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**COMPARATIVE RATINGS OF PRINTED NUTRITION
MATERIALS DEVELOPED BY INDUSTRY
AND GOVERNMENT PRODUCERS**

by

Cheryl L. Holmes

**A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Educational Leadership**

**Western Michigan University
Kalamazoo, Michigan
August 1981**

COMPARATIVE RATINGS OF PRINTED NUTRITION
MATERIALS DEVELOPED BY INDUSTRY
AND GOVERNMENT PRODUCERS

Cheryl L. Holmes, Ed.D.

Western Michigan University, 1981

The question as to the appropriateness of using materials developed by industry in the nation's classrooms has been raised by educators for many years. Some educators have urged that the use of these sponsored materials be banned totally as teaching tools in the schools; others have indicated that these sponsored materials provide an excellent alternative to textbooks, and are often more current than textbooks when the content is controversial or the subject is one for which new information is often available.

The purpose of this study was to investigate the quality of selected supplemental, printed nutrition education materials developed by three identified producer units for use in the classroom. These three producer units were: (a) food industry, (b) food industry association, and (c) government agencies.

Information was also provided from which discrepancies between rater types could be identified. The perspectives and functions of raters, representative of various educational occupations, were recognized as potentially different in their ratings of the same materials. Thus, in this study the group of educators making the judgment of the quality of nutrition materials were of three types: (a) classroom teacher, (b) curriculum specialist, and (c) nutrition

*

specialist.

To conduct this comparative analysis of nutrition materials sponsored by food industry, food industry associations, and government agencies, an instrument was developed which contained the designated evaluative criteria to measure the quality of the materials for two variables: format and content.

Representatives of the three producer units were identified as the major producers of free and/or inexpensive nutrition education materials published for use in the nation's classrooms. Four materials, each representing one of the four food groups, were randomly selected for rater review for both the food industry and food industry association. Two materials were randomly selected from the two government agencies most recognized for their production of nutrition materials used in the classroom. These materials were not representative of one particular food group per se, but of general nutrition itself. The independent variable, raters, were selected from three categories of professional occupations. Thirty raters were selected from each professional occupation, for a total of 90 raters, in this analysis.

There were two major hypotheses identified for investigation. These two hypotheses were stated in null form, and indicated that there would be no difference in overall format and general content qualities for the three producer units of materials and there would be no difference in the ratings assigned to the three producers of materials by the three rater types. A one-way analysis of variance was selected as the statistical procedure to identify if there were

differences in the producer categories or rater types for material analysis.

It was not possible to reject the null hypotheses in this study. This failure to reject the null hypotheses limited the impact of the study, and prohibited making recommendations as to the appropriateness of using industry, industry association, and government sponsored sources of printed nutrition education materials in the classroom. The wide variance of ratings of materials within each of the producer categories indicated that the quality of materials varied substantially from each of the producer units.

ACKNOWLEDGMENTS

No one owns his own life. Everyone--no matter how insignificant--has an effect on someone else, just as a stone sends out ripples when cast into still waters.

--Paul Lowney

Many individuals have sent out both ripples and major tidal waves into my life. These "significant others" have touched my life by their continuing demands for excellence, their belief in my abilities both as a professional and as a student, and their caring for me as an individual. Many thanks, much gratitude, and love needs to be expressed to the following individuals:

Carolyn Shafer, Executive Director of the Dairy Council of Michigan, has given generously of her time, talent, and self in nurturing my growth as a professional. Her encouragement, high standards for performance, and excellent example have assisted in providing me with both an outstanding role model for professionalism and greater insight into the challenges and demands of a successful administrator. Much gratitude is owed to Carolyn Shafer for her flexibility and positive support of my pursuit of the doctoral degree while serving as my employer.

Dr. Mary Anne Bunda, chairperson of this doctoral study, has given invaluable assistance in the development and writing of this dissertation. She provided laughter when my perspective was lost; consistent positive support, hours of labor in guiding this project to completion, much patience, unwavering support of this study, and the highest of standards for quality performance. It has been a

great privilege to have Dr. Mary Anne Bunda serve as my dissertation chairperson.

Dr. Carol F. Sheffer, academic advisor and committee member, continued to express belief in my abilities to accomplish established goals, and gave encouragement, guidance, and assistance in making these goals become a reality. Her extremely high standards for performance in all aspects of my doctoral studies provided an excellent challenge and base for my academic growth. Much appreciated was her ability to pause during a hectic day as department chairperson and provide an encouraging word, empathetic smile, or needed challenge. Her caring for all students and her willingness to share her time and expertise make her an outstanding role model in my educational process in education administration.

Dr. Michael Stoline, committee member, provided tremendous talent and innumerable hours in solving a critically needed statistical equation so that data could be used in this study. His patience in explaining the statistical problems and equations, sense of humor, interest in the dissertation, and continued positive support for me as a student, were phenomenal. Much, much gratitude is owed to this individual for his efforts in my behalf.

Dr. James Sanders, committee member, gave consistent and excellent assistance in the development and writing of this dissertation. He provided many helpful insights into the design of the study and the interpretation of the data; much patience with my statistical limitations; and positive support at all times. It has been a privilege to both study statistics under his direction and to have him

serve as a committee member for this dissertation.

Dr. Judy Brun, Nutrition Education Evaluation Specialist for the National Dairy Council, gave excellent assistance throughout this research project providing valuable insight and many useful research studies.

The raters in this study, i.e., classroom teachers, curriculum specialists, and nutrition specialists, gave very generously of their expertise and time. Without their effort, this study would not have been feasible.

Family and friends are listed last, but definitely, not least. Their acceptance of my goals, encouragement, and support when I was faced with the inevitable difficulties of a doctoral program, and their total belief in my abilities to meet the challenges, is greatly appreciated. Especially appreciated is their love for me and their understanding and acceptance of my chosen pursuits in life.

Cheryl L. Holmes

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DEVELOPED BY INDUSTRY AND GOVERNMENT PRODUCERS

Western Michigan University

Ed.D. 1981

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TABLE OF CONTENTS

ACKNOWLEDGMENTS	11
LIST OF TABLES	viii
CHAPTER	
I THE RESEARCH PROBLEM	1
Introduction	1
The Debate on the Use of Sponsored Classroom Materials	2
Statement of the Problem	6
Summary	10
II REVIEW OF THE LITERATURE: NUTRITION	11
Introduction	11
Nutrition Defined	11
Practical Applications of the Science of Nutrition	12
Nutrition Education	21
Summary	27
III REVIEW OF THE LITERATURE: EVALUATION	28
Introduction	28
Education Evaluation: Definitions and Goals	28
Curriculum Evaluation	34
A Review of Evaluated Nutrition Programs in the Secondary Schools	47
Selecting an Instrument to Evaluate Printed Materials	54
Summary	62

CHAPTER

IV	DESIGN OF THE STUDY	64
	Introduction	64
	Identification and Description of the Independent Variables	64
	Identification and Description of the Dependent Variables	70
	Instrumentation	71
	Materials Population	77
	Population of Raters	80
	Assignment of Raters to Products	83
	Hypotheses	87
	Data Analyses Procedures	87
	Summary	89
V	FINDINGS	92
	Introduction	92
	Data Collection Procedures	93
	Findings and Discussion of Hypothesis 1	97
	Findings and Discussion of Hypothesis 2	109
	Summary	115
VI	DISCUSSION AND CONCLUSIONS	117
	Introduction	117
	Review of the Findings	118
	Limitations of This Study	120
	Value of the Study	123
	Future Research Recommendations	124
	Summary	125

APPENDICES	128
A Criteria to Evaluate Written Materials	129
B Criteria to Evaluate Written Materials	138
BIBLIOGRAPHY	143

LIST OF TABLES

1. Summary of Comprehensive Qualities for Selected Rating Tools	62
2. Numerical Depiction of Nutrition Materials Provided by Selected Food Industries, Food Industry Associations, and Government Agencies for Classroom Use	79
3. Summary Table of the Design of the Study	85
4. Pattern of Materials Distributed to Each Rater According to Each Producer Type	86
5. Pattern of Materials Distributed to Each Nutrition Specialist Rater	95
6. Feasibility of Pooling Data Using F-Probabilities From the Ratings of Home Economics Teacher (HET) and Curriculum Specialist (CS) Raters	99
7. Ratings of Home Economics Teachers and Curriculum Specialists for Each Material Rated in the Industry Producer Category	102
8. Ratings by Nutrition Specialists for Each Material Rated in the Industry Producer Category	103
9. Ratings by Home Economics Teachers and Curriculum Specialists for Each Material Rated in the Industry Association Category	105
10. Ratings by Nutrition Specialists for Each Material Rated in the Industry Association Producer Category	106
11. Ratings by Home Economics Teachers and Curriculum Specialists for All Materials Rated in the Government Producer Category	107
12. Ratings by Nutrition Specialists for All Materials Rated in the Government Producer Category	108
13. Ratings by the Three Rater Types for Industry Produced Materials of Format and Content	111

14. Ratings by the Three Rater Types for Industry Association Produced Materials for Format and Content	113
15. Ratings by the Three Rater Types for Government Produced Materials Rated for Format and Content	114

CHAPTER I

THE RESEARCH PROBLEM

Introduction

Since the invention of the printing press, printed matter has been the major method of storing and transmitting information. Woodbury (1978) noted that it is still our major conveyor of information, and "in school situations, the study of printed matter occupies about 62.5% of classroom time" (p. 25). Woodbury further identified that, while instructional materials play a central role in education, there is surprisingly little usable research on their actual use; or to what extent the teachers actually determine the course of their instruction, or adapt or fill classroom time with these materials.

Lortie (1975) identified that today one finds numerous curricula for a given subject and a given grade level. He noted that the novel ways of teaching students are systematically disseminated by change agencies, with government and private donors offering incentives to school systems preparing to adopt particular innovations. He stated,

Today thousands of people are engaged in research, development and dissemination, and the machinery for producing educational knowledge is still building . . . the superstructure of people involved in education but working outside schools is increasingly influential. The result of this activity is a marked increase in the options available to those making educational decisions at all levels. (p. 216)

For the past 20 years, there has been a great quantity of free and inexpensive materials made available to teachers for use in their

classrooms by government and industrial sources. Promotion and use of these sponsored educational materials has become a concern to many educators. The National Education Association (1977) estimated that at least one half of the teachers in the United States use industry and/or government sponsored materials in the classroom.

The Debate on the Use of Sponsored Classroom Materials

The question as to the appropriateness of using materials developed by industry in the classroom has been raised by educators for many years. In 1929 the need was presented by the National Education Association for a guide to evaluate industry materials, and for greater teacher discretion in selecting industry materials for use in the classroom (Harty, 1979). The American Association of School Administrators (1955), in their booklet Choosing Free Materials for Use in the Schools, cited the potential market represented by the captive audience of over 30 million children, and the obviously poor quality of some of the materials as factors which should be recognized in using these materials.

The Center for the Study of Responsive Law, under the direction of Dr. Harty, recently sponsored a study of industry developed materials designed for use in the classroom. This study was in response to a growing concern that industry was more interested in the ability to promote sales of a product than with its stated intent of education. Harty (1979) indicated that she found the bottom line objective of most industry materials reviewed to be sales promotions.

Representative Richmond (1978), as Subcommittee Chairman for the Subcommittee on Domestic Marketing, Consumer Relations and Nutrition of the House Agriculture Committee, sharply criticized food industry nutrition efforts as "nothing more than product promotions" (p. 10). This criticism was given, but he further stated that "there were a number of individual industry activities that are praiseworthy for their scope, quality, and accuracy" (p. 10).

In a recent editorial in Phi Delta Kappan, Editor Elam (1980) stated that textbooks do not keep up well with the fast changing topic areas like energy or nutrition. Some corporations, according to Elam, have produced excellent materials. Woodbury (1978) noted that, while free materials are issued by a producer to promote a point of view, if "they are from a variety of sources, they will represent a range of viewpoints" (p. 30). She further identified that free materials have a high interest value and a potentially positive correlation with the classroom curricula. Yet, welcome as free materials may be, Woodbury (1978) cautioned that they should meet the same criteria as purchased materials.

The status of sponsored instructional materials was discussed in a report published by the Joint Committee on Cooperation of Business and Industry of the National Council of Social Studies (1963). They stated,

Sponsored instructional materials can add substantially to the variety, timeliness, and depth of teaching. They can motivate, interact, serve as a reservoir of information, present points of view forcefully and meaningfully, and extend the range of direct experience. (p. 2)

The Committee also stated that as a supplement to the textbook, sponsored materials have certain advantages. They can be more up-to-date and dramatize the subjects effectively. Jarolimek (1971) stated that industry materials have become a valuable resource for the teacher. He noted that the firms which produce these materials have realized that if materials are to meet the needs of the classroom teacher, the advertising aspects of these materials would have to be kept to a minimum, and the factual materials objective and honest. Hug (1978) further identified that some educational materials produced by industry are among the best available. He stated, "Many industry materials are at least as good as those produced by publishing houses . . . educational materials, including those produced by industry, play essential roles in instruction" (p. 63). Duvall (1973) noted that use of industry materials in the classroom is encouraged by recognized experts in the field of social studies, science, and other disciplines, even with the given limitations imposed upon the materials by the fact that they are industry sponsored.

From a financial perspective, industry is able to provide educators with classroom materials which may not otherwise be purchased by the schools. According to the Educational Products Information Exchange Institute (1978), a consumer-based evaluation service for educators, schools spend 1% of their budgets on instructional materials. According to this report, the need for classroom materials must compete with continued salary demands and high overhead for utilities and food services. Harty (1979) challenged the use of industry materials in the classroom based on a school's financial need. Harty

(1979) stressed that, "curriculum materials should be purchased from public monies and profit making private interest should not be in the business of producing curriculum materials" (p. 3).

Public monies do provide numerous supplemental curriculum materials. Seavey and Hathaway (1979) stated that "the Government Printing Office is the largest publisher in the world, with three basic sources of listings especially useful for schools" (p. 34). The Office of Education, according to Boyd and Rips (1952), issues publications in all educational fields and educational levels. The publications of this office are generally more known than those of any office or bureau in the government. Moorehead (1975) noted that the Office of Education dispenses "seven percent of the total U.S. expenditures for education, and its operations and publications cover every area and level of formal educational activities" (p. 189).

LaHurd (1978) identified that there are over 1,200 educational depositories for publications of the federal government housed in public, college, university, and law libraries. There are two depositories in each state designated by each Senator, two depositories in each Congressional district, and depositories in all land grant colleges. The government documents contained in each of these depositories are available for examination by the public, including teachers and students, without charge. Richmond (1977) noted that there are 30 federal programs spending more than \$70 million each year to inform and educate the American public about food and nutrition.

Examining nutrition education and the role of both industry and the federal government as producers of supplemental materials used in the nation's classrooms, Todhunter (1979) stated that "government alone cannot be responsible nor can a single agency, organization, institution or group accomplish what is needed" (p. 2). He further said that industry has had successful experience in working with the specialized methods and materials developed to serve today's consumers. He discussed the fact that business organizations have had expertise in professional personnel and resources to create and distribute imaginative and reliable publications for educational programs at all levels.

The Educational Products Information Exchange Institute (1978) published a report by E. J. Amrein Professional Associates commissioned by the National Textbook Company. This study, conducted in 1976-77, was designed to assess classroom teacher's use of a single, comprehensive textbook in the classroom. The trends identified were the decline of the single, comprehensive textbook and the increased use of many different kinds of instructional materials. Hug (1978) noted that the pervasiveness of many different kinds of instructional materials "requires the objective applications of criteria and methods for selection and use without regard to the producer or sponsor" (p. 63).

Statement of the Problem

It is estimated by the National Education Association (1977) that at least one half of the teachers in the United States use

industry materials in the classroom. The question as to the appropriateness of using materials in the classroom developed by industry has been of concern to some educators for many years.

In response to this question, various educational agencies and associations have developed evaluative criteria for assessment of industry sponsored materials prior to their utilization in the classroom. In 1953, the Association for supervision and Curriculum Development developed a handbook for teachers entitled, Using Free Materials in the Classroom. In 1955, the American Association of School Administrators published a more critical guide entitled Choosing Free Materials for Use in Schools, which was developed for use by the classroom teacher. Further evaluation instruments, especially checklists, have been developed throughout the years to evaluate industry sponsored materials designed for use in the classroom. None specifically exists which will assist the educator in evaluating nutrition education materials at the high school level developed by industry for use in the classroom. There is also no data base which will allow comparison of nutrition education materials developed by industry and industry associations with those developed by government agencies to show the comparative comprehensiveness and fairness of these sources of nutrition materials.

Hicks (1977) pointed out that in the frantic rush to keep up with the increased demand for nutrition information and educational materials, a great many companies, not for profit organizations, and mass individual authors "whipped up" educational materials and mass merchandised them. Many, according to Hicks, have been carefully

prepared, reviewed by experts, and tested with the intended audience. However, much of the available nutrition education material has been quickly conceived and developed by people lacking basic knowledge in the subject. These materials are very likely to be inaccurate and/or ineffective.

Nutrition related organizations have no official criteria for evaluating the quality of educational materials, but the standards developed by other education related organizations could well apply. All have developed guidelines for their constituencies in selecting education materials (Hicks, 1977). Boyd and Rips (1952) stated that "selection is as important for government publications as for any other type of material one acquires" (p. 555).

The purpose of this study was to compare, on two selected evaluative criteria from alternative perspectives printed nutrition education materials designed for use in the classroom by individual food industries, food industry associations, and government agencies. The nutrition education materials were evaluated on two major criteria: format and content.

To conduct this comparative analysis of nutrition education materials designed for use in the classroom, an evaluation instrument was identified which contained the designated evaluative criteria. This instrument analyzed for discrepancies in the three sets of nutrition materials identified for classroom use provided by individual food industries, food industry associations, and government agencies.

The selected instrument was also used to provide data from which discrepancies between rater types could be identified. Vernon (1965)

stated that value definitions permit man to "rank or locate things along some value scale" (p. 98). He further identified that value definitions grow out of association with others and this acceptance of common value definitions is one method of binding a group together. Cohen (1964) noted that people do not exist in isolation, but their thoughts, attitudes, and actions are inextricably interwoven with those of other people with whom there is involvement in a network of responsibility and mutual regard. These people constitute reference points for opinion and action to be shaped.

As different perspectives from individuals in specific professional organizations might look at materials differently, it was necessary to know if their role made a difference in the ratings of the nutrition materials. Thus, in this study the group of educators making the judgment of nutrition materials were of three educator types: (a) classroom teacher, (b) curriculum specialist, and (c) nutrition specialist.

The classroom teacher was recognized as an important source of materials evaluation as he/she is the actual consumer of these materials. The curriculum specialist was identified as an educator who has a specific responsibility to review, recommend, and integrate classroom materials into the total school curriculum. The nutrition specialist was noted as serving an important educational role as the watchdog of specific nutrition content of the classroom materials.

This study sought to use a methodology for examining nutrition education materials developed by the individual food industries, food industry associations, and government agencies. This methodology was

used by the three identified educator types: (a) classroom teachers, (b) curriculum specialists, and (c) nutrition specialists.

Summary

The purpose of this study was to evaluate the quality of selected supplemental, printed nutrition education materials developed by three identified producer units for use in the nation's classroom. These three producer units were: (a) food industry, (b) food industry association, and (c) government agencies. The materials were rated by three rater types: (a) classroom teacher, (b) curriculum specialist, and (c) nutrition specialist. Systematic differences due to either raters of materials or the producers were identified.

This study was established in response to a report of the study of industry developed materials designed for use in the classroom sponsored by the Center for Responsive Law under the direction of Harty (1979). Harty's study indicated that the bottom line objective of most industry materials were sales promotion. Hicks (1977) also pointed out that in the rush to meet the need for nutrition education materials for use in the classroom, many industry sponsored materials have been "whipped up" and merchandised. Yet Hicks also indicated that many materials have been carefully prepared, reviewed by experts, and tested with the intended audience. Thus, it was determined that materials from the three major producer categories of free and inexpensive nutrition education sources be evaluated on selected evaluative criteria from alternative perspective.

CHAPTER II

REVIEW OF LITERATURE: NUTRITION

Introduction

The purpose of this chapter was to review the literature as it related to the science of nutrition. The material has been divided into three categories and is presented as follows: (a) a definition of nutrition, (b) practical applications of the science of nutrition, and (c) an overview of nutrition education: its definition, curricula, and status in the public schools.

Nutrition Defined

People throughout history have been told what to eat and what not to eat. Earliest recommendations, for the most part, were based on personal experience or on folklore (White, 1979). Interest in food and what happens to it in the human body remained in the philosophical realm until scientific facts were validated and principles formulated in several fields, especially physics and chemistry. These two subjects became the basis for the science of nutrition (Hill, 1976).

The White House Conference on Food, Nutrition, and Health (1970) defined nutrition simply as "the process by which food and other substances become you" (p. 4). Deutsch (1976) provided a similar definition with his statement that "nutrition is the study of foods and their effects on health, development, and performance of the

individual" (p. 5).

Mitchell, Rynberger, Anderson, and Dibble (1968), Fleck (1971), Robinson (1975), and Whitney and Henrietta (1977) defined nutrition as the study of nutrients and of their digestion, absorption, metabolism, interaction, storage, and excretion. Whitney and Henrietta (1977) further elaborated that the study of nutrition included the study of environment and of human behavior as it relates to the science of nutrition. Mitchell et al. (1968) expanded the nutrition definition to include the purpose of the maintenance of body functions and of the growth of tissues.

Hill (1976) defined nutrition as simply, "the control of health insofar as it is affected by the food we eat" (p. 1). Arlin (1972) viewed nutrition in similar manner as "the relationship between life and food" (p. 1). Guthrie (1971) identified that the science of nutrition has many definitions but most simply it has been expressed as the "science of nourishing the body properly, or the analysis of the effect of food on the living organism" (p. 1).

Practical Applications of the Science of Nutrition

Recommended Daily Allowances

To determine actual nutrient needs of individuals, the Food and Nutrition Board of the National Academy of Sciences-National Research Council, established the Recommended Dietary Allowances. These were established to provide actual standards of nutrient intake for a wide range of age, sex, and weight groups (Deutsch, 1976). The Recommended

Dietary Allowances, commonly referred to as the "RDA's," were first published in 1943 (National Research Council, 1980). The purpose was "to provide standards serving as a goal for good nutrition" (p. v). The Council further pointed out that those allowances were not considered permanent but were recommendations based on the best scientific knowledge of that time. Since the initial 1943 meeting, the RDA's have been revised at approximately 5-year intervals as additional data became available.

Munro (1980) noted that the recommended dietary allowances "are intended to provide for the needs of essentially all healthy people in the U.S. population" (p. 1). Therefore, the levels of specific nutrients are set at a level sufficiently high to cover the upper limit of the range of individual needs.

The Recommended Dietary Allowances are used extensively by the U.S. Department of Agriculture and other agencies in estimating food requirements and meal patterns for special food services, school lunch, and various feeding programs. The RDA's are used by federal, state, and local health and welfare agencies in licensing and certification standards for virtually all feeding programs (Brown, 1979).

The U.S. Recommended Daily Allowances

The U.S. Recommended Daily Allowances were developed by the Food and Drug Administration for the nutrient content labeling of foods. These U.S. Recommended Daily Allowances are the values of the Recommended Dietary Allowances established as nutrient needs by the National Research Council in percentage form for the eight major

nutrients found in foods. These major nutrients include: protein, vitamin A, vitamin C, thiamin, niacin, riboflavin, calcium, and iron. Calories are presented in actual grams per serving for each food product (Deutsch, 1976). Whitney and Henrietta (1977) identified that to provide information for all age and sex categories on one nutrition information label would not be feasible. Therefore, "the highest value for each nutrient given by the National Academy of Sciences for each of the specified age/sex categories was selected as the needed amount of that nutrient" (p. 417).

Brown (1979) noted that the U.S. RDA are a good index of the nutritive value of foods and can serve as a means of comparing the nutritive contributions of foods to the total diet. However, she further noted that "without education as to how to use the nutrient information on the label, information may be counter-productive" (p. 10). Brown elaborated that in the case of highly fortified foods, only a few essential nutrients are listed on the label. A highly fortified food may contain 100% of the nutrients listed, but will not necessarily provide any of the many other essential nutrients. This, according, to Brown (1979), could be misleading to the consumer.

Classifying Foods into Food Groups

Brown (1979) identified that

When working with the layperson it has been customary to categorize foods into specific groups as a means of translating the Recommended Dietary Allowances into a meaningful system that can be used in planning diets. (p. 9)

Deutsch (1976) discussed the use of food groups as an instructional method since the science of nutrition began to take shape in the 1930's. He stated that "greatest success was found with the Basic Eleven" (p. 290). This method, which placed foods into 11 categories, soon proved to be cumbersome. Gradually, it was believed that the individual food groups could be enlarged and the whole concept simplified. This concept was modified to first the Basic Nine, then the Basic Seven, and finally to the more current Basic Four.

The Basic Four foundation food groups include the dairy group, meat and/or meat alternate group, fruit and vegetable group, and the grain group. Different patterns of nutrients appear in broad families of these food groups. Deutsch (1976) pointed out that the dairy group contributes high levels of calcium, riboflavin, and protein to the diet; meat and meat alternates contribute protein, niacin, thiamin, and iron; fruits and vegetables provide high levels of vitamins A and C; and the grain group provides thiamin, niacin, and iron.

Brown (1979) identified that the Four Food Groups have been used in the United States for some time, but are currently under some criticism as to usefulness. Opponents suggest that this method is too simplistic. Brown did note, however, that "the Guide as a concept has been a simple and effective means of communicating nutrition information to the general public" (p. 9).

United States Dietary Goals

In 1968, the United States Senate created A Select Committee on Nutrition and Human Needs which held hearings on the importance of nutrition in health and the nutrition problems present in this country that require attention (U.S. Senate, 1969). From this initial meeting it was determined that there was a need for a National Nutrition Policy. This belief was based on research data accumulated during the decade which focused attention on the interrelationship of environment and health, and the fact that six of the 10 leading causes of death in the United States had been statistically associated with diet. These diseases include heart disease, cancer, cerebrovascular disease, diabetes, arteriosclerosis, and cirrhosis of the liver.

These diseases were viewed as an integral part of the environment which can be modified through diet, according to the U.S. Senate Select Committee on Nutrition and Human Needs (1977). This committee, chaired by Senator McGovern, published a report in 1977 entitled, Dietary Goals for the United States. This report provided practical guidelines to the individual consumer and set dietary goals for the United States as a whole. In essence, this report called for reduction or elimination of certain foods in the belief that these foods may be involved in the etiology of various diseases. Specifically, the entire population was urged to decrease its use of sugar, salt, and fat.

Much controversy arose over these Dietary Goals for the United States. In opposition, there were numerous medical and dietetic related associations who cited the Select Committee's lack of evidence to support the implication that achieving the goals would reduce the incidence of the "killer diseases." It was also believed that little concern was given to a major nutritional problem in the United States: obesity (Harper, 1979). Another major problem, that of dental health in the United States, was not addressed directly. The focus of the Dietary Goals report with respect to this problem centered on reducing sugar consumption by 40%, but did not address the major dental problem of sticky carbohydrate consumption. It also did not provide evidence to show that reduction of sugar from 100 to 60 pounds per person annually would reduce dental caries (Harper, 1979).

Kummerow (1977) identified that the major error in the dietary goals report was the recommended reduction of specific food items without proof that the consumption of these items would decrease the identified killer diseases for which these recommendations were established. Many generations have consumed the identified foods in quantity, according to Kummerow (1977) and the population groups studied may have 10 to 20 times lower coronary heart diseases, or other killer diseases, than population groups for which a food item was eliminated. Thus, while certain foods may be associated with the killer diseases when consumed in quantity, there is no proof that reduction of these foods in the American diet will decrease the incidence of diseases identified.

Numerous other health professionals objected to the lack of a defined role for implementation of the dietary goals. Leveille (1978) objected to the implication that the United States has been a nation without dietary goals. He cited the Recommended Dietary Allowances which has served the United States since 1942, and noted that these RDA's differ from dietary goals in that they base requirements for known nutrients and provide an allowance that will meet the needs of almost all individuals. The Dietary Goals attempt to provide guidelines for prevention of diseases, but not on a sound scientific basis.

Because of these many arguments, the Dietary Goals for the United States were withdrawn as first published and revised. This revised edition was entitled, Nutrition and Your Health--Dietary Guidelines for Americans (U.S. Department of Agriculture, 1980). This final report included both suggestions for basic goal patterns and suggestions of how these were to be achieved. This edition improved upon the earlier report by refining some of the original goals, adding sections on obesity and alcohol consumption, and more fully representing the scientific controversies which exist.

This report, Nutrition and Your Health--Dietary Guidelines for Americans, was authored jointly by the U.S. Department of Agriculture and the Department of Health, Education and Welfare, but was based on the original congressional committee report by the U.S. Senate Select Committee on Nutrition and Human Needs (1977). It has been accepted and adopted for use by the federal, state, and local government agencies, as well as by many related health agencies. It was printed

with the intent that all county and state health departments and agencies would distribute to its clients and to area consumers.

White House Conference on Nutrition

The White House Conference on Food, Nutrition and Health was held in 1969. This White House Conference resulted in more definitive and urgent directives in nutrition education. Five recommendations, reported in the Journal of Nutrition Education ("Recommendations of Panel," 1970) particularly noted as important included:

1. That a person with a nutrition education background and essential personal qualifications be designated to coordinate nutrition education activities and nutrition services at state and local levels. . . .

2. That a comprehensive and sequential program of nutrition education be included as an integral part of the curriculum of every school in the United States and its territories. . . .

3. Because of continuous expansion of knowledge in nutrition and food science, advancement in food technology, and developments in educational techniques, a strong continuing education program must be provided both for teacher educators and school personnel. . . .

4. A unified and intensified thrust in community nutrition education is needed involving all segments of the community, and that legislation be enacted to fund and support out-of-class efforts to strengthen food habits and to eliminate hunger and malnutrition in all segments of the population. . . .

5. The development of a bold, vigorous program in popular education in nutrition is imperative to assure that everyone in America has the best possible knowledge of how to feed himself properly. . . . (pp. 25-37)

Brun (1980) noted that the White House Conference on nutrition provided "an awakening process" which took many directions. Some of these include Congressional committee hearings and staff studies

which have made more visible the current problems in nutrition education; the development of the Dietary Goals for the United States by the staff of the U.S. Senate Select Committee on Nutrition and Human Needs; establishment of supplemental feeding programs for disadvantaged children; and special effort by the government to assess and provide assistance to the nation's public schools in the area of nutrition education curricula development.

Federally Mandated Health Programs

The Federal Government's response to the White House Conference on nutrition resulted in the first federally mandated nutrition education program for children with the 1977 Food and Agriculture Act. This 1977 Act appropriated \$26 million to fund state education programs through the Department of Agriculture's Food and Nutrition Service. This pioneering program, known as the Nutrition Education and Training Program, is tied closely with the child nutrition programs' educational potential (U.S. Department of Agriculture, 1979).

The major emphases of this nutrition education program are identified by the U.S. Department of Agriculture (1979) as follows:

1. To educate children as to the relationship between the nutritional value of foods and good health.
2. To train food service personnel in the principles of good nutrition and food service management.
3. To inform educators of the principles of nutrition and available resources.
4. To develop useful educational materials, aids and curricula. (pp. 18-19)

Currently, 45 states, Puerto Rico, the Virgin Islands, Trust Territories of the Pacific Islands, the Commonwealth of the Marianas, and American Samoa are participating in this federally mandated program.

Nutrition Education

Nutrition Education Defined

Nutrition education, according to Harper (1979), is "part of the practice of nutrition" (p. 171). Robinson (1968) pointed out that "nutrition education affords the greatest opportunity for the individual to control the quality of his health and well-being" (p. 454). It is further discussed by Ullrich (1972) that nutrition education can save lives, perhaps not as quickly nor as dramatically as a cure for drug addiction, but through optimal nutritional health throughout life.

Johnson (1965) encouraged that the first question in nutrition education ought not to be how much or what nutrition information should be provided, but rather what one is attempting to achieve. He further encouraged that nutrition education be related to some action, not just the storage of scientific information. Robinson (1968) reiterated this belief with the statement that,

action results in changes of behavior. It can settle for nothing less than the creation of awareness and interest, the seeking and acquisition of knowledge, the motivation to change and the adoption of some new behavior patterns. (p. 454)

Arlin (1972) noted that people are exposed to nutrition education through example and instruction, beginning in the high chair and continuing through family experience, cultural indoctrination, and the framework of formal education. The American adult, according to Arlin, encounters nutrition advice in books, newspaper, radio, television, magazines, the food industry, adult education, and federal agencies.

An understanding of science as a method of obtaining objective knowledge, according to Harper (1979), assists the individual in distinguishing between opinions based on speculation and those based on scientific knowledge. Leverton (1974) pointed out that the promotion of sound nutrition education is often met with a hostile environment, as can be seen with the prevalence of misinformation.

A major cause of malnutrition, according to Arlin (1972), is ignorance of the facts about nutrition. Yet, the problem is not lack of information, but overabundance of misinformation. Not encouraging, Barnette and Bianca (1978) stated that it is probable that, "As the diversity and complexity of the food supply increases there will be even more complex issues and problems which will impact upon our nutrition related practices and outcomes" (p. 65).

Education in nutrition serves society in two ways, according to Griffen and Light (1975). Traditionally, it acts as a conserving force which maintains the viability of culture, but it also is an innovative and adaptive force contributing to the adjustment of contemporary problems and conditions. He stated that the power of nutrition education to "effect significant, sustained and constructive

changes in nutrition behavior will depend on the value placed by society on these changes and the rewards sanctioned by the community as appropriate recompense for success" (p. 25).

White (1976) presented the notion that nutrition education is involved in value setting to provide a method for evaluation of one's goals for life. It establishes the risk benefit relationship of life challenges. Ultimately, White perceived nutrition education as reaching people before they are required to make independent judgments. Mackenzie and Arbor (1979) supported his belief that nutrition education should begin in the early years. They stated "because of the need for good food habits in the early years of life, nutrition is important as a concept to be incorporated in the curriculum for the elementary child" (p. 138). However, MacKenzie and Arbor (1979) pointed out that of all ages the teen-age girl or boy is apt to offer the greatest challenge for the teacher of nutrition. Effective approaches for teaching nutrition to the 14 to 17 year old student are difficult to find.

Nutrition Education Curricula

With the growing awareness of the importance of nutrition education at the K-12 level has come an increased number of curricula materials designed to assist in this effort (Maretzski, 1979). McAfee and Hughes (1976) pointed out that from the variety of teaching methods, activities, and materials included in current curricula, it must be assumed that effective nutrition education is not intrinsic to one method of presentation. Rather, he stressed that curricula

should be adaptable to the diversity of instructional programs in our schools and the variety of teachers and students for whom they are designed to serve.

Leverton (1974) stated that nutrition education is a multidisciplinary process that involves the transfer of information, the development of motivation, and the modification of food habits where needed. Maretzski (1979) suggested that nutrition education should complement the child's changing perception of both food and what takes place in the body, as these perceptions evolve through observation and analysis to insight and conclusion.

McAfee and Hughes (1976) proposed that "nutrition education programs must elicit personal meanings on the part of students" (p. 63). They further identified that personal meanings are concerned with learning in all its aspects: thinking, feeling, and acting. Students should recognize, according to McAfee and Hughes, that no single nutritional pattern is "best," but rather that the adequacy can be achieved by a variety of social and cultural food selection patterns.

Barnette and Bianca (1978) reinforced this need for nutrition education curricula to present the relationship between social and cultural factors that affect food purchasing, eating patterns and habits of different families, and the influences of foods on social interaction.

It is well established that behavior is more likely to be changed or modified when it is associated with an immediate and identifiable benefit. Unfortunately, Guthrie (1978) pointed out

that for those nutrition educators who hope to actively change nutritional behavior through education, there are few immediate benefits associated with improved diet practices. She further suggested that nutrition methods, like messages, must emphasize variety in the recognition that results come slowly. White (1976) stated that "nutrition education is involved with value settings" (p. 54). He further identified that this value setting is a procedure for evaluating one's goals for life and establishing a risk-benefit relationship of life's challenges.

Nutritional Education Status in the Public Schools

Brun (1980) noted that interest in and concern for nutrition education has been fairly continuous. Experimental school nutrition programs in a given period of time have reflected current ideas of leaders in nutrition education. The more recent ones, according to Brun (1980), have incorporated modern nutrition education concepts. Yet, such concepts have not been widely accepted and adopted. Brun pointed out that the nation's schools have not made any significant gains in its actual numbers of nutrition education programs.

Reports of specific nutrition education programs designated for grades 7 through 12, and actually taught in the classroom, can be divided into two categories: nonevaluated or subjectively evaluated and those which were evaluated. The nonevaluated or subjectively evaluated programs provided ideas for learning activities for students which other nutrition educators could utilize in their

classrooms, according to Brun (1980). However, the omission of evaluation procedures eliminated the ability of the developers of these teaching activities to determine their actual effectiveness as a learning tool.

Lack of evaluation was identified as the result of funding, time, and expertise. Green (1977) identified, in the related area of health, some problems peculiar to health education research. He noted that researchers face several dilemmas with inadequate methodologies, such as: rigor vs. significance, internal vs. external validity, and experimental vs. placebo effects.

The methodological dilemma of long vs. short term evaluation is one of the most difficult to eliminate, according to Green (1977). He pointed out that the benefits of health education are time dependent. Some effects are immediate and temporary while others are much slower in developing, but longer lasting. This delayed, or sleeper, effect, in behavior change occurs when the audience must undergo a process of attitudinal change between education exposure and the actual behavioral change.

Griffen and Light (1975) noted that the aim of nutrition education is similar to that of other educational enterprises; that is, to change the behavior of learners. They stated,

It is useful to define the goals of school nutrition programs as changes in "behavior potentiality," learning which may not be immediately reflected in habitual actions but which is indicated by trends of change in thinking, feeling or the capacity to act. (p. 15)

They further identified that the power of nutrition education to effect significant, sustained, and constructive changes in nutritional

behavior will depend on the value placed by society on these changes and the rewards sanctioned by the community as appropriate recompense for success.

Hill (1976) stated that most American educators would agree that "one aim of education is to prepare our people to live effectively in a free society, and that health influences effectiveness" (p. 1). Therefore, if the health of the nation is important to national survival, then health instruction should be provided for all people. In response to this need, Ogletree (1979) noted that fewer than half of the states prescribed subjects dealing with the three R's, but 66% prescribed for physical education courses and 58% for health education, of which nutrition is a part.

Summary

This chapter has explored both the simplistic and complex definitions of nutrition. It then examined practical applications of the science of nutrition for individuals in the United States through establishment of dietary standards and goals, and government sponsored programs.

Actual nutrition education status of public school curricula was identified. It was determined that there is much greater availability of nutrition education curricula which was not evaluated, or only subjectively evaluated, than those which were carefully scrutinized in an evaluation process. The many difficulties of assessing the value of nutrition education materials were discussed. The need for continuing education was emphasized.

CHAPTER III

REVIEW OF THE LITERATURE: EVALUATION

Introduction

The purpose of this chapter is to review the literature as it relates to the theoretical framework of evaluation. The material has been divided into four categories and is presented as follows:

(a) the numerous definitions and goals of evaluation as defined by selected experts in the field of evaluation; (b) the actual roles and purposes of evaluation as it specifically pertains to curriculum evaluation are explored with an examination of the role of the education evaluator; (c) an evaluation of printed materials is presented, including a review of evaluated nutrition curricula designated for use in the secondary schools; and (d) the actual selection of an appropriate evaluation instrument is discussed.

It was the intent of this investigator to provide information in the above four categories which would assist in the later explanation of current practices in the evaluation of nutrition education materials and provide a rationale for the selected instrument utilized in the evaluation of actual nutrition education curricula.

Education Evaluation: Definitions and Goals

Within the past decade evaluation has reached a new status as a field of study (Talmadge, Hughes, & Eash, 1978). The Joint Committee

on Standards for Educational Evaluation (1981) stated that "major reforms in evaluation have consistently been accompanied by major reforms in education" (p. 2). They further noted that in the 1930's, 40's, and 50's the advances in evaluation were mainly concerned with assessing student performance. In the 1960's there were many developments related to assessments of educational programs, projects, and materials.

In response to this tremendous growth in the field of evaluation, numerous definitions and goals of evaluation were presented by experts in this field of study. Much controversy reigned regarding the ultimate aims and purposes of evaluation.

Evaluation Defined

Worthen and Sanders (1973) defined evaluation as simply the "determination of the worth of a thing" (p. 19). Willem (1972) provided a similar definition with his statement that, "Evaluation is a process of gathering evidence that will form the basis for the most accurate statements possible about particular institutions, strategies, sequences and styles of educational policies" (p. 73).

Stufflebeam, Foley, Gephart, Guba, Hammond, Merriman, and Provus (1971) defined evaluation in more complex terms as the "process of delineating, obtaining and providing useful information for judging alternatives" (p. xv). Stake (1967) identified that the major purpose is one of assisting others involved in a curriculum or program to evaluate it and use this information to actually improve upon it. Merriman (1972) and Haller (1974) both defined evaluation as a tool

of the decision-maker which provided a method of viewing planned educational change. Worthen and Sanders (1973) maintained that "evaluation is clearly tied to decision-making" (p. 59). The Cooperative Educational Research Laboratory, Inc. (1968) has maintained that the judging act itself is "assigning a weight to each set of standards" (p. 13).

Evaluation, according to the Cooperative Educational Research Laboratory, Inc. (CERLI) has both informal and formal sides. Stake (1967) specified that informal evaluation is recognized by dependence on casual observation, implicit goals, intuitive norms, and subjective judgment. Formal evaluation is dependent on checklists, structure visitation by peers, controlled comparisons, and standardized testing.

Evaluation, then, can be viewed as having two distinct functions: (a) the determination of the actual worth of a thing, and (b) providing information to the decision-maker to judge between alternatives. The degree of formality assigned to the selected evaluation determines the method of evaluation utilized: subjective judgment or controlled comparisons and standardized testing.

Goals of Evaluation

The goal of evaluation was determined by Worthen and Sanders (1973) as providing the answer to the question: "Does the phenomenon under observation have greater value than its competitors or sufficient value of itself that it should be maintained" (p. 26). This goal was reiterated by Stufflebeam et al. (1971) who noted that for

educators to avoid the fads, pressures, and pendulum swings in educational practice, information about critical questions is needed on a continuous and systematic basis.

Worthen and Sanders (1973) stated that the "purposes and procedures of an education evaluation will vary from instance to instance" (p. 109). Provus (1971) concluded that evaluation can serve at least three major purposes: (a) to insure the quality of the product, (b) to insure this quality at minimal cost, and (c) to help management make decisions about what should be produced and how. Gephart (1978) further maintained that evaluation should produce data about the relative worth of all program alternatives on all the possible criteria to be used in the decision. Stufflebeam et al. (1971) elaborated that evaluation is a complex process with the ultimate aim of providing better information for decision making. Popham (1974) reinforced these beliefs with his statement that "the purpose of evaluation is to help delineate alternatives and to provide information to help decision-makers arrive at more rational choices" (p. 403).

Evaluation is described in many ways. Yet, the ultimate goal of evaluation identified by numerous experts in the field is the provision of information from which to make the best decision of what should be produced, how, or what item under investigation should be selected or maintained.

Role of the Evaluator

Various interpretations exist regarding the role of the evaluator. These interpretations are critical in the final dissemination

of evaluative data. Stufflebeam et al. (1971) stated,

The evaluator is viewed as an extension of the decision maker's mental process. In essence, the evaluator seeks to aid the decision maker in negotiating each step of the decision process by working with him to delineate the information which is needed, by obtaining this information and by helping the decision maker to use the information. (p. 73)

The chief task, then, of the evaluator is to provide information to help the decision maker make his choice by providing reliable, relevant, and timely information in order to improve administrative decisions. The role is largely diagnostic. The evaluator seeks to identify the problems that must be solved in meeting needs of the decision maker in using opportunities. Thus, the evaluator's major task is to present the decision maker with alternative problems or objectives from which rational choices can be made. The evaluator is the supplier of knowledge, according to Stufflebeam et al. (1971). S/He never supplies the values for the education decisions that are made.

Scriven (1967) has charged evaluators with the responsibility for moving beyond only providing the data from which others will draw conclusions and make decisions. He promotes that the evaluator has the responsibility for passing upon the merit of an educational practice. Scriven's position is that "there is no evaluation until judgment has been passed" (p. 39). Evaluators are identified as the most qualified to judge. He reminded evaluators that there are very few who can judge complex programs and still fewer who will.

Stufflebeam et al. (1971) strongly disagreed with Scriven's belief that the role of the evaluator is that of passing judgment.

They stated, "the act of judging is not central to the evaluator's role" (p. 43). Stake (1967) supported Stufflebeam et al. (1971) when he said, "the evaluator who does participate in decision-making destroys his objectivity, and thus, his utility" (p. 523). CERLI (1968) clarified that the evaluators may not feel capable of perceiving the unidimensional value of the alternative problems. They are reluctant to judge and believe that it is the community's privilege to set its own standards and serve as its own judge. However, CERLI (1968) does admit that, "Judgements will become an increasing part of the evaluation report and that evaluators will seek out and record the opinions of persons of special qualifications" (p. 9).

In retrospect, both views of the evaluator as presented by Stufflebeam et al. (1971) and Scriven (1967) present the role of the evaluator as one of providing information from which alternatives can be evaluated and a decision made. The conflict occurs when one is presented with the question of who will judge and actually make the final decision: the individual for whom the data were gathered or the evaluator her/himself.

To provide professional judgments on how well evaluation itself was performing, the Joint Committee on Standards for Educational Evaluation (1981) was formed in 1975 to develop a set of professional standards in the field of evaluation. The Joint Committee was guided by the assumption that "evaluation is an inevitable part of any human undertaking, and by the belief that sound evaluation can promote the understanding and improvement of education" (p. 5).

Curriculum Evaluation

Any curriculum, according to Worthen and Sanders (1973), tends to touch a variety of people in a variety of ways at a variety of times. These groups come with various motives of assorted legitimacies. One of the most difficult tasks facing the curriculum development team is the integration of accountabilities to create a curriculum that is most responsible to the audiences that are effected by it. Taba (1962) stated that decisions need to be made about the general aims of schools and the more specific objectives of instruction. All curriculum is a plan for learning: formulation of clear and comprehensive objectives provides an essential platform for the curriculum. Society's concept of the function of the public school determines to a great extent what kind of curriculum schools will have. Different layers of society participate in the process of determining what education in general, and public schools specifically, should do.

There are many ways of viewing curriculum evaluation. According to Hersom (1978), curriculum evaluation is concerned with ascertaining the worthwhileness of meanings students have regarding purposes, learning opportunities, and evaluation. Stake (1967) stated that evaluation is the task of gathering information about the nature and worth of education programs in order to improve decisions about the management of these programs. Scriven (1967) stated that the greatest service that curriculum evaluation can perform is to identify aspects of the course where revisions are needed.

Cronbach (1963) and Taylor and McGuire (1972) viewed evaluation as a fundamental part of curriculum development, not an appendage. Its job is to collect facts the course developer can and will use to do a better job, and facts from which a deeper understanding of the process will emerge. Taba (1962) identified evaluation as a means of referring to many different processes. It may be a rendering of a value judgment based on sheer opinion; it may be used to describe a process which includes careful gathering of evidence on the attainment of curriculum objectives; or, it may be a basis for forming judgments based on evidence, and weighing that evidence in the light of specified objectives. Worthen and Sanders (1973) specified that when evaluation is carried out in the service of course improvement, the chief aim is to ascertain what effects the course has and the changes it produces in pupils.

Curriculum evaluation according to Stake (1967) requires collecting, processing, and interpreting data pertaining to an education program. Stake (1967) and Eye, Netzger, and Krey (1971) identified that there are two main kinds of data collected in a complete evaluation: (a) objective descriptive data of goals, environments, personnel methods and contents, and outcomes, and (b) personal judgments as to the quality of and appropriateness of these factors. Cohen (1964) noted that people do not exist in isolation, but their thoughts, attitudes, and actions are inextricably interwoven with those of other people with whom there is involvement in a network of responsibility and mutual regard. Thus, different perspectives from individuals in specific professional organizations may view materials

differently when evaluating. Stake (1967) elaborated that "subjective, private evaluations are not all bad when the individual is making a personal choice" (p. 7). However, when the decision involves others and the options are complex, Stake noted that systematic and public evaluations are preferred.

If one is serious about evaluation for improvement purposes, Brandt (1978) urged that one needs to identify the purpose and kinds of decisions to be made. Then, one needs to formulate and utilize evaluation procedures that make sense.

Hersom (1978) and Beauchamp (1978) cautioned that when assessing the effects of the curriculum that has been implemented it is a temptation to attribute these effects to the original nature of the curriculum as it was developed instead of examining carefully the nature of the curriculum implementation and the quality of instruction. Stake (1967) maintained that to evaluate an education program it is necessary to examine what teaching, as well as what learning, is intended. Worthen and Sanders (1973) identified that when any piece of curriculum is used with real people there are important learning outcomes that cannot have been anticipated when the objectives were formulated. There is a possibility that cumulative side effects are as important as the intended main effects. Taba (1962) indicated that evaluation serves an important role in the curriculum, teaching, and learning. The way of evaluating what is learned dictates the way in which learning takes place.

Klein, Fye, and Wright (1979) discussed that the expectations of what should be done in the school constitute the formal curriculum.

They are derived from sources outside the classroom, according to Klein et al., and consist of such things as state or district guidelines, school department syllabi, listings of course offerings, legislative decrees, national curriculum projects, school board policies, and instructional materials that are available.

Judging the quality of each project and piece of material should not be a haphazard or implicit process, according to Tyler and Klein (1976). It should be a deliberate, explicit process. An important criterion identified by Taba (1962) is that evaluation results be sufficiently diagnostic to distinguish various levels of performance or mastery attained and descriptive of the strengths and weaknesses in the processes as well as in the product performance. Tyler and Klein (1976) stated that, "the development of criteria by which to judge quality and make choices is a complex matter. In doing this, one suggests guidelines by which the worth of the product is determined" (p. 11).

In review, it was identified that the general aims of schools, the specific objectives of instruction, and the view of society regarding the role of public education must be taken under consideration when evaluating curricula. This knowledge can then be integrated to determine the evaluation function needed. Evaluation of curricula can be accomplished by many different perspectives. It can be a means of determining the actual value of the curricula as perceived by students for whom it was developed or the teachers. It also can serve the function of gathering data from which the nature and worth of the educational program can be ascertained. Curriculum

evaluation may also identify needed course revisions. However, it was cautioned that when assessing the effects of the curriculum for any one of the above purposes, the evaluator must examine the nature of the curriculum implementation and the quality of the instruction.

Criteria for Evaluating Printed Materials for Format Quality

Harker (1977) noted that format is probably the first thing that a reader notices when viewing printed materials. He stated that "first impressions influence the reader so dramatically that a decision to read or not to read may be made with just one glance" (p. 129). While an attractive format motivates the reader to pick up and read the material, an unappealing format can repel the person before the first page is read. According to Anderson (1979), format becomes elevated in importance when coercive force cannot be used to insure the material is read, as in a formal school setting. For these reasons, it is necessary to consider the format of printed materials before adopting for use.

Fisher, Coyle, and Steinmetz (1977) identified that a good format will make the material attractive, point out important information to the reader, and design the layout in such a way that the information is easy to read, follow, comprehend, and remember. He specified that format includes legibility, white space, color, print characteristics, placement, layout, and illustrations.

Readability. Klare, Mabry, and Gustafson (1955) noted that the use of materials which are easy to read and have fewer abstract

concepts may result in: (a) greater and more immediate retention of information, (b) a greater amount read in a given time, and (c) material being more acceptable to the intended audience. Anderson (1979) stated that it is vitally important that the reading level of written materials be in line with the reading ability of the intended audience, since written materials surpassing the level of the reader will be difficult to understand. Entin and Klare (1978) noted that "a single-minded application of a (readability) factor to all age and ability levels is likely to be ineffective" (p. 281). Fass and Schumacher (1978) further indicated that all considerations of readability must include reader related factors such as prior knowledge, attitudes, and motivation.

Writing style. The writing style, according to Fisher et al. (1977), should be appropriate for the intended audience. Language style does affect readability. A personal style is better suited to poor readers, while a formal style is more appropriately used with better readers. Positive approach improves the readers' motivation, whereas a negative approach does have the opposite effect. Laubach and Koschnick (1977) noted that "an active voice talking directly to the reader also helps the reader by motivating him/her to complete the passage" (p. 9).

Hartley and Burnhill (1977) stated that "research has shown that familiar words are easier to understand than technical words, even if they have the same meaning" (p. 66). The importance of vocabulary in reading comprehension has been consistently reported in different

areas of reading research. Davis (1971) noted that factor analyses of component skills in reading comprehension point to a knowledge of words as the essential component in reading comprehension. Therefore, Auckerman (1972) noted that scientific or technical language should often be replaced with more common words. If technical words are used, Auckerman (1972) stated that they should be explained in a contextual definition or defined in a noncircular manner in a glossary. While defining technical words does not lower the reading level of the material, Auckerman pointed out that it does increase the readability.

Instructional aids. Anderson (1979) identified instructional aids as tables of contents, indexes, paragraph headings, typographical cuing, illustrations, glossary, and bibliography. In fact, she noted that all items which enhance the comprehension of the reader in the material are instructional aids.

Fisher et al. (1977) noted that instructional aids have two functions: (a) to direct readers' attention to specific topics, and (b) to aid in the comprehension of the material. They stated that "indexes and table of contents functions as indirect aids to learning, primarily is assessing desired information" (p. 15). If materials are comprehensive, these helps can be an indispensable aid to the reader.

Harker (1977) posited that the use of paragraph headings helps to increase the amount of white space which is important in offering the reader a visual "resting place" devoid of print. Laubach and

Koschnick (1977) further suggested that the length of the paragraph is an important factor influencing the reader's idea of how easy the reading level of the material may be. He noted that a short paragraph of six lines is optimal for poor readers as they help to break up the grey mass into smaller sections.

Coles and Foster (1975) and Hartley (1977) made the point that the use of typographic cuing to call something to the attention of the reader is helpful in most instances. If the reader is aware of what the cuing means in advance of reading the material, this aid can be useful; otherwise, it has little effect. Fisher et al. (1977) also noted that typographic cuing is helpful in decreasing visual monotony and reinforcing concepts emphasized in the text.

Illustrations, according to Fisher et al. (1977) and Anderson (1979) are increased in importance for low reading level materials, but are valuable for almost all readers. Illustrations should function to increase the interest of the reader, relieve the monotony of the reading level materials, and to emphasize important concepts, convey or reinforce information. Hartley (1977) cautioned that illustrations should never be separated from their related textual references for artistic or aesthetic reasons, as the reader will lose track of the line of reasoning or argument put forth by the author.

Anderson (1979) indicated that a glossary emphasizing key terms and new or unfamiliar vocabulary can facilitate comprehension and enhance the motivation of the reader. She also suggested that bibliographies are most helpful to the reader if one desires to go back to the original source. References and resources, according to Anderson

(1979), "are aids which are probably most appropriate in comprehensive printed materials" (p. 60).

Paper Quality, Style and Size

Anderson (1979) suggested that paper quality, while seemingly unimportant, does contribute to both ease of reading and appearance. A high gloss paper which reflects light makes print difficult to read. Very thin pages allow printing on the backside to be seen through the front page.

Laubach and Koschnick (1977) indicated that the style of print affects the ease or difficulty an individual may face in reading printed materials. They indicated that research has shown Roman type which has serifs is best for reading. Serifs are tiny projections which stick out at the top and bottom of the letters, making the words appear more unified. These are important because they allow for speedy and comfortable reading. Italics, boldface, and fancy type should not be used as the main body type.

Print size which is 11 or 12 points (as illustrated in Appendix A) is generally recommended for persons who have above a third grade reading level, according to Laubach and Koschnick (1977). Adult material that is designed for very poor readers should be at 14 to 16 points. Size of print affects reader perceptions: the larger the print, the easier it appears to be read, and the individual is more likely to give it a try.

Column width also affects a reader's desire to read. Laubach and Koschnick (1977) indicated that long lines are difficult to read

as they cause too many eye fixations and the reader is not likely to immediately locate his/her place on the next line.

Criteria for Evaluating Printed Materials for General Content

Of major concern to the educator in judging written materials is matching the nature and complexity of the content found in various materials to the stated learning objectives already determined to be important. Anderson (1979) identified that the primary purpose of suggesting to an individual a book, pamphlet, or magazine is either to convey, reinforce, review, or broaden the knowledge base of that individual by presenting information deemed important.

Educational Products Information Exchange (1974) noted that the importance of how materials are being used and what materials are used are concerns becoming increasingly highlighted. Woodbury (1978) noted that traditional criteria for assessing print materials include accuracy, currency, content organization, and curriculum correlation. Metz (1978) pointed out that since reading materials are provided by and used in schools, the portrayal of sex roles in reading materials are but one way in which "schools function to reinforce the sexual stereotypes that children have been taught by their parents, friends, and cultures in which they live" (p. 10). Anderson (1979) further suggested that how content reflects the interests of the reader and his/her ability to identify with the content through real life situations contributes to the acceptance of the written material's appropriateness as a teaching tool.

Organization. Smith (1976) identified that cognitive development is related to the developmental level of the learner. Cognitive development follows a sequence in which simpler and more concrete information precedes and prepares the learner for more complex and abstract knowledge. Learning consists, then, of sequential steps in which successful mastery of each step is a progression on to the next step. In the selection of written materials, logical sequencing is important because it assists the reader in comprehension and retention of the information. Fisher et al. (1977) stated that "it may also help the reader by providing easier accessibility to specific information on the manuscript" (p. 15).

Hartley and Burnhill (1977) suggested that graphs and tables, if used in conjunction with an explanation in the text, can be an effective way to communicate information. The simplest graphs are the easiest to understand. These are usually line or bar graphs. Tables should include all the information a reader will need.

Stereotyping. Written materials have always been one of the most utilized tools in our educational system. While they are designed to convey information, Weitzman and Rizzo (1975) stated that written materials also "provide the child with ethical and moral values" (p. 49). They stated that textbooks and instructional materials, designed to transmit knowledge and skills, are equally effective at indoctrinating children in societally prescribed behaviors through their selection and omission of life experiences. To a great extent these materials form the range of experience for the young

student and a lifetime reality. Sexual, racial, ethnic, and religious stereotyping are potentially counterproductive and should be identified in the printed materials prior to adoption for classroom use. In addition, materials that provide a variety of lifestyles in a positive manner are suggested as very beneficial.

A 3-year study by Weitzman and Rizzo (1975) analyzing the latent content of the most widely used textbooks in the United States in five different subject areas found that there was sex discrimination in activities, roles, and occupations depicted. Schneider (1977) stated that sex stereotyping is so prevalent in our educational materials, it becomes even more important that educators start to select materials that portray positive images of women. He further discussed that materials which imply by text or illustration that women have limited abilities or traits, or imply that women have subservient status to men can be detrimental. These can be especially detrimental if females are to feel that they are independent entities capable of making decisions, controlling their environment, and deciding on their futures.

The material should respect the differences in personal choice and cultures that exist, and should emphasize the legitimacy of different lifestyles. The Council on Interracial Books for Children (1977) indicated that because racism is often covertly presented in communications, educators must be particularly sensitive to hidden and subtle messages imbedded in both words and illustrations used in instructional materials. The Educational Products Information Exchange (1976) reported that racism and sexism are common in many

educational materials in the market today. A 9-month study of career education materials resulted in the conclusion that "minorities were often stereotyped in appearance and behaviors" (p. 427).

Readers' needs and interests. Anderson (1979) stated that in looking at written materials "it is always necessary to keep the characteristics, background, values and attributes of the intended readers in mind" (p. 68). She identified that it is helpful to try to match the interests and capabilities of the reader with the material.

Harker (1977) identified that materials which refer to real life situations increase interest and are more effective teaching tools. When the content is interwoven with experiences that the reader can relate directly to, new information becomes easier to process and understand. He further maintained that reading becomes easier and more enjoyable if the audience has sufficient background information.

Unbiased presentation of subject matter. Many controversial topics, issues, and problems have been delicate situations to handle in the school environment. Nix (1973), Superintendent of the Georgian Department of Education, Division of Curriculum Development and Pupil Personnel Services, noted that many instructional materials which present a problem are being presented for use in the schools. He indicated that,

it is increasingly becoming necessary for each school system to initiate a prescreening process for each item of unstructured material. This, in all likelihood, will mean that each word, picture, point of view, will have to be examined. (p. 5)

Anderson (1979) stated that it is essential to present all topics in an objective, fair manner so that the reader can make an informed decision. Controversial views need to be presented so that the reader is informed on all viewpoints before reaching any conclusions.

Worthen and Sanders (1973) noted that a variety of people are touched in a variety of ways at a variety of times with any curriculum. One of the most difficult tasks is the integration of accountabilities to create a curriculum that is most responsible to the audiences affected by it.

A Review of Evaluated Nutrition Programs in the Secondary Schools

Plass and Mapes (1981) examined nutrition education in the nation's secondary schools and described intervention programs which have been subjected to evaluation. Their review revealed effective nutrition education approaches and identified areas where further effort is needed in programming and research.

According to Plass and Mapes (1981), reports of nutrition education programs for the secondary school, grades 7-12, could be divided into two major categories: nonevaluated or subjectively evaluated efforts and evaluated programs. They noted that while reports of nonevaluated or subjectively evaluated programs were useful as a means of providing ideas for learning activities for students, the absence of solid evaluation undermined the opportunity for others to replicate potentially successful programs.

Ten evaluated programs, or methods of nutrition education instruction, were summarized by Plass and Mapes (1981) for Abt Associates, Inc., a private research firm. The 10 selected programs and methods of instruction were concerned with the measurement of student reactions and the innovative approaches utilized to involve and attract adolescents. They also reported on two nutrition education programs which were pilot tested and just released for national distribution in the secondary schools. These 10 evaluated programs and methods of instruction, and the two pilot tested nutrition programs, are summarized below.

Body Weight as a Health Index

This mini-program was integrated into one high school's biology and chemistry classes, with 77 students involved. An inquiry-oriented approach was used in laboratory experiments which allowed students to relate energy metabolism concepts to their daily experiences. This program, for non-obese students, was designed as a preventive and educational measure. Limited formative evaluation data did not allow analytical separation of teacher effect from material quality effect on learner outcomes. A course assessment questionnaire indicated both teachers and students had positive attitudes toward this educational approach. Thus, evaluation was limited for this particular program, but positive feedback from teachers and students indicates it has value. A more controlled study is indicated.

Cross Age Teaching

In this nutrition program, high school students learned nutrition through preparation of lessons to teach other age groups. Two control and two experimental groups were assigned the task of teaching classes to either younger children or older adults on nutrition for the life cycle. A pretest revealed no significant differences in the nutritional knowledge between the control and experimental high school student groups. Subjective evaluation by the authors reported a lack of class discipline problems and an increase in school attendance in the experimental group.

Cartoons and Comics

Two studies reported using cartoons and comics as a method of teaching and improving nutrition knowledge found that there was increased knowledge gains from the more traditional approach. Yet, a retention test 6 weeks following the posttest, indicated no significant difference in knowledge retention between the students receiving traditional course instruction and those utilizing cartoons and comics.

Mass Media

An 8-week mass media nutrition campaign, using television, radio, and brochures indicated that this method of teaching was successful. There was a reported increase in pre- and posttests of nutrition knowledge in experimental and control groups of ninth grades with a

sample of 400. Blacks in the experimental group made the greatest improvement in knowledge when compared to the control group. This provided an implication that specifically targeted education programs for subgroups can be an effective means of teaching nutrition.

Laboratory Involvement

A 20-hour food and nutrition mini-course for 11th and 12th grade biology and chemistry courses was developed and conducted in two trial sessions. Results of knowledge tests showed a gain score for each experimental group which was significantly larger than the control group. However, correlations among knowledge, attitudes, and behavior were low in frequency and different in each trial. Students concerned about a nutrition issue did not necessarily act upon that concern with their own dietary habits.

Games

The use of games and discovery learning to try and improve high school students' nutrition knowledge, attitudes, and food preferences was evaluated. Pre- and posttest measures for 50 students indicated that there was a significant knowledge gain. But, once again, attitudes and food preference changes were not significantly effected.

Health Awareness

A cardiovascular nutrition course for 10th grade biology students using pre- and posttest measurements for knowledge, attitudes, reported dietary behavior, and actual serum cholesterol and triglyceride

levels resulted in significant improvements in cardiovascular nutrition knowledge. Students with a family history of elevated serum cholesterol were more likely to show positive changes in attitude. A 1-year follow-up showed significantly higher and similar values for serum cholesterol in the experimental and matched control groups. The parents of the children involved in the course, interviewed 3 months after the completion of the class, reported that their children were interested and enthusiastic about the program and tried to implement dietary changes for the entire family.

Changing Food Habits

A program designed to determine whether nutrition education could contribute to changes in food habits or acceptability of school lunch foods was implemented for 5th, 7th, and 10th grade classes. Evaluation consisted of students' ratings of school foods, weight and nutrient content of school cafeteria plate waste, performance on cognitive tests and dietary recall records. The greatest effects of this program was measured in fifth graders where teacher and administrative support was strongest. Teacher techniques and attitudes were widely varied and were important factors in the program's success. Thus, the program's effectiveness is dependent upon the attitude of the teachers and administrators responsible for its implementation. The program itself is not as effective without the human component.

On-Site Nutrition Education

A 3-week, on-site nutrition education program in a high school cafeteria reported no significant changes in behavior of food selection patterns or reduced plate waste. This program included a nutrition knowledge test for students, records of food consumption patterns, and the measurement of plate waste prior to the nutrition education campaign. Wall posters and table information emphasized the major nutrients in the various foods. The students appeared, from the posttest of nutrition knowledge, food preferences, and plate waste measurements, to have had no impact as a result of this study.

National Dairy Council

The National Dairy Council (NDC) has pretested four separate new strands of a currently utilized nutrition curriculum, Food . . . Your Choice, for grades PreK-6. The new strands, designated for use with grades 7-10, were developed for use with home economics, science, health, and social studies classes. To date the NDC has engaged in formative evaluation to verify the module activities, working at nine sites with a total of 16 schools and 25 teachers. After these data were gathered and revisions made of the curricula materials, the National Dairy Council returned to the field for a follow-up achievement study in two of the strands: home economics and health. Summative evaluation is planned for Spring 1981.

The American Health Foundation

A piloted health and nutrition program in the greater metropolitan New York area sponsored by the American Health Foundation, Know Your Body, focuses on disease prevention. The overall goal of this risk factor prevention curriculum was to increase health knowledge and to identify relationships between risk factors and personal health behaviors. It also attempted to assist students to accept responsibility for their own health, interact with peers, teachers, family and begin to practice good health habits. The evaluation results indicate that if students actively participated in the program activities there was motivation for behavior change.

In review people are involved in many different ways with the nutrition of adolescents. Yet much work remains in isolation as can be seen by this review of existing evaluated nutrition programs and curricula reported in the literature by Plass and Mapes (1981). Their thorough review of the literature identified only 10 programs in nutrition for the adolescent which were able to measure student reactions and used innovative approaches to involve and attract the adolescents. Two other pilot tested curricula now ready for distribution in the secondary schools as nutrition resources were summarized. The evaluation methods used included pre- and posttests, teacher/student perspectives, and actual measurement of behavior change for the target populations involved in the programs.

Selecting an Instrument to Evaluate Printed Materials

The selection of materials can be made on the information available or it can be accomplished by systematic rating of materials which are to be used to complement curriculum already in place. If materials are to be rated, an instrument should be used.

Selecting instructional materials is a process involving a complex weight of many factors. Woodbury (1978) identified that selection is a decision-making process requiring "a critical mind, a wide acquaintance with existing materials, an awareness of trends in subject matter fields and teaching methods, and an intimate knowledge of one's school population" (p. 7).

Zais (1976) noted that the most established procedures geared to collecting information for curriculum evaluation have to do with product evaluation. Cohen (1976) noted that the teacher should approach the selection of classroom materials with the intention of acquiring the best possible teaching objectives. To accomplish this task, Stroud (1978) stated that "there are a variety of evaluation tools available" (p. 17). Stroud discussed that these tools reflect the wide range of professional opinion concerning input into the evaluative process. She cautioned that the various evaluation instruments should be carefully examined before use to determine their strengths and weaknesses in light of the school district's needs. Stroud elaborated that "even a very good instrument can fail if it is inappropriate for the evaluation" (p. 1).

In selecting an instrument to evaluate specific classroom materials by the teacher, it is essential to note that teachers infrequently actually engage in any formal evaluation process of materials they select for classroom use. Hug (1978) noted that teachers spend "less than one hour per year on the activity of evaluating materials they use" (p. 63). He further pointed out that many teachers have had no formal training in evaluation.

Due to teachers' infrequent utilization of evaluation procedures for the selection of classroom materials, and their lack of official training in the process of evaluation, it is necessary to provide the most simple evaluation instrument feasible to accomplish the task of actually involving educators in the evaluation process. Two evaluation instruments are suggested by Gronlund (1971) as "convenient methods of evaluation for recording judgements" (p. 418). These two instruments are the rating scale and the checklist. Gronlund (1971) defined a rating scale as "consisting of a set of characteristics or qualities to be judged and some type of scale for indicating the degree to which each attribute is present" (p. 417). He elaborated that the rating scale provides a systematic procedure for obtaining and reporting judgments.

Gronlund (1971) defined a checklist as, "a method of recording whether a characteristic is present or absent, or whether an action was taken or not taken. It calls for a simple 'yes-no' judgement" (p. 418).

Gronlund noted that the rating scale is quick and easy to score, easily adapted to a variety of settings, and can be structured so as

to provide quantifiable data. The disadvantages are relatively low interrater reliability and the possible error due to the response set and biases of the evaluator.

Evaluation of Selected Evaluation Instruments

Numerous evaluation instruments are available for a variety of purposes. A checklist or rating scale is often found to be either very complex or simplistic in their evaluative structure. The following is a summary of seven selected checklists illustrative of what actually exists in the field, but is by no means a thorough or exhaustive review of all existing evaluative checklists.

A Checklist for Evaluation of Products, Producers, and Proposals. This form, developed by Scriven (1973) is a very complex evaluation system. The checklist can be used, according to Scriven, as a key item in the evaluation of products of almost any kind including educational products, and in the educational field, it can be used in the following five ways: (a) as an instrument for evaluating products, (b) as an instrument for evaluating producers in the "pay-off" dimension, (c) as an instrument for evaluating evaluation proposals focused on products or producers, (d) as an instrument for evaluating production proposals, and (e) as an instrument for evaluating evaluators of products or producers. Scriven also noted that "no products have ever been produced that meet all the standards, and only a handful have ever been produced that meet enough of them to justify confidence in the merit of the product" (p. 1-2).

He further noted, however, that the use of this checklist is potentially lethal and thus, the failure to meet any one of the checkpoints leaves open a significant possibility that the product under review is simply not of excellent quality.

The scales that are identified on this checklist are hybrid crosses of methodological and substantive merit. The top scores require good evidence of good performance; the bottom score implies that either good evidence or good performance is lacking.

This checklist is very complex and one of the most demanding in quality of a product. It would be a very useful tool for the determination of value of a very expensive and complex curricula under consideration by a school system. It is not a reasonable tool for the evaluation of simple printed materials which would be used as a supplement in the classroom to the basic text or existing curricula.

Curriculum Materials Analysis System. This evaluation tool, developed by a grant from the National Science Foundation and the U.S. Department of Health, Education and Welfare, Office of Education, under the directorship of Morrisett and Stevens (1971) is a very complex, detailed checklist. It was established to evaluate total curricula for school systems. It is not a reasonable instrument to use in the simple assessment of printed materials used in the classroom as a supplement to a textbook or curriculum package. Eight major categories are presented for evaluation, with varying numbers of criteria identified for specific evaluation within each category. The eight categories for evaluation include: (a) product

characteristics, (b) rationale and objectives, (c) content, (d) theory and strategies, (e) antecedent conditions, (f) evaluation, (g) background of materials development, and (h) background of analysis.

Each of the major categories is determined according to quality for the curriculum under review by a rating of each criteria listed for that category. The rater is asked to select, on a scale of 1 to 6, the appropriate rating of the material under review. The ultimate and least desirable characteristics for that category, plus a middle ranking, is specified. Criteria are defined briefly at each analysis point. Definitions for each major category under question are given prior to the listing of the criteria for rating. An additional section is included which asks the rater to make judgments regarding the appropriateness of the material for recommended use.

Early Childhood Education--How to Select and Evaluate Materials.

The Education Products Information Exchange Institute (1973) developed this form in 1972 to assist educational decision makers to consider, in a systematic fashion, characteristics and relative merits of early learning materials, kits, and systems. This form specifies that key considerations in purchasing materials or adopting program models for use with primary children include what "we think is taking place as a child develops" (p. 42). Thus, this form first utilizes a rating system, or checklist, for the rater to determine his/her personal attitudes about: (a) human development, (b) the nature of school subjects and other areas of knowledge, (c) how the nature of knowledge in these areas relates to overall development of the child,

and (d) the main mechanisms of processes involved in development. From this assessment, the rating scale for analyzing curriculum is approached.

The guidelines for analyzing curriculum is a nine part questionnaire, with numerous criteria listed and defined for each of the nine categories under question. The rater is asked to identify quality of the product under review by using a combination approach of checklists and short answer responses. This form is quite complex and would be suitable for the evaluation of curriculum kits/sets, as the title specifies. It is best used with preprimary and early primary learning materials. However, some of the criteria identified would be appropriate for any age level.

Educator's Guide for Using Business Sponsored Resources. This form was developed by the Michigan Consumer Education Center, under the directorship of Bannister (1978). This evaluation tool was developed for use by the classroom teacher. It consists of three major categories for evaluation, including: (a) content, brand name, and bias; (b) suitability for the classroom; and (c) format, packaging, and cost. Each category has varying numbers of criteria listed for evaluation. The rater is asked to check a "yes," "no," or "somewhat" for each of the criteria listed under the three major categories. Each criteria is lacking in definition and left to rater discretion for the determination of appropriate responses. Thus, this instrument does not provide a method of qualifying rater responses for all criteria. Reliability of responses by the total group of raters is

questionable.

Evaluation Form for Print Resources. This form, developed by Pennsylvania State University's Nutrition Information and Resource Center (1980), lists six criteria for evaluation in question format, including: (a) content accurate, (b) balanced presentation, (c) content organized, (d) reading level appropriate, (e) illustrations appropriate, and (f) instructions adequate. These six criteria are listed in question form and the rater must check either "yes" or "no." There is a small space for evaluator comment by each criteria. This checklist does not provide any set of definitions or explanation for the six criteria. The evaluator is required to define the parameters from which the criteria are established. The checklist also requires the evaluator to make the determination of quality for the overall product by indicating if the evaluated item is excellent, good, fair, or poor.

Evaluation of Nutrition Education Materials. This evaluation form developed by Hicks (1979), director of the National Meat and Livestock Board, lists 18 criteria for evaluation. The raters are asked to rank the educational material under review on a scale of 1 to 10 for quality. The ultimate and least desirable attributes for each of the 18 criteria are defined. All remaining eight attributes are left to rater discretion for definition. This particular evaluation form incorporates two types of measurement: validity questions and effectiveness scales. Three of the 18 criteria are validity questions, and the remaining 15 criteria are, in actuality, effectiveness

scales.

Criteria to Evaluate Written Materials. This evaluation tool, developed by Anderson (1979) was developed to evaluate printed nutrition materials. The evaluation instrument incorporated needed characteristics for measurement of nutrition printed materials such as: (a) readability, (b) stereotyping, (c) use of instructional aids, (d) format, and (e) content. The five listed categories have several criteria identified for rater evaluation. Each criterion is defined according to "superior," "adequate," and "poor." The rater is asked to check one of these three evaluative statements for each of the listed criteria in each of the five major categories. If the rater does not perceive the characteristic under question to be appropriate for the materials under review, the rater is provided the opportunity of checking "not appropriate."

In review, the seven identified evaluation tools range from very complex to simple in their evaluative structure in the checklist or rating scale format. These rating scales are all appropriate for use, dependent upon the type of material to be rated and the needs of the individual for whom the evaluation is conducted. Table 1 presents an identification of each of the seven evaluation tools as either appropriate to rate simple printed materials or more complex materials such as curriculum kits or textbooks.

Table 1
Summary of Comprehensive Qualities
for Selected Rating Tools

Rating scale	Simple	Comprehensive
A Checklist for Evaluation of Products, Producers, and Proposals		X
Curriculum Materials Analysis System		X
Early Childhood Education: How to Select and Evaluate Materials		X
Educator's Guide for Using Business Sponsored Resources	X	
Evaluation Form for Print Resources	X	
Evaluation of Nutrition Education Materials	X	
Criteria to Evaluate Written Materials	X	

Summary

From this review of literature, it would seem that there are numerous acceptable definitions of evaluation and many goals for which evaluation is an effective, essential tool. The role of the education evaluator was presented as having two possible functions: (a) actual judgment of curriculum and (b) providing only information from which others can make the actual judgment. The actual evaluation of printed curriculum materials was discussed in detail as it pertained to two major categories: (a) general format and (b) general content. For each of these two major categories, numerous criteria were selected for evaluation.

A thorough review of the literature by Plass and Mapes (1981) of existing evaluated secondary nutrition education programs and curricula indicated that there were few nationally recognized or distributed programs available. They did indicate that people are involved in many different ways with adolescent nutrition. Yet, much of the work remains in isolation or is used with a limited scope with selected students. In many instances evaluations were limited to pre- and posttest procedures.

It was identified that there are many possible evaluation procedures that one might use with print materials. However, it was noted that educators spend very little, if any time, actually evaluating the materials selected for classroom use. Due to the educator's limited role in evaluation, the simplest tools were identified as best: the rating scale and/or the checklist. These tools provide a means of measuring information in quantifiable form, relatively quickly and with ease in use, and adaptable for a variety of settings.

Numerous evaluation instruments in the form of a rating scale or checklist were discussed as illustrative of the wide variety and function of instruments available for both their comprehensiveness and their simplicity of review. It was identified that different materials reflect a variety of degrees of complexity, and thus, evaluative intensities. It is the responsibility of the evaluator to select the instrument most appropriate for the given task.

CHAPTER IV

DESIGN OF THE STUDY

Introduction

The purpose of this study was to evaluate the quality of selected supplemental, printed nutrition education materials developed by individual food industries, food industry associations, and governmental agencies from the perspective of the educator, curriculum specialist, and the nutrition specialist. Within this chapter, discussion will center on the following five categories: (a) identification and description of the independent variables, (b) identification and description of the dependent variables, (c) instrumentation, (d) data collection procedures, and (e) hypotheses and data analyses procedures.

Identification and Description of the Independent Variables

The Producer Variable

Griffen and Light (1975) pointed out that education in nutrition must be woven into all educational enterprises, those which support school learning as well as those directly responsible for its production. They also noted that agencies which deal with the health of citizens, which place emphasis on the need for well trained healthy manpower, which determine the nature and character of educational

programs, and which act upon the needs of people for fulfillment and well-being are appropriate contributors to proposed nutrition education curricula.

In this study, the producer of nutrition education materials was an independent variable. This variable was investigated at three levels: (a) individual food industry producers, (b) food industry association producers, and (c) government agency producers. Each of the three levels of the independent variable will be described in terms of a conceptual definition, and an operational definition for purposes of this study.

Individual food industry producers. Industry is defined by The Random House Dictionary of the English Language (Stein, 1979) as "an organization of people with a common purpose and having a formal structure" (p. 2779). For purposes of this study, the population of individual food industry producers is identified as those organizations of people having a formal structure and a common purpose of food production who produce nutrition education materials for use in the classroom.

The sample considered was one industry representative for each of the Four Food Groups: dairy, meat and/or meat alternate, fruit and vegetable, and the grains. The selection of one representative from each of the Four Food Groups as a sample was made to provide generalization in basic nutrition education. The individual food industry producers selected for this sample included: Kraft Cheese, Oscar Mayer Company, Sunkist, and Kellogg's. These four industries

were identified for this study due to their well recognized names in food production and the likelihood that a teacher, curriculum specialist, or nutrition specialist would identify these names with available nutrition information about their products for classroom use.

Food industry association producers. An industry association is defined by The New Columbia Encyclopedia (Harris & Levy, 1975) as a "group of businessmen in the same trade or industry organization for the advancement of common interests" (p. 2772). For purposes of this study the common purposes of the food industry association will be nutrition education and the production of nutrition information materials for use in the nation's classrooms.

The sample considered was one food industry association producer for each of the Four Food Groups. The reason for this sample selection, as stated above, was to provide representation from each of the Four Food Groups, thus providing generalization in nutrition. The food industry association producers selected for this sample included: The National Dairy Council, The National Meat and Livestock Board, The Potato Board, and the Cereal Institute. These four associations were selected because of their active participation in the development and promotion of nutrition education materials for classroom use.

Government agency producer. Boyd and Rips (1952) in the book, U.S. Government Publications, defined a government body or agency as a term used to "identify any officially authorized organization within the government, such as the Congress, Senate, a department or

office" (p. 27). For purposes of this study, the government agency producers were defined as the officially authorized organization within the government which produces nutrition education materials for use in the nation's classrooms.

The sample considered was limited to two government agencies which were active producers of nutrition education materials for use in the classroom. These two agencies were the Cooperative Extension Service, a division of the United States Department of Agriculture, and the Food and Drug Administration. Both of these agencies are well recognized producers of nutrition education materials by educators. It must be noted that the government does not specialize in the production of materials for any one specific food group, but rather prints materials on all Four Food Groups. Thus, the difference in the designation of units within the level of the producer independent variable.

The Rater Independent Variable

To evaluate the printed, supplemental nutrition education materials, raters were selected from three categories of professional occupations: (a) educators, (b) curriculum specialists, and (c) nutrition specialists. These three categories of professional occupations form the independent variable. Each of the levels is described in terms of a conceptual definition, and an operational definition for the purposes of this study.

Educators. An educator is defined by The Dictionary of Education (Good, 1973) as "one who teaches, instructs or otherwise contributes to the educational development of others" (p. 206). For purposes of this study, this definition is limited to those individuals who teach or instruct at the 7th to 12th grade levels in the nation's classrooms.

The sample of educators was drawn from the secondary level and included educators who teach nutrition in the classroom, specifically home economics teachers. This limitation of teachers, grades 7 through 12, was established because of the educator's greater likelihood to actually use free and inexpensive materials such as the ones selected for review in this study. The sample of teachers was taken from the Region 9 Career Education and Planning District in the state of Michigan of home economists. Region 9 included home economics teachers, grades 7 through 12, from a given county region in Michigan: Kent, Ottawa, Ionia, Montcalm, and Newaygo.

Curriculum specialists. A curriculum specialist is defined in The Dictionary of Education (Good, 1973) as a "member of the supervisory staff of a school district or other educational organization specializing in curriculum development and the implementation of curriculum designs" (p. 160). For purposes of this study, this definition is utilized as stated, recognizing that people who perform this function do not always have the official title of "curriculum specialist."

The sample of curriculum specialists for this study was selected from the Michigan Regional Education Material Center, Numbers 9 and 12.

Regional Education Material Center Number 9 included curriculum specialists in Michigan from Kalamazoo, Van Buren, Calhoun, and Allegan Counties. Regional Education Material Center Number 12 included curriculum specialists from Kent, Ionia, Montcalm, and Mecosta Counties.

Nutrition specialists. To define this rater category it was necessary to combine two definitions as given in The Dictionary of Education (Good, 1973). A specialist is identified as "a person who has studied and worked intensively in one field of knowledge and supposedly has thus attained a high degree of understanding and proficiency" (p. 548). Nutrition is defined as a "science of nourishing the living organism, that is of providing adequate food for its growth, maintenance and repair" (p. 392). For purposes of this study, a nutrition specialist is defined as a person who has attained a high degree of understanding and proficiency in the science of nourishing the living organism, that is, of providing adequate food for its growth, maintenance, and repair.

The sample of nutrition specialists selected for this study were from the Greater Grand Rapids Chapter of the Michigan Dietetic Association. This Chapter included nutrition specialists from a five county region in Michigan including: Kent, Ionia, Muskegon, Newaygo, and Ottawa.

Identification and Description of the Dependent Variables

The selection of printed materials to promote learning is at best a difficult task, although the importance of choosing appropriate materials cannot be overemphasized. To expedite this task, a set of criteria for evaluation of printed, supplemental nutrition education materials were identified. These criteria are the dependent variables in this study. The rationale for the inclusion of each of these given variables comes from the description in Chapter III. A description of each of the theoretical definitions of each of the two variables is given as follows:

Format

Harker (1977) stated that format is the first thing a reader notices when viewing printed materials. Fisher et al. (1977) identified that a good format will make the material attractive, point out important information to the reader and design the layout in such a way that the information is easy to read, follow, comprehend, and remember. Format includes criteria such as: readability, writing style, instructional aids, and print quality, size, and style.

Content

A major concern to the educator in assessing the content of materials is the accuracy, organization, lack of stereotyping of minority groups, correlation with the reader's interests and needs, unbiased presentation of subject matter, and its ability to be utilized effectively in the classroom setting.

Instrumentation

The instrument entitled, Criteria to Evaluate Written Materials, developed by Anderson (1979) was selected as a model to evaluate printed supplemental nutrition education materials used in this study. It was selected based on its previous successful use by the developer as part of a master's thesis, entitled, The Development and Application of Criteria for the Evaluation of Written Prenatal Nutrition Education Materials for Pregnant Teenagers (Anderson, 1979). She indicated that this instrument could be utilized successfully for the evaluation of printed nutrition education materials with a slight modification of the nutrition questions as designated in the categorical section of "content."

In this instrument Anderson (1979) utilized a set of criteria for evaluation of printed materials adapted from Fisher et al. (1977). These criteria were arranged in five master categories: (a) readability, (b) stereotyping, (c) instructional aids, (d) format, and (e) content. Each of these five categories was further broken down into subcategories of specification for a total of 34 evaluation criteria.

Within the master category of readability, the Fry (1968) Readability Graph was used to determine the grade level of the materials. Anderson (1979) identified that the Fry Graph was selected because it was easier and quick to use, valid at both the lower and higher levels and yielded more distinctions in reading levels than other methods considered.

For purposes of this study, the instrument entitled Criteria to Evaluate Written Materials developed by Anderson (1979) was modified. The evaluative criteria designed for each of the five master categories were recategorized into the appropriate two master categories: (a) format and (b) content, which are the two dependent variables in this study. Only those criteria deemed applicable for the evaluation of printed nutrition materials of lesser scope than textbooks, i.e., leaflets or pamphlets, were selected. Anderson's specific content analyses for the evaluation of prenatal nutrition was eliminated due to its nonrelevance of subject specificity for this research study.

Operationalization of Variables

Anderson (1979) identified that for each item in the major categories an operational definition was provided. Each item was then rated by the rater, using these operational definitions, as "superior," "adequate," "poor," and "non-applicable." The first three of these categories were operationally defined for each item in the set of criteria. The nonapplicable category was included since not all items in the criteria may be appropriately applied to all materials.

It was stated by Anderson (1979), in her description of this instrument, that each rater was asked to make a series of small decisions about each item. After completing all the items, the rater could then plot all the scores, locate the weak points and strengths of the materials, and determine which printed material was most appropriate for a given situation. She also indicated that the rater must state the intended learning outcomes before utilizing this tool for

it to be effective. She noted that "deciding on the reasons for using printed materials is at least as important as using a tool for systematic evaluation" (p. 73).

Reliability and Validity of the Instrument

The inter-coder reliability of the instrument was identified by Anderson (1979) as .60. Anderson noted that "while this was not an impressive figure, it should be realized that individuals were given no prior direction, instruction or practice before they were asked to use the instrument" (p. 74). She further indicated that individuals using the instrument were not allowed to ask any questions concerning the interpretation of operational definitions set forth by the instrument. Since instruments usually are not used by a group of individuals without discussion of the definitions, the author believed that reliability between coders could be greatly improved by prior discussion and/or practice before actually rating materials for purposes of evaluation.

When the instrument was evaluated for its reliability with only one individual at two different points in time, the percentage of agreement was 96%. The author believed that this high percentage of agreement suggested, that with practice, an individual or group could obtain reasonable reliability, making this a practical and usable tool.

The evaluation tool was determined by Anderson (1979) to have validity by consensus among a panel of experts. Expert panelists consisted of three Cornell University professors and two graduate

students.

For purposes of this study, Anderson's reported reliability is inappropriate. The data set in this study produced data on which the internal consistency was calculated on each variable score. This was accomplished using Cronbach's Coefficient Alpha. Subjects were given a brief lecture on the values of evaluation as a summative process when selecting nutrition materials for classroom use, and an overview of the summative evaluative process. The selected evaluation form was discussed prior to rater use.

Advantages and Limitations of the Modeled Instrument

Anderson (1979) noted that the evaluation instrument had several important attributes. It allowed individuals with little or no experience to select materials with greater expertise than would otherwise be likely. Also, the instrument allowed an individual to evaluate materials systematically which encouraged comparison of materials and selections based on less subjective evidence. It also insured that the individual was aware of the strengths and limitations of the materials in use. The instrument was flexible and allowed the user to select a material which best fit the needs of that situation. The instrument was cheaply reproduced and could be used quite effectively with individuals with little evaluative training.

The primary limitation of the instrument, according to Anderson (1979), was the time needed to evaluate materials when the rater was not familiar with the process of evaluating for readability, content,

style, and format of printed materials. However, Anderson did note that the length of time needed to evaluate could be sharply reduced with practice. Also, when more than one material was rated from a set of materials, the dependent variables allowed for momentary flaws in ratings on any one item.

Pilot Test of the Evaluation Instrument

For purposes of the pilot test, a randomly selected subset of four materials of the identified sample of producer unit materials were selected for review. Forty-one health and nutrition students at Grand Valley State College were selected to serve as raters of the materials for the pilot test. They were selected because they represented both the field of education and the specialty knowledge of nutrition. Data were analyzed to determine the usability of the selected evaluation instrument developed by Anderson (1979), entitled, Criteria to Evaluate Written Materials. Raters were debriefed following their rating of materials to identify areas of ambiguity on the instrument.

It was determined from the data analysis of the instrument that some modification was needed for this study. The instrument was identified as too lengthy, and certain criteria were too repetitive or inappropriate for the simple type of material designated for review in this study. In review of the instrument, it appeared feasible to eliminate specific criteria within each of the categories, and to reorder the five master categories into the desired two: (a) format and (b) content.

To identify if order effect of materials rated would cause a difference in rater analysis, materials were rotated in their order of evaluation per rater. There was no noticeable effect discovered due to the order in which the materials were rated. That is, practice with the instrument and/or rater fatigue did not seem to change the subsequent ratings of the individual materials.

From an analysis of the data, it was determined that the instrument did require revisions for use with the rating of the selected printed nutrition materials of limited size, i.e., leaflets and pamphlets. Five of the items utilized in the instrument developed by Anderson (1979) were revised. These five items pertained to the investigation of the materials' fair use of minority representation and the lack of stereotyping through both the use of illustration and in the text. These five individual questions were reduced to two items in the revised instrument.

Twelve items were completely eliminated. These items were judged to be either inappropriate for the type of material selected for review, or too lengthy. Two items not found in Anderson's instrument were added to this revised instrument. These two items, essential criteria for any material used in the classroom, rated the effectiveness of the material in complementing existing classroom objectives and the material's amenability for student use without interpretation by the teacher. These two instruments, Anderson's Criteria to Evaluate Written Materials and the modified instrument are found in Appendices A and B, respectively.

Field Test of the Evaluation Instrument

A field test was conducted to determine the usability of the modified evaluation instrument with the identified printed nutrition education materials designated for evaluation in this study. For purposes of the field test, the same four materials utilized in the pilot test were selected for analyses. Health and nutrition education students at Grand Rapids Junior College were selected to serve as raters for the field test as they represented both the field of education and the specialty knowledge area of nutrition. Data were analyzed to determine the quality of the modified evaluation instrument. A check for order effect was once again established. Raters were debriefed to identify areas of ambiguity on the instrument.

It was determined from the data analysis of the modified instrument that it was appropriate for use in this study. The questions were understood by the raters, and deemed both applicable and appropriate for the length of the nutrition materials and their complexity.

Materials Population

Population

There are a wide variety of printed nutrition education materials produced by each of the identified individual sources representative of the three main categories of producer units: (a) individual food industries, (b) food industry associations, and (c) government agencies. These nutrition education materials are listed in catalogs which are made available by the producers upon request. All items

are listed according to type of material, such as curriculum kit, booklet, pamphlet, leaflet, and poster.

Total curriculum kits, for purposes of this study, are identified as complex teaching aids. Only the simple, printed supplemental teaching aids were reviewed in this study. The rationale for this limitation is the far greater number of simple, printed nutrition education materials produced by the three major producer units as compared to the total curriculum packages. Table 2 provides an identification of the actual number of materials available in each of the selected food industries, food industry associations, and government agencies for nutrition education materials to review in both classifications of: (a) curriculum packages and (b) simple printed materials.

Sample

For purposes of this study, the sample of materials selected for review were limited to 10 materials from all sources. These 10 materials were representative of the three major producer categories: (a) four from food industry, (b) four from food industry associations, and (c) two from government agencies. The food industry and the food industry association categories were each represented by four randomly selected materials from a specific Four Food Group category; i.e., dairy, meat and/or meat alternate, fruit and vegetable, and the grain group, or one from each of the selected producers. Thus, the food industry and the food industry association category were each represented by a material from each of the Four Food Groups.

Table 2

Numerical Depiction of Nutrition Materials Provided
by Selected Food Industries, Food Industry
Associations, and Government Agencies
for Classroom Use

Producers	Complex Materials	Simple Materials
Category 1: Industry Producers		
Oscar Mayer	0	7
Kellogg	3	10
Sunkist	2	6
Kraft	4	8
Category 2: Food Association Producers		
National Dairy Council	8	78
National Meat & Livestock Board	4	47
Potato Board	0	6
Cereal Institute	0	?
Category 3: Government Agencies		
Extension Service	4	35
Food and Drug Administration	0	45

Only two government agencies were identified as major contributors of nutrition education materials for classroom use. A material was randomly selected from each producer. These two agencies are: (a) the Extension Service of the United States Department of Agriculture and (b) the Food and Drug Administration. These two agencies develop and distribute materials representative of all Four Food Groups. Thus, while materials selected for review were limited to one randomly selected material from each of these two categories, the Four Food Groups were still considered to be represented.

Population of Raters

Classroom Teacher

Population. The population of classroom teachers identified for this study were limited to those individuals who teach or instruct at the 7th to 12th grade levels and who teach nutrition in the classroom, specifically home economics teachers. This limitation of teachers, grades 7 through 12, was established because of this type of educator's greater likelihood to actually use free and inexpensive materials such as the ones identified for review in this study.

Sample. The sample of classroom teachers were from Michigan's Region Nine Career Education and Planning District of home economists. The President of the Regional Career Education and Planning District of home economists was contacted and provided with some information regarding the study which was characterized as an evaluation project. It was determined that the home economics teachers who were part of

this organization represented rural, suburban, and city schools in a five county area of Michigan, including: Kent, Ottawa, Ionia, Montcalm, and Newaygo. A regularly planned meeting of this organization was designated for a presentation of the value of summative evaluation in rating materials, and the actual data collection for this study. All attending home economists served as raters of materials for this study.

Nutrition Specialists

Population. Nutrition specialists, as a population, were defined as individuals who have studied and worked intensively in the field of nutrition and have attained a high degree of understanding and proficiency in the science of nourishing the living organism.

Sample. The sample of nutrition specialists selected for this study were from the Greater Grand Rapids Chapter of the Michigan Dietetic Association. The chairperson of this dietetic association chapter was contacted and provided with some information regarding the study which was characterized as an evaluation project. It was determined that the nutrition specialists who were members of this chapter represented numerous occupations in the field of nutrition in a five county region in Michigan, including: Kent, Ionia, Muskegon, Newaygo, and Ottawa. A regularly planned meeting of this organization was designated for a presentation of the value of summative evaluation in rating materials, and the actual data collection for this study. All attending nutrition specialists served as raters

of materials for this study.

Curriculum Specialists

Population. Curriculum specialists, as a population, were defined for this study as members of the supervisory staff of a school district or other educational organization specializing in curriculum development and the implementation of curriculum designs.

Sample. For purposes of this study, the sample of curriculum specialists were selected from the Michigan Regional Education Materials Centers, Numbers 9 and 12. The Regional Education Material Center's chairperson for each was contacted and provided with some information regarding the study which was characterized as an evaluation project. It was determined that the curriculum specialists who were members of each region would attend a regularly planned meeting of the Regional Education Material Center. At this meeting the value of summative evaluation in rating materials selected for use in the classroom, and the actual data collection for this study, was presented. Regional Education Material Center Number 9 included curriculum specialists from Kalamazoo, Van Buren, Calhoun, and Allegan Counties in the state of Michigan. Regional Education Material Center Number 12 included curriculum specialists from Kent, Ionia, Montcalm, and Mecosta Counties in Michigan. Two data collections, using two Regional Education Material Centers, were needed to accomplish data collection from the designated 30 raters as the total population of curriculum specialists per center was small. By

meeting with curriculum specialists in the two Regional Education Material Centers the needed data were collected for purposes of this study.

Assignment of Raters to Products

In presenting the instruction of how to rate materials and in the actual distribution of the materials to each rater, the same format was followed for each of the three rater types: (a) classroom home economics teachers, (b) nutrition specialists, and (c) curriculum specialists. Each of the raters were in attendance at a regularly planned meeting of their professional association. The program included, "Evaluation of Printed Nutrition Education Materials." Each association hosted this program as part of a professional update for their membership. The program consisted of a 15-minute prepared lecture on the purposes and goals of summative evaluation, an overview of the research problem with no producers identified, and an introduction and discussion of the rating instrument as utilized in this study.

Upon completion of the 15-minute presentation, each rater was given the appropriate set of materials to rate. Each of the raters were assigned four materials to rate nested within one specific producer category, i.e., Raters 1-12 rated materials from only the food industry category; Raters 13-24 from only the food industry association category; and raters remaining were assigned materials from the government producer category. All raters within an assigned category rated the four materials selected to represent that category:

(a) food industry and (b) food industry association. As only two major producers of government materials were identified as specifically utilized in the classroom by teachers, both government materials selected for review were combined with one industry and one industry association material to keep the number of materials reviewed equal to four per rater. However, data from the government producer category only were used in the analysis.

The sequence in which the raters evaluated the materials was changed for each rater in each producer category. This changing sequence pattern was established so that any effect due to the order in which the rater reviewed the material could be minimized and accounted for in the analysis. The sequence pattern was controlled in the government producer category by the addition of one material type from industry and one material type from the industry association category in combination with the two selected materials representative from the government agencies.

Table 3 is a summary of the original design of the study. The distribution of materials per subject was identified as four from one specified category. However, originally 10 subjects were designated to rate materials from an assigned category. There were 30 raters for each rater category of (a) home economics teachers, (b) nutrition specialist, and (c) curriculum specialist. This resulted in a total of 90 raters for all selected materials. Table 4 depicts the design of this study. All remained the same as indicated in Table 3, except for the number of subjects rating materials for each of the three categories of producer types. Twelve subjects rated materials in the

Table 3

Summary Table of the Design of the Study

Rater type	Category 1 Food industry	Category 2 Food industry association	Category 3 Government agency
Classroom teacher	4 Materials per subject	4 Materials per subject	4 Materials per subject
S ₁	S ₁	S ₁₁	S ₂₁
S ₂	S ₂	S ₁₂	S ₂₂
S ₃	S ₃	S ₁₃	S ₂₃
.	.	.	.
.	.	.	.
.	.	.	.
Total: S ₃₀	S ₁₀	S ₂₀	S ₃₀
Nutrition specialist			
S ₃₁	S ₃₁	S ₄₁	S ₅₁
S ₃₂	S ₃₂	S ₄₂	S ₅₂
S ₃₃	S ₃₃	S ₄₃	S ₅₃
.	.	.	.
.	.	.	.
.	.	.	.
Total: S ₆₀	S ₄₀	S ₅₀	S ₆₀
Curriculum specialist			
S ₆₁	S ₆₁	S ₇₁	S ₈₁
S ₆₂	S ₆₂	S ₇₂	S ₈₂
S ₆₃	S ₆₃	S ₇₃	S ₈₃
.	.	.	.
.	.	.	.
.	.	.	.
Total: S ₉₀	S ₇₀	S ₈₀	S ₉₀

Note. Total: 90 ratings.

Table 4
Pattern of Materials Distributed to Each Rater
According to Each Producer Type

Rater no.	Food industry	Rater no.	Food industry assn.	Rater no.	Government agency
1	1 2 3 4	13	5 6 7 8	25	9 10 1 5
2	4 1 2 3	14	8 5 6 7	26	10 9 6 2
3	3 4 1 2	15	7 8 5 6	27	9 7 10 3
4	2 3 4 1	16	6 7 8 5	28	10 8 9 4
5	3 1 4 2	17	7 5 8 6	29	9 1 5 10
6	2 3 1 4	18	6 7 5 8	30	10 6 3 9
7	4 2 3 1	19	8 6 7 5	31	3 9 10 7
8	1 4 2 3	20	5 8 6 7	32	8 10 9 4
9	4 1 3 2	21	8 5 7 6	33	1 9 5 10
10	2 4 1 3	22	6 8 5 7	34	6 10 2 9
11	3 2 4 1	23	7 6 8 5	35	3 7 9 10
12	1 3 2 4	24	5 7 6 8	36	6 4 10 9

Key:

Food industries	Food industry associations	Government agencies
(1) Oscar Mayer	(5) Dairy Council	(9) Extension Service
(2) Kellogg	(6) Livestock Board	(10) Food & Drug. Adm.
(3) Sunkist	(7) Potato Board	
(4) Kraft	(8) Cereal Institute	

food industry and food industry association materials. All remaining raters rated materials from the government producer category. This change was made to facilitate the sequencing pattern to control for rater fatigue or practice effect.

Hypotheses

There were two null hypotheses relevant to the problem statement in this study. These two null hypotheses are listed below:

Hypothesis 1: The three producer types of materials: (a) food industry, (b) food industry association, and (c) government agency, will not differ according to their rating of format and content.

Hypothesis 2: The ratings of the three rater types: (a) home economics teachers, (b) nutrition specialists, and (c) curriculum specialists, will not differ according to their ratings of materials for format and content.

Data Analyses Procedures

Statistical Procedures

A one-way analysis of variance was used to test for differences between group means for the two hypotheses under investigation in this study. The analyses of the two hypotheses under investigation were dependent upon the ability to pool the ratings.

Design Issues

There are two major design issues in this study. The first issue is concerned with the investigator's ability to pool the data within the producer and rater categories for comparison purposes. The second design issue is the potential for an order effect in rating the materials. This order effect could produce ratings of materials that are reflections of individual rater fatigue or practice, not the real quality of the material.

Pooling issue. For purposes of the analysis of the data, it was critical that data within the producer and rater categories could be pooled. This assumption meant that material types within categories were approximately equal to one another. This was a critical assumption; it implies that the independent variable is three levels rather than 10. If materials are, in fact, rated significantly different from one another, the ability to test the stated hypotheses would have been eliminated, or at least reduced. It would be feasible to compare only mean scores of material types within categories and mean score averages of the four material types within each category to one another. An extreme rating of any one material type within a producer category could give the illusion of a higher or lower mean score average for the producer category than actually exists. Also, with the rater comparisons, mean average scores could be compared within producer categories and mean scores across the producer category units. As with the producer category ratings, any extremes in scores would influence the data analyses.

To determine if materials within each of the three producer categories could be pooled, the data were initially tested at the .05 level with least significant differences F-test in a repeated measures design. When the F-probability was less than .05 a correlated t-test using a pooled mean square error was run. If the probability of the t exceeded .05, the investigator could not reject the null hypotheses.

Order effect issue. A possible order effect due to rater fatigue could result in this study with each rater assigned to rate four materials for analyses. It was also possible that, with practice, the raters would rate materials differently. This potential order effect was minimized by sequencing each set of four materials within each producer category. Thus, raters rated the same four materials per category, but in different sequences.

Summary

Discussion in this chapter centered on five major areas. These areas included: (a) identification and description of the independent variables, (b) identification and description of the dependent variables, (c) instrumentation, (d) data collection procedures, and (e) hypotheses and data analyses procedures.

The independent variable, the producer categories, was identified as: (a) food industry, (b) food industry association, and (c) government agency. These three producer categories were identified as the three major producers of free and/or inexpensive nutrition

education materials for use in the nation's classrooms. There were 10 materials representative of the Four Food Groups randomly selected for review. Four materials, each representing one of the Four Food Groups, were randomly selected for rater review for both the food industry and food industry association. Two materials were randomly selected from two government agencies most recognized for their production of nutrition materials utilized in the classroom. There were only two materials selected in total from the government agency producer group, one from each identified agency, as the materials were not representative of any one food group, but rather from all Four Food Groups.

The independent variable, raters, were selected from three categories of professional occupations. These included: (a) home economics teachers, (b) nutrition specialists, and (c) curriculum specialists. A total of 30 raters were selected from each professional occupation, for a total of 90 raters, in this analysis.

The instrument entitled, Criteria to Evaluate Written Materials, developed by Anderson (1979) was selected as the model for the dependent variable measure to evaluate printed nutrition education materials rated in this study. The evaluative criteria designed for each of the five master categories: (a) readability, (b) stereotyping, (c) instructional aids, (d) format, and (e) content were recategorized into the appropriate two master categories: (a) format and (b) content. Only those criteria deemed applicable for the evaluation of supplemental printed nutrition education materials, i.e., leaflets and pamphlets, were selected for review.

There were two major hypotheses identified for investigation. These two hypotheses were stated in null form, and indicated that there would be no difference in overall format and general content qualities for the three producer categories of materials and no difference in the ratings assigned to the three producer categories of materials by the three rater types: (a) home economics classroom teachers, (b) nutrition specialists, and (c) curriculum specialists.

Two major design issues were identified in this study which could prohibit the usefulness of the data in determining the investigator's ability to reject the null hypothesis. The first issue was concerned with the ability to pool the material type ratings for each producer category into one representative score for comparison purposes. The second issue addressed the potential order effect due to rater fatigue or practice when assigned four materials to rate.

A one-way analysis of variance was selected as the statistical procedure to identify if there were differences in the producer categories or rater types for material analysis.

CHAPTER V

FINDINGS

Introduction

This chapter includes information on: (a) the actual data collection procedures used in the distribution of printed nutrition education materials for review by home economics teachers, nutrition specialists, and curriculum specialists; (b) the reliability of the instrument selected to rate the materials; (c) the data control methods employed to identify individual rater data which could not be used as an adequate measure of the variables under investigation; (d) the issue of pooling data within the three producer categories for each of the material types rater; (e) the actual findings and discussion of the data; and (f) implications of the findings for each of the two hypotheses under investigation. The two hypotheses tested are listed below:

Hypothesis 1: The three producer types of materials, (a) food industry, (b) food industry association, and (c) government agency, will not differ according to ratings of format and content.

Hypothesis 2: The ratings of the three rater types: (a) home economics teachers, (b) nutrition specialists, and (c) curriculum specialists, will not differ according to their ratings of materials for format and content.

In order to test each of these two hypotheses, the mean score for the two major variables, format and content, was determined for each of the selected nutrition education materials within the three producer categories of: (a) food industry, (b) food industry association, and (c) government agency. A one-way analysis of variance was used to test for differences in group means for the three producer categories of materials rated by classroom teachers and curriculum specialists. A special analysis, using a Bonferroni-Welch t-type approximate procedure, was necessary for the nutrition specialist rater group due to an error in the distribution of materials. This error resulted in an imbalance in the data from this nutrition specialist rater group.

Data Collection Procedures

Data from home economics classroom teachers and curriculum specialists were collected by limiting each rater to one specific producer category for analysis, i.e., Subjects 1-12 rated materials from only the food industry producer category; Raters 13-24 rated materials from only the food industry association category; all remaining raters evaluated materials from the government producer category. All raters within an assigned category rated the same four materials selected for review by the industry and the industry association. However, the sequence in which the four materials were rated was changed for each rater to minimize any possible order effect in the ratings assigned each material. Government produced materials were sequenced with a combination of one industry and one industry

association material to keep the number of materials reviewed per rater equal to four. They were sequenced to control for any possible order effect due to rater fatigue or practice. The distribution method employed was identified in Table 4, Chapter IV.

Nutrition specialists were given four materials to rate per each rater, but due to an error in the distribution of materials not all materials rated were nested according to producer type. Rather, some materials were of a food industry type, some a food industry association type, and some a government type. Special statistical procedures had to be developed and used for the analyses of such data because the nesting effect could not be examined using either a one-way analysis of variance or a repeated measures procedure, nor could a total score be assessed per producer category. Table 5 depicts the actual data collection method used by the nutrition specialist rater group in the ratings of the materials.

The imbalanced nature of the material distribution for the nutrition specialist group resulted in the need for a special statistical analysis of the data. As some of the data fit a repeated measurement mode and some fit an independent two sample t-design, an approximate Bonferroni-Welch t-type statistic was developed and used for analysis of the data. This approximate statistical test was developed by the Center for Statistical Services at Western Michigan University, Kalamazoo, Michigan, under the direction of Dr. Michael Stoline (1981).

Table 5

Pattern of Materials Distributed to Each
Nutrition Specialist Rater

Rater no.	Industry producer	Industry assn. producer	Government producer
1	1 2 3 4		
2	2 3 4	5	
3	3 4	5 6	
4		5 6 7 8	
5		6 7 8	9
6		7 8	9 10
7	1	8	9 10
8	1 2 3		10
9	1 2 3 4		
10	2 3 4	5	
11	3 4	5 6	
12	4	5 6 7	
13		5 6 7 8	
.			
.			
.			
n	1 2 3		10

Key:

(1) Oscar Mayer	(5) Dairy Council	(9) Extension Service
(2) Kellogg	(6) Livestock Bd.	(10) Food and Drug Adm.
(3) Sunkist	(7) Potato Bd.	
(4) Kraft	(8) Cereal Institute	

Data Control

Thirty raters from each rater category: (a) home economics classroom teacher, (b) nutrition specialist, and (c) curriculum specialist rated the four materials using an evaluation instrument modified from Anderson (1979) entitled, Criteria to Evaluate Written Materials. This resulted in a total of 90 raters evaluating four selected materials, or a total of 360 ratings.

The instrument utilized for this rating of materials consisted of two major variables: format and content. Each variable was measured by nine criteria. Each of the criteria was rated as: (a) superior, (b) adequate, or (c) poor. If a rater failed to rate two or more of the nine items for a given variable, that total variable score was eliminated from the study.

Order Effect

No significant differences were identified due to order in which materials were rated by the three rater types. Both variables investigated: (a) format and (b) content were nonsignificant at an established alpha of .05 for all three producer categories: (a) food industry, (b) food industry association, and (c) government agencies.

Reliability of the Instrument

Only the qualified sources of data were used to determine the reliability of the instrument in this study. The Cronbach Coefficient Alpha was the selected statistical procedure used to determine

reliability of the instrument in this study. The instrument was identified to be reliable with a value of alpha at .78 for the variable format. It was reliable with a value of alpha at .82 for the variable content. These computed reliabilities indicated reasonably high reliability for all ratings of materials for both variables: format and content.

Findings and Discussion of Hypothesis 1

Hypothesis 1 is concerned with the determination of the similarity of overall format and general content quality of materials produced by: (a) food industry, (b) food industry association, and (c) government agencies. The underlying assumption of this hypothesis was that the materials rated in each of these producer categories could be rated consistently by the raters so that the data could be pooled within categories. Thus, producer categories could be compared one to another for overall format and general content quality.

It was determined that it was not feasible to pool data for analysis of the three producer categories of materials by any of the three rater groups: (a) home economics teachers, (b) nutrition specialists, and (c) curriculum specialists. Individual material type ratings within categories were significantly different at the established alpha of .05 for home economics teacher raters and curriculum specialist raters. The nutrition specialist data were identified earlier as using a Bonferroni-Welch t-type approximate procedure due to an error in the distribution of materials. This error resulted in an imbalance in the data collection. Thus, the significance level

for the nutrition specialist raters was determined for t-probabilities of pairwise comparisons of the data, not an F-probability alpha used with the home economics teacher and curriculum specialist raters. To imply an alpha of .05 equivalent to an F-probability, nutrition specialist data were identified as significant for t-probability pairwise comparisons at alpha = .004. This alpha was determined using the formula:

$$\frac{.05}{2(6)}$$

where: .05 = designated alpha for F-probability analysis;

2 = number of materials in each of the pairwise comparisons;

6 = number of pairs per producer category.

The F-probabilities of the home economics teacher and the curriculum specialist raters designated as significant at the .05 level, and the t-probability established alpha of .004 for significance for the nutrition specialist raters indicated that it was not feasible to pool the data. Table 6 displays the F-probabilities of the data analysis for the home economics teacher and curriculum specialist raters.

It can be noted from Table 6 that in all but the government agency produced materials category rated by the curriculum specialists there were significant differences within each category at the .05 level of significance. As only one of these categories could be pooled for further analysis of the data, it was determined inappropriate to continue further analysis based on the assumption that materials within each producer category were similar in format and content quality.

Table 6
Feasibility of Pooling Data Using F-Probabilities
From the Ratings of Home Economics Teacher (HET)
and Curriculum Specialist (CS) Raters

Rater	Variable	Industry	Industry assn.	Government agency
HET	Format	.00*	.00*	.009*
	Content	.06	.00*	.009*
CS	Format	.00*	.00*	.664
	Content	.08	.465	.195

*If less than .05 there are significant differences between materials within the producer categories.

Industry Materials

When determining overall format qualities, home economics teachers rated the industry producer category materials significantly different from one another. This difference was noted with the F-probability of .00 in Table 6. An analysis of general content ratings by home economics teachers for the industry producer category indicated that there were no significant differences in quality. The F-probability was .06 in Table 6.

Thus, while there were no significant differences between material types in the general content ratings, home economics teachers were significantly different in their rating of overall format. It was not possible to pool the data due to these significant differences.

Curriculum specialists, when evaluating format qualities of industry produced materials, identified significant differences for individual material types. The F-probability was .00 as noted in Table 6. There were no significant differences in the four material types rated in the industry producer category for general content quality, as indicated with the F-probability of .08 as noted in Table 6.

As with the home economics teacher raters, it was not possible to pool the data for the industry producer category as rated by curriculum specialists. The content was not significantly different, but the format varied significantly between material types.

It was not possible to derive an F-probability for the nutrition specialist raters to determine differences in overall format quality and general content quality as was computed for the home economics teacher rater and curriculum specialist raters. Instead, only the estimated t-probability was used to determine pairwise differences between material types for each of the two variables analyzed. The estimated t-probabilities indicated that there were significant differences between the Oscar Meyer material and the Kraft material for both content and format quality. The t-probabilities were .00 for both format and content comparisons of Oscar Meyer and Kraft materials. In both instances, Kraft was rated higher according to the mean score averages than the Oscar Meyer material.

From this analysis of the data, nutrition specialists were significantly different in their rating of material types. Thus, data could not be pooled.

It was identified, using mean score averages, that the Sunkist material type in the industry category was rated noticeably higher in both overall format and general content quality by all three rater types: (a) home economics teachers, (b) curriculum specialists, and (c) nutrition specialists. Table 7 depicts these results for home economics teacher raters and curriculum specialist raters. Table 8 depicts results for nutrition specialist raters.

Industry Association Materials

Within the industry association producer category, materials were found to have significant differences when rated for both overall format and general content quality by the home economics teacher raters. The F-probability was .00 in Table 6 for both variables. Thus, data could not be pooled.

Curriculum specialists rated industry association materials significantly different from one another in overall format quality, but not significantly different in general content quality. This can be noted in the F-probability of .00 in Table 6 for format and the .465 level for content. Therefore, data could not be pooled for the general content variable.

It was not possible to derive an F-probability for the nutrition specialist raters to determine differences in overall format and general content quality as was computed for the home economics teacher and curriculum specialist raters. Instead, only the estimated t-probability was used to determine pairwise differences between material types for each of the two variables analyzed. These estimated

Table 7

Ratings by Home Economics Teachers and Curriculum Specialists for Each
Material Rated in the Industry Producer Category

Vari- able	Home economics teacher raters				Curriculum specialist raters			
	Material type	Mean	Pairs	<u>t</u> -Prob.	Material type	Mean	Pairs	<u>t</u> -Prob.
Format	(1) Kellogg	2.000	(1,2)	.126	(1) Kellogg	1.911	(1,2)	.030*
	(2) Oscar Mayer	2.167	(1,3)	.000*	(2) Kraft	2.267	(1,3)	.016*
	(3) Kraft	2.533	(1,4)	.000*	(3) Oscar Meyer	2.311	(1,4)	.000*
	(4) Sunkist	2.556	(2,3)	.002*	(4) Sunkist	2.733	(2,3)	.777
	<u>F</u> -Prob: .00*		(2,4)	.001*	<u>F</u> -Prob: .00*		(2,4)	.006*
	<u>N</u> = .0		(3,4)	.835	<u>N</u> = 10		(3,4)	.011*
Content	(1) Kellogg	2.111	(1,2)	.629	(1) Kraft	2.167	(1,2)	.895
	(2) Oscar Mayer	2.178	(1,3)	.071	(2) Oscar Meyer	2.194	(1,3)	.792
	(3) Kraft	2.367	(1,4)	.018*	(3) Kellogg	2.222	(1,4)	.030*
	(4) Sunkist	2.456	(2,3)	.177	(4) Sunkist	2.694	(2,3)	.895
	<u>F</u> -Prob: .06		(2,4)	.051	<u>F</u> -Prob.: .08		(2,4)	.037*
	<u>N</u> = 10		(3,4)	.520	<u>N</u> = 4		(3,4)	.047

*If less than .05 there are significant differences in the ratings of materials in the industry category.

Table 8

Ratings by Nutrition Specialists for Each Material
Rated in the Industry Producer Category

Variable	Material type	Mean	Pairs	Estimated t-prob.
Format	(1) Oscar Mayer	1.946	(1,2)	.187
	(2) Kellogg	2.148	(1,3)	.000*
	(3) Kraft	2.488	(1,4)	.004
	(4) Sunkist	2.759	(2,3)	.006
			(2,4)	.070
			(3,4)	.006
Content	(1) Oscar Mayer	1.952	(1,2)	.250
	(2) Kellogg	2.145	(1,3)	.000*
	(3) Kraft	2.488	(1,4)	.004
	(4) Sunkist	2.759	(2,3)	.088
			(2,4)	.091
			(3,4)	.790

*If less than .004 there are significant differences in the pairwise comparisons of materials within the industry category.

t-probabilities indicated that there were significant differences in the format variable, but not in the content variable. The National Meat and Livestock Board material differed significantly from the Potato Board material with a t-probability of .002; the Potato Board material was noted to differ significantly from the Cereal Institute material with a t-probability of .000. Thus, data could be pooled for general content but not for the format variable. The inability to pool data on the format variable eliminated the possibility of further data analysis in a pooled context for purposes of this study.

In the mean score averages, it was identified that the National Meat and Livestock Board association material was rated noticeably lower by all three rater types: (a) home economics teacher, (b) nutrition specialist, and (c) curriculum specialist. Table 9 depicts the results of the F-probabilities and the t-probabilities, plus the mean score averages, for materials rated by home economics teacher and curriculum specialist raters. Nutrition specialist data are presented in Table 10.

Government Materials

Home economics teacher raters identified significant differences in the government producer category between materials for both their overall format and general content quality. This was indicated with an F-probability of .009 for both variables. Mean scores indicated that the Food and Drug Administration material was preferred by home economics teachers for overall format, but the Extension Service material was rated high in general content quality.

Table 9

Ratings by Home Economics Teachers and Curriculum Specialists for Each
Material Rated in the Industry Association Category

Variable	Home economics teacher raters				Curriculum specialist raters			
	Material type	Mean	Pairs	t-Prob.	Material type	Mean	Pairs	t-Prob.
Format	(1) Livestock	1.787	(1,2)	.000*	(1) Livestock	1.815	(1,2)	.047*
	(2) Potato	2.315	(1,3)	.000*	(2) Potato	2.123	(1,3)	.006*
	(3) Dairy	2.472	(1,4)	.000*	(3) Dairy	2.259	(1,4)	.000*
	(4) Cereal	2.583	(2,3)	.177	(4) Cereal	2.568	(2,3)	.365
	F-Prob: .00*		(2,4)	.025*	F-Prob: .00*		(2,4)	.000*
	<u>N</u> = 12		(3,4)	.337	<u>N</u> = 9		(3,4)	.047*
Content	(1) Livestock	1.852	(1,2)	.000*	(1) Livestock	1.556	(1,2)	.521
	(2) Potato	2.259	(1,3)	.000*	(2) Potato	1.889	(1,3)	.405
	(3) Cereal	2.287	(1,4)	.000*	(3) Dairy	2.000	(1,4)	.168
	(4) Dairy	2.528	(2,3)	.790	(4) Cereal	2.389	(2,3)	.825
	F-Prob: .00*		(2,4)	.014*	F-Prob: .465		(2,4)	.356
	<u>N</u> = 12		(3,4)	.026	<u>N</u> = 2		(3,4)	.460

*If less than .05 there are significant differences between paired comparisons.

Table 10
 Ratings by Nutrition Specialists for Each Material
 Rated in the Industry Association
 Producer Category

Variable	Material type	Mean	Pairs	Estimated t-prob.
Format	(1) Livestock	1.917	(1,2)	.002*
	(2) Potato	2.296	(1,3)	.100
	(3) Cereal	2.342	(1,4)	.190
	(4) Dairy	2.521	(2,3)	.015
			(2,4)	.000*
			(3,4)	.690
Content	(1) Livestock	.979	(1,2)	.012
	(2) Potato	2.253	(1,3)	.063
	(3) Cereal	2.165	(1,4)	.019
	(4) Dairy	2.322	(2,3)	.018
			(2,4)	.011
			(3,4)	.649

*If less than .004 there are significant differences in the ratings of materials for industry association producer category.

Curriculum specialist raters found no significant differences between the material types within the government producer category for overall format and general content quality. The F-probabilities for both variables exceeded .05 (see Table 11).

Table 11

Ratings by Home Economics Teachers and Curriculum Specialists for All Materials Rated in the Government Producer Category

Variable	Home Economics Teacher Raters		Curriculum Specialist Raters	
	Material type	Mean	Material type	Mean
Format	Extension Serv.	2.063	Food and Drug Adm.	2.639
	Food and Drug Adm.	2.619	Extension Serv.	2.694
	<u>F</u> -Prob: .009* <u>N</u> = 7		<u>F</u> -Prob: .009* <u>N</u> = 4	
Content	Food and Drug Adm.	2.222	Food and Drug Adm.	2.648
	Extension Serv.	2.444	Extension Serv.	2.933
	<u>F</u> -Prob: .009 <u>N</u> = 6		<u>F</u> -Prob: .195 <u>N</u> = 6	

*If less than .05 there are significant differences between the paired comparisons.

It was not possible to derive an F-probability for the nutrition specialist raters due to an error in the distribution of materials for data collection. However, to determine differences in material quality an estimated t-probability was computed to assist in the determination of the possible differences between materials when

evaluated for format and content.

The materials were not significantly different in their overall format quality as indicated in the t-probability. However, the Food and Drug Administration material was rated significantly different from the Extension Service material for content quality, with a t-probability of .001. In both instances the mean score for the Extension Service material was noticeably higher than the Food and Drug Administration material. This information is depicted in Table 12.

Table 12

Ratings by Nutrition Specialists for All Materials
Rated in the Government Producer Category

Variable	Material type	Mean	Pairs	<u>t</u> -Prob.
Format	(1) Food & Drug Adm.	2.277	(1,2)	.006
	(2) Extension Serv.	2.747		
Content	(1) Food & Drug Adm.	2.153	(1,2)	.001*
	(2) Extension Serv.	2.753		

*If less than .004 there are significant differences between pairs.

Consequences of Tests of Hypothesis 1

From this analysis of the data from the three producer categories: (a) food industry, (b) food industry association, and (c) government agency, it was determined that in most instances the data could not be pooled. Therefore, further analysis was possible based

only on a pairwise analysis of material types for the nutrition specialist raters and the mean score averages of material with noticeable differences in quality for all rater types. Due to this wide variance within each of the two producer categories, it was not possible to reject the null hypothesis under investigation.

Findings and Discussion of Hypothesis 2

Hypothesis 2 is concerned with the determination of the similarity of the ratings for all producer categories of materials by the three rater types: (a) home economics teachers, (b) curriculum specialists, and (c) nutrition specialists on the two variables: format and content. The underlying assumption of this hypothesis was that the rater types would be consistent in their rating of materials within each producer category. Thus, rater types could be compared to one another for overall format and general content quality ratings of the selected materials.

It was not feasible to determine a representative score for analysis of the three rater types' ratings of the three producer categories of materials. Individual material type ratings within producer categories were significantly different at the established .05 level. Thus, it was necessary to limit data analysis to a discussion of the noticeable differences in the ratings of the three rater types according to mean score averages of the materials within each producer category.

Raters of Industry Materials

The industry material category data for the variable, format, could not be combined to form a representative score for each of the three rater types as there were significant differences in the ratings of individual materials reviewed in this category. The variance of ratings for each of the four materials by each rater type prohibited the ability to assign a representative score for this category. The F -probability of .029 for the Sunkist material indicated significant differences in the raters' view of this material compared to the other three materials rated. The mean score average indicated a noticeable difference in the home economics teacher raters' lower rating of this material's overall format quality than the scores assigned by the nutrition specialist or curriculum specialist raters.

In rating the general content of industry materials, the three rater types again were so different in their ratings of individual materials within the producer category that a representative score could not be determined. Table 13 depicts the results of the data.

Ratings of Industry Association Materials

The industry association material category data for the two variables, format and content, could be combined to form a representative score for each of the three rater types. There were no significant differences in the ratings for each of the materials within this category for each rater type: (a) home economics teacher, (b) nutrition specialist, and (c) curriculum specialist. Thus, a representative

Table 13

Ratings by the Three Rater Types for Industry
Produced Materials of Format and Content

Material type	Format				Content			
	Rater type ^a	Mean	<u>N</u>	<u>F</u> -prob.	Rater type ^a	Mean	<u>N</u>	<u>F</u> -prob.
Oscar Mayer	NS	1.947	14	.161	NS	1.953	12	.533
	HET	1.999	12		CS	2.066	12	
	CS	2.246	14		HET	2.119	14	
Kellogg	CS	1.850	13	.175	NS	1.987	11	.635
	HET	2.000	13		HET	2.120	13	
	NS	2.148	12		CS	2.140	12	
Sunkist	HET	2.434	14	.029*	HET	2.397	14	.641
	CS	2.752	13		CS	2.500	12	
	NS	2.759	12		NS	2.542	12	
Kraft	CS	2.274	13	.238	CS	1.986	11	.003*
	HET	2.453	13		HET	2.384	13	
	NS	2.465	11		NS	2.501	10	

^aNS = Nutrition Specialist; CS = Curriculum Specialist; and
HET = Home Economics Teacher.

*If less than .05, there are significant differences in the
ratings of the industry produced materials.

score could be identified for each of the rater types for this producer category. The F -probability scores exceeded the established .05 level for alpha in all cases. However, because raters could not identify materials in the other two categories as having such similar quality so that a representative score could be assigned, information could not be used in this method for further analysis. Table 14 depicts the results of this data.

Raters of Government Agency Materials

There were significant differences in government agency materials as rated by the three rater types: (a) home economics teacher raters, (b) nutrition specialist raters, and (c) curriculum specialist raters. The format variable was rated significantly different for the Food and Drug Administration material by the three rater types, with curriculum specialists' mean score average for this material the highest. In general content quality, both materials rated were significantly different in quality according to the three rater types. This information is presented in Table 15.

Consequences of Tests of Hypothesis 2

From this analysis of the data of the three rater types rating of the three producer categories of materials, it was determined that data could be assigned a representative score for the industry association material category. There was little variance per rater for materials rated within this category. Therefore, a score representative of the specific rater type could be identified. However, the

Table 14

Ratings by the Three Rater Types for Industry
Association Produced Materials
for Format and Content

Material type	Format				Content			
	Rater type ^a	Mean	<u>N</u>	<u>F</u> -prob.	Rater type ^a	Mean	<u>N</u>	<u>F</u> -prob.
Dairy Council	CS	2.302	14	.162	CS	2.283	9	.253
	HET	2.437	14		NS	2.338	11	
	NS	2.522	12		HET	2.484	14	
Livestock Board	HET	1.762	14	.465	CS	1.874	10	.899
	CS	1.902	13		HET	1.889	14	
	NS	1.918	12		NS	1.947	10	
Potato Board	CS	2.225	14	.814	CS	2.106	11	.519
	HET	2.286	14		HET	2.270	14	
	NS	2.296	12		NS	2.316	11	
Cereal Institute	NS	2.343	12	.142	NS	2.166	12	.927
	HET	2.510	13		HET	2.214	13	
	CS	2.590	13		CS	2.237	12	

^aNS = Nutrition Specialist; CS = Curriculum Specialist; and
HET = Home Economics Teacher.

Table 15

Ratings by the Three Rater Types for Government
Produced Materials Rated for
Format and Content

Material type	Format				Content			
	Rater type ^a	Mean	N	F-prob.	Rater type ^a	Mean	N	F-prob.
Extension Service	HET	2.619	7	.325	HET	2.413	7	.003*
	NS	2.748	12		NS	2.747	10	
	CS	2.796	6		CS	2.833	6	
Food & Drug Adm.	HET	2.063	7	.027*	NS	2.142	10	.029*
	NS	2.278	12		HET	2.222	6	
	CS	2.646	6		CS	2.648	6	

^aNS = Nutrition Specialist; CS = Curriculum Specialist; and
HET = Home Economics Teacher.

*If less than .05, there are significant differences in the
ratings of government produced materials by the three rater types.

variance was too great per rater for materials reviewed within the
other two producer categories, industry and government, to determine
a representative score for each rater type. Thus, discussion was
limited to mean score averages when there was a noticeable differ-
ence in a rater's rating of a given material type within a producer
category. This limitation resulted in the inability to reject the
null hypothesis under investigation.

Summary

Due to the wide variance within producer and rater type categories, it was not possible to reject the two null hypotheses under investigation. Discussion of the data was limited to an identification of those materials and rater types which were significantly different as identified by the F-probability or t-probability statistic and noticeable differences in material or rater types based on the mean score average.

It was identified by mean score averages in the industry producer category that Sunkist was the most preferred material by all three rater types for both overall format and general content. The National Meat and Livestock Board material reviewed in the industry association producer category was least preferred by all three rater types for both format and content.

An analysis of each rater type's rating of the three producer categories indicated that there were differences in their rating of format and content quality of materials. However, there were few consistent patterns of the rater's preferences for a given producer category of materials from which to make judgments.

Even though there existed certain large variabilities within groups which prevented pooling, there were certain general tendencies which were worthy of note, namely, the high consistent rating of Sunkist over all groups for both format and content, and the low consistent rating of the National Meat and Livestock Board material. Particular materials from various sources seem to be preferred by

raters. Thus, it may be more preferable to view materials not from the assigned categories of industry, industry association, and government agencies, but as entities within themselves. The question may not be the appropriateness of using materials from a particular producer category, but that of making the best selections from the variety of available producers.

CHAPTER VI

DISCUSSION AND CONCLUSIONS

Introduction

The purpose of this study was to evaluate the quality of supplemental, printed nutrition education materials developed for use in the nation's classrooms by the three producer units: (a) food industry, (b) food industry association, and (c) government agency. The quality of the materials were rated by the three selected rater types: (a) home economics teacher, (b) nutrition specialist, and (c) curriculum specialist. Systematic differences due to either raters of materials or producers of these materials were sought. A one-way analysis of variance was used to test for the differences between producer categories rated by home economics teacher raters and curriculum specialist raters. Due to the imbalanced method employed in the data collection by nutrition specialists, an approximate Bonferroni-Welch t-type statistic was utilized to determine differences in producer categories.

The purpose of this chapter is to (a) briefly review the findings of this study and to present tentative conclusions, (b) identify the limitations of this study, (c) discuss the value of the study, and (c) suggest future research needs.

Review of the Findings

Hypothesis 1

Due to the wide variance within each of the producer categories, it was not possible to reject the null hypothesis. Discussion of the data was limited to mean score averages of materials within producer categories and pairwise analysis of material types rated by nutrition specialists.

It was identified, using observed mean score averages, that the Sunkist material type in the industry producer category was rated higher in both overall format and general content quality by all three rater types: (a) home economics teacher, (b) nutrition specialists, and (c) curriculum specialists. The t-probabilities indicate that in pairwise comparisons the Sunkist material was significantly different from all other materials when rated by home economics teachers and curriculum specialists for overall format quality. In general content quality the home economics teacher raters were significantly different in only one pairwise comparison for Sunkist. Curriculum specialists were significantly different in the rating of the Sunkist material in two pairwise comparisons. Nutrition specialists were not significantly different in either format or content quality ratings of the Sunkist material compared to all other materials rated in that category.

The National Meat and Livestock Board material within the industry association producer category was rated noticeably lower in observed mean score averages by all three rater types. The

t-probabilities indicated that in pairwise comparisons the National Meat and Livestock Board material was significantly different from the other three rated materials in this producer category by both home economics teacher raters and curriculum specialists for format quality. Home economics teacher raters also rated this material significantly different from all other three materials for general content. Curriculum specialists were not significantly different in the pairwise comparisons of the four material types. Nutrition specialists rated the National Meat and Livestock Board material significantly different from one other material for overall format quality, but did not rate it significantly different from the other three materials in this producer category for general content. Thus, while observed mean scores indicated this material to be least preferable, not all the means reflected significant differences in the ratings of this material to the other three reviewed in this producer category.

Hypothesis 2

Due to the wide variance of the data of the three rater types' rating of the industry and government produced categories of materials, it was identified that a representative score per rater type for each of these two producer categories could not be determined. Industry association materials were rated similarly by raters from each of the three rater types. The lack of variance by the rater types would have allowed a designation of a representative score for this producer category. This score was recognized as not valuable due to the inability to compare with the other two producer categories, and

thus was not computed. The inability to determine a representative rater type score for each of the three producer categories made it impossible to reject the null hypothesis.

Analysis of the data for discussion was limited to mean score averages when there were noticeable differences in the rater type's rating of a given material within a producer category. As raters did not indicate a preference for a specific producer category, indicated by the similarity of observed mean score averages assigned materials rated within each producer category, it is not likely that raters were influenced by the knowledge of the actual producer of the material. The inconsistent rating patterns indicated that the possible bias which may have occurred due to the knowledge of producer type, i.e., government produced materials, was not apparent. Nor was it possible to detect systematically higher ratings by curriculum specialists or teachers, i.e., role of rater.

Limitations of This Study

Pooling of Data

It was not feasible to pool the data for analyses as originally designated. There were significant differences in the quality of format and content for materials within each producer category selected for review. These significant differences prohibited the ability to assign one representative score to each producer category for comparative purposes. Thus, the study was limited to a discussion of the mean score averages within each producer category, and

pairwise comparisons of materials rated by the nutrition specialists.

Sample Size

This study was very limited in its sample size from which to make references to the total population of materials. The three producer categories: (a) food industry, (b) food industry association, and (c) government agency were represented by a very limited number of producers of nutrition education materials. Food industry and food industry association were represented by four producer units. The government agency producer category was represented by only two units. For each of these selected producer units, only one randomly selected material produced by the designated unit was identified for review. Therefore, it is possible that the identified producer units and materials selected for review in this study was not representative of the total population of producers and/or materials. However, the producer units were selected based on their representation of the Four Food Group categories, i.e., dairy, meat and meat alternate, fruit and vegetable, and the grains. The material chosen to represent each of these producer units was randomly selected.

Data Control

Items missing in the individual rater's analysis of their assigned materials for review eliminated the ability of the investigator to use all rater analyses. The instrument used for the rating of materials consisted of two variables: format and content. Each variable was measured by nine items. If a rater failed to rate two

or more of the nine items for a given variable, that total variable rating was eliminated from the study. Thus, the data set on which comparisons were made was limited.

Imbalanced Data Collection

Nutrition specialists were given four materials to rate per each rater, as were all raters in this study. However, not all materials rated by nutrition specialists were nested according to producer type. Rather, some materials were of a food industry type, some a food industry association type, and some a government type. This imbalance in the data collection was due to an error in the distribution of materials to be rated to the nutrition specialists. To analyze these data, special statistical procedures had to be developed and utilized because the nesting effect could not be examined using either a one-way analysis of variance or a repeated measures procedure, nor could a total score be assessed per producer category. A Bonferroni-Welch t-type approximate procedure was utilized to analyze the data from this rater type.

Failure to Reject the Hypotheses

The inability to reject the two null hypotheses under investigation limited the power of this study to make recommendations for the quality of materials produced by industry, industry association, or government agencies. It also prohibited the ability to render complete data on which rater types perceived the quality of the materials investigated most favorably. Some inferences could be made using

mean score averages for all producer and rater types, and pairwise comparisons for the nutrition specialist analysis of the producer categories. However, the mean scores were discussed only when noticeably different from the other mean scores identified for material types within a producer category due to their reflection of extremes in the ratings. This reflection may not be a fair representation of the materials' quality or the rater's review as was indicated by the t-probabilities with the pairwise comparisons.

Value of the Study

While it was not possible to provide the educator with a specific producer category for recommended use as a result of this study, it has provided a much more systematic review of representative materials that did Harty (1979) in the book, Hucksters in the Classroom. This book was highly critical of the use of industry and industry association materials produced for use in the nation's classrooms. However, Harty's criticisms were not based on an objective, systematic analysis. Rather, materials were subjectively analyzed for their overall quality according to "expert" review. The sample of materials reviewed by Harty (1979) were not selected with any stated method, nor with any attempt to reflect a fair representation of materials available in the marketplace. This failure to use an identified instrument to rate materials on the same established criteria, and the failure to select materials to insure equal representation to the total population, does raise serious questions as to the appropriateness of the recommendations to ban the use of these

materials in the classroom.

The systematic review of materials randomly selected from the identified population in this study did not provide the comprehensive data needed from which to make recommendations regarding the appropriateness of the use of industry, industry association, and government materials in the classroom. However, it was determined that quality of materials for format and content were significantly different from one another within these three producer categories. Thus, this indicated that perhaps not one particular producer unit is most appropriate, but that the educator must make selections carefully based on an identified criteria from the multitude of materials available from all sources.

The need for all educators to evaluate prior to use in the classroom was reinforced in this study with the wide variance in the materials rated within each of the three producer categories. Materials of even such small scope as the supplemental, printed nutrition materials can vary substantially in their quality regardless of the producer. It is necessary for all educators to exercise caution in making selections, and preferable to make the decisions of selection according to specified criteria.

Future Research Recommendations

A much more intensive review of a large set of representative materials limited to just one producer category is needed. This study identified that there is much variance in materials within each producer category. A large sample of a representative set of

materials would provide much more complete information from which to judge the quality of the producer category under review.

Further research is also needed on how the materials are actually used in the classroom and their effectiveness based on that use. Currently, many opinions of how good the actual materials' quality, according to a variety of raters, is available. How students perceive the quality of these same materials is not known. The actual value of the material must be judged by the acceptability to the student as well as the opinion of experts in the field.

Summary

It is not possible to reject the two null hypotheses under investigation due to the wide variance within producer and rater type categories. However, with the use of mean score averages, plus the use of pairwise comparisons of material types within producer categories rated by nutrition specialists, it was identified that there were significant differences in the format and content quality of materials rated by all three rater types: (a) home economics teachers, (b) nutrition specialists, and (c) curriculum specialists.

There were numerous limitations identified in this study. It was not possible to pool data due to the wide variances within producer categories. Therefore, analysis was limited to mean score averages and to the pairwise comparisons for nutrition specialists. Rater type data were not available for comparisons for producers of industry and government materials due to the large variance in the ratings of the individual material types within producer categories.

Industry association produced materials were rated more similarly by each of the three rater types, and data could have been used as a representative score for each rater type for this producer category. It was not computed due to its inability to be of value with a comparison to the industry and government produced materials. Therefore, analysis was limited to mean score averages and to pairwise comparisons with the nutrition specialist raters.

The sample size of materials was recognized as very small from which to make inferences to the total population of available materials. Missing data due to individual rater failure to rate at least seven of the nine criteria for each of the two variables, format and content, eliminated the use of data in this study.

An error in the distribution of materials for data collection with the nutrition specialist raters resulted in an imbalance in the data. This imbalance created a need to use an approximate Bonferroni-Welch t-type statistic for analysis, rather than the one-way analysis used with the other two rater types: (a) home economics teachers and (b) curriculum specialists.

It was not possible to reject the null hypotheses in this study. This failure to reject the null hypotheses limited the impact of this study, and prohibited making recommendations as to the appropriateness of using industry, industry association, and government agencies as sources of printed nutrition education materials in the classroom.

Further research is needed using a much larger sample of material for each of the three producer types. It is also recommended that the actual effectiveness of the material as perceived by the

actual users of these materials, i.e., the students, is investigated.

APPENDICES

Appendix A

CRITERIA TO EVALUATE WRITTEN MATERIALS

Developed By

Marcy L. Fallick Anderson

These criteria were developed to evaluate prenatal nutrition written materials for pregnant teenagers; they are particularly appropriate guidelines for materials for poor readers. Also, by changing the specific content criteria, this form can be used to evaluate written materials in a wide variety of content areas.

NAME OF MATERIAL _____
SOURCE ORGANIZATION _____ PAGES _____
AUTHOR _____ COST _____

DIRECTIONS: Evaluate the material using the guidelines below, placing a check mark next to the description which most appropriately applies in each category. For comparison purposes, you may wish to transfer these ratings to the graph located on page 11.

NOTE: The non-applicable category should be used when the other ratings cannot be fairly applied. For example, a two-page pamphlet should not be penalized for the lack of a table of contents.

READABILITY: Choose two pages from the main body of the text, and rate for each readability factor on the basis of these two pages, unless otherwise instructed.

1a. Avoidance of over-technical language

- ____ Superior: an average of 2 or fewer technical terms are used per page
____ Adequate: an average of 3 technical terms are used per page
____ Poor: an average of 4 or more technical terms are used per page
____ Non-applicable

1b. Technical words, if used, are explained

- ____ Superior: definitions provided for two or more of the technical terms found in the material
____ Adequate: definition is provided for one of the technical words found in the material
____ Poor: no definitions provided for technical words found in the material
____ Non-applicable

1c. Hyphens

- ☐ Superior: no hyphens used in materials
☐ Adequate: average of two or fewer hyphens per page
☐ Poor: average of three or more hyphens per page
☐ Non-applicable

1d. Writing Style

- ☐ Superior: material is light, giving the reader a sense of active involvement with the material; written in a positive style; an average of one or no instances of negative wording (e.g., "don't eat . . .") per page
☐ Adequate: material is easy to read, but does not personally involve the reader; average of two instances of negative wording per page
☐ Poor: academic style or other style that would turn teens away is used; average of three or more instances of negative wording per page
☐ Non-applicable

1e. Active Voice

- ☐ Superior: an active voice (e.g., "you need . . . you eat") rather than a passive voice (e.g., "can be influenced . . . has been shown") is used at least 75 percent of the time
☐ Adequate: an active voice is used from 50 to 74 percent of the time
☐ Poor: an active voice is used less than 50 percent of the time
☐ Non-applicable

1f. Suitability of Reading Level (see Fry graph, page 13, to determine grade level)

- ☐ Superior: reading level of material is fifth grade or lower
☐ Adequate: reading level is sixth or seventh grade
☐ Poor: reading level is eighth grade or higher
☐ Non-applicable

1g. Reading Level is _____.

STEREOTYPING

2a. Role Models Provided in the Text

- ☐ Superior: women are discussed having many roles, traits, and emotions, at least one of which may be considered "untraditional"
☐ Adequate: material does not include any negative stereotypes but fails to consider women in untraditional roles
☐ Poor: material relegates women to secondary or inferior status in society, implies females are limited to certain abilities, traits, roles, emotions, and/or property of males
☐ Non-applicable

2b. Role Models Provided by Illustrations

- ____ Superior: women are shown having many roles, traits, and emotions, at least one of which may be considered "untraditional"
- ____ Adequate: material does not portray any negative stereotypes but fails to show women in untraditional roles
- ____ Poor: material depicts women in secondary or inferior status in society, implies females are limited to certain abilities, traits, roles, emotions, and/or implies that women are subservient to or are the property of males
- ____ Non-applicable

2c. Minority Representation in Text

- ____ Superior: racial, ethnic, and/or religious groups are represented in a scholarly, factual manner, having a variety of roles, occupations, and values reflective of a pluralistic society
- ____ Adequate: material does not include any outright negative stereotypes concerning any racial, religious, or ethnic group, and does represent at least one minority in at least one instance
- ____ Poor: no minority representation, and/or the inclusion of any negative stereotypes of any racial, ethnic, or religious groups
- ____ Non-applicable

2d. Minority Representation in Illustrations

- ____ Superior: racial, ethnic, and/or religious groups are portrayed in a scholarly, factual manner, showing a variety of roles, occupations, and values reflective of a pluralistic society
- ____ Adequate: material does not portray any outright negative stereotypes concerning any racial, religious, or ethnic group, and does depict at least one minority in at least one instance
- ____ Poor: no minority representation, and/or the inclusion of any negative stereotypes of any racial, ethnic, or religious groups
- ____ Non-applicable

2e. Different Lifestyles and/or Cultures Presented in a Positive Way

- ____ Superior: material emphasizes the legitimacy of different lifestyles, cultures, and values either through text or illustrations
- ____ Adequate: material reflects but does not emphasize the pluralistic nature of our society either through text or illustrations
- ____ Poor: material does not respect personal or cultural differences either through text or illustrations
- ____ Non-applicable

INSTRUCTIONAL AIDS

3a. Chapter and/or Paragraph Headings

- ___ Superior: frequent use of clear chapter, subchapter, and paragraph headings
- ___ Adequate: topic headings not entirely clear, and/or not sufficient to create a pleasing amount of white space
- ___ Poor: few or no topic headings; material appears as one solid gray mass; and/or use of unclear topic headings
- ___ Non-applicable

3b. References and Resources

- ___ Superior: references and resources are current and listed consistently and completely
- ___ Adequate: references and resources incomplete but usable (e.g., failure to include publication dates)
- ___ Poor: references or resources are incomplete and unusable, or inappropriately omitted
- ___ Non-applicable

3c. Index

- ___ Superior: if appropriate, material has complete index by topic headings, author, and key words
- ___ Adequate: index, if appropriate, is not extensive, but is included
- ___ Poor: although appropriate, index is not included
- ___ Non-applicable

3d. Glossary

- ___ Superior: glossary provides easy to understand, non-circular definitions of all technical terms
- ___ Adequate: glossary provides definitions for some technical vocabulary, and/or provides some definitions that are unclear or in difficult terminology
- ___ Poor: glossary does not include most of the technical terms, and/or provides mostly circular definitions, or defines most terms with difficult terminology
- ___ Non-applicable

3e. Learning Experiences, Questions, or Projects

- ___ Superior: material includes a variety of stimulating and interesting learning experiences, (or) questions, (or) projects that will challenge the reader
- ___ Adequate: material suggests learning experiences, (or) questions, (or) projects that the reader can follow through on
- ___ Poor: material suggests unrealistic or inappropriate learning experiences, (or) questions, (or) projects
- ___ Non-applicable

3f. Bibliography

- ____ Superior: bibliography is current and complete
- ____ Adequate: bibliography is not entirely complete, and/or is not current with publication date
- ____ Poor: bibliography lacking when appropriate, and/or very incomplete
- ____ Non-applicable

3g. Table of Contents

- ____ Superior: listing includes clear and precise information on the location of topics and page numbers
- ____ Adequate: listing of broad chapter headings
- ____ Poor: failure to include table of contents although appropriate
- ____ Non-applicable

3h. Typographic Cuing

- ____ Superior: material uses boldface type, italics, boxes, etc., to emphasize new terminology, questions, or important information
- ____ Adequate: material uses different types of print only for chapter and/or paragraph headings
- ____ Poor: no or little variation in size and type of print, or so much variation that cuing loses its value
- ____ Non-applicable

FORMAT

4a. Paper Quality

- ____ Superior: material uses heavy weight, non-gloss or semi-gloss paper, and print from one side cannot be seen on the other side
- ____ Adequate: material uses medium weight, non-gloss or semi-gloss paper, and print from one side is not obvious or distracting even if it can be seen on the other side
- ____ Poor: material uses light weight, high-gloss paper, and/or print seen through paper is distracting
- ____ Non-applicable

4b. Print Size (see sample on next page)

- ____ Superior: print 11 to 12 point type or larger, on a line 2 1/4 to 4 inches long (line length criteria not applicable to type larger than 13 point)
- ____ Adequate: print 9 to 10 point type; or, print 11 to 12 point but line length exceeding 4 inches
- ____ Poor: print 8 point type or smaller
- ____ Non-applicable

Type sizes.

This is 8-point type.

This is 10-point type.

This is 11-point type.

This is 14-point type.

This is 18-point type.

4c. Print Style (see sample below)

- ☐ Superior: a roman type with serifs used for the main body of print
- ☐ Adequate: a type with serifs used for the main body of print
- ☐ Poor: a non-serif type, (or) fancy type, (or) capital letters used for the main body of print
- ☐ Non-applicable

4d. Paragraphs

- ☐ Superior: of five randomly chosen consecutive paragraphs, at least four contain from six to twelve lines each
- ☐ Adequate: three of five randomly chosen consecutive paragraphs range from six to twelve lines each
- ☐ Poor: two or fewer of five randomly chosen consecutive paragraphs range from six to twelve lines each
- ☐ Non-applicable

4e. Placement of Tables, Charts, and/or Illustrations

- ☐ Superior: ninety percent or more of the tables, charts, and illustrations are on the same pages as their textual references
- ☐ Adequate: sixty to eighty-nine percent of the tables, charts, and illustrations are placed on the same pages as their textual references
- ☐ Poor: fifty-nine percent or less of the tables, charts, and illustrations are placed on the same pages as their textual references
- ☐ Non-applicable

4f. Ease of reading Tables and Graphs (characteristics referred to in operational definitions:)

- all information needed in graphs and tables is provided in a form requiring no further calculations
- complex tables set up so that they can be scanned vertically rather than horizontally
- tables and graphs as simple and easy to read as possible

- ____ Superior: the characteristics described above are observed in 90 percent or more of the appropriate instances
- ____ Adequate: the characteristics described above are observed in 70 to 89 percent of the appropriate instances
- ____ Poor: the characteristics described above are observed in less than 75 percent of the appropriate instances
- ____ Non-applicable

4g. Illustrations Give Meaning to Materials (If the material is long, a randomly chosen 10-page section will be rated by the criteria described below.)

- ____ Superior: 95 percent or more of the illustrations contribute to the material in some way (e.g., improve understanding, convey, reinforce, or clarify information, provide comic relief, etc.)
- ____ Adequate: 80 to 94 percent of the illustrations contribute to the material in some way
- ____ Poor: less than 80 percent of the illustrations contribute to the material in some way
- ____ Non-applicable

4h. Appeal of General Format

- ____ Superior: material is very attractive, colorful, well illustrated, and eye-catching, and will appeal to a teenage audience
- ____ Adequate: material is somewhat attractive and a sufficient number of illustrations relieve monotony; teenagers will not be turned off due to a childish or overly academic appearance
- ____ Poor: no or few illustrations or colors are used; material looks boring and not of interest to teenagers; teenagers will be turned off by childish, old-fashioned, or academic appearance
- ____ Non-applicable

4i. Organization of Material

- ____ Superior: material logically organized, and major points presented clearly, internal organization provides a smooth, continuous flow of ideas, and no assumptions of background information are made
- ____ Adequate: material is easy to read but not all major points are easily identified; sequence may not flow smoothly in all sections; and/or author assumes the reader has some background information

4i. Organization of Material (continued)

- ___ Poor: material is illogically organized, and most major points are not easily identified; internal organization does not flow from one idea to the next; and/or the author assumes the reader has a wealth of background information
- ___ Non-applicable

4j. Summarization and Review of Concepts

- ___ Superior: all major ideas summarized or reviewed to reinforce key concepts; summaries easily identified
- ___ Adequate: some major ideas summarized; not consistently identified
- ___ Poor: no or few major ideas reviewed or summarized
- ___ Non-applicable

CONTENT

5a. Accuracy of Content

- ___ Superior: all facts are correct, current new information is included, and old material is updated
- ___ Adequate: all facts correct, but no new research findings are included (not a recent publication)
- ___ Poor: errors in facts, and/or materials reprinted but no update to reflect new research findings
- ___ Non-applicable

5b. Teenagers' Needs and Interests Kept in Mind

- ___ Superior: material solely directed toward teenagers' special needs and interests
- ___ Adequate: material written for a general audience, with remarks or sections on the special needs and interests of teenagers included
- ___ Poor: material written for a general audience, with no consideration given to special needs and interests of teenagers
- ___ Non-applicable

5c. Use of Real Life Situations

- ___ Superior: material refers to many practical real life situations that the reader may relate to and/or identify with
- ___ Adequate: material refers to some real life situations that the reader can relate to and/or identify with
- ___ Poor: material rarely or never refers to real life situations that the reader can relate to and/or identify with
- ___ Non-applicable

5d. Subject Matter Presented in an Unbiased Manner

- ☐ Superior: subject matter presented objectively and fairly; different views on controversial topics are discussed
- ☐ Adequate: subject matter presented objectively and fairly; differing views are acknowledged but not discussed
- ☐ Poor: subject matter presented in a biased manner; differing views not mentioned or discussed
- ☐ Non-applicable

MATERIAL ID NUMBER: _____

Appendix B

CRITERIA TO EVALUATE WRITTEN MATERIALS

NAME OF MATERIAL: _____

SOURCE ORGANIZATION: _____

DIRECTIONS: Evaluate the material using the guidelines below, placing a check mark next to the description which most appropriately applies in each category.

FORMAT

1. Avoidance of over-technical language

____(3) SUPERIOR: an average of 2 or fewer technical terms are used per page

____(2) ADEQUATE: an average of 3 technical terms are used per page

____(1) POOR: an average of 4 or more technical terms are used per page

2. Technical words, if used, are explained

____(3) SUPERIOR: definitions provided for two or more of the technical terms found in the material

____(2) ADEQUATE: definition is provided for one of the technical terms found in the material

____(1) POOR: no definitions are provided for technical words found in the material

3. Writing Style

____(3) SUPERIOR: material is light, giving the reader a sense of active involvement; written in a positive style; an average of one or no instances of negative wording (e.g., "don't eat . . . don't drink") per page

____(2) ADEQUATE: material is easy to read, but does not personally involve the reader; an average of two instances of negative wording per page

____(1) POOR: academic style or other style that would turn reader away is used; average of three or more instances of negative wording per page

4. Active Voice

- ____(3) SUPERIOR: an active voice (e.g., "you need . . . you eat") rather than a passive voice (e.g., "can be shown . . . has been influenced") is used at least 75 percent of the time
- ____(2) ADEQUATE: an active voice is used 50 to 74 percent of the time
- ____(1) POOR: an active voice is used less than 50 percent of the time

5. Paragraph Headings

- ____(3) SUPERIOR: frequent use of clear headings
- ____(2) ADEQUATE: paragraph headings are not entirely clear, and/or not sufficient to create a pleasing amount of white space
- ____(1) POOR: few or no paragraph headings; material appears as one solid gray mass; and/or use of unclear paragraph headings

6. Typographical Cuing

- ____(3) SUPERIOR: material uses boldface type, italics, boxes, etc., to emphasize new terminology, questions, or important information
- ____(2) ADEQUATE: material uses different types of print only for chapter or paragraph headings
- ____(1) POOR: no or little variation in size and type of print, or so much variation that cuing loses its value

7. Paper Quality

- ____(3) SUPERIOR: material uses heavy weight, non-gloss or semi-gloss paper, and print from one side cannot be seen on the other side
- ____(2) ADEQUATE: material uses medium weight, non-gloss or semi-gloss paper, and print from one side is not obvious or distracting even if it can be seen on the other side
- ____(1) POOR: material uses light weight, high-gloss paper, and/or print seen through the paper is distracting

8. Print Size

- ____(3) SUPERIOR: print 11 to 12 point type or larger, on a line 2 1/4 to 4 inches long
- ____(2) ADEQUATE: print 9 to 10 point type; or, print 11 to 12 point but line length exceeding 4 inches
- ____(1) POOR: print 8 point type or smaller

Type sizes .

This is 8-point type.

This is 10-point type.

This is 11-point type.

This is 14-point type.

This is 18-point type.

9. Appeal of General Format

- ____(3) SUPERIOR: material is very attractive, colorful, well illustrated, and eye-catching
- ____(2) ADEQUATE: material is somewhat attractive and a sufficient number of illustrations to relieve monotony are used
- ____(1) POOR: no or few illustrations or colors used

YOUR TOTAL SCORE FOR THIS SECTION: _____

CONTENT**10. Role Models and Minority Representation Provided in Text and in Illustrations**

- ____(3) SUPERIOR: women, racial, ethnic, and/or religious groups, when utilized, are represented as having many roles, traits, and emotions and are presented in a factual manner
- ____(2) ADEQUATE: material does not include any negative stereotypes concerning any female role, racial, ethnic or religious groups, and, when appropriate, does represent at least one minority in at least one instance
- ____(1) POOR: no minority representation, and/or the inclusion of negative stereotypes of any female role, racial, ethnic or religious group

11. Organization of Material

- ____(3) SUPERIOR: material logically organized, and major points presented clearly, internal organization provides a smooth, continuous flow of ideas; no assumptions of background information are made
- ____(2) ADEQUATE: material is easy to read but not all major points are easily identified; sequence may not flow smoothly in all sections; and/or author assumes reader has previous background information

11. Organization of Material (continued)

- ____(1) POOR: material is illogically organized, and most major points are not easily identified; internal organization does not flow from one idea to the next; author assumes the reader has previous background information

12. Tables, Charts, and Graphs

- ____(3) SUPERIOR: 95 percent or more of the illustrations contribute to the material in some way (e.g., improve understanding, reinforce, clarify)
- ____(2) ADEQUATE: 80-94 percent of the illustrations contribute in some way
- ____(1) POOR: less than 80 percent of the illustrations contribute in some way

13. Accuracy of Content

- ____(3) SUPERIOR: all facts are correct, current new information is included, and old material is updated
- ____(2) ADEQUATE: all facts are correct, but no new research findings are included (not a recent publication)
- ____(1) POOR: errors in facts, and/or materials reprinted but no update to reflect new research findings

14. Readers' Needs and Interests Kept in Mind

- ____(3) SUPERIOR: material solely directed toward special needs and interests of the reader
- ____(2) ADEQUATE: material written for a general audience, but some sections or remarks are for a specified target reader
- ____(1) POOR: material is written for a general audience with no consideration given for special needs and interests of reader

15. Use of Real Life Situations

- ____(3) SUPERIOR: material refers to many practical real life situations that the reader may relate to and/or identify with
- ____(2) ADEQUATE: material refers to some real life situations that the reader can relate to or identify with
- ____(1) POOR: material rarely or never refers to real life situations that the reader can relate to and/or identify with

16. Subject Matter Presented in an Unbiased Manner

- ____(3) SUPERIOR: subject matter presented objectively and fairly, different views on controversial topics are discussed

16. Subject Matter Presented in an Unbiased Manner (continued)

- ____(2) ADEQUATE: subject matter presented objectively and fairly; differing views are acknowledged but not discussed
- ____(1) POOR: subject matter presented in a biased manner; differing views not mentioned or discussed

17. The Material is Amenable to Instructional Objectives

- ____(3) SUPERIOR: material is easily adapted into existing curricula
- ____(2) ADEQUATE: material can be used with some modifications with existing curricula
- ____(1) POOR: material is not adaptable for use with existing curricula

18. The Material Is Easily Understood and Used by Student Without Teacher Explanation or Other Support Materials

- ____(3) SUPERIOR: the material does not need explanation or other support materials to be easily used
- ____(2) ADEQUATE: the material can be used with just teacher/counselor explanation
- ____(1) POOR: the material requires both explanation and support of other materials to be easily used

YOUR TOTAL SCORE FOR THIS SECTION: _____

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