrition behavior patterns of the Average Adult Learners and the Socially/Economically Deprived Adult Learners have not received appropriate attention, thus resulting in a break-down of nutrition education delivery.

Review of the cultural impact of language and communication illustrates the need for understanding communication patterns of each target group for effective delivery and marketing of nutrition education. Use of proper marketing techniques has been shown to increase effectiveness of nutrition education delivery.

In this report, gaps in the hierarchy of the nutrition education delivery system have been identified which affect nutrition education delivery to selected populations. These gaps are the result of: 1) lack of identifiable education theory or methods in nutrition education, 2) limited knowledge by nutrition educators of learning characteristics of adults, 3) need for advocacy training of nutritionists, 4) limited understanding of the language, culture, or needs of selected adult groups, and 5) need for greater use of marketing-type techniques in delivery of nutrition education.

Recommendations for closing the gaps in the nutrition education delivery system to these selected populations include: 1) nutritionists should show greater involvement in the advocacy process to influence Policy Makers, 2) nutrition education for the Average Adult Learner should be based on cognitive and behavioral learning theories,

3) nutrition education for the Socially/Economically Deprived Learner should consider the physical barriers to learning and basic skills of the group, 4) Wolf J. Rinke's Holistic Education Theory should be used in the development of a nutrition education theory, 5) nutritionists should have ongoing training in adult education methods and 6) future nutritionists should have coursework in nutrition education to prepare them to meet the education needs of all adults.