A study to determine the suitability of utilizing the audio-modular instructional approach as an alternative in-service training technique for teachers of adult education in the area of adult learning theory.

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A STUDY TO DETERMINE THE SUITABILITY OF UTILIZING THE AUDIO-MODULAR INSTRUCTIONAL APPROACH AS AN ALTERNATIVE IN-SERVICE TRAINING TECHNIQUE FOR TEACHERS OF ADULT EDUCATION IN THE AREA OF ADULT LEARNING THEORY

A Dissertation Presented
By
M. Peter Wright

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of DOCTOR OF EDUCATION
June, 1973
EDUCATION
A STUDY TO DETERMINE THE SUITABILITY OF UTILIZING THE AUDIO-MODULAR INSTRUCTIONAL APPROACH AS AN ALTERNATIVE IN-SERVICE TRAINING TECHNIQUE FOR TEACHERS OF ADULT EDUCATION IN THE AREA OF ADULT LEARNING THEORY

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DEDICATION

To my wife, Ann Marie, and our two daughters, Lisa and Kristen, who have made the real sacrifices during my pursuit of this degree.
ACKNOWLEDGMENTS

The preparation and completion of this study would not have been possible without the supportive role played by my doctoral committee during the past year.

To my Chairman and friend, Dr. Mark Rossman, I would like to give particular thanks for his encouragement, guidance, patience, and humanism during both the course of my studies as well as the preparation and writing of this dissertation. To Dr. Roger Peck, I will always be indebted for his educational commitment, concern, and personal advice. To Dr. Ann Lieberman, I would like to express my gratitude for her individual concern as well as her poignant and constructive criticism throughout the pursuit of this degree. I also wish to express my appreciation to Dr. Arthur Eve for his supportive role during the final stages of completing this dissertation.

I would also like to thank Mrs. Nancy Worek whose assistance and good humor during the design and completion of the modules were invaluable.

Finally, it would be impossible to express in words the gratitude and appreciation I have for my wife for her patience, advice, and secretarial skills during the drafting and final typing of this document.
ABSTRACT

A STUDY TO DETERMINE THE SUITABILITY OF UTILIZING THE AUDIO-MODULAR INSTRUCTIONAL APPROACH AS AN ALTERNATIVE IN-SERVICE TRAINING TECHNIQUE FOR TEACHERS OF ADULT EDUCATION IN THE AREA OF ADULT LEARNING THEORY

June, 1973

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The study sought to determine the suitability of using the audio-modular instructional approach as an alternative in-service training technique for teachers of adult education in the area of adult learning theory. Since the suitability factor is the justification for the entire study, six criteria for suitability were measured: the participants' interest in the experience and their motivation as a result of the experience, the worth of the experience as compared to alternative experiences as perceived by the participants, the connotative meaning of the experience as compared to the connotative meaning of a concept which signifies any other type of experience by which the participants could achieve the same learning objectives, the cognitive change that takes place in the individual as a result of participating in the experience, and the potential for further development of learning experiences utilizing the same instructional approach.

Data on the six criteria utilized to measure suitability as defined were collected through the use of a written evaluation instrument.
which included "open-ended" and "closed" questions of both an objective and a subjective nature, semantic differential scales, and achievement tests which were validated and tested for reliability specifically for use in this study.

The results of the study indicate that the participants evaluated the audio-modular instructional approach positively on all the suitability criteria. The participants perceived the content and overall design of the modules as the major strengths with the major weakness of the modules indicated as the lack of group interaction. Significant cognitive change was also shown to occur as a result of participating in the audio-modular instructional units.

Concerning the audio-modular approach as a suitable alternative in-service training technique for adult educators, recommendations of the study included: (1) further research should be done in the pilot phases of validating and determining the reliability of the achievement instruments used to measure the cognitive changes of the participants resulting from the modules, particularly among a larger, more homogeneous grouping of adult educators, (2) further studies of the audio-modular approach should consider designing modules oriented toward specific area needs for adult educators, (3) to ascertain the degree beyond the cognitive domain that the approach is functional; the development and field testing of future audio-modular instructional units should be geared toward the application level, (4) future modules developed utilizing this approach should be further field tested with the use of an evaluative design to determine the value of field testing the modules using small
group formats compared to the individualized format, and (5) further development of evaluative instruments could be effectively used to measure the degree of attitudinal and/or behavioral changes resulting from the participation in the modules after a determined length of time and is considered highly desirable.
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CHAPTER I

INTRODUCTION

The emphasis on individuality and change seems to be prevailing every aspect of our society. Alvin Toffler attests to the latter statement in *Future Shock* when he poignantly states, "Change is avalanching upon our heads and most people are grotesquely unprepared to cope with it."

The speed of change in our society reflects more than just the importance of our educational system responding to the needs of the young. If the estimates by those who claim that the average person will change livelihoods five or six times in a lifetime are anywhere near accurate, then it is obvious that a fourth dimension to our educational structure, adult education, has already emerged as the fourth member of the educational structure preceded by the elementary, secondary, and post-secondary structures.

Unfortunately, adult education in and of itself has taken a back seat to most other levels of education. Frequently, last to be considered important and first to be eliminated as least important, the field of adult education has suffered immensely to be recognized as a signifi-

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cant field of endeavor. This failure to be recognized has been partially a result of organizational chaos, multitudinous kinds of clientele it has had to serve and, perhaps most importantly, the result of the stigma attached to adults concerning both their inability and need to learn.

Malcolm Knowles captured the importance of change in our society and why it is significant not only to the adult but the community when he stated,

To change skills and attitudes continuously has become as relentlessly important as acquiring them initially. Education in general is expanding in every direction and turning into a concept of human resource development. . . .It is becoming less the province of the young; it is moving from the learning space of the classroom to that of the community.2

One positive effect of the first three decades of this country's history in this century was recognizing the fundamental importance of intensive research, of defining objectives, and of gathering and analyzing relevant information. "Today, the focus [in education] is more and more on positive factors, on differences rather than limitations. . . ."3

With the emphasis on change and individuality and an increasing acceptance of adult education as an added dimension to our educational

4 Ibid., p. 82.
structure several areas of importance in the field of adult education have become apparent. Strongest among these importances appear to be in the areas of in-service training, improved communications and a broadened and more relevant curriculum for adult educators.

However, the recognition of adult education as either a fourth dimension or the fourth member of our educational structure will not be completed by simply extending elementary, secondary, and college education. Adult education is a different type of education with characteristics that call for a different curriculum, course content, methods and materials, counseling, differing facilities and for the most part a different teaching staff.

Those needs that appear to be most important in adult educational programs generally, and in the State of Massachusetts particularly, have been realized and summarized in two significant reports. One of these reports was completed in August of 1970 and was entitled, An Evaluation of Adult Basic Education Programs in Massachusetts, and the other was completed in August of 1972 and entitled A Delphi Study on Adult Education Programs in Massachusetts. In September of 1969, the Bureau of Civic Education of the Massachusetts Department of Education awarded a contract to the University of Massachusetts, School of Education, for the purpose of studying adult basic education programs.

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1 See A Delphi Survey on Adult Education Programs in Massachusetts (Massachusetts: University of Massachusetts, 1972), pp. 46-48. Note: For a better perspective on the need for in-service programs for adult educators in Massachusetts, see needs statements numbers 2, 5, 11, 19, 21, and 24.

The writing of the final report was under the direction and leadership of the Project Coordinator, and now Project Director of Adult Education, Dr. Mark H. Rossman. In August of 1970, Rossman's final report entitled, *An Evaluation of Adult Basic Education Programs in Massachusetts* identified the four need or problem areas of adult basic education as: (1) recruiting students, (2) communication (both among the staff of adult educators and between staff and directors), (3) curriculum, and (4) funding. A follow up to the 1970 evaluation *A Delphi Survey of Adult Education in the State of Massachusetts*, co-sponsored by the Massachusetts Department of Education, Bureau of Adult Education and the University of Massachusetts, Amherst, Massachusetts, was completed in August, 1972 by Dr. Mark H. Rossman and Dr. Dennis M. Carey, research associate, at the School of Education, University of Massachusetts. The purpose of the survey was to identify the needs of the teachers, administrators, and training directors as determined by the participants themselves in the three largest adult learning centers in Massachusetts namely, Boston, Springfield, and Worcester. The Delphi Survey included a tabulation of results indicating that a total of twenty-nine need statements received the "highest priority" rating.

As a result of that survey and other research, it is this investigator's belief that developing sound educational techniques for the in-

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2. See *A Delphi Survey on Adult Education Programs in Massachusetts* (Massachusetts: University of Massachusetts, 1972), pp. 46-68.
service development of staffs of adult educators is one way of meeting many, if not all, of the "high priority needs" in adult education in Massachusetts. The importance of in-service training for teachers in general has been attested to by B. O. Smith in Research in Teacher Education. Smith referred to the location of a research gap in education, "...when we compare a list of teacher's attitudes currently receiving research attention and the much longer list of attitudes included in statements of objectives of existing or proposed programs in teacher education."

More specifically, the importance of in-service training for adult educators has been alluded to by John H. Thatcher when he expressed his view that, "Whatever the source of teachers may be, experience has demonstrated that in-service training is essential to the development of the highest teaching efficiency in classes for the more mature student."

Robert M. Smith in Handbook of Adult Education illustrates quite well the need for adult learning and the demands on education for the future when he states that,

Perhaps those who believe in adult education for self-fulfillment and those who believe in adult education for maintaining or influencing the direction of social change can find common ground in the almost clinical description of the social setting in which we must operate in the 1970's. ...The society capable of continuous renewal will be one that develops to the fullest its human resources, that removes obstacles to individual fulfillment, that emphasizes education, lifelong learning and self-

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discovery. In these matters our record [in adult education] is uneven—brilliant in some respects, shameful in others. And, we are still far from having created, for either black or white, an education system that produces self-discoverers and lifelong learners.\(^1\)

There is, however, a cause for optimism existing in that literally millions of adults have great potential for developing increased skills in problem solving. Adult educators must fully recognize the following: (1) the various differences among adults, (2) that adults have certain basic needs other than vocational achievement, and (3) that adults have a need for acceptance by peers (certainly as much as the young) and need value placed on their own worth. Those needs, among many, are motivating factors in adult learning and as such demand attention as well as action.

Adult educators must find ways to identify the individual as a unique person. To do this requires an understanding of what the most effective adult educational techniques and methods may be. Adult educators must also be aware of the internal and external factors that lead to or promote self-fulfillment and the sociocultural factors that encourage or inhibit the growth of individuality. According to J. R. Kidd, "...what is learned and how it is learned are inextricably linked.\(^4\)

\(^2\) Ibid., idea extracted, pp. 522-524.
\(^3\) Ibid., p. 525.
B. O. Smith has summed up the fact that the time has come for a marriage between pedagogical theory and pedagogical practice when he stated that,

Perhaps the time has come when those who are engaged in research in teacher education should take more seriously the problems of determining how the theoretical knowledge of pedagogy can be rendered more effective in controlling the behavior of teachers both in the classroom and in their pre- and post-classroom activities.¹

As a result of both An Evaluation of Adult Basic Education Programs in Massachusetts and A Delphi Survey of Adult Education, one area, the need for a broadened and more relevant curriculum in adult education has emerged as particularly significant. It is this investigator's belief that establishing a greater knowledge of adult learning theory will enable adult educators specifically and those who instruct adults in various capacities generally, to broaden their knowledge of how adults learn and hopefully make them more cognizant of the need for a more relevant curriculum for adults. Learning theory is one of the few areas where any significant research has been done in adult

¹ B. O. Smith, Research in Teacher Education, p. 7.
³ A Delphi Study on Adult Education Programs in Massachusetts (Massachusetts: University of Massachusetts, 1972), pp. 47-48. See needs #15 - There is a need for teachers to meet with more staff members in order to discuss particular student problems; #17 - There is a need for a clear delineation of objectives in teaching various subjects; #22 - The Directors need a staff who has a more increased awareness of the needs and goals of the program; #24 - A Director needs a staff with a lot of experience and possibly specialization; and #29 - There will be a need for a more broadened and relevant curriculum.
education. That which has been accomplished in adult learning theory has been mostly an outgrowth of the behaviorist movement and such distinct disciplines as psychotherapy, social anthropology, group psychology and cultural and organizational sociology.

Consequently, this investigator will seek to ascertain the suitability of presenting the basic contributions to theories of adult learning in the format of an audio-modular instructional approach to adult education as a method of helping adult educators to become more knowledgeable of adult learning theory.

Purpose of the Study

The major objective of the study was to determine the suitability of utilizing the audio-modular instructional approach as one alternative in-service training technique for teachers of adult education.

More specifically, the purposes of the study were to:

(1) Implement the subsequently described procedures for field testing the audio-modular instructional units.

(2) To assess the suitability of utilizing the modules for presenting selected concepts and skills to adult educators and instructors of adult learning experiences and to secure evaluations from adult educators for the purpose of improving the form, content, and use of the


two modules.

(3) develop recommendations focused on (a) the further development and use of the audio-modular instructional approach for the in-service training of adult educators, and (b) further assessment of the learning modules as an instructional approach.

**Definition of Terms**

The following terms were defined operationally as used in this study:

**Adult Educator** - a person with either formal training and/or experience in the field of adult education who may be either in a teaching, counseling, or administrative capacity.

**Attitude** - the degree of positive or negative feeling associated with some psychological object.

**Audio-modular instructional unit** - each learning activity module included an audio tape, an exercise packet, and a guidebook. The module emphasized the learning of a single concept through a series of logical and sequential experiences lasting approximately one hour. The combination audio tape and guidebook presented the following: (a) instructions on how to use the unit; (b) the performance objectives which the individual should have been able to achieve as a result of participating in the unit; (c) role playing, simulation or other types of exercises which allowed the participants to apply parts of the information which had been presented in the narration; (d) self-evaluation instruments; and (e) selected references. For the purpose of the study, two
audio-modular instructional units were developed:

**Adult Learner Classification Modular Unit #1** - an audio-modular instructional unit which was one of two modules. The terminal objective of this unit was to be able to successfully apply Cyril O. Houle's theory concerning his three classifications of the adult learner to simulated situations showing the appropriate classification of each; thereby illustrating each classification that was indicative of a different kind of adult learner, namely, the learning-oriented; activity-oriented; or goal-oriented adult learner.

**Adult Learner Participation Modular Unit #2** - an audio-modular instructional unit which was one of two modules. The terminal objective was to be able to successfully apply Cyril O. Houle's theory concerning his six conditions which limit the curriculum of adult education programs to simulated situations showing the appropriate conditions of each; thereby illustrating each condition that could be limiting factors in identifying and formulating adult education curriculum, namely, emphasis on high income grouping, relation to size of the community, cultural limitations, age factor, relationship of marital status and age of children, and the amount of schooling.

Audio-modular instruction approach - a learning methodology in which the individual participated in one or more audio-modular instructional units for the purpose of achieving the performance objectives specified in the unit.

In-service programs - conferences, workshops, or courses which had the express purpose of developing skills, concepts, and techniques
for improving the staff development of teachers. The purposes of such programs were usually for either increasing or improving the quality of teaching and/or increasing self-confidence and morale.

Suitability - the usefulness of the audio-modular instructional approach as determined by the data obtained through the use of a variety of data gathering procedures utilized both subjective and objective assessment approaches. The criteria utilized were:

Participants' interest in the experience, and their motivation as a result of the experience - the degree to which the experience with the audio-modular instructional unit was interesting and of value to the participant; the degree to which the participants were stimulated to elect to participate in additional audio-modular instructional units; and the degree to which the participants were excited about recommending to other persons that they should participate in the audio-modular instructional unit.

The worth of the experience as compared to alternative experiences as perceived by the participants - the order of ranking for preference for the audio-modular instructional unit as compared to other specific forms of in-service educational programs for adult educators.

The connotative meaning of the experience compared to the connotative meaning of a concept signifying any other type of experience by which the participant could achieve the learning objectives - the degree

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to which the connotative meaning of the concept, "Audio-Modular Instruction as One Alternative Approach for In-service Education for Adult Educators" elicited from the participants a positive rating for (a) the factors of potency, evaluation, and activity; and (b) the polar traits signifying the degree to which the concept was relevant, meaningful, useful, promising, and interesting; in addition to the degree to which the ratings on these previously mentioned factors and traits compare with the ratings on the same factors and traits as they related to the connotative meaning of the concept, "In-service Educational Programs for Adult Educators in Which You Have Participated (excluding the Audio-Modular Instructional Approach but Including Course Work and Other Learning Experiences)"

The cognitive change that took place in the individual as a result of participating in the experience - the degree to which the participants, after completing the unit, achieved the performance objectives which were stated at the beginning of the audio-modular instructional unit.

The potential for further development of learning experiences utilizing the same instructional approach - the perceptions of the individuals, who participated in the audio-modular instructional units, concerned: (a) their desire to participate in any additional audio-modular instructional units; (b) the conditions under which they would participate in additional modules; (c) the value of developing any more audio-modular instructional units; (d) the topics which could be adapted for presentation through the use of the audio-modular instructional ap-
approach; and (e) the types of skills which could be learned through the use of the audio-modular instructional approach.

The expenditure of time and money used in the development and production of the learning experience - the amount of time involved in developing the audio-modular instructional unit; and the monetary cost of producing the units.

Limitations of the Study

The following limitations were placed upon the study:

1. The purpose of this study was to determine the suitability of utilizing the audio-modular instructional approach for the in-service training of adult educators. The criteria upon which the term "suitability" was established was limited to the operational definition for suitability as it was used in this study. Consequently, the conclusions and recommendations for the study were limited to this definition of suitability.

2. Since very little in-service training has been done in this area of adult education teacher preparation, any attempt to generalize on the findings of the data from this study should take this factor into consideration in light of the fact that this study was designed to test the suitability of an alternative approach to in-service training of adult educators.

3. The design used in the study for determining the cognitive change effected after participating in the audio-modular instructional modules was the pre-test and post-test nonequivalent control group design. Although virtually all of the participants were adult educators
from the Massachusetts area, great care was exercised in attempting to insure the best possible matching of the control group (individuals who did not participate in the units) and the experimental group (individuals who did participate in the units). The two groups were not equally matched on the identified criteria. Consequently, there was uncertainty as to whether both the control group or the experimental group were similar in relation to their level of performance of the objectives before the experience with the audio-modular instructional units. As a result, caution was taken when viewing the findings focused on the gain in achievement relative to the performance objectives.

Summary of the Procedures Used in the Study

The study was exploratory in nature. It was an attempt to determine the suitability of utilizing audio-modular instructional approach for the in-service training of adult educators. The study incorporated a field study technique, utilizing several forms of assessment procedures. In the following sections, the procedures used in the study are briefly described: (a) the procedures used in the field testing of the modules, (b) the assessment procedures used to determine the suitability of the modules, and (c) other assessment procedures used in the study.

Procedures used in field testing. The population for the study consisted of thirty-six adult educators from the Massachusetts area and four from Philadelphia, Pennsylvania. The three workshop sessions of the adult educators provided a format for participation in the two audio-modular instructional units. The assessment focused on determining the suitability of using the audio-modular instructional approach providing
adult educators with a workable knowledge of identifying classification of adult students and the six conditions which tend to limit the curriculum of most adult education programs according to Cyril O. Houle.

Assessment procedures to be used to determine the suitability of the modules. The assessment procedures used in the study were based on the criteria established in the definition for suitability, as this term was used operationally in the study. These criteria and the assessment procedures used for each criterion were summarized in the following sections.

The assessment procedures used to determine the participants' interest in the experience and their motivation as a result of the experience. Each of the participants in the experimental group was asked to react to a series of "closed" questions focused on his/her attitude toward the audio-modular instructional units in which they participated. These questions were presented immediately upon completion of the units. In addition to the "closed" questions, the participants were asked to react to a number of "open-ended" questions focused on their attitudes toward their experience with the units. The purpose for the "open-ended" questions was to supplement the data provided through the use of the "closed" questions. The data from the "closed" questions was presented in the form of number and percentage of responses made for each level of the Likert-type response pattern. The "open-ended" questions were categorized and presented in the form of the number and percentage of responses made for each category.
The assessment procedures used to determine the worth of the experience as compared to alternative experiences, as perceived by the participants. The participants were asked to rank-order a list of six different in-service approaches. This rank-ordering process was in relation to the participant's preference as to which instructional approach he/she chose to experience. Within this list was included the audio-modular instructional approach. The data produced was analyzed in two different ways. The first approach was to determine the number of times each approach was assigned a certain rank value. The second approach was to weigh the responses and determine the weighted mean score for each in-service approach listed.

The assessment procedures used to determine the connotative meaning of the experience, as compared to the connotative meaning of a concept which signified any other type of experience by which the participant achieved the same learning objective. The participants were asked to react to two Semantic Differential Scales. On the first scale, the participants reacted to the concept "Audio-Modular Instruction as One Alternative Approach to In-service Education for Adult Educators." On the second scale, the participants reacted to the concept, "In-service Educational Programs for Adult Educators in Which You Have Participated (excluding the audio-modular instructional approach, but including course work and other learning experiences)." The mean polarity scores for each of the two concepts were determined for the factors of evaluation, potency, and activity. The mean polarity scores for a number of individual polar traits were also calculated. The difference in the mean polarity
scores for the two concepts was subjected to a statistical analysis of variance to determine if the differences in these scores reached a statistical level of significance. This statistical analysis was calculated for each of the three factors and for each of the individual polar traits for which mean polarity scores were determined.

The assessment procedures used to determine the cognitive changes that took place in the individuals as a result of participating in the experience. The pre-test and post-test-only nonequivalent control group quasi-experimental design was used in an attempt to determine the cognitive changes which occurred as a result of participating in the audio-modular instructional units. An achievement test based on the performance objectives for the modules was constructed, validated, and tested for reliability during the study. The validation process consisted of the following procedures:

1. Two groups of sixteen teachers from the Western Massachusetts area participated in the validation process. Each of these groups was divided into two equal groups: an experimental and a control group. The first group of sixteen adult educators was given the Achievement Test 1 designed for Module I. The second group was given the Achievement Test 2 designed for Module II. Both study member groups were retested in the same manner one week later. The Pearson Product-Moment Correlation Formula was used to determine the relationship of the two sets of scores for each group. The correlation coefficient indicated whether the Achievement Test pos-
sessed the factor of reliability.

2. The eight members for each of the two experimental groups participated in the audio-modular instructional units designed for them after they had taken the retest. They were asked to participate in the modules within one week. They were then given Test 3. The difference between the mean scores for Test 2 and Test 3 was then subjected to a correlated t Test to determine if this difference in scores reached a statistical level of significance.

During the field testing, the Achievement Test was administered twice to the adult educators who participated in the two units (the experimental group). This experimental group was administered the test before and after they had participated in the two units. The members of the field testing control group (teachers not participating in the units) were administered the Achievement Test only once. The mean score for each group for the three administrations of the Achievement Test was calculated separately. The difference in the individual group mean scores resulting from the three administrations of the test was subjected to a statistical analysis of variance to determine if the differences in the mean scores reached a statistical level of significance.

The assessment procedures used to determine the potential for further development of learning experiences utilizing the same instructional approach. The participants in the audio-modular instructional units were asked to react to a number of "open-ended questions presented on a written questionnaire. These questions focused on: (a) the participants'
desire to participate in any additional audio-modular instructional units, (b) the conditions under which they would participate in additional units, (c) the value of developing any more audio-modular instructional units in adult education, (d) the topics which could be adapted for presentation through the use of the audio-modular instructional approach, and (e) the types of skills which could be learned through the use of the learning modular approach. The data from these questions was categorized and presented in the form of the number and percentage of responses made for each category.

The procedures used for determining the expenditure of time and money used in the development and production of the learning experience. In an attempt to attach a cost factor to each module that was produced, the investigator kept an accurate account of the "dollar cost" for the production of each module. The cost factor for each module was based on a per unit cost of producing each of the two audio-modular instructional units. The factor of "time spent" in the development and production of the audio-modular instructional units was somewhat less accurate. The investigator produced only a close estimate of the time element since overlapping agendas often distract any attempts to monitor the time factor.

Other assessment procedures used. In addition to the assessment procedures used in the study which related directly to the criteria established for the term "suitability," other procedures were used to obtain additional information about the audio-modular instructional units. The procedures included: (a) "open-ended" questions on a written ques-
tionnaire administered to the participants—the purpose being to determine the major strengths and weaknesses of the audio-modular instructional units and the changes which should be made in the units, and (b) personal interviews, observations, and note taking have been conducted by the investigator. The data from these procedures was analyzed, and these findings have been considered in the development of the final conclusions and recommendations for the study.

Significance of the Study

The demand for improved in-service training of teachers has been pointed out not only by specific studies concerning adult education in Massachusetts but also by such authors as John H. Thatcher, B. O. Smith, Robert M. Smith, John C. Moffitt, and others about the demand in general. It is this investigator's belief that the quality of education for the future is going to be dependent upon the ability of teachers to meet change. A diversity of methods will be needed to allow teachers to meet their commitment to change in order to improve the quality of the educational process. Moffitt has stated that,

This is an age of change. . . . Without continuing study teacher knowledge and teacher performance soon become obsolete. No one is ever completely educated—at most one can only be a student of the daily incidents as they occur.

1 John H. Thatcher, ed., Public School Adult Education.
2 B. O. Smith, Research in Teacher Education.
3 Robert M. Smith, et. al., ed., Handbook of Adult Education.
5 Ibid., p. 9.
Consequently, the goal of this study was to design and field test an alternative in-service training technique for adult educators.

**Organization of the Dissertation**

Chapter I consists of the problem, its significant aspects, the general design of the study, the limitations and assumptions, and the suitability factor which becomes the justification for the entire study. Chapter II presents a review of the literature and research concerning the accelerating need for bringing about educational change in teacher education in general, with particular emphasis on the in-service training of adult educators. Chapter III presents a description of the background, development, composition, and field testing of the learning modules. Chapter IV is a description of the methodology used to conduct the analysis. The instruments used in the study are also presented. Chapter V is a comparative analysis of the data collected during the field testing and an analysis of the results of the semantic differential and the results it implies. Chapter VI presents the summary, conclusions, and recommendations suggested by the data collected in this study.
CHAPTER II

REVIEW OF RELATED RESEARCH AND LITERATURE

In the previous chapter, both Alvin Toffler\(^1\) and John C. Moffitt\(^2\) alluded to the belief in contemporary American society that we are presently involved in an age of revolutionary change. The fact that our educational system, and particularly our teachers, must keep pace with a changing society encumbered by perhaps the greatest knowledge explosion yet experienced by man is offered as a given.

According to Anna L. Hyer, within ten years; that is, in the early 1980's, we will witness very pronounced changes in the role of the teacher as more rapid applications of media and technology in education occur. The next twenty or perhaps thirty years should probably be looked at as a period of transition.\(^3\) Toffler attests to this in *Future Shock*, when he states that,

> Mass education was the ingenuity machine constructed by industrialism to produce the kind of adults it needed. The problem was inordinately complex. How to pre-adapt children for a new world—a world of repetitive indoor toil, smoke, noise machines, crowded living conditions, collective discipline, a world in which time was to be regulated not by the cycle of the sun and moon, but by the factory whistle and the clock. The solution was an educational system that, in its very structure, simulated this new world. . . . The

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The historic struggle waged by John Dewey and his followers to introduce "progressive" measures into American education was, in part, merely a desperate effort to alter the old time-bias. Thus our education systems had not yet fully adapted themselves to the industrial age when the need for a new revolution—the super-industrial revolution—burst upon them. And just as the progressives of yesterday were accused of "presentism," it is likely that the education reformers of tomorrow will be accused of "futurism." For we shall find that a super-industrial education is only possible if we once more shift our time bias forward. Education [and educators] must shift into the future tense.

Michael Katz has claimed that the time for methodological unconsciousness within history has ended. Narrative history, uninformed by social or behavioral science, is pleasant and sometimes even interesting, but as a way of either advancing knowledge or contributing to substantive intellectual problems, it is virtually useless. The fact is man's destiny may be dependent upon how well the behavioral sciences are able to resolve conflict through understanding and implementing change. Katz makes no attempt to conceal his contention that the progressives failed to challenge either societal or institutional structure, and he states that, "social science cut off from its historical base...has weaknesses as grave as those of historical writing uninformed by social theory... Myth in turn, inhibits change by sentimental or unreal.

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1 Alvin Toffler, Future Shock, pp. 400-405. Note: For an excellent treatise on the Progressive Period and the effect of scientism on American education during that period, see Raymond E. Callahan, Education and the Cult of Efficiency (The University of Chicago Press, 1962).


value to institutions and forms that should be discarded."¹ The uniformity shaped in the name of the public weal is a bankrupt policy socially. It engenders a sense of overwhelming futility; there is no reason to work for change. Meanwhile, every serious social problem increases in scope and severity from year-to-year, and traditional approaches to social reform offer nothing new.² Katz has succinctly written, "In the nineteenth century, as now, the controversy over the shape of education reflected a debate over the shape of society."³

Continuing education, or adult education, terms which we will use interchangeably,⁴ is receiving increased emphasis in all occupations due to rapid advances in knowledge and technology, accelerating socioeconomic changes, and pressing manpower needs.⁵ N. L. Gage alluded to this accelerating economic and social change in the late nineteen sixties when he reported that 700,000 bachelor's degrees in engineering had

¹ Michael Katz, Class, Bureaucracy and Schools, p. xxvi. See also, Robert Nisbet's, Social Change and History (Oxford University Press, 1969).
² Michael Katz, Class, Bureaucracy and Schools, p. 4.
³ Ibid., p. 4.
⁴ Ibid., p. vii.
been awarded since 1940 and that 350,000 or half of these engineers were out of date. He emphasized that the engineers were attacking their obsolescence problem through retraining programs in various universities and corporations.\(^1\) There can be little doubt that the field of education is undergoing changes in theory and methodology. Educators are striving to incorporate advances in communications, human systems design, and learning technology; they are also stressing individualization, learner involvement, lifelong learning, social relevance, program effectiveness, and behavioral change. Continuing education is especially well suited to serve as a bridge between academic centers and service organizations, a bridge for which there is increased urgency.\(^2\)

In this rapid age of social change, the identification adjustments of adolescents and adults alike must be recapitulated in new contexts roughly four or more times in the working life of each individual. In the health services, for example, there is a great deal of familiarity with the rigidities in organizational structure that are associated with a lack of adaptability to change and with minds that are closed to learning. Although this is not necessarily cause and effect, the relationship is clear. Service agencies are under great pressure to pro-

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\(^2\) Thomas G. Webster, et. al., ed., *Continuing Education: Agent of Change*. Proceedings of the National Conference on Continuing Education in Mental Health, p. viii. (ED 057 345)
duce services. Yet budgets devoted exclusively to services, over-
attention to the immediate visible production of service, and lack of
attention to the individuals and human organization that render the
service, can result in rigid hierarchies, resistance to change, and a
tendency to hold onto patients, clients, or students for gratification
just as surely as the social structure can result in thwarted aspira-
tions. Margaret Mead has similarly reflected upon our shortcomings in
manpower planning and our resistance to change as well as our inability
to predict change when she stated,

. . .our predictions have always been too slow and
built for too few. . . . Before we get it built, every
airport we build is too slow [sic] for the planes that
are going to come into it. Every student union [and
practically every school] in the country is too small
for the enrollment, before the roof goes on. Our con-
tinuous inability to predict the rapidity of change. . .
is one of the things that I think we ought to ask some
questions about. 1

In the present period, there is a whole wave of new demand from
consumers, particularly the poor and the minorities who have complained
bitterly about the character of the service provided by the professional.

1 Thomas G. Webster, et. al., ed., Continuing Education: Agent of
Change. Proceedings of the National Conference on Continuing Education
in Mental Health, pp. 49-50. (ED 057 345)

2 Ernest E. McMahon, Needs--of People and Their Communities--and
the Adult Educator: A Review of the Literature of Need Determination
p. 3. (ED 038 551). See also Margaret Mead, The Changing Cultural
Patterns of Work and Leisure (Washington, D.C.: Manpower Administra-
tion, 1967), pp. 5-6.
These same groups are demanding entrance into the professions; that is, they want to become doctors, lawyers, teachers, and they are not all so sure that it should take so long to acquire necessary skills. Both of these pressures have led to the demand for performance criteria in evaluating the practice of the teacher, rather than traditional intelligence type tests which serve to screen in the middle class and exclude the poor. The obsolescence of past training and the need for new training models is all part of the general ethos demanding accountability to the "consumer" on the part of the teacher, or other practitioner, and new forms of education and training which will much more rapidly produce the new worker in a much more relevant, task-oriented, efficient fashion. This demand for newer and different training models should recognize that teaching has dimensions to it that are qualitatively different from teaching. The training must be highly participatory rather than trainer or professional centered.¹

In addition, the simple fact of objective environmental conditions today demands more attention to this aspect of the professional's growth; in order words, the social and educational changes which are taking place at an increasingly accelerated rate render much that we know obsolete much quicker than before. There is considerable evidence that people do, in fact, want to change, and the effective coordination of instructional programs requires such changes if any program is to continue

to be relevant to the needs of individuals today.¹

According to Gartner and Riessman, there are three key characteristics of our new service oriented society, each with their derivative consequence for training. First, with services being consumer centered, it leads to a participatory training design. Second, the service should be accountable and efficient. This means that the training must effectively develop the workers' skills, and third, since there is an expanding demand for services, the training must be as rapid as possible.² Unfortunately, professional training in the human services typically has not been explicitly skill centered nor participatory in character. Trainees must be trained in ways in which they will perform. Much systematic professional knowledge will have to be developed and then become part of the total education and training pattern. Much professional knowledge at the present time is not sufficiently related to practice and field experience, nor is it sufficiently skilled based. Hopefully, the revamping of professional knowledge will emerge from new practice and training designs.³ But training or educating means change. It is generally acknowledged that changes in knowledge are the easiest

¹ William G. Monahan and Howard E. Miller, Planning and Developing In-service Education (Iowa City, Iowa: The Iowa Center for Research in School Administration, 1970), p. 2. (ED 045 611)
² Alan Gartner and Frank Riessman, The Transformation of Training, pp. 8-9. (ED 055 272)
³ Ibid., pp. 20-22.
to make, followed by changes in attitudes. Changes in behavior are significantly more difficult and time consuming than either of the two previous levels. Group or organizational performance change is perhaps the most difficult and time consuming.\(^1\) The proverbial resistance to change is a problem that needs little elaboration.\(^2\) However, some factors that do inhibit educational change are justified and deserve slight emphasis.\(^3\) Saul Lavisky\(^4\) has stressed concern over several misconceptions about the change process. According to him, there are a lot of ideas about the change process—some of them quite widely held—that simply are not confirmed by experience. In fact, they are not true. First, Lavisky feels that some perfectly sincere people contend that a good product or idea will succeed on its own merits, that all you have to do is to cast light on the "truth" and good things will automatically flow. The second misconception about the process of change ac-

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ccording to Lavisky is the belief that change is linear in nature and that it proceeds in stages from research to development to experimentation to adoption for utilization. Lavisky states three basic contentions or beliefs about the educational change process. First, the process of directed change is much less linear than is frequently presumed; that it is, in fact, a complex feedback-type information-processing system in which a key aspect is the linkage or coupling between the scientific and technological communities. Second, there is much evidence to support the view that science and technology are really two different worlds—that the scientist who produces new knowledge about human learning has relatively little in common with the technologist or developer who will eventually use that knowledge in producing an educational innovation. They have different methods, values, and objectives. Lavisky's third contention, one which he admits may not be necessarily always so, is the belief that when educators are successful in getting an educational innovation adopted—whether it be by their school, school system, or college, the job is considered complete—that no further action is required. Lavisky cites the storehouses of schools and colleges across this nation containing countless teaching aids and devices gathering dust, and the classroom teachers who, only a year or so ago, were singing the praises of T-Groups, human relations sessions, and so forth, but who have now reverted to their old behaviors. Education for a variety of reasons has a well-deserved reputation for faddism—for jump-
ing on (and then off) bandwagons.  

While Lavisky's thesis on the change process is essentially premised on his contention that the greatest impediment to the successful introduction of educational innovations in American education has been the suppositions about educational change that just aren't so, he does feel that there are a number of problems inhibiting such change. First, in terms of priority, problems thwarting such change are educational objectives. To him if the statement of educational objectives is relatively specific, it does not command anything approaching a consensus, and if the statement has anything approaching a consensus, it is usually so vague and ambiguous as to be practically meaningless as a guide to educational planning. A second problem that inhibits educational change is that most school systems do not have a change agent. By that he means a professional person who is familiar with both the strategy and the techniques of the educational change process. A third factor inhibiting educational change is a lack of evaluation and feedback. This problem obviously derives from the lack of clear-cut educational objectives. Fourth, cost, particularly today, inhibits the adoption of educational innovations whether those innovations give promise of reducing expenses long run or increased quality of education. The point is that the taxpayer is understandably reluctant to foot the bill. A fifth problem is the innate conservatism of the educational establishment. Sixth,

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1 Saul Lavisky, Faculty In-Service Training Programs and the Educational Change Process, pp. 3-5. (ED 042 248)
too often the adopting agency of innovation, more specifically schools, fails to adapt innovation to specifically fit its own situation. Too often innovations are used, in fact, in dissimilar situations than those originally intended. Seventh, and more difficult to accomplish than buying new equipment or making physical changes, is the problem of changing the behavior of school personnel at all levels. The solution to this problem, while admittedly long term, could make real differences in the qualitative education of students. Eighth, we don't really understand how "societal forces" act to influence curriculum decisions and other decisions in education. Ninth, and perhaps more important overall, is the fact we don't really know how to translate knowledge about the psychological characteristics of learners into practical, practicable educational innovations.¹

In terms of change, one has to consider that presently about 250,000 new teachers are prepared for the labor market each year.² In the late 1950's, a great public concern to increase the quality of the schools was quickly followed by Congressional action. This was manifested by the sudden input of large amounts of money from the federal government available for purchase of materials and equipment and for the continuing education of teachers as well as to fund research and experimentation in the affective utilization of new media. The influx of

¹ Saul Lavisky, Faculty In-Service Training Programs and the Educational Change Process, pp. 3-7. (ED 042 248)
² Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. 22. (ED 058 751)
money was started with "Sputnik"\(^1\) and the National Defense Education Act of 1958 and has continued to the present time. In 1958 the annual expenditure of elementary and secondary schools for audiovisual equipment alone was about 62 million dollars; by 1968 it was about 253 million dollars.\(^2\) But the economics of education have already cast a long shadow on the future of school finance in the United States. Some basic constitutional questions are now in the courts challenging the fiscal basis of our present means of school finance. It has been clear for some time that present tax structures are not adequate. It is also clear that a small but alarming number of our school districts are now facing bankruptcy, and that the cost of our present system has been increasing over the past few decades at an exponential rate. In fact, at present growth rates, it has been determined that by the year 2080 our total Gross National Product will equal the total cost of public education. This statistical exercise has a meaning that must not be lost as we contemplate technology and the school, how they will interrelate increasingly, and how all of this will, without question, change the role of the teacher.\(^3\)

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1. Note: There is a thesis propounded by many critics of education including prominent educators themselves who contend that as a whole, educators have reacted rather than acted to societal pressures to improve our educational system. These critics cite American reactions to "Sputnik" and the educational legislation of the 1960's as examples of this. This would concur with Michael Katz' thesis previously mentioned. See page 23 of this dissertation.


3. Ibid., p. 46.
Finn\textsuperscript{1} pointed out in his studies in the early 1960's that the cost of tooling up for technology is great. A new technology of any size and consequence in a society such as ours can only be developed with considerable support from a federal government. The railroads, highways, jet aircraft, and recent space travel are all examples of this.\textsuperscript{2} According to Anna Hyer,

The current debate ranging both in educational and lay magazines of "technology vs. humanism" is also a deterrent to the introduction of instructional technology in the schools although it can easily be shown that much of this debate reflects serious misunderstanding of both "technology" and "humanism."\textsuperscript{3}

Technology in itself is neither good nor bad, humane or inhumane. The morality of any technology is a function of the human use and human ends—that is, new moral issues are raised, and we are forced to re-examine our goals. This is true in education as it is in the rest of society which is just beginning to realize that because technology makes


\textsuperscript{2} Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. 13. (ED 058 751)

\textsuperscript{3} Ibid., p. 44.
something possible is no reason for doing it.¹

N. L. Gage has predicted three pressing concerns of educational research in lieu of considering the whole array of new directions in educational research which serve to synthesize the needs for educational advancement. First, education for the culturally disadvantaged desperately needs fresh and powerful ideas that will produce effects of whose educational significance there can be no doubt. Second, the field of educational research needs improved ways of combating the obsolescence of its workers. Third, new relationships between research and development are needed to permit the former to advance the latter.²

John J. Horvat observed in late 1970: "Only recently has the concept of development been recognized as the best available, and perhaps the only, means to bridge the research-practice gap."³

Educational development, in turn, seeks to apply knowledge and produce innovation. Harold Jung and Ronald Lippitt have pointed out

¹ Anna L. Hyer, Effect on Teacher Role of the Introduction of the Introduction of Educational Technology and Media into Schools, p. 44. (ED 058 751) Note: For one of the best in depth writings on how American education can fall victim to science for the sake of science and the resulting dehumanization in American education during the first quarter of this century, I again refer you to Raymond E. Callahan, Education and the Cult of Efficiency (The University of Chicago Press, 1962).

² N. L. Gage, Three Pressing Concerns of Educational Research, p. 15. (ED 051 096)

that development means: (1) diagnosing the priority needs for change, (2) finding the existing innovations that provide alternatives for action toward change, and (3) locating the resources available for working toward that change. The field of development has been described as one of the most critical, yet overlooked, fields of education.¹

Richard A. Stowe has made some basic assertions concerning alternative models for training "developers"² in education. One of these assertions is that the demand for the services of skilled developers in education is already high and will increase sharply, perhaps exponentially, in many sectors of education over the next three to five years. Another assertion is that the rapidity of increase for services will create, in many cases, false expectations on the part of educators and the public toward development and its practitioners. A third assertion is that the same demand for the services of skilled developers in education will place a serious strain on institutions offering programs for the preparation of developers. The fourth, and last assertion made by Stowe, is that the lack of adequate numbers of well-prepared developers will have the following effects—creation of a "seller's market" for qualified developers accompanied by a disproportionate increase in


² Note: For a differentiation of the terms "developer" versus "scientist," see page 30 of this dissertation.
salaries for such personnel, the employment of poorly qualified personnel to serve as developers (the effect of which may be a serious tarnishing of the image of development), the attraction of numerous recruits into the field resulting in an eventual oversupply of developers, and finally a gradual adjustment of these imbalances, but only after a stressful period.\(^1\)

Unfortunately, the traditional image of the teacher is that he is supposed to be able to "do and teach" everything, and everywhere. Too often teachers try to do just that—a good example of this is the great numbers of moonlighting adult educators. Consequently, their performance in teaching is often ineffective. Never is teacher ineffectiveness more obvious than when the vast diversity of cultural determinants in our society render the traditional image of the teacher untenable. Today, teachers must be specifically trained for special situations. One important concept born out by research is the fact that everyone's teaching style differs.\(^2\) Educators today find themselves threatened from all sides.

\(^1\) Richard S. Stowe, Paper on Alternative Models for Training Developers in Education, p. 1. (ED 059 592)

Such confusion in the ranks of educators must be reduced. Within the next ten to fifteen years, there is little doubt that major changes will have to be made in the training and retraining of teachers. Interest in the continuing education of teachers has been fanned by research evidence supporting the view that teaching is no longer simply a generalized capacity to relate and solve problems. Joyce states that well:

The experience of innovative movements in education has shown us that the conception of teaching as a general capacity to educate is erroneous and dysfunctional [sic]. Most teachers simply have not effectively accepted the new roles, or learned the new strategies unless a massive inservice effort was made.

This is not to imply that innovation is not an accepted concept in education, and it also seems apparent that most of the innovations being tried today are technology-dependent. When a technological advance is made, it is impossible from looking at the beginning stage to predict with accuracy what the end result will look like. This is as true for


2 Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. ii. (ED 058 751)

3 Ibid., p. 22.

education as it is for other aspects of society, but we must try, from the transition stage that we are now in, to identify trends or directions.\textsuperscript{1} In such a fast-paced and technological environment in which educators operate today, it is important that the concept of educational media be differentiated from the broader concept of a technology of education.\textsuperscript{2} The implications of the differentiation of the two concepts will ultimately have quite different effects on the role of the teacher. Although the thrust for an increase in the quantity in education has gained tremendous emphasis nearly midway into the last half of the twentieth century, it is overshadowed by an emphasis on increased quality in education. This has led to experimentation and innovation in teacher education and the beginnings of experimentation with instructional technology in its true sense.\textsuperscript{3} Most of the literature that has been selected for review up to this point relates to change. In itself, change holds no value connotations. It may be for good or bad. Educators, however, are concerned with improvement. In-service education

\textsuperscript{1} Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. 31. (ED 058 751)

\textsuperscript{2} Note: I feel that there is a need to differentiate between the terms media and technology as they are applied to education. The point is that the term educational media does not, in itself, suggest the ramifications for research and for educational policy and operating procedures which are inherent in the terms, "technology" of education. Technology is not just machines and men. It is a complex, integrated organization of men and machines, of ideas, of procedures, and of management. See Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. 2. (ED 058 684)

\textsuperscript{3} Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, pp. 3-4. (ED 058 751)
programs are designed not only to change educational practice but also to improve classroom instruction. While much has been written about in-service education as a whole, much of the writing has been descriptive and subjective and only recently have research studies attempted to evaluate in-service programs. And while special attention in this area has been given to the resources provided by the field of psychology, social psychology, and sociology, few would perhaps argue that if education is to be improved, scientific knowledge must be used for planned change. According to Roland J. Pellegrin, "The alternative to planned change is to be buffeted about by the pressures and demands of a society that clamors for educational services of many kinds." Since change alone is not enough, change must be planned if educational objectives are to be reached. Technology changes the role of teachers only when the rest of the system changes sufficiently to permit the teachers to change. In many instances teachers are kept from doing so because, one, their fellow teachers are not equally prepared for change and thus

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1 Dorothy Westby-Gibson, *Inservice Education: Perspectives for Educators*, p. 2. (ED 015 161)
3 Dorothy Westby-Gibson, *Inservice Education: Perspectives for Educators*, p. 2. (ED 015 161)
4 Ibid., p. 52.
create an overwhelming resistance; two, their administrators are not convinced it is necessary and, consequently, resist the expenditures or reorganization of resources required; three, the constituency of the school is suspicious of its relevance and thereby creates a resistance force; fourth, the teacher education section of the college or university servicing that area is not convinced or trained in the innovations applicable and thereby are non-supporting; fifth, the state departments of education have individual proponents of change, but they have no clout with the "door keepers" at the local levels to give the teacher the needed support.¹ A most obvious fact of life is that virtually all changes in instruction involve changes in people.² The whole problem of institutional change as it appears to the educational system in the United States was summed up quite well in one sentence in a recent education publication of the Association for Supervision and Curriculum Development:³ "What emerges from this consideration of the system of education in the United States is an enormous capacity to absorb change while not changing at all."⁴ Too often educators are prone to overlook the classroom and the school as interrelated social subsystems of the

1 Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. 40. (ED 058 751)
2 Ben M. Harris, The Supervisor-Agent for Change in Teaching, idea extracted, p. 91. (ED 013 799)
3 Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. 40. (ED 058 751)
4 Ibid., p. 40.
larger community. Hayes contends that when we consider the changing cultural values of this society, it was not too long ago that most Americans believed that schools were to educate and not change the social order. Then students were to hear and not necessarily be heard and that they were to be of very proper conduct and dress. Now the converse is true. Society, partially through government leadership, demands that schools change the social order. One major problem area ahead is that of changing the institutions of education, teacher education specifically, and the behavior of teachers. The problem for educational change in the United States is complicated by the fact that our educational system, including teacher education, is decentralized. As a result, it is impossible to make changes by edict from the top or even at the state level. Change has to take place at the local level. This is both costly and time consuming. The alternatives seem clear. Educators may continue in education to keep school—to teach what we have been teaching, to ignore volatile change and attitudes about them—and rapidly decline as a major positive force in society. Or, we can rethink our goals, processes, and problems in terms of community needs and aspirations and remain a strong force in society. There does not appear

1 Ben M. Harris, *The Supervisor-Agent for Change in Teaching*, p. 91. (ED 013 799)
to be a middle ground.¹

There is evidence that the so-called educational "theory-into-practice-lag" which once was said to be fifty years and which has dropped to twenty, may in the near future, be reduced further. It is necessary that we train teachers for the future and not for the past, perhaps, that we train them for a life of professional change per se.²

Questions inevitably emerge about teacher training. First, how is the new training to be produced? Where is it to come from? Gartner and Riessman have stated that this training can emanate out of what they term the "multiplier effect" emerging from some central source such as a Training the Teacher Trainers concept or TTT model. The premise of this diffusion of training skills is that it will come from some group or center hopefully permeating education professors and other teacher trainees who, in turn, teach teachers who affect students. It is essentially a top-down authority laden schema, just a more sophisticated version of the traditional professional model where the doctor, teacher, professor, or whoever, knows best.³

The greatest problem with the new training models is that they are not fully developed; they are in need of constant modifications and transformations, related to a rapidly changing practice. According to

¹ Dale K. Hayes, Removing the Storm Clouds: Cooperative Leadership to Provide Constructive and Viable Solutions to Critical Problems in Education, p. 11. (ED 045 684)

² Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media Into Schools, p. 37. (ED 058 751)

³ Alan Gartner and Frank Riessman, The Transformation of Training, p. 23. (ED 053 272)
Gartner and Riessman, what is required is the collectivizing or pooling of the experience of many field-based trainers who are close to the teachers or service givers. And, concurring with Hyer's thinking previously mentioned, they feel that a constant building of every-changing models from the bottom up, rather than the top down, is needed. Whatever the source, the new models that emerge must be fed by practice and then dispersed to be tested in practice—in pre-service and continuous in-service training.  

Obviously, there are no models for training that offer panaceas regardless of the service or profession, but that should not prevent educators from developing alternatives to be tried, modified, and implemented when successful.

As we explore the literature concerning the growing "technocracy" and the rapidly growing complex society in which educators are given the choice to either lead for societal change via education or abdicate their responsibilities completely, there emerges the recognition of a growing movement in the United States toward the concept of lifelong learning.  

In 1969 Malcolm S. Knowles, preeminent author in adult education recognized the growing movement of this country toward the acceptance of lifelong learning when he stated,

1 Alan Gartner and Frank Riessman, The Transformation of Training, p. 23. (ED 053 272)

2 Thomas G. Webster, et. al., ed., Continuing Education: Agent of Change. Proceedings of the National Conference on Continuing Education in Mental Health, p. 56. (ED 057 345)
Midpoint in the decade of the sixties it was clear, if it had not been before, that education was regarded by large segments of the American population as a lifelong process.¹

Eric Sevareid, famed news commentator, once said that, "... the American public ... includes 10,000,000 college graduates and more than half of all the high school educated people in the world."² The other side of the coin is that at least 10,500,000 adult Americans are functional-illiterates, having progressed no further than the fourth grade in English competency. And despite the attempts by special federal, state, and local literacy programs to ease the problem, high incidences of poverty and migration tend to maintain illiteracy at a fairly constant level.³ Whereas the illiterate man could survive in the 1870's by the use of muscle power, he will be unable to sustain himself in the 1970's and beyond where the prime requirement for survival will be brain power. As the demand for well-educated and skilled manpower rapidly increases, job opportunities for the undereducated adult decline. There are far too many educationally handicapped individuals who are prevented from functioning to their highest potential in a

² Hunter Fitzgerald, Adult Basic Education National Teacher Trainer Institute, Report of the University of California Division, Los Angeles, California, July 10-28, 1967 (Los Angeles, California: National Teacher Trainer Institute, 1967), p. 9. (ED 012 878)
³ Ibid., p. 9.
world to which they want to belong. According to Malcolm S. Knowles, the adult body will expand not only in the number of adults but also in the pace of technological change. The United States Department of Labor statistics are commensurate with Robert Smith's thinking stated earlier when it predicts that the average worker will need to change his employment skills at least eight times during his productive years. These factors not only make obvious the need for directly involving adult illiterates but also accentuates the comparable need for improving teacher education and/or training to combat the compounded problem of educating the adult as well as the young.

Commissioner Evan Claque of the Bureau of Labor Statistics predicts

1 Department of Adult Education. Report of Florida State University. Southeastern Institute for Teacher Training in Adult Basic Education (Tallahassee, Florida: Florida State University Department of Adult Education, 1972), p. 121. (ED 061 480)


4 Hunter Fitzgerald, Adult Basic Education National Teacher Trainer Institute, idea extracted, pp. 9-10. (ED 012 878) Note: Thomas Webster, op. cit., p. 212, defines the term training in connection with those programs which are motivated primarily by and for the benefit of the company. On the other hand, the term "education" is used to refer to those educational opportunities, wherever found, in which the employee takes the initiative to enroll. In other words, Webster sees education as something that the individual does for himself, whereas training is something the company does to the individual. I prefer to use the two terms interchangeably in education believing that both connotations can be applied to either term as I refer to them.
that the pace of change during the remainder of this decade and especially in the 1980's will generate demand for more well-educated, highly skilled workers than will be available while dwindling job opportunities further decline for the unskilled and underskilled. Labor department statistics estimate that for increases in employment by 1975, farmworkers will decrease by approximately 1,000,000 or twenty percent. There will be no increase in industrial laborers. Skilled industrial workers (operatives, craftsmen, foremen, etc.) will increase by 4,700,000. Clerical workers will increase by 4,100,000 (up to forty-one percent), and professional and technical workers will increase by 4,400,000—the largest percent of any group, or fifty-five percent.¹

Since there appears to be a renewed interest in the continuing education of teachers at all levels to meet changing demands,² the in-service educating or training of teachers, in general, appears to be the most viable and perhaps lowest cost long term. In a sense in-service education reflects our national struggle "to keep up" and the need to go ahead as the literature we have cited clearly shows. All, regardless of occupation must continue learning. In-service education of professional men and women, managers, technicians, and skilled workers in all occupational fields is of national concern. The in-service education of

1 Thomas G. Webster, et. al., ed., Continuing Education: Agent of Change. Proceedings of the National Conference on Continuing Education in Mental Health, p. 206. (ED 057 245)

2 Anna L. Hyer, Effect on Teacher Role of the Introduction of Educational Technology and Media into Schools, p. 23. (ED 058 751)
teachers is, especially, of national concern.  

1 O'Hanlon has stated that the need for in-service education programs is accepted by almost all educators.  

2 With the "breakthrough" in federal aid to education occurring in the late 1950's (a consequence of societal events like "Sputnik" discussed earlier), it resulted in major congressional legislation applicable to the in-service education of teachers. Such legislation included the National Defense Education Act (NDEA) of 1958 and the Elementary and Secondary Act of 1965. Title III of the NDEA provided matching federal funds to the state departments of education for administrative and supervisory services. Initially the overall goal of the program was to improve instruction in mathematics, science, and foreign languages. Eventually the act spanned the social sciences, reading, English, and the humanities. Title XI provided federally supported institutes available to classroom teachers for advanced study although more limited now than in the past. The Elementary and Secondary Act of 1965 had even broader implications for the improvement of instruction. Title I of that act provided federal grants to local public school districts for programs designed to meet the needs of educationally deprived

1 Dorothy Westby-Gibson, Inservice Education: Perspectives for Educators, p. v. (ED 015 616)

children residing in attendance areas where there are high concentrations of children from low-income families. Opportunities for in-service programs are limitless in this title.¹

The literature we have reviewed thus far clearly indicates that the in-service training of teachers is not only a need and a viable alternative but also a national concern. Anticipating most thoughts on the subject, the question as to the definition of in-service education arises. Malcolm S. Knowles broadly defines in-service education when he states, ". . . that those who regard adult education as. . . [a] profession would include [in the definition of in-service education] all those experiences in a work situation that are designed to influence the growth of employees. . . ."² Historically in-service education was invented to correct serious deficiencies in pre-service education. As pre-service education developed into professional college preparation, the concept of in-service education shifted to a notion of expanded training and retraining so that teachers could remain current with the most recent innovations in education, science, and technology.³ At the start of the century, apprentice training was the major formal activity, and

¹ James O'Hanlon and Lee A. Witters, Breakthrough: Inservice Education for All Schools, p. 21. (ED 015 147)
² Thomas G. Webster, et. al., ed., Continuing Education: Agent of Change. Proceedings of the National Conference on Continuing Education in Mental Health, p. 204. (ED 057 345)
this, together with less formalized learning on the job, seemed to meet the need. World War II created a crisis in industry for which millions of persons had to take on new responsibilities. Industry conducted job instruction training or "J" programs developed by the War Manpower Commission. Although the war ended, problems created by an economy multiplied. The number of individuals involved and the variations in specific job requirements were too great to expect the schools to help much. Industry undertook this massive educational task herself. The result was more in-service education within industry, both in extent and variety.\(^1\) Most professional education or training grew out of an elite tradition; for example, four years to train a plumber, eighteen months to train an airline pilot. The major concern was that the professional-to-be acquire a definite point of view and perspective about the work he was to perform. A good example was the law student who was trained to be a lawyer, not so much to do lawyering. Ralph Nader cogently described the process in legal education when he said,\(^2\) "Law professors take delight in crushing egos in order to acculturate the students to what they called 'legal reasoning' or 'thinking like a lawyer.'"\(^3\) There was definitely no particular hurry about acquiring the

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\(^1\) Thomas G. Webster, et. al., ed., Continuing Education: Agent of Change. Proceedings of the National Conference on Continuing Education in Mental Health, p. 207. (ED 057 345)

\(^2\) Alan Gartner and Frank Riessman, The Transformation of Training, p. 4. (ED 055 272)

\(^3\) Ibid., p. 4.
necessary skills. In fact, it was part of the entire tradition that one acquire these skills in a rather leisurely fashion through slow internships and apprenticeships from other peers. Most professional practice and training has been directed toward (and often results in) maintaining a monopoly over the necessary skills and knowledge. Traditionally efforts have been made to limit the number of people who could acquire professional skills and knowledge. Restrictive licenses and expensive, prolonged training practices have been highly suitable, just as they are very useful for the plumbers' union in maintaining its monopoly.¹

From our present perspective of a rapidly growing and changing technocracy, we can better realize the unfortunate aspects of the traditional training, free of hurry and human service workers. Regardless of whether they were doctors, teachers, or social workers, there was no consumer carefully demanding accountability of the task being performed, and it was very easy to maintain the traditional highly stretched-out model of training and educating. The result was protection for the semi-monopoly of the existing professional stratum.²

Monahan and Miller³ support O'Hanlon's contention that the need for in-service education programs is accepted by almost all educators.

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¹ Alan Gartner and Frank Riessman, The Transformation of Training, pp. 4-5. (ED 055 272)
² Ibid., p. 5.
³ William G. Monahan and Howard E. Miller, Planning and Developing Inservice Education (Iowa City, Iowa: The Iowa Center for Research in School Administration, 1970). (ED 045 611) See page 48 of this dissertation.
According to them, few people in the field of professional education—if they give it thoughtful consideration—will not admit that in-service education is a most important activity. But it must be generally conceded that in actual practice, in-service education is not accorded the importance it deserves. According to the research and literature available on the subject, there are a number of reasons for the fact that the continued on-the-job growth of teachers and administrators is held in low repute. Perhaps such activity, so much a part of the routine thinking of those of us engaged in education, is merely too much taken for granted. Unquestionably, such activity is not planned well, nor is it generally designed to truly meet the real needs of professional personnel.\(^1\) A report of the Bureau of Navy Personnel\(^2\) supported the latter contention as early as 1965. That report stated that the best in-service training rarely occurs of its own accord. It usually happens as a result of careful planning aimed at fulfilling specific needs and at enabling as many as possible to participate. The Bureau of Navy Personnel likened unplanned in-service training programs to that of a rudderless ship. It isn't really going anywhere and much of the time it is in danger of running aground.\(^3\) Any good in-service training programs

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\(^1\) William G. Monahan and Howard E. Miller, Planning and Developing Inservice Education, p. 1. (ED 045 611)


\(^3\) Ibid., p. 8.
should have their goals clearly indicated! Follow up and the ability to fit them into the normal schedule is desirable.¹

A five-state study conducted by the Iowa Center for Research in School Administration, the University of Iowa, disclosed that regardless of length of experience, grade level, subject concern, whether male or female—regardless of any particular variable involved—teachers overwhelmingly indicated that their chief desire from in-service education programs was to improve their teaching skills. Yet, the same study, as well as others, pointed out that teachers felt that too frequently the purposes that such programs are designed to serve are not well conceived nor appropriately pursued. The bases for the need for in-service education programs should be obvious, and the important reasons for them being effectively planned and carried out must be given more emphasis than ever before and are not so difficult to enumerate. Unquestionably, we must begin more to recognize that pre-service training (traditionally and credentialed based) is not enough to appropriately prepare the teacher for many aspects of his role that can only be internalized after he has accepted a teaching post. Pre-service is, at best, a kind of introduction to the tasks unless it can be more realistical and competency based. It is analogous in medicine to the young physi-

cian who is ready to intern because, in spite of vast improvements in practicum experiences, true practice must await placement in a real position. Everything prior to that is not authentic enough in and of itself to make each teacher more completely aware of his needs as well as his strengths.

Perhaps the importance of in-service education has been expressed with greatest simplicity and clarity by Charles D. Lowry who was Superintendent of Schools in Chicago. Lowry said that,

The work of making good teachers must be carried forward steadily because of the immaturity of teachers on entering the profession, the unevenness of their preparation, the singular lack of external stimulus connected with practice of the profession, the complex nature of the work that must be entrusted to even the poorest teacher, the profound injury that results when the work is badly done and the constant change in methods and curriculum.

In light of current thinking concerning the concept of lifelong learning and supportive literature and research purporting the need for the in-service education of teachers in general, including the overall purpose of this study, is incumbent to emphasize the need for the professional preparation of adult educators specifically.

1 William G. Monahan and Howard E. Miller, Planning and Developing Inservice Education, p. 1. (ED 045 611)
2 James J. Asher, Inservice Education: Psychological Perspectives, idea extracted, p. 1. (ED 015 891)
Coolie Verner has written that,

The recognition of adult education as the curative solution to many social problems and its new role as a major instrument of national policy have hastened the already rapid growth of this emergent profession and field of study. No problem is more severe than the need to augment and upgrade the work force providing programs of education and training to millions of adults each year.¹

Perhaps a problem equally severe to that of augmenting and upgrading the work force of adult educators is the absence of research and literature in the area of training them. Regardless of any of the arguments, the simple fact remains that the routine reader of literature purporting to be "of adult education" will not find many of his most helpful references about determination of need on the library shelves which house the materials cataloged for adult education nor will he find a large percentage of the articles in the journals of adult education. However, one is likely to find help in the literature of social welfare, sociology, school administration, manpower training, and many other fields concerned with the community and with human growth and development.² There does exist a growing body of literature although scant in respect to other fields on the need for and provision of education about educating adults.³

² Ibid., idea extracted, pp. 10-11.
³ Ibid., p. 2. See bibliography of this dissertation. Note: For an excellent study on the need for educating adults in the state of Massachusetts specifically, see Melvin R. Levin and Joseph S. Slavet, Continuing Education: State Programs for the 1970's (Lexington, Massachusetts: D.C. Heath and Company, 1970). A summary of this report has been prepared for and is available from the Educational Resources Information Center (ERIC). (ED 040 359)
One of the most tedious and somewhat futile subjects of concern expressed in the literature is the question as to whether or not adult education is even a profession.\(^1\) Few would perhaps question that as a field of social practice, adult education has developed within a variety of existing social institutions—often without a distinctive and visible status or place.\(^2\) In recent times the complex, rapidly changing nature of modern life has made continuous learning a prevailing social need as the literature substantiates. Adult education, having become a significant social movement to take care of that need, has accentuated the rapidly increasing demand for professionally prepared adult educators and the increasing body of knowledge about providing opportunities for learning have culminated in the need for specialized programs to educate adult educators.\(^3\)

Jindra Kulich alluded to the universal need for preparing adult educators when he stated that the,

Research and training of adult educators, both at the professional and the voluntary level, are of importance to further development of effective adult education in any country. . . .[However, the] . . .successful and effective training of adult educators at all levels must

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\(^1\) Coolie Verner, et. al., *The Preparation of Adult Educators*, idea extracted, p. 9. (ED 041 180)

\(^2\) Ibid., idea extracted, p. 13.

\(^3\) Ibid., idea extracted, p. 1.
be based on a body of knowledge assembled through empirical research as well as through conceptualization and theory building.¹

Too often, as has been the case with education in general, the gap between theory and practice, between accomplishment and intention has often been wide, and the achievements of adult educators must not be confused with its theoretical framework. The theory of education to meet current needs is sound; the implementation of the theory has left much to be desired.²

Most leaders in adult education have entered the field by accident; consequently, they have not experienced any preparatory training about adult education. As they become more deeply involved with the field, these leaders recognize a need for special training and educating about education for adults.³

Verner has cited research that has identified commonalities of interests among a group of one-hundred adult education leaders that deserves attention and may even serve as a basis for planning an in-service leadership program. These common interests include: (1) gaining a


² Ernest E. McMahon, Needs--of People and Their Communities--and the Adult Educator: A Review of the Literature of Need Determination, idea extracted, pp. 1-2. (ED 038 551)

³ Coolie Verner, et. al., The Preparation of Adult Educators, p. 20. (ED 041 180)
better understanding of the basic needs which cause adults to participate in education programs, (2) gaining a clearer insight into the changing interests of adults in vocations, religion, family, leisure time activities, health, and other areas of life, (3) increasing their ability to apply psychological principles to the selection of objectives, (4) acquiring techniques for relating their programs to the needs and interests of adults and the general needs of the community, (5) to become more skillful in recognizing community needs and resources that are important to adult education programs, and (6) to become more familiar with procedures for "keeping up" with new developments and materials for adult education programs.²

According to McMahon, adult educators have always stressed the meeting of needs as a cardinal principle of adult education; yet today demands for relevance are directed to adult educators as well as to the rest of the educational establishment. While relevance may be the magic word of the moment, what could be more relevant than the development of

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¹ Note: While everybody talks about the implications of increased leisure time as we shorten the work week and that it is going to be shortened even more, we have not prepared for it. We have not designed any good programs, any far reaching implications to handle the great amounts of leisure time we are going to have in the next fifty years. See Thomas G. Webster, et al., ed., Continuing Education: Agent of Change. Proceedings of the National Conference on Continuing Education in Mental Health, p. 54. (ED 057 345)

² Coolie Verner, et al., The Preparation of Adult Educators, pp. 22-23.
an educational program for the specific purpose of meeting someone's need?¹

In response to the growing demand for personnel to perform the adult education function, systematic instructional programs have been developed for the preparation of those for whom adult education is a primary occupation as well as less intensive activities to train the part-time and volunteer workers in the field.² Vemer's perception of adult education differs somewhat in specificity of meaning from that offered by either Webster or Knowles.³ Vemer views adult education as a relationship between an educational agent and a learner in which the agent selects, arranges, and continuously directs a sequence of progressive tasks that provide systematic experiences to achieve learning for those whose participation in such activities is subsidiary and supplemental to a primary productive role in society.⁴

If graduate study in adult education was more intimately integrated into adult education, it might be possible to produce more functional evaluations of graduate study and professional preparation in the field. Perhaps one of the reasons professional preparation is not so in-

¹ Ernest E. McMahon, Needs--of People and Their Communities--and the Adult Educator: A Review of the Literature of Need Determination, p. 1. (ED 038 551)
² Coolie Vemer, et. al., The Preparation of Adult Educators, p. 2. (ED 041 180)
³ Note: See pages 24 and 49, respectively, of this dissertation.
⁴ Coolie Vemer, et. al., The Preparation of Adult Educators, p. 6. (ED 041 180)
timely integrated is that adult education is an eclectic discipline that draws knowledge from all the social sciences; it is difficult to specify the content of graduate programs. It is safe to say that virtually every university has its own unique series of courses and that these vary in terms of the education and experience of the responsible professor.¹

The achievement of a doctorate in adult education is frequently a goal of the professional adult educator, but the bulk of professional leadership in the field of adult education has come from other fields and disciplines. While enrollments in university courses and programs of graduate study in adult education are increasing rapidly, these activities cannot possibly meet the demand for personnel with specialized education and training. For the most part, part-time and volunteer leaders usually have no specialized training or at best one or more courses at the university level. Most of the training in adult education specifically for both part-time and volunteer personnel is through in-service education.² Although the training of volunteer leaders is an old established tradition in the cooperative extension service,³ it is less systematically organized in other phases of adult

¹ Coolie Verner, et. al., The Preparation of Adult Educators, p. 40. (ED 041 180)
² Ibid., p. 6.
³ See Alexander A. Liveright, A Study of Adult Education in the United States (Syracuse: Center for the Study of Liberal Education for Adults, 1968).
education. In the literature available, there is evidence that in recent years there has been a spurt of interest in the training of teachers in Adult Basic Education programs.\(^1\)

As the result of a seminar conducted by the Southeastern Regional Adult Basic Education Staff Development Project, the participants concluded that most Adult Basic Education teachers are "moonlighters" from the day school program. In most instances they found that such teachers of adults were unavailable to the typical graduate degree program, bound as it is to campus course offerings. Another revelation that emerged from the seminar was that the teachers of Adult Basic Education have needs that are different. The teachers specified that they wanted help, immediately and conveniently, in the skills of relating to adult learners. Another conclusion drawn was that in many instances one day in-service training workshop sessions in all areas of each state\(^2\) were appropriate. Rather than full summer-degree-oriented study, the teachers felt that two-week summer institutions would better provide training relevant to recruiting and retaining adults in Adult Basic Education programs. Out of the seminar emanated recognition that one of the basic and most apparent weaknesses was in the planning of training and

\(^1\) Coolie Verner, et. al., *The Preparation of Adult Educators*, p. 45. (ED 041 180)

\(^2\) Note: The Southeastern Adult Education Region includes the states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.
use of commonly accepted adult education techniques. This would seem to corroborate Monahan and Miller's contention that inept planning characterizes in-service programs in general.

There were several significant problem areas identified by the Southeastern Region Seminar held in Atlanta, Georgia, concerning the teachers of adults. One of these problem areas was that differing levels of competency are required for adult educators, and it appeared important to develop skills against which individuals can match their competencies. A second problem area recognized was the lack of familiarity on the part of the adult education directors with the most effective processes in training adult educators—how to select them and when to use them in specific and different situations. The key factor in this problem area was how content for teachers would be organized. The concern that was particularly strong was how the content would be presented to the teachers in relation to specific problems that they had. The latter concern emerged as a result of a feeling by the participating directors that adult education teachers want answers to their problems not just the presentation of content for its own sake. A third problem

1 Southeastern Regional Adult Basic Education Staff Development Project, The Planning of In-Service Workshops: A Seminar (Atlanta, Georgia: Conducted by the Southeastern Regional Adult Basic Education Staff Development Project, February 14-17, 1971), pp. 4-6. (ED 058 539)

2 Note: See pages 51 and 52, respectively, of this dissertation.

3 Southeastern Regional Adult Basic Education Staff Development Project, The Planning of In-Service Workshops: A Seminar, p. 8. (ED 058 539)
area identified was the importance of adult education in-service workshops being seen as the beginning of need diagnosis and selection of resources, rather than an end of a training activity.\(^1\) One general reaction from the seminar participants was that in-service workshops should be seen as one phase of a continuous training process.\(^2\)

In 1972 on the basis of follow through activities and evaluation carried on by the Educational Systems Corporation for the Southeastern Institute for Teacher Training in Adult Basic Education, it was concluded that: (1) teacher turnover in Adult Basic Education was high, (2) teachers need intensive pre-service orientation to Adult Basic Education and continuing in-service training, and (3) at present there are few career ladders for the professional development of adult education teachers. And one of the things that they found adult teachers need most is to be able to effectively serve in the roles of counselor, diagnostician, evaluator, resource specialist and designer—manager of learning experiences. The foregoing conclusions have several important implications for future teacher training programs in Adult Basic Education specifically and for adult educators generally. Among some of these conclusions are: (1) as long as the position of most adult educators remains a part-time one, with relatively high turnover, effective teacher training and staff development will require more resources, time, and

\(^1\) Southeastern Regional Adult Basic Education Staff Development Project, *The Planning of In-Service Workshops: A Seminar*, p. 15. (ED 058 539)

\(^2\) Ibid., p. 36.
funds than presently provided, (2) resources should be directed toward self-instructional programs for teacher training, and a program of high quality technical assistance should be established to provide continuous professional updating to teachers in the field, and (3) state departments of education and universities will need more human and financial resources if the needs for teacher training are to be adequately met.¹

In a study done on Adult Basic Education teachers in Ontario, Canada, Wilfred Brooke ² reported that seventy percent of the Adult Basic Education teachers felt a serious lack of resources with ninety percent indicating a great need for training. Cathy Davidson ³ found that eighty-five percent of the teachers of adults in the province of British Columbia, Canada, would participate in in-service training if it were made available. Generally speaking, Vemer has stated that the higher the educational level and the greater the experience in teaching, the greater the awareness of the need for learning about adult education.⁴

¹ Department of Adult Education, Report of Florida State University, Southeastern Institute for Teacher Training in Adult Basic Education, Florida State University, p. 4. (ED 061 480)
⁴ Coolie Vemer, et. al., The Preparation of Adult Educators, pp. 20-21. (ED 041 180)
While yesterday the focus in adult education was on the individual, today the emphasis is on community needs. In addition to the changing scene in adult education, adult educators have to turn their attention to the community and to face the need for action. As much as anything, the field of adult education needs the central thrust of interest and academic endeavor that is provided by a formal educational program. Presently, the professionals in adult education exist at the fringe of a number of areas without a central focus with which to relate. Melvin R. Levin and Joseph S. Slavet described the status of adult education generally and in Massachusetts specifically much more cogently when they stated that,

For at least a generation, the persistent neglect of continuing [adult] education—part time schooling for adults—has made it one of the few remaining orphans in the educational spectrum.

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1 Ernest E. McMahon, Needs—of People and Their Communities—and the Adult Educator: A Review of the Literature of Need Determination, pp. 5-9. (ED 038 551)

2 Gary Dickinson, A Survey of the Need for Programs to Prepare Members of the Health Professions as Specialists in Continuing Education, Report to Adult Education Research Center and Division of Continuing Education in the Health Sciences, Vancouver, Canada, 1972 (Vancouver, Canada, University of British Columbia, 1972), p. 12. (ED 063 530)

If adult educators in Massachusetts are going to heed the warnings of Levin and Slavet's 1970 report to the Massachusetts Advisory Council on Education, a massive training program for adult educators appears imperative in the next three or four decades to meet not only the demands for continuing education in Massachusetts but also nationwide. Taking into account all of the other aspects of adult education, cultural, avocational activities, and so on--there is a surging growth in adult education which has led to predictions that, by the turn of the century, adult education will be one of the nation's biggest businesses. Up to the present, educators have found it difficult to design curricula and teaching techniques suitable for the special requirements of adult audiences. This deficiency may be attributed to the fact that adult education, as Malcolm S. Knowles views it, is emerging as the largest and most significant dimension of our national educational enterprise. Knowles claims that the size of the adult student body will eventually grow to be at least twice the size of the youth student body in numbers and probably equal size in volume of attendance hours.¹

In Massachusetts along it is estimated that, depending on definition, there are between 600,000 and 700,000 functional illiterates who need basic education before they are eligible to seek any but the most menial types of employment. Fifty-three percent or 1,600,000 of the

state's population in 1960 over twenty-five years of age had not completed high school. During the next ten years; that is, by 1980 Levin and Slavet have projected that a minimum of 250,000 of the estimated 600,000 to 700,000 people in the state of Massachusetts with less than an eighth grade education should be enrolled in programs of elementary instruction in the skills of reading, writing and speaking English, and arithmetic with subject matter drawn from the fields of civic education, health practices, consumer education, human relations, and family and home life. During the same time period, Levin and Slavet project that a minimum of 300,000 people of the estimated 1,300,000 in the state over seventeen years of age with between eight and twelve years of education should be enrolled in programs of high school level instruction with a high school diploma as the goal or with the successful passing of high school equivalency examinations as the objective for the enrollees. As a result of these statistics, it should come as no surprise that in 1969 only an estimated five percent of Massachusetts' four million adults aged eighteen to sixty-four were enrolled in any kind of continuing education program. ¹ Nor should it be surprising that the need for specially trained adult educators especially at the teaching level is an urgent one—not only in Massachusetts but also nationally. In the United States for 1972, 850,000 students dropped out of high school, whereas another 850,000 students started college and eventually dropped

¹ Melvin R. Levin and Joseph S. Slavet, Continuing Education: State Programs for the 1970's, pp. 1-14. (ED 040 359)
Another 750,000 students got a general high school education virtually void of any particular marketable skill.\(^1\)

The recommendations of Levin and Slavet cannot be ignored by educators if Massachusetts particularly and the nation in general are going to fulfill their responsibilities to the people of equal opportunity. The most important recommendations of their report included: (1) a significant commitment by the Commonwealth of Massachusetts to a balanced program of adult education designed to enable the state to cope with a growing backlog of negative needs in the education and training of adults and to equalize the educational opportunities offered to adults with those available to the young. Philosophically, allocating certain state financial resources to adult programs will inevitably be returned to the state tenfold in higher tax revenues, reduced dependency costs and improved services, (2) the recommendations also recognized the importance and desirability of flexibility to serve demands and needs which can fluctuate considerably. Few would perhaps question that the social consequences of continuing education are particularly important to the disadvantaged segments of the population, many of whom require specially designed opportunities for adult education and training, and (3) as part of a broader commitment for improving the quality of state services as well as the effectiveness and efficiency of state employees, extending the principle of staff training and career development for

\[^1\] Note: These figures have been released from the office of Commissioner of United States Education, Sydney P. Marland, United States Department of Health, Education, and Welfare, Office of Education.
state employees is imperative for expanding into a comprehensive program the present limited activities in this critical area of continuing education.¹

One very viable alternative methodology for the in-service training of adult educators appears to be in the area of individualized, systems oriented and performance based² instructional units or modules. Yet while the times demand fundamental change in the very nature of staff development³ in the schools, few would perhaps concede the fact that teachers are people—variable, unique, and dependent upon past experiences as well as contemporary exposures nor the fact that the criteria for the "effective teacher" have never been stabilized. A set, specific program to do everything is, then, unlikely. There is no "right way" to prepare teachers any more than there is one "right way" to teach. Instead of attempting to formulate a single program which would bring all people to the ability to perform all possible tasks in all institutions satisfying most peoples' needs, the time has arrived when it is necessary to innovate and try different methodologies for educating

¹ Melvin R. Levin and Joseph S. Slavet, Continuing Education: State Programs for the 1970's, pp. 11-12. (ED 040 359)
² Note: For excellent treatises on both these areas, see Bela H. Benathy, Instructional Systems (Belmont, California: Fearon Publishers, 1968) and Robert F. Mager, Preparing Instructional Objectives (Belmont, California: Fearson Publishers, 1962).
teachers. In this respect, to use Alvin Toffler's phrase, educators today must shift into the future tense.

The problems of improving the education, training, and competencies of teachers are sufficient challenge for the most daring of iconoclasts. But the greatest challenge is in the requirement that we learn to facilitate change with speed while we steer an educationally sound course and simultaneously preserve the heritage of public education for all citizenry that is unmatched for excellence anywhere in the world.

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2 Ben M. Harris, The Supervisor-Agent for Change in Teaching, idea extracted, p. 93. (ED 013 799)
CHAPTER III

A DESCRIPTION OF THE BACKGROUND, DEVELOPMENT, COMPOSITION, AND FIELD TESTING OF THE TWO AUDIO-MODULAR INSTRUCTIONAL UNITS

In Chapter II a review of the related research and literature concerning the accelerating need for bringing about educational change and the in-service education of teachers as a viable alternative to teacher education, in general, was presented. The chapter gives particular emphasis to the need for the in-service education and/or training of adult educators. This chapter describes the background, development, and description of the two audio instructional modules as well as the procedure for field testing the two units in this study.

Background and Emergence of the Audio-Modular Instructional Approach for the In-service Training of Adult Educators

In 1969 the Florida State Department of Education designed a comprehensive plan for using funds from the Education Professions Development Act (Title V of the Higher Education Act of 1965) to foster individualized, performance-based teacher education in Florida. The major thrust was on individualized performance-based teacher training materials designed for the pre-service or in-service education of teachers. The plan of the Florida State Department of Education resulted in a performance-based certification program for teachers designated as the Florida EPDA B-2 Program. The materials developed by the Florida State Department of Education were organized and packaged in the form of modular (independent and self-contained) instructional units to train teachers in specific teaching skills and/or concepts. The modules were de-
signed to include a rationale, performance objectives (to meet the goals of the module), developmental procedures, and evaluation.

Once the Florida State Department of Education began applying the modular approach to the in-service training of school principals as a result of good teacher reception of the modules in the field, the Center for Leadership and Administration (CLA), School of Education, University of Massachusetts, expressed interest in the development of the modules. After examining both the B-2 modules and the IBM Audio Instructional Units as well as various other types, the Center for Leadership and Administration decided that the IBM approach and format possessed more potential for in-service training packets.¹

The IBM Audio Instructional Units consisted primarily of an audio tape and a guidebook. The guidebook included graphs, charts, case studies, review questions and answers, and other such material. The audio tape was the primary method of instruction, and the guidebook supplemented the tape. Included in the guidebook was an introduction stating the following: Purpose of Audio Instruction, Description of the Module, Prerequisites, Time Required, Materials and Resources Required, and Instructions to the Participant.² It is the latter description that the two modules, the Adult Learner Classification Module and the Adult

² Ibid., pp. 57-58.
Learner Participation Module, developed for use in this study, most resemble. The modules developed included an audio tape, a guidebook, and a throw-away exercise packet.

In 1969 or at approximately the same time that the Florida State Department of Education was designing its plan for a competency-based teacher education program, the Bureau of Civic Education of the Massachusetts Department of Education awarded a contract to the Center for Occupational Education at the School of Education, University of Massachusetts, for the purpose of studying adult basic education programs. Several studies under the direction of Dr. Mark Rossman, Project Director of Adult Education and a member of the Center for Occupational Education in the School of Education, were a consequence of this contract. In August of 1970, Dr. Rossman's final report, An Evaluation of Adult Basic Education Programs in Massachusetts, identified the four critical or problem areas for adult educators as the need for recruiting students, an increasing demand for better communication among the staff of adult educators, as well as a more relevant curriculum and the perennial problem of funding. In 1971 as a result of the 1970 evaluation report, Dr. Rossman designed a model to recruit functionally illiterate adults into adult basic education programs in the state of Massachusetts. In

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1 Note: See pages 3 and 4 of this dissertation.

essence this model developed and assessed the effectiveness of a pre-
dominantly visual-aural recruitment package designed for prospective
Adult Basic Education students.

In August of 1972, a follow-up report to the 1970 evaluation, *A
Delphi Survey of Adult Education in the State of Massachusetts*, identi-
Oined twenty-nine "high priority needs" of the teachers, administrators,
and training directors of the three largest adult learning centers in
Massachusetts; namely, Boston, Springfield, and Worcester. Some of the
twenty-nine "high priority needs" of the Delphi Survey are at least par-
tial justification for this study and include: (1) a growing need for
more time being allotted for staff meetings, in-service programs, and
planning, (2) a need for training sessions for both adult education
teachers and aides, (3) a need to improve communication among adult edu-
cation staff concerning differences in students, (4) a rapidly increas-
ing need for teachers to meet with more staff members in order to dis-
cuss particular student problems, (5) the need for a clear delineation
of objectives in teaching various subjects, (6) directors need staff
members who have an increased awareness of the needs and goals of the
programs, (7) directors need staff members with a great deal of experi-
ence and possibly specialization, and (8) there exists a growing need
for a more broadened and relevant curriculum. ¹

¹ See *A Delphi Survey on Adult Education Programs in Massachusetts*
In 1972 the University of Massachusetts, School of Education, as part of a proposed three year Regional Adult Education Staff Development Project, agreed to develop three individualized adult education in-service learning packets and to research and develop two new courses in adult education. Under the direction of Dr. Mark Rossman, the project further envisioned the expansion of the fledgling adult education program already in existence at the University of Massachusetts, School of Education. The two modules used in this study emanated from Phase I of the contractual agreement previously referred to.

**Development of the Two Audio-Modular Instructional Units**

As a result of the contractual commitments inherent in the agreement between the Center for Occupational Education and the Massachusetts Department, Bureau of Adult Services, a project team was established. The project team was headed by Dr. Mark Rossman, three doctoral candidates/graduate assistants, and a secretary. The major responsibility of that project was to develop and prepare at least three individualized adult education in-service learning packets. Three content areas were identified as particularly viable subject matter for these learning packets and considered to possess the most relevance for fulfilling the needs of adult educators as defined in the studies identifying those needs previously mentioned. The content areas identified were in the areas of adult learning theory, communication skills (using transactional analysis), and motivational theory.

After much research involving a thorough review of the literature concerning that which has been written in adult education, the area of
adult learning theory, how and why adults either learn or seek to participate in adult education programs became the basis for the content of the two learning packets used in this study.

By mid-fall 1972 after conferring with Mrs. Pauline Masterton and Mr. Michael Kuhn in Florida and Dr. Roger H. Peck of the University of Massachusetts, the project team agreed that the audio-modular instructional approach was one viable alternative in the production of these learning packets. Mrs. Pauline Masterton is the Associate for Teacher Education, Department of Education, Tallahassee, Florida. Mr. Michael Kuhn, also associated with the Florida State Department and closely associated with the Florida Protocol Materials Project, acted as consultant in conceiving the design of the content for the modules.

The Description and Composition of the Audio-Modular Instructional Units

Physical appearance. The components of the modules each included an acetate covered and spiral bound guidebook, a spiral bound (for field testing purposes only) throw-away exercise packet, and a high-quality sixty minute Memorex tape professionally recorded. After exploring the cost factor for the custom-made packaging of the modules and the fact that such a cost had not been written into the project expenditures, it was decided that the three components of the module could be placed in a labeled, ten by thirteen inch manila envelope for distribution during the field testing procedures. It was further decided that any decision concerning the cost of packaging, distribution, and reproduction of further modules for future use would have to be decided by the Massachusetts
Bureau of Adult Services.

Contents. The contents of the Adult Learner Classification Module are summarized as follows:

1. A title page, which includes the name of the individuals who were involved in developing the module and supporting agencies.
2. A table of contents.
3. An introduction.
   a. Purpose and Description of the Audio Instructional Module - An instructional module may be defined as a set of learning activities intended to facilitate the achievement of a specific objective or set of objectives. This instructional module is designed for practicing or aspiring adult educators. The module is an attempt to emphasize the learning of a single concept through a series of logical and sequential experiences. The selected concept in this module concerns itself with the ability of the participants to successfully apply Cyril O. Houle's three classifications of the adult learner to simulated situations defining and/or identifying the appropriate classification of each. The module also has the purpose by means of audio-taped vignettes of encouraging the participant to be able to differentiate between the classifications, each indicative of a different kind of adult learner; namely, the goal-oriented, activity-oriented, or learning-oriented adult learner.
b. Basic Contentions of the Module - This module deals with the area of "Adult Learner Classification." The following contentions are made:

(1) Research concerning the ability of adults to learn has little practical value for the practicing teacher of adults unless pedagogical theory and pedagogical practice can be combined to improve competency-based teacher preparation.

(2) Education is being increasingly regarded by large segments of the American population as a lifelong process, and the most critical variable in any educational system is the learner.

(3) Since the motivations of the adult learner to pursue continuing education are multitudinous, it would be helpful for adult educators to be able to classify the primary kinds or types of adult learners uncovered by research.

(4) Being able to identify the adult learner in terms of what motivates him/her to pursue continued education will hopefully enable teachers of adults to recognize the individual needs of the adult learner and aid the teacher in modifying his curriculum to meet these needs as they present themselves.

(5) "Adult Learning Theory" is helpful in determining situational demands facing the practicing adult edu-
c. Performance Objectives - Upon completion of this module the participants should be able to:

(1) Name the three classifications of adult learners. Participants will be able to list the three classifications.

(2) Describe the three classifications of the adult learner. Participants will be able to write out the definition of each type of adult learner including at least two characteristics of each classification.

(3) Identify the three classifications of adult learners from audio-taped vignettes (with different voice dubbings) presented in the module. Participants will be able to match the proper classification of the adult learner with each vignette presented.

(4) Demonstrate their ability to analyze different kinds of adult learner behavior. Participants will be able to decide which adult learner classification is represented within a large body content of behavioral vignettes as they are presented by audio tape.

d. Time Requirement - Approximately one hour to complete the module.

Contents. The contents of the Adult Learner Participation Module are summarized as follows:
1. A title page, which includes the name of the individuals who were involved in developing the module and supporting agencies.

2. A table of contents.

3. An introduction.

   a. Purpose and Description of the Audio Instructional Module - An instructional module may be defined as a set of learning activities intended to facilitate the achievement of a specific objective or set of objectives. This instructional module is designed for practicing or aspiring adult educators. The module is an attempt to emphasize the learning of a single concept through a series of logical and sequential experiences. The selected concept in this module is concerned with the ability of the participant to successfully apply Cyril O. Houle's six conditions which he contends have limited the clientele and the curriculum of adult educational programs. Further, the module elicits from the participants applications of those conditions that can be limiting factors in identifying the kinds of clientele served by the curriculum of the communities in which the adult educators are involved. This would likewise help the participants to become cognizant of those adult educational needs not being served. Houle's six limiting conditions emphasize high-income grouping, relation of participation to size of the community, cultural limitations, age factor, relationship of
marital status and age of children, and the amount of schooling.

b. Basic Contentions of the Module - This module deals with the area of "Adult Learner Participation." The following contentions are made:

(1) Every adult education program has not only basic classifications of adult learners participating but also has been developed in terms of conditions which either limit or serve its clientele.

(2) While the clientele of each institution has its unique features, research has shown that certain limiting conditions are indicative of most communities thereby limiting the clientele of adult education programs.

(3) That the ability to analyze your own community in terms of what Houle feels are the limiting conditions of adult educational programs common to all groups served will enable adult educators to be cognizant of those reasons why particular programs are more successful than others in terms of participation.

(4) Projected figures estimate that by 1985 one out of every four students will be adults. Consequently, being cognizant of the conditions which limit or serve the clientele of most adult education
programs will enable adult educators to analyze the recruiting techniques being used in their communities. It will prepare them to choose new locations for new programs fulfilling one need of a rapidly growing field.

(5) Knowledge of conditions which limit or serve the clientele of adult education is helpful when determining curriculum changes often confronting the practicing adult educator.

c. Performance Objectives - Upon completion of this module, the participants should be able to:

(1) Describe those conditions which Houle contends limit or serve the clientele of most adult educational programs. Participants will be able to describe at least four out of six of those conditions.

(2) Describe those conditions which limit or serve the clientele of adult educational programs from an audio-tape vignette of a particular community. Participants will be able to explain at least three limiting conditions and the way each of those conditions limit the participation of adult clientele in the particular community described in the vignette.

(3) Demonstrate their ability to write out a brief description of the community in which they are employed as an adult educator (or the one they are
most familiar with which may have an adult education program). Participants will describe at least three of Houle's conditions in that community which tend to limit the clientele of adult education programs.

(4) Demonstrate their ability to describe those conditions existent within their particular community previously described which limit the clientele of adult educational programs. Participants will include at least two groups of adult clientele either limited (or served) by those conditions.

d. Time Requirement - Approximately one hour to complete the module.

The exercise packets in each of the two modules were developed as throw-aways so that they could easily be reproduced and discarded thus saving high, long-term cost of reproducing module guidebooks after each use. The answers to each of the exercises were included in the guidebooks.

The materials, resources, and instructions required for this study and found in both the modules were similar.

Materials and resources required:

1. An audio instructional cassette tape.

2. A cassette tape recorder player.

3. The audio instructional module guidebook including a pre-test and post-test.
4. A packet of exercises that accompany the guidebook.

5. Preferably a pencil to write with and a piece of scratchpaper.

Materials found in the modules:

1. A cassette tape containing informational input pertaining to adult learners.

2. A guidebook with printed directions, answers to exercises, including alternative exercises to those on the tape, a pre-test and a post-test.

3. A packet of exercises including answer spaces for the pre-test and post-test.

4. An evaluation packet, to be completed after participating in both modules, found in a brown nine by twelve envelope containing three phases of the evaluation along with a biographical data sheet.

5. A bibliography of selected references at the end of each module.

Instructions to the participants were that you will derive the greatest benefit from this instructional module by observing the following suggestions:

1. Although this modular unit is applicable to either individual or small group use, it would be best if in either situation you would participate in a place where you will not be subjected to interruptions and allow it your complete attention.

2. Set aside sufficient time (approximately one hour) so that you can follow the instruction through to its conclusion.
3. Following directions accurately will insure a greater measure of participant accomplishment.

4. Although it is not absolutely necessary that the participant go immediately into the evaluation packet following the completion of the module, it is desirable that this task be done soon thereafter to insure the greatest possible accuracy. The completion of the evaluation packet will take an additional thirty to forty minutes.

5. You will participate in a very short pre-test. The pre-test is used only as a measure of determining the participant's level of awareness in knowing what he doesn't know. The pre-test can be used by the individual in justifying whether or not the learning experience would be beneficial.

Field Testing of the Adult Learner Classification Module and the Adult Learner Participation Module

Both modules were field tested in three separate workshops in the state of Massachusetts as well as several singular experiences in Western Massachusetts and Philadelphia, Pennsylvania. Included in the field testing were participants living in communities classified as rural, suburban, and urban. However, the composition of all the adult students being served by the participants were predominantly in the lower or middle socio-economic class.

Forty participants were involved in the evaluation of the modules as an alternative approach to the in-service education of adult educators. These participants were all experienced adult educators and in-
cluded teachers of adults (in various capacities), assistant directors, directors, and one volunteer director. The participants were also comprised of both part-time and full-time adult educators. While most were practicing teachers of adults, a more finite breakdown of the participants will be offered in Chapter IV.

Thirty-four of the forty participants evaluated the modules in three different workshops. One of the workshops was held in the Campus Center at the University of Massachusetts, Amherst, Massachusetts, and the other two were held in the Adult Learning Center, Boston, Massachusetts. Of the remaining six participants, two were from Western Massachusetts. Both were full-time teachers in a day time high school where one taught adults part-time at night. The other was experienced with teaching adults but was engaged in graduate work in adult education and at the time of this study, presently not teaching adults. The remaining four participants were teachers of a church affiliated adult education program in Philadelphia, Pennsylvania.

In the workshop held in Amherst, Massachusetts, one full working day of a five-day workshop was used by the participants to experience the modules and give their evaluation. The two Boston workshops were half-day sessions where the participants were released from their regular teaching duties and compensated for their time for participating in the modules. All workshop participants returned both modules and the accompanying evaluations immediately upon completion of the modules.

Since the modules were applicable for both individualized and small group use, various combinations of both formats were used while
the participants participated in the modules. This construction also permitted take home use of the modules allowing the six teachers participating singularly to do so at home. These six participants completed the modules and the evaluation materials within one week.
CHAPTER IV
METHODOLOGY OF THE STUDY

The previous chapter described the background, development, composition, and field testing of the two audio-modular instructional units. The overall objective of this study was to determine the suitability of utilizing the audio-modular instructional approach as one alternative in-service training technique for presenting selected concepts and skills to adult educators. This chapter will: (1) describe the procedures utilized in obtaining the degree of validity and reliability for the achievement portion of the testing instruments, (2) describe the field study population comprising the experimental group and the control group, and (3) describe the assessment procedures utilized in determining the suitability of the audio-modular instructional units as an alternative in-service training approach for presenting selected concepts and skills to adult educators in the area of adult learning theory.

Validation of the Achievement Tests

One aspect of this study was the construction of two achievement tests. An achievement test for each of the two modules based on the performance objectives for the modules was constructed, validated, and tested for reliability during the study. According to Thorndike and
Validity refers to the extent to which a test measures what we actually wish to measure. Reliability has to do with accuracy and precision of a measurement procedure.\(^1\)

A measure is reliable to the extent that an individual remains nearly the same in repeated measurements. Frequently validity is used when we are interested in using a test to predict some specific future outcome. The usefulness of a test as a predictor depends not only on how well it correlates with a criterion or criteria, but also on how much new information it gives.\(^2\)

**Study population participating in the validation process.** In order to ascertain the reliability and validity of the achievement instruments of both modules, two groups of sixteen, or thirty-two adult educators from the adult education program in Springfield, Massachusetts, were asked to participate in this aspect of the study. Half of each group acted as a control group while the remaining halves of each group acted as an experimental group.

**The reliability study.** The first group of sixteen adult educators was given the achievement test designed for Module I entitled the "Adult Learner Classification Module." The second group of sixteen adult educators was given the achievement test designed for Module II

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entitled the "Adult Learner Participation Module." These tests are presented in Appendix C as a part of the evaluation packet. Both study member groups were retested in the same manner one week later. The purpose of the retests was to measure reliability; that is, the extent that an individual remains the same in repeated measurements. The scores of Test 1 and Test 2 (retest) for Achievement Test 1 are presented in Appendix B, Table B-1. The Pearson Product-Moment Correlation Formula was used to discover the degree of relationship of the two sets of scores. The data computed for the formula is presented in Appendix B, Table B-2. The Pearson Product-Moment Correlation Formula and computations are presented in Appendix B, Figure B-1. The correlation coefficient of reliability for Achievement Test 1 was found to be 0.04.

The scores of Test 1 and Test 2 (retest) for Achievement Test 2 are presented in Appendix B, Table B-3. The data computed for the Pearson Product-Moment Correlation Formula for Achievement Test 2 is presented in Appendix B, Table B-4. The formula and computations are presented in Appendix B, Figure B-2. The correlation coefficient of reliability for Achievement Test 2 was found to be 0.54.

The validity study. Two experimental groups, each consisting of eight members, participated in the modules during the validation process. The first group was asked to experience Module I, the "Adult Learner Classification Module," and the second group was asked to experience Module II, the "Adult Learner Participation Module." Both groups were asked to complete the experience within one week. Each group was then given Test 3 (retest). While the achievement tests used on both groups
were different, Test 3 was identical to Test 1 and Test 2 in each instance. Eight members of both experimental groups participated in the modules and completed Test 3. The scores of Test 2 and Test 3 of the experimental group who participated in Module I appear in Appendix B, Table B-5.

The Pearson Product-Moment Correlation Formula was used to determine the degree of relationship between Test 2 and Test 3 of the experimental group participating in Module I. The data computed for the formula is presented in Appendix B, Table B-6. The coefficient of correlation was found to be 0.92. Study members had experienced the "Adult Learner Classification Module" between Test 2 and Test 3. The computations of the formula are presented in Appendix B, Figure B-3.

Variance factor. To reflect the variability of the test scores, the variance and standard deviation were computed for Test 2 and Test 3. The data computed for the variance formula is presented in Appendix B, Table B-7. The variance formula and computations are presented in Appendix B, Figure B-4. The variance for the second test of the experimental group was found to be 8.29. The standard deviation was 2.88. The variance of the third test was found to be 6.39, and the standard deviation was 2.53.

Application of the t Test. The t Test was applied to the difference in the mean scores for the two tests to determine whether the difference reached a level of significance. The t Test formula and computations are presented in Appendix B, Figure B-5. The t value (value by which the statistical significance of the mean differential is judged)
was found to be 5.6. To determine whether or not this value was statistically significant, the t value was compared with a table of t values. The degrees of freedom used were seven. The distribution of t table values was entered at a probability level of 0.05. The point of intersection yielded a t value of 2.305. The difference in mean scores was judged to be significant.

The scores of Test 2 and Test 3 of the eight members of the experimental group who participated in Module II appear in Appendix B, Table B-8. The Pearson Product-Moment Correlation Formula was again used to determine the degree of relationship between Test 2 and Test 3 for this group. The data computed for the formula is presented in Appendix B, Table B-9. The coefficient of correlation was found to be 0.83. Study members had experienced the "Adult Learner Participation Module" between Test 2 and Test 3. The computation of the formula is presented in Appendix B, Figure B-6.

Variance factor. To reflect the variability of the test scores, the variance and standard deviation were computed for Test 2 and Test 3. The data computed for the variance formula is presented in Appendix B, Table B-10. The variance formula and computations are presented in Appendix B, Figure B-7. The variance for the second test was 5.65, and the standard deviation was 2.38. The variance for the third test was 0.29, and the standard deviation was 0.54.

Application of the t Test. The t Test was applied to the difference in the mean scores for Test 2 and Test 3 of the experimental group to determine whether the difference reached a level of significance.
The t Test formula and computations are presented in Appendix B, Figure B-8. The t value was found to be 5.1. The distribution of values on the t table shows that a value of t greater than 2.305 is significant at the 0.05 level with seven degrees of freedom. The difference in the mean scores was judged to be significant.

Summary of the validation process for Achievement Test I. The correlation coefficient of Test 1 and Test 2 was found to be 0.04. The correlation coefficient of Test 2 and Test 3 was found to be 0.92. When the t Test was applied to the mean differential of Test 2 and Test 3 of the experimental group (those participating in the "Adult Learner Classification Module"), the t value was found to be statistically significant at the 0.05 level. While the statistical data for Achievement Test I used in the "Adult Learner Classification Module" indicates the lack of reliability, it may be attributable to too few people sampled or the heterogeneous nature of the group or both. However, Achievement Test I does possess the factor of validity.

Summary of the validation process for Achievement Test II. The correlation coefficient of Test 1 and Test 2 was found to be 0.54. The correlation coefficient of Test 2 and Test 3 was found to be 0.83. When the t Test was applied to the mean differential of Test 2 and Test 3 of the experimental group (those participating in the "Adult Learner Participation Module"), the t value was found to be statistically significant at the 0.05 level. The statistical data for Achievement Test II used in the "Adult Learner Participation Module" was found to possess both the factors of reliability and validity.
Summary of the validation process. The previous section has described the procedures used in the validation and reliability testing of the two achievement instruments for the modules on adult learning theory used in this study. In the subsequent section, the composition of the field study population will be described.

Study Population

Two groups comprised the study population during the actual field testing of the modules. One group of forty adult educators comprised the field-test control group who participated only in the achievement instruments of the two modules without experiencing the modules. The field-test experimental group also consisted of forty adult educators who experienced both modules. The makeup of both groups were virtually all experienced adult educators and ranged from graduate students and administrators to volunteer directors in the field of adult education. In this section a description of the two groups involved in the field testing of the modules but excluding the validation group who participated in the pilot phase of this study will be presented in relation to the following criteria: (1) sex, (2) age, (3) present position, (4) number of years of educational experience in adult education, (5) setting of the school or programs in which the participants were employed, (6) socio-economic background of the students with whom the participants were involved, and (7) the highest academic degree held by the participants.

The composition and comparison of the groups in relation to sex and age. In Table 1 the composition and comparison of the field-test
experimental and control groups in relation to sex and age is presented.

**TABLE 1**

A COMPARISON OF THE COMPOSITION OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN RELATION TO SEX AND AGE

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experimental Group</th>
<th>Control Group</th>
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<tr>
<td></td>
<td>(N=40)</td>
<td>(N=40)</td>
</tr>
<tr>
<td>Sex:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>17 42.5</td>
<td>16 40.0</td>
</tr>
<tr>
<td>Female</td>
<td>23 57.5</td>
<td>20 50.0</td>
</tr>
<tr>
<td>Unidentified</td>
<td>0 0.0</td>
<td>4 10.0</td>
</tr>
<tr>
<td>Age:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-30</td>
<td>17 42.5</td>
<td>13 32.5</td>
</tr>
<tr>
<td>31-40</td>
<td>6 15.0</td>
<td>14 35.0</td>
</tr>
<tr>
<td>41-50</td>
<td>10 25.0</td>
<td>4 10.0</td>
</tr>
<tr>
<td>51-over</td>
<td>6 15.0</td>
<td>6 15.0</td>
</tr>
<tr>
<td>Unidentified</td>
<td>1 2.5</td>
<td>3 7.5</td>
</tr>
</tbody>
</table>

The data in Table 1 illustrates that seventeen members of the experimental group are male while twenty-three members of the same group are female. Sixteen members of the control group are male while twenty members of that group are female. Four members of the control group either refused or failed to identify their sex. It is evident from Table 1 that on the criterion of sex, the experimental group and the control group are similar with 42.5 percent and 40.0 percent male members, respectively, and 57.5 and 50.0 female members, respectively, with 10.0 percent of the control group's sex unidentified.

On the criterion of age, the data indicates that seventeen mem-
bers of the experimental group and thirteen members of the control group are between the ages of twenty-one and thirty. Fewer members for the age group thirty-one to forty make up the experimental group with six than do the control group having fourteen. Ten members of the forty-one to fifty age category comprised the experimental group. The control group had four members in this category. The experimental and control groups each had six participants in the over fifty age category. One member of the experimental group and three members of the control group did not identify their age.

The data compiled in Table 1 illustrates that the highest percentage of members in the experimental group is in the twenty-one to thirty age category, while the control group has the highest percentage of members in the thirty-one to forty age category. It is also obvious that the vast majority of both groups with 57.5 percent of the experimental group and 67.5 percent of the control group are forty years of age or younger. For the age category of forty-one to fifty, 25 percent of the experimental group and 10 percent of the control group come under that category. Both groups each have 15 percent of their members in the fifty-one or over age category. For reasons unexplained 2.5 percent and 7.5 percent of the experimental and control groups, respectively, did not identify their age.

The composition and comparison of the groups in relation to present position. In Table 2 the composition and comparison of the field-test experimental and control groups in relation to their present position is presented.
### TABLE 2

A COMPARISON OF THE COMPOSITION OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN RELATION TO PRESENT POSITION

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experimental Group (N=40)</th>
<th>Control Group (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Part-time Adult Educator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director</td>
<td>1 2.5</td>
<td>1 2.5</td>
</tr>
<tr>
<td>Teacher</td>
<td>19 47.5</td>
<td>19 47.5</td>
</tr>
<tr>
<td>Full-time Adult Educator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director</td>
<td>3 7.5</td>
<td>0 0.0</td>
</tr>
<tr>
<td>Teacher</td>
<td>13 32.5</td>
<td>10 25.0</td>
</tr>
<tr>
<td>Guidance Counselor</td>
<td>1 2.5</td>
<td>4 10.0</td>
</tr>
<tr>
<td>Nurse</td>
<td>0 0.0</td>
<td>1 2.5</td>
</tr>
<tr>
<td>Aide</td>
<td>2 5.0</td>
<td>2 5.0</td>
</tr>
<tr>
<td>Formal Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Graduate Student</td>
<td>1 2.5</td>
<td>3 7.5</td>
</tr>
</tbody>
</table>

*Of the four graduate students, three are currently full-time doctoral students in adult education with one of the control group members involved in administering an adult education program.

The data for Table 2 illustrates that four members of the experimental group are involved in an administrative capacity in adult education while the remaining thirty-six members of this group are involved in adult education in various capacities such as teachers, aides, graduate students, and guidance counselors. Eighty percent of the experimental group are teachers. In the control group, only one member is involved in an administrative capacity in adult education. In the same group, twenty-nine members or 72.5 percent are teachers of adult education with four members acting in a full-time guidance capacity, two as aides, and one as a nurse in adult education programs. The vast major-
ity of both the experimental and control groups are teachers of adults. More than three fourths of the experimental group are either part-time or full-time teachers of adults with nearly three fourths or 72.5 percent of the control group categorized similarly. Both groups have one part-time director of adult education while the experimental group has three full-time directors with the control group having none.

Consequently, it is valid to conclude that while there are more guidance counselors and graduate students in the control group, both groups have 50 percent of their members composed of part-time adult educators, and virtually 50 percent of their members, exclusive of the graduate students, composed of full-time adult educators.

The composition and comparison of the groups in relation to years of adult education experience. In Table 3 the composition and comparison of the field-test experimental and control groups in relation to years of experience in adult education is presented.
A COMPARISON OF THE COMPOSITION OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN RELATION TO EDUCATIONAL EXPERIENCE IN ADULT EDUCATION

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experimental Group (N=40)</th>
<th>Control Group (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Number of Years of Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in Adult Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 1</td>
<td>6</td>
<td>15.0</td>
</tr>
<tr>
<td>2 - 3</td>
<td>16</td>
<td>40.0</td>
</tr>
<tr>
<td>4 - 5</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>6 - 10</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>11 - over</td>
<td>5</td>
<td>12.5</td>
</tr>
</tbody>
</table>

The data in Table 3 illustrates that six members of the experimental group and ten members of the control group had one year or less of adult education experience. One member of the control group had no prior experience teaching adults. Twenty-two members of the experimental group and twenty members of the control group have three years or less experience in adult education.

In both the groups, a total of nineteen members, eight in the experimental group and eleven in the control group, had between four and five years of experience. Twelve members, five in the experimental group and seven in the control group, had between six and ten years of experience. Five members of the experimental group and two members of the control group had over eleven years of experience.

Conclusively, a majority or 55 percent of the experimental group...
and 50 percent of the control group had three years of experience or less in adult education. Both groups were somewhat comparable in percentage of members having four to five and six to ten years of experience while the experimental group had 7.5 percent more members with experience in the eleven years and over category. Three members of the experimental group had twenty-five years of experience or more while the highest number of years of experience for any one control group member was sixteen.

The composition and comparison of the groups in relation to setting of the schools or programs. In Table 4 the composition and comparison of the field-test experimental and control groups in relation to the setting of the schools or programs in which the member is employed is presented.
## TABLE 4

A COMPARISON OF THE COMPOSITION OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN RELATION TO THE SETTING OF THE SCHOOL OR PROGRAM IN WHICH THE MEMBER IS EMPLOYED

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experimental Group (N=40)</th>
<th>Control Group (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Setting of the School or Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>30</td>
<td>75.0</td>
</tr>
<tr>
<td>Suburban</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Rural</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>*Other</td>
<td>2</td>
<td>5.0</td>
</tr>
</tbody>
</table>

* Two full-time directors in the experimental group described their programs as encompassing urban, suburban, and rural settings while two graduate students in the control group are not employed in a school or program at the present time.

The data from Table 4 illustrates that the vast majority of both the experimental and control groups are employed in schools or programs with an urban setting. Thirty members or 75 percent of the experimental group and thirty-four members or 85 percent of the control group are employed in a suburban school program. One slightly notable difference in both groups is that seven members (17.5 percent) of the experimental group and two members (5.0 percent) of the control group are employed in a program with a suburban setting. The groups are more similar in the respect that only one member (2.5 percent) of the experimental group and two members (5.0 percent) of the control group are employed in an adult education program with a rural setting.
The composition and comparison of the groups in relation to the size of the school or program in which the member is employed. In Table 5 the composition and comparison of the field-test experimental and control groups in relation to the size of the school or program in which the member is employed is presented.

**TABLE 5**

A COMPARISON OF THE COMPOSITION OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP IN RELATION TO THE SIZE OF THE SCHOOL OR PROGRAM IN WHICH THE MEMBER IS EMPLOYED

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experimental Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N=40)</td>
<td>(N=40)</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Size of the School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 25</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>26 - 50</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>51 - 100</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>101 - 200</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>201 - 500</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>*Other</td>
<td>6</td>
<td>15.0</td>
</tr>
</tbody>
</table>

Of the six members comprising the "other" category of the experimental group, four were directors and the fifth a guidance counselor of either state or city programs of adult education having enrollments exceeding 500 students with the sixth member a graduate student not presently employed in an adult education program. Of the four members comprising the "other" category of the control group, three were graduate students not presently employed in an adult education program, and the fourth member did not identify the size of the program in which he was employed.

The data from Table 5 illustrates that 50 percent or more of the members of both the experimental and control group are employed in adult
education programs or schools of one hundred or less participants. A disproportionate number of control group members were employed in programs of less than twenty-five participants than were those of the experimental group. While 30 percent of the experimental group and 12.5 percent of the control group were employed in programs having between fifty-one and one hundred participants, 20 percent of the experimental group had members employed in programs of 101-200 participants in respect to the 2.5 percent in the same category for the control group. The control group has three times the number employed in a program having between 201-500 participants. However, the largest single percentage of the experimental group is employed in programs having 51-100 participants. A significant difference exists in the control group which has its largest single percentage employed in schools or programs having between 201-500 adult participants.

The composition and comparison of the groups in relation to the adult student socio-economic background in which the member is employed.

In Table 6 the composition and comparison of the groups in relation to the adult student socio-economic background in which the member is employed is presented.
TABLE 6
A COMPARISON OF THE COMPOSITION OF THE EXPERIMENTAL GROUP AND THE CONTROL GROUP MEMBERS IN RELATION TO THE ADULT STUDENT SOCIO-ECONOMIC BACKGROUND

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experimental Group (N=40)</th>
<th>Control Group (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Adult Student Socio-economic Background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Class</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Middle Class</td>
<td>17</td>
<td>42.5</td>
</tr>
<tr>
<td>Lower Class</td>
<td>22</td>
<td>55.0</td>
</tr>
<tr>
<td>*Other</td>
<td>1</td>
<td>2.5</td>
</tr>
</tbody>
</table>

* Of those categorized as "other," one experimental group member described the socio-economic background of those in the program in which she is employed as both middle and lower class, and the two control group members are graduate students not presently employed in an adult education program.

Table 6 illustrates that neither the experimental nor control groups had any members employed in an adult education program that dealt with upper socio-economic level adult students. And 97.5 percent of the experimental group and 95 percent of the control group are presently employed in programs dealing with adult students entirely from the lower and middle socio-economic levels. While this socio-economic makeup of adult students reported in this study does not support the contention of the literature concerning the majority of those who participate in adult education programs nationally, it does represent the kinds of adult programs the study participants are presently employed in. The socio-economic makeup of adult students reported is a result of the
fact that many of the adult educators in this study come from Adult
Basic Education and English as a Second Language programs where high
numbers of upper socio-economic level adults would unlikely be en-
rolled.

A comparison of the composition of the groups in relation to the
highest academic degree held. In Table 7 the composition and compari-
son of the groups in relation to the highest academic degree held is
presented.

TABLE 7

A COMPARISON OF THE COMPOSITION OF THE EXPERIMENTAL GROUP AND THE
CONTROL GROUP IN RELATION TO THE HIGHEST ACADEMIC DEGREE HELD

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Experimental Group (N=40)</th>
<th>Control Group (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Highest Degree Held</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelors</td>
<td>6</td>
<td>15.0</td>
</tr>
<tr>
<td>Bachelors +</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>Masters</td>
<td>10</td>
<td>25.0</td>
</tr>
<tr>
<td>Masters +</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>Specialist</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Doctorate</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>*Other</td>
<td>2</td>
<td>5.0</td>
</tr>
</tbody>
</table>

* Of those categorized as "other," the two experimental group mem-
bers consisted of an instructor in charge of civic education and an
aide. In this same category, four control group members failed to of-
fer this information, and one was a non-degreed aide.

The data from Table 7 illustrates that the experimental and the
control group are somewhat similar in terms of the percentage of each
group holding particular kinds of degrees. One noticeable difference is the fact that twice as many experimental group members (ten) as control group members (five) are in the Master's degree category. Conversely, more than twice the number of control group members (or 42.5 percent) than experimental group members (20 percent) have credits beyond the Master's degree.

Summary of the study population. In the previous section of Chapter IV, a description of the study population comprised for the field testing of the two audio-modular instructional units in the area of adult learning theory was presented. The comparison of the composition of the experimental and the control group was reported both in table and narrative form based on the criteria of: (1) sex, (2) age, (3) present position, (4) number of years of experience in adult education, (5) setting of the school or program in which the study population participants were employed, (6) socio-economic background of the students with whom the participants were involved educationally, and (7) the highest academic degree held by the participants. On the basis of the data reported, a great deal of homogeneity existed in that virtually all of the eighty study participants either had previous experience as adult educators or are presently employed as such. Significantly, both groups were equally divided into full-time and part-time adult educators. In the next section of this chapter, the methodology of gathering and processing the data will be presented.

Methodology of Gathering and Processing the Data

The review of related literature and research substantiates the
contention that our present society is characterized by the accelerating need for bringing about educational change to meet the growing demands of a new consumer centered, service oriented society. According to Gartner and Riessman, this leads to the necessity for developing educational and/or training designs that are skill oriented and participatory in nature as rapidly as possible.

Lavisky contends that the educational directed change process is more than simply a linear development of "research to adoption to use" procedure but a more complex feedback-type information-processing system. To accomplish the educational change process, Lavisky feels that a linkage or coupling between the scientist and the developer is indispensable. Hence Hayes, Toffler, and others have propounded on the necessity for training teachers for the future and perhaps that we train them for a life of professional change per se. And on the other hand, Campbell and Stanley have poignantly justified experimentation not on grounds that it is a panacea, but rather as the only available route to cumulative progress.¹

As a result of a growing need for directed educational change, the evaluation model used in this study sought information on two major aspects concerning the suitability of utilizing the audio-modular instructional approach as an alternative in-service training technique for adult

educators: (1) are the audio-modular instructional modules suitable as an alternative methodology for presenting selected skills, knowledge, and concepts for adult educators in the area of adult learning theory, and (2) is the audio-modular instructional approach a suitable alternative in-service training technique for adult educators? Consequently, the procedures designed for gathering information on these two aspects for determining suitability are presented in this section. Also included in this section are the specific procedures utilized to collect information pertaining to certain criteria for suitability as well as a description of the methods used in processing and analyzing the data. In all instances the procedures to be described were evaluated by the experimental group once they had experienced both modules.

The procedures used to determine the suitability of these modules as an alternative methodology for presenting skills, knowledge, and concepts for adult educators in the area of adult learning theory. The suitability of the modules as an alternative for presenting skills, knowledge, and concepts in the area of adult learning theory was evaluated on the basis of four criteria pertaining to the definition of suitability used in this study: (1) interest and motivation, (2) the perceived worth of the experience, (3) the cognitive change resulting from the experience, and (4) the suggestions for further development of such modules and for improvement of the existing modules.

The procedures used to determine the participants' interest and motivation as a result of experiencing the modules. Upon completion of the two modules, each participant in the experimental group was asked
to respond to three closed questions and three open questions. The three "closed" questions focused on: (1) the degree to which the experience with the audio-modular instructional unit was interesting to the participant, (2) the degree to which the participants were motivated to elect to participate in additional modules, and (3) the degree to which the participants were excited in recommending modules as learning experiences to other adult educators. A sample of these questions is presented in Figure 1.
1. I found participating in the audio instructional module:
   _____ a) very interesting.
   _____ b) somewhat interesting.
   _____ c) somewhat boring.
   _____ d) very boring.

8. Now that I know what the module is like, if I had the choice I would
   _____ a) have definitely participated in the module.
   _____ b) have probably participated in the module.
   _____ c) not know whether I would or would not have participated
       in the module.
   _____ d) have probably not participated in the module.
   _____ e) have definitely not participated in the module.

9. How excited would you be in recommending to a fellow educator that
   he/she participate in this module?
   _____ a) very excited.
   _____ b) somewhat excited.
   _____ c) no feeling either way.
   _____ d) would be reluctant to recommend it.
   _____ e) definitely would not recommend it.

Fig. 1--A sample of the "closed" questions used to determine participants' interest and motivation as a result of the modular experience.

The three "open" questions focused on the major strengths and weaknesses of the modules and recommendations as to which portions of the modules should be retained and those portions removed in revising the modules. A sample of these questions is presented in Figure 2.
3. What was the major strength of this specific audio instructional module?

4. What was the major weakness of this specific audio instructional module?

7. If it was discovered that this module was too time consuming, and you were involved in revising it, what portion would you definitely keep in the module? What portion would you remove?

Fig. 2—A sample of the "open" questions used to determine participants' interest and motivation as a result of the modular experience.

The procedures used to determine the worth of the experience as perceived by the participants. Four questions were utilized to obtain information pertaining to the participants' perceived worth of the experience. Two "closed" questions focused on evaluating the value and the worth (in respect to time spent) of the modular experience. Samples of these questions are presented in Figure 3.
2. I found participating in the audio instructional module:
   _____ a) a very valuable learning experience.
   _____ b) a learning experience of some value.
   _____ c) an experience which is neither valuable nor worthless
       as far as my own learning.
   _____ d) an experience somewhat worthless.
   _____ e) an experience which was completely worthless.

6. I feel that the experience I gained from participating in this module
   _____ a) was definitely worth this amount of time.
   _____ b) was probably worth this amount of time.
   _____ c) may or may not have been worth the time.
   _____ d) was probably not worth this amount of time.
   _____ e) was definitely not worth this amount of time.

---

Fig. 3—A sample of the "closed" questions used to determine participants' value and worth (in time) as a result of the modular experience.

Two "open" questions focused on evaluating both what the participants had learned from the modules and what other existing instructional method they would have preferred to participate in, in order to learn the same skills and concepts. A sample of these questions is presented in Figure 4.
10. a) Briefly state what you feel you have learned from this module.

b) What other existing instructional method would you have preferred to participate in, in order to learn this?

Fig. 4--A sample of the "open" questions used to determine what the participants had learned and what existing instructional method they would have preferred to learn the same material from as a result of the modular experience.

Another "closed" question was oriented toward determining the length of time it took the participants to experience the module, and three "closed" questions were geared toward evaluating particular aspects of the modules by means of completing sentence fragments. A sample of these questions is presented in Figure 5.
5. Which of the following responses represents the total time you spent participating in the module?

   ______ a) 30-45 minutes.           ______ e) 90-105 minutes.
   ______ b) 45-60 minutes.           ______ f) 105-120 minutes.
   ______ c) 60-75 minutes.           ______ g) over 2 hours.
   ______ d) 75-90 minutes.           ______ h) over 2 1/2 hours.

12. Complete the following statements:

   a) The exercises connected to the module which I participated in

      ____________________________ ____________________________

   b) One change that I would make in this module

      ____________________________ ____________________________

   c) One aspect of this module which should definitely remain the same

      ____________________________ ____________________________

Fig. 5—A sample of "closed" and "open" questions used to determine the length of time and additional evaluation from the participants as a result of the modular experience.
The procedures used to determine the cognitive change of the individual resulting from the experience with the modules. One "open" question was used to evaluate what the participants had learned from experiencing the two modules and is illustrated as question 10 in Figure 4. The pre-test post-test nonequivalent control group quasi-experimental design was also used in an attempt to determine the cognitive changes which may occur as a result of participating in the modules. The design included the administration of an achievement test for each module.

The first achievement test consisted of twenty "closed" questions, and the second achievement test consisted of ten "closed" questions, and both tests were designed to measure the cognitive change in the participants once they had experienced the modules. Both of these instruments appear in Appendix C. Each of the achievement tests were administered twice to the experimental group, before and after they participated in the modules. The control group did not participate in the modules but participated in taking both achievement tests once.

The three sets of test scores (one from the control group and two from the experimental group) for each of the two achievement tests were derived from implementing the pre-test post-test nonequivalent control group quasi-experimental design. The scores for the three sets of tests were then subjected to a statistical analysis. The mean scores for the three sets of achievement tests were calculated separately. The difference in the individual group mean scores resulting
from the three administrations of the achievement tests were subjected to a statistical analysis to determine if the differences in the mean scores reached a statistical level of significance.

The procedures used to determine the potential for the revision and further development of these modules for adult educators. Two "open" questions and one "closed" question were used to evaluate possibly needed revisions and the potential for further development of the modules. A sample of the "open" questions is presented in Figure 6.

7. If it was discovered that this module was too time consuming, and you were involved in revising it, what portion would you definitely keep in the module? What portion would you remove?

**Fig. 6--A sample of the "open" questions used to determine participants' views for further development and revisions of the modules as a result of the modular experience.**

A "closed" question was used to evaluate and determine what technical aspects of the modules need revision. A sample of this question is presented in Figure 7.
11. The following items focus on the technical aspects of the audio instructional module. Please circle the number at the right of the statement which best represents your evaluation of the particular aspect mentioned in the statement. Use the following scale:

1. Outstanding
2. Good
3. Average
4. Needs improvement
5. Very poor

a) The general appearance of the module 1 2 3 4 5
b) The clarity of the module instructions 1 2 3 4 5
c) The statement of objectives 1 2 3 4 5
d) The appearance of the pages in the test 1 2 3 4 5
e) The quality of the cassette tape 1 2 3 4 5
f) The synchronization between tape and text 1 2 3 4 5
g) The ease and convenience with which the material can be utilized 1 2 3 4 5

Fig. 7—A sample of the "closed" question used to determine participants' views on revising the technical aspects of the modules.

A summary of the procedures used to determine the suitability for presenting selected skills and concepts to adult educators in the area of adult learning theory. The procedures used elaborated on the four criteria as they relate to the established definition of suitability used in this study: (1) the interest and motivation of the participants as a result of the modular experience, (2) the participants' perceived worth of the experience, (3) the cognitive change resulting from the ex-
experience, and (4) the suggestions for further development of such modules and for the improvement of existing modules as they pertain to the suitability of presenting skills, knowledge, and concepts for adult educators in the area of adult learning theory.

The procedures used to determine the suitability of the audio-modular instructional approach as an alternative in-service training technique for adult educators. The suitability of the modules as an alternative in-service training technique was evaluated on the basis of the six criteria pertaining to the definition of suitability as used in this study: (1) interest and motivation, (2) perceived worth of the experience as compared with other in-service training experiences, (3) the negative or positive attitude toward the audio-modular approach as compared with the negative or positive attitude toward other in-service training experiences, (4) the cognitive change resulting from the experience, (5) the potential for further development of learning experiences utilizing the same instructional approach, and (6) the expenditure of time and money in the development and production of the designed modules used in the approach.

The procedures used to evaluate the participants' interest and motivation as a result of experiencing the modules. After experiencing the modules, the participants were asked one "closed" question and two "open" questions used to evaluate the degree to which the participants were interested and motivated to participate in additional audio-instructional modules. A sample of the "closed" question is presented in Figure 8.
13. If you had the opportunity, would you participate in additional modules?
   _____a) Yes, definitely.
   _____b) Yes, probably.
   _____c) I don't know.
   _____d) Probably not.
   _____e) Definitely not.

Fig. 8--A sample of the "closed" question evaluating the degree to which the participants were interested and motivated to participate in additional modules.

The two "open" questions used were of completion type and focused on evaluating the major strengths and weaknesses of this particular in-service training approach. Information from these "open" questions augmented that information obtained from the one "closed" question used to evaluate the suitability of utilizing the modular approach for adult educators based on the criteria of interest and motivation. A sample of these "open" questions is presented in Figure 9.

15. The major strengths of the audio-modular instructional approach as an in-service technique are:

16. The major weaknesses of the audio-modular instructional approach as an in-service technique are:

Fig. 9--A sample of the two "open" questions evaluating the major strengths and weaknesses of the modules as a particular in-service training approach.
The procedures used to evaluate the participants' perceived worth of the experience as compared to alternative experiences. Two methods were used to evaluate how the participants perceived the worth of the experience as compared to alternative experiences. The first method used an "open" question to evaluate what other existing instructional approach the participants would have preferred in order to learn the same thing. A sample of this question was presented in Figure 4 and was used as additional input pertaining to the suitability of using the modular approach oriented toward the in-service training of adult educators in the area of adult learning theory. The second method used a "closed" question which asked the participants to rank order a list of six different in-service approaches commonly used in the in-service training of teachers. One of the six choices included the audio-modular unit. Several additional blanks were also provided on this question to seek additional participant preferences for in-service training techniques not included in the given choices. This "closed" question is presented in Figure 10.
14. Suppose you were given the option to participate in the following in-service educational programs. Assuming they would be somewhat equal in time commitment, rank the following approaches in the order of your preference. Start with the number (1) for your highest preference; number (2) as second, and so on.

_____ a) Attend a seminar where the material is presented in lecture form.

_____ b) Participate in a course where the material in question is presented sometime within the context of the course.

_____ c) Purchase a professional book and read it.

_____ d) Visit sites to observe adult education programs.

_____ e) Participate in an audio-modular instructional unit.

_____ f) Discover the material through independent study.

(Below, add any additional in-service educational program approaches you might choose as one alternative approach to concept learning.)

_____ g) _______________________________________________________

_____ h) _______________________________________________________

Fig. 10--A sample of the "closed" question asking the participants to rank order a list of six different in-service approaches according to preference.

The data that was collected from the rank-order question used to evaluate the participants' perceived worth of the modular experience compared to alternative in-service training approaches was processed in two ways: (1) by computing the number of times each approach was ranked according to order preference, and (2) assigning numerical values to each response and then determining the weighted mean score for each technique listed. A sample of the numerical values that were assigned
is presented in Figure 11.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Assigned Numerical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Fig. 11—Assigned numerical value to rank preference given for each item of Question No. 14.

The procedures used for evaluating the connotative meaning of the experience. The participants were asked to react to two Semantic Differential Scales relating to the connotative meaning of the modular experienced compared to other types of experiences by which they could achieve the same learning objective. The Semantic Differential Scales consisted of seven units with pairs of adjectives opposite in meaning placed at each end of a scale. For evaluative purposes ratings on the scales were assigned values according to the response pattern illustrated below. A sample of a scale used for the Semantic Differential is presented in Figure 12.

![Semantic Differential Scale](image)

Fig. 12—A sample of a seven unit scale used in the Semantic Differential for this study.
To evaluate the connotative meaning of the modular experience, the participants were asked to react to the concept "Audio-Modular Instruction as One Alternative Approach to In-service Education for Adult Educators." On the second scale, the participants reacted to the concept "In-service Educational Programs for Adult Educators in Which You Have Participated (excluding the audio-modular instructional approach, but including course work and other learning experiences)." The teacher was then asked to judge one of two concepts against a series of scales. The scales were constructed to evaluate data on four major clusters entered on the factors of evaluation, potency, receptivity, and activity. The four clusters and related adjectives are presented in Figure 13.

(1) Evaluation = (good-bad) (untimely-timely) (pleasant-unpleasant) (meaningless-meaningful) (useless-useful) (true-false) (skeptical-believing) (promising-disappointed) (inferior-superior) (relevant-irrelevant)

(2) Potency = (weak-strong) (free-constrained) (prohibitive-permissive) (shallow-deep) (tense-relaxed) (threatening-non-threatening)

(3) Receptivity = (boring-interesting) (rough-smooth) (attentive-inattentive) (near-far) (comfortable-uncomfortable)

(4) Activity = (active-passive) (still-moving) (slow-fast) (complex-simple)

Fig. 13--A sample of the four cluster factors and accompanying adjectives of both Semantic Differential Scales used for evaluating the connotative meaning of the experience.

---

The process for evaluating data obtained by the ratings on the Semantic Differential Scales included having the mean polarity scores for each of the two concepts on the scales determined for the four cluster factors of evaluation, potency, receptivity, and activity, and for the individual polarity traits of: (useful-useless), (relevant-irrelevant), (promising-disappointing), (interesting-boring), (meaningful-meaningless). The difference in the mean polarity scores for the two concepts for each factor and for each of the five individual traits were subjected to a statistical analysis of variance to determine if the difference in these scores reached a statistical level of significance.

The procedures used to evaluate the cognitive change that took place in the participants as a result of participating in the modules. The method for evaluating this cognitive change was presented earlier and utilized the pre-test post-test nonequivalent control quasi-experimental design. The field-test experimental group experienced the achievement tests twice (both before and after experiencing the modules), whereas the control group only experienced the achievement tests once. The process for calculating the mean scores for the three administrations of the tests was also presented.

The procedures used for evaluating the potential for further development of learning experiences utilizing the same instructional approach. In order to determine the potential for further development of the audio-modular approach, the participants in the audio-modular instructional units were asked to react to several "open" ended questions. These questions focused on: (1) the participants' desire to participate
in additional units if. . ., (2) the conditions under which they would participate in additional units, (3) the value of developing any additional units in adult education, (4) additional topics which could be adapted for presentation through the use of the audio-modular instructional approach, and (5) the types of skills, knowledge and/or concepts which could be learned through the use of the modular approach as well as additional space for additional "open-ended" comments. A sample of these questions is presented in Figure 14.

17. Please complete the following statements:

   a) I would spend time participating in an audio-modular instructional unit only if __________________________

   b) I would definitely not spend time participating in an audio-modular instructional unit if __________________________

   c) For any one to develop any more audio-modular instructional units would __________________________

18. What kind of skills and knowledge do you think could be learned through the use of audio-modular instruction?

19. What additional topics might be adapted to audio-modular instruction?

20. Any additional comments.

Fig. 14--A sample of the "open" questions for evaluating the potential for further development of learning experiences utilizing the modular approach.
The procedures used to measure the time and money factors involved in the development and production of the Audio-Modular Instructional Units. In order to attach a cost factor to each of the two modules produced, the investigator kept an accurate account of the "dollar cost" for the production of each module. Consequently, this information is reported in two ways: (1) the cost of the development and production of the prototype of each module was considered, and (2) the cost of reproducing each of the additional twenty copies of both prototype modules used in this study.

As stated in Chapter I, the factor of total "time spent" in the research, development, and production of the modules will be somewhat less accurate attributable primarily to overlapping agendas. However, the amount of time spent by the developer in designing, developing, and producing each of the prototype modules is presented. In no way does the time factor include the research for conceiving the idea for the design or the travel and consultation prior to the development and production of the modules. Nor does the cost reflect the secretarial assistance provided the designer.

The methodology used to process, analyze, and present the data resulting from the evaluation model. The essential processes used in the evaluation model were the "open" and "closed" questions. The "open-ended" questions were interpreted, categorized, and reported in narrative form. The "open-ended" responses were also presented in the form of number and percentage of responses for each category and tabulated.
The responses to the "closed" questions included rank orderings, achievement tests, ratings on the Semantic Differential Scales and the Likert-type scale. All were tabulated and reported in narrative form. The first three processes have been described and the procedures for the particular "closed" questions were presented and illustrated. The Likert-type response pattern was tabulated in number and percentage of responses for each question. In addition, the levels of response were weighted, and the mean weighted scores for each question were calculated. Tables were presented for clarity in each instance.

A summary of the methodology of gathering and processing the data. In this third and final section of Chapter IV, two major aspects of the evaluation procedures were presented in relation to the term suitability as it is operationally defined in this study. First, the procedures, processes, and four criteria used to determine the suitability of the modules as an alternative methodology for presenting selected skills, knowledge, and concepts for adult educators in the area of adult learning theory were presented. Second, the procedures, processes, and six criteria used to determine the suitability of the audio-modular instructional approach as an alternative in-service training technique for adult educators were presented.

Summary

Chapter IV provided a description of the methodology used to determine the suitability of the audio-modular instructional approach as an alternative in-service training technique for teachers of adult education in the area of adult learning theory. The chapter was comprised of
three main sections and dealt with three primary evaluative processes by: (1) describing the procedures utilized in obtaining the degree of validity and reliability for the achievement portion of the testing instruments, (2) describing the field study population comprising the experimental and control groups, and (3) describing the procedures utilized in determining the suitability of the audio-modular instructional units as an alternative in-service training approach for presenting selected skills, knowledge, and concepts to adult educators in the area of adult learning theory.
CHAPTER V

ANALYSIS OF THE FINDINGS

The previous chapter described the procedures for determining the degree of reliability and validity of the achievement instruments used to measure the cognitive change as a result of experiencing the modules, the study population, and the methodology for gathering and processing the data collected in the study. In this chapter the presentation and analysis of the data utilized for determining the suitability of the audio-modular instructional approach as an alternative in-service training technique for adult educators is presented.

The chapter emphasizes two major aspects of inquiry undertaken in this study: (1) whether or not the audio-modular instructional units are a suitable alternative methodology for presenting selected knowledge, skills, and concepts to adult educators in the area of adult learning theory, and (2) whether or not the audio-modular instructional approach is a suitable alternative in-service training technique for adult educators. The presentation and analysis of the data concerning the two major aspects of inquiry are treated as separate parts in this chapter.

Subsequently, the data is presented and analyzed based on the methodology utilized in gathering and processing that information relevant to determining the suitability of the modules as defined in this study. Five evaluative processes are utilized in the analysis of the findings: (1) the Likert-type response scale, (2) categorization of
the number and percentage of responses for specific questions, (3) ranking, (4) achievement tests, and (5) the use of two Semantic Differential Scales. It should be noted that in particular instances of analyzing the data, the number of responses exceeds the number of participants and is a result of some participants responding more than once to a particular question. The observations and perceptions of this investigator resulting from notetaking, discussion, and oral reactions of the participants concerning the suitability of the modules are also presented.

The Suitability of the Modules as an Alternative Methodology for Presenting Skills, Knowledge, and Concepts for Adult Educators in the Area of Adult Learning Theory

With the first major aspect of inquiry concerned with the suitability of the modules as an alternative methodology for presenting skills, knowledge, and concepts for adult educators in the area of adult learning theory, the presentation and analysis of the data will be evaluated on the basis of the four criteria used as they pertain to the definition of suitability used in this study. The four criteria are: (1) the participants' interest and motivation after experiencing the modules, (2) the participants' perceived worth of the experience, (3) the cognitive change resulting from the experience, and (4) the suggestions for further development of such modules and the improvement of existing modules.

Presentation and analysis of the questions used to determine the participants' interest and motivation after experiencing the modules. In order to evaluate data based on this criterion, the evaluation model uti-
lized three "closed" and three "open" questions and subjected all forty participants of the experimental group to them. The three "closed" questions were structured to focus on: (1) the degree to which the modular experience was interesting to the participants, (2) the degree to which the participants were motivated to elect to participate in additional modules, and (3) the degree to which the participants were excited in recommending modules as learning experiences to other adult educators. In Table 8 the result of the responses to the "closed" question pertaining to the degree of interest the participants experienced in using the modules is presented.

**TABLE 8**

RESULT OF THE RESPONSES TO THE STATEMENT: "I FOUND PARTICIPATING IN THE AUDIO INSTRUCTIONAL MODULE. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>&quot;very interesting&quot;</td>
<td>17</td>
</tr>
<tr>
<td>&quot;somewhat interesting&quot;</td>
<td>22</td>
</tr>
<tr>
<td>&quot;somewhat boring&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;very boring&quot;</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>40</td>
</tr>
</tbody>
</table>

The data from Table 8 illustrates that thirty-nine participants found their experience with the modules "interesting." More specifically, seventeen participants (or 42.5 percent) found the experience "very in-
interesting" with twenty-two (or 55.0 percent) reporting that the experience was "somewhat interesting." One participant (or 2.5 percent) found the experience "somewhat boring." No one found the experience "very boring," and as a result, 97.5 percent responded positively to the question. The responses to the question used a Likert-type scale and were weighted in the following manner: "very interesting"-1, "somewhat interesting"-2, "somewhat boring"-3, "very boring"-4. The weighted mean score for the responses to this question was 1.6.

In Table 9 the result of the responses to the "closed" question used to evaluate the degree to which the participants were motivated to elect to participate in additional modules once they had experienced the module is presented.

**TABLE 9**

RESULT OF THE RESPONSES TO THE STATEMENT: "NOW THAT I KNOW WHAT THE MODULE IS LIKE, IF I HAD THE CHOICE I WOULD. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>&quot;have definitely participated&quot;</td>
<td>15</td>
</tr>
<tr>
<td>&quot;have probably participated&quot;</td>
<td>20</td>
</tr>
<tr>
<td>&quot;not know whether I would or would not have participated&quot;</td>
<td>3</td>
</tr>
<tr>
<td>&quot;have probably not participated&quot;</td>
<td>2</td>
</tr>
<tr>
<td>&quot;have definitely not participated&quot;</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>40</td>
</tr>
</tbody>
</table>
The data from Table 9 illustrates that fifteen participants (or 37.5 percent) responded that they were definitely motivated to participate in the modules after knowing what the experience was like. Twenty participants (or 50.0 percent) indicated a probable willingness to participate in the modules after experiencing them. Three (or 7.5 percent) indicated that they were not sure or undecided as to whether or not they would have participated in the modules, whereas two (or 5.0 percent) indicated that they would probably not have participated in the modules once they experienced them. No one expressed a definite unwillingness to participate in the modules after experiencing them. The total breakdown of responses indicates that 87.5 percent indicated either a definite or probable willingness to participate in the module assuming they knew what the experience was like prior to experiencing it. The weighted mean score for the responses to this question using the same Likert-type scale was 1.8.

In Table 10 the result of the responses to the "closed" question used to evaluate the degree of motivation the participants expressed in respect to their willingness to recommend the module to other adult educators is presented.
TABLE 10

RESULT OF THE RESPONSES TO THE QUESTION: "HOW EXCITED WOULD YOU BE IN RECOMMENDING TO A FELLOW EDUCATOR THAT HE/SHE PARTICIPATE IN THIS MODULE?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>&quot;very excited&quot;</td>
<td>9</td>
</tr>
<tr>
<td>&quot;somewhat excited&quot;</td>
<td>18</td>
</tr>
<tr>
<td>&quot;no feeling either way&quot;</td>
<td>11</td>
</tr>
<tr>
<td>&quot;would be reluctant to recommend it&quot;</td>
<td>2</td>
</tr>
<tr>
<td>&quot;definitely would not recommend it&quot;</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

The data from Table 10 illustrates that twenty-seven participants (or 67.5 percent) expressed excitement about recommending the modules to other adult educators. More specifically, nine participants (or 22.5 percent) expressed a level of being "very excited" about recommending the modules. Eighteen participants (or 45.0 percent) felt "somewhat excited" about recommending the modules. Eleven participants (or 27.5 percent) felt either excited or reluctant about recommending the modules, whereas two participants (or 5.0 percent) felt a reluctance in recommending them. No member responded that they would definitely not recommend the modules to fellow adult educators after they had experienced them. Using the same Likert-type scale of "very excited"-1, "somewhat excited"-2, "no feeling either way"-3, "reluctant to recommend
it"-4, and "definitely would not recommend it"-5, the weighted mean score was 2.2 or comparable to being "somewhat excited."

The responses relating to the three "closed" questions pertaining to the interest and motivation expressed by the participants after experiencing the modules indicates that as a whole most were more than just somewhat interested in the modules, and if given a choice, most would freely choose to participate in the modules. More than two thirds of the participants expressed excitement about recommending the modules to other adult educators.

The three "open" questions used to determine the participants' interest and motivation as a result of the modular experience focused on the major strengths and weaknesses of the modules and recommendations as to which portions of the modules should either be retained or removed if revised.

In Table 11 the result of the responses to the question pertaining to the major strength of these specific audio instructional modules is presented.
TABLE 11
RESULT OF THE RESPONSES TO THE QUESTION: "WHAT WAS THE MAJOR STRENGTH OF THIS SPECIFIC AUDIO INSTRUCTIONAL MODULE?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=52)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Ability to review</td>
<td>2</td>
</tr>
<tr>
<td>Audio component</td>
<td>2</td>
</tr>
<tr>
<td>Clarity of instructions</td>
<td>9</td>
</tr>
<tr>
<td>Content</td>
<td>12</td>
</tr>
<tr>
<td>Convenient</td>
<td>5</td>
</tr>
<tr>
<td>Format for exchanging ideas</td>
<td>2</td>
</tr>
<tr>
<td>Individualized (self-paced)</td>
<td>4</td>
</tr>
<tr>
<td>Objectives oriented/objectives completed</td>
<td>2</td>
</tr>
<tr>
<td>Organization</td>
<td>10</td>
</tr>
<tr>
<td>Reinforcement of learning (step-by-step)</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>52</strong></td>
</tr>
</tbody>
</table>

The data from Table 11 illustrates that twelve participants (or 23.1 percent) felt that the content was the greatest strength of the modules. The next highest percentage of responses indicated the organization of the modules as the most often indicated strength. If one considers the fact that such response categories as the "ability to review," "audio component," "clarity of instructions," "open-ended type format" (felt it was adaptable to small groups as well as individually),
"individualized," "objectives oriented," "organization," and the "reinforcement of learning" pertain to the overall design of the modules, thirty-five (or 67.1 percent) directed their responses toward the design of the modules as being the greatest strength. Five participants (or 9.6 percent) indicated that the convenience of use was the greatest strength. The data indicates that the overall design, content, and convenience were the greatest strengths of the modules as perceived by the participants.

Table 12 presents the findings of a second "open" question pertaining to the data relating to the major weakness of the modules as indicated by the experimental group.
Table 12 illustrates that the reactions to what the participants perceived to be the greatest weakness of the modules for presenting selected concepts to adult educators in the area of adult learning theory.
varied considerably. The data indicates that the largest number of responses (or 20.0 percent) elicited from the participants sampled felt that the greatest weakness of the modules is the lack of group interaction. Any conclusions drawn from the latter 20.0 percent of recorded responses may be limited by the fact that thirty-four of the forty workshop participants were provided the option of either working individually or in small groups. The other six participants participated independently of the workshop sessions. The second highest number of participants (nine or 18.0 percent) indicated the pre-test as the greatest weakness of the modules.

A third pair of "open" questions were used to elicit the participants' degree of excitement to recommend additional audio instructional modules as learning experiences to other adult educators. The question is analyzed and reported in two parts: (1) assuming that the modules were too time consuming and the participants were involved in the revision, what portion would they definitely retain, and (2) which portion would they remove? Table 13 presents the data relating to the "what portion would you definitely retain" part of the question.
TABLE 13
RESULT OF THE RESPONSES TO THE QUESTION: "IF...YOU WERE INVOLVED IN REVISING THE MODULES, WHAT PORTION WOULD YOU DEFINITELY KEEP IN THE MODULES?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=43)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Audio</td>
<td>6</td>
<td>14.0</td>
</tr>
<tr>
<td>Content</td>
<td>11</td>
<td>25.6</td>
</tr>
<tr>
<td>Everything</td>
<td>6</td>
<td>14.0</td>
</tr>
<tr>
<td>Flexibility (for both individualized and small group use)</td>
<td>2</td>
<td>4.7</td>
</tr>
<tr>
<td>Guidebook</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Instructions</td>
<td>2</td>
<td>4.7</td>
</tr>
<tr>
<td>Post-test</td>
<td>2</td>
<td>4.7</td>
</tr>
<tr>
<td>Pre-test</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Reinforcement of learning (step-by-step)</td>
<td>2</td>
<td>4.7</td>
</tr>
<tr>
<td>Vignettes</td>
<td>3</td>
<td>7.0</td>
</tr>
<tr>
<td>No response</td>
<td>7</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>43</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

The data in Table 13 illustrates that the content was most often the component of the modules that participants felt should be retained. Although just over a quarter of the participants listed that the content portion should be retained, six (or 14.0 percent) felt that the audio portion should also be retained with the same percentage indicating that
"everything" should be retained. Consequently, twenty-three (or 53.6 percent) responded that the content, audio portion, or "everything" of the modules be retained. A significant 16.3 percent did not respond to the question. Three participants' responses (or 7.0 percent) indicated that the vignettes be retained. Eight participants either indicated that the instructions, post-test, flexibility of the modules, or reinforced learning steps within the modules be retained. One participant indicated that the guidebook be retained, whereas another indicated that the pre-test be retained. There is no data to indicate that any portion of the modules was not completely necessary or necessitated removal entirely. The second part of the "open" question pertaining to the portion of the module they would remove if involved in the revision is presented in Table 14.
TABLE 14
RESULT OF THE RESPONSES TO THE QUESTION: "IF YOU WERE INVOLVED IN REVISING THE MODULES, WHAT PORTION WOULD YOU REMOVE?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Ambiguity in answers to post-test (Module II)</td>
<td>2</td>
</tr>
<tr>
<td>Amount of instructions</td>
<td>2</td>
</tr>
<tr>
<td>Answers distracting (Module I)</td>
<td>1</td>
</tr>
<tr>
<td>Audio:</td>
<td></td>
</tr>
<tr>
<td>Completely</td>
<td>1</td>
</tr>
<tr>
<td>Introduction too strong</td>
<td>1</td>
</tr>
<tr>
<td>Further delimit amount of writing (Module II)</td>
<td>7</td>
</tr>
<tr>
<td>Nothing</td>
<td>13</td>
</tr>
<tr>
<td>Pre-test</td>
<td>6</td>
</tr>
<tr>
<td>Some exercises repetitive (Module II)</td>
<td>3</td>
</tr>
<tr>
<td>Unnecessary reinforcement of material once introduced</td>
<td>1</td>
</tr>
<tr>
<td>Unsure</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>2</td>
</tr>
<tr>
<td>TOTALS</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 14 illustrates that thirteen participants (or 32.5 percent) felt that nothing should be removed. However, a significant number or 17.5 percent felt that the amount of writing required in Module II needed to be shortened. Six participants (or 15.0 percent) felt that the pre-tests should be removed. It should be noted that while the removal of
the pre-tests drew a significant number of responses for both modules, they were used in this study to enable this investigator to measure some degree of cognitive change in the participants once they had experienced the modules. Except for further delimiting the amount of writing required in Module II, there appeared to be no other component of either module which seriously hampered their efficacy. Three participants did feel that some exercises were repetitive in Module II. Two participants' responses indicated an ambiguity between the content in Module II and some of the post-test answers, and two participants indicated an excessive amount of instructions.

As a result of the "open-ended" questions used to determine the participants' interest and motivation after experiencing the modules, fifty-two responses were elicited in an attempt to determine the greatest strength of the modules. There is evidence to support the contention that the greatest strengths of the modules appeared to be in the areas of the content used, the organization of the modules, and the clarity of instructions within the modules. Summarily, more than two thirds of the participants considered the overall design of the modules as the greatest strength. Fifty responses were elicited relevant to the major weakness of the modules. The largest number (or 20.0 percent) of the responses indicated that the lack of group interaction was the major weakness. The fact that the workshop participants were given the option of experiencing the modules individually or in small groups should be considered when making any conclusions concerning the figure of 20.0 percent responding to the "lack of group interaction" as the major weak-
ness. The second largest category of responses (or 18.0 percent) indicated that the pre-test was the major weakness. The data indicates that the categories of "lacking group interaction" and the "pre-test" elicited the greatest response percentages (38.0 percent combined) when indicating the greatest weaknesses of the modules. Although six participants (or 12.0 percent) responded to the categories of too much time spent experiencing both modules (including the evaluation) in the allotted time imposed by the workshops, this may be construed as a major weakness of the method of field testing the modules rather than major weaknesses of the modules themselves. In respect to the question as to what portion of the module should definitely be retained if the modules were too long and the participants were involved in the revision, the largest percentage of responses (25.6 percent) indicated that the content should be retained. In terms of that portion which they would remove, 17.5 percent felt that the amount of writing in Module II should be decreased, whereas 15.0 percent felt that the pre-tests in both modules should be removed. A significant percentage of the participants (or 32.0 percent) felt nothing in the modules should be removed.

Presentation and analysis of the questions used to determine the worth of the experience as perceived by the participants. In order to evaluate data based on this criterion, the evaluation model utilized two "closed" questions focused on evaluating the value and the worth (in respect to time spent) of the modular experience. Two "open" questions focused on evaluating both what the participants had learned from the modules and what other existing instructional method the participants
would have preferred to participate in, in order to learn the same skills and concepts. One "closed" question was directed toward determining the length of time it took the participants to experience the module, and three "open" questions were geared toward evaluating the modules via completion of sentence fragments.

In Table 15 the result of the responses to the "closed" question used to evaluate the participants' perceived value of the modular experience is presented.

TABLE 15

RESULT OF THE RESPONSES TO THE STATEMENT: "I FOUND PARTICIPATING IN THE AUDIO INSTRUCTIONAL MODULE. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;very valuable&quot;</td>
<td>14 35.0</td>
</tr>
<tr>
<td>&quot;of some value&quot;</td>
<td>23 57.5</td>
</tr>
<tr>
<td>&quot;neither valuable nor worthless&quot;</td>
<td>3  7.5</td>
</tr>
<tr>
<td>&quot;somewhat worthless&quot;</td>
<td>0  0.0</td>
</tr>
<tr>
<td>&quot;completely worthless&quot;</td>
<td>0  0.0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>40 100.0</td>
</tr>
</tbody>
</table>

The data from Table 15 illustrates that thirty-seven participants found participating in the modules "valuable." More specifically, fourteen participants (or 35.0 percent) found the experience "very valuable," whereas twenty-three (or 57.5 percent) felt the experience "of some value" with three (or 7.5 percent) indicating that the experience with
the modules was "neither valuable nor worthless" as a learning experience. Whereas 92.5 percent of the participants eliciting responses indicative of the experience being valuable, no one viewed the experience as either "somewhat worthless" or "completely worthless." The responses to the question used a Likert-type scale and were weighted in the following manner: "very valuable"-1, "of some value"-2, "neither valuable nor worthless"-3, "somewhat worthless"-4, and "completely worthless"-5. The weighted mean score for the responses to this question was 1.7 or valuable.

In Table 16 the result of the "closed" question relating to the amount of time which the participants spent on the modules in relation to the worth of the modular experience as perceived by them is presented.

TABLE 16
RESULT OF THE RESPONSES TO THE STATEMENT: "I FEEL THAT THE EXPERIENCE I GAINED FROM PARTICIPATING IN THIS MODULE..."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>&quot;was definitely worth this amount of time&quot;</td>
<td>15</td>
</tr>
<tr>
<td>&quot;was probably worth this amount of time&quot;</td>
<td>13</td>
</tr>
<tr>
<td>&quot;may or may not have been worth the time&quot;</td>
<td>12</td>
</tr>
<tr>
<td>&quot;was probably not worth this amount of time&quot;</td>
<td>0</td>
</tr>
<tr>
<td>&quot;was definitely not worth this amount of time&quot;</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>
The data in Table 16 illustrates that twenty-eight participants (or 70.0 percent) found the experience worth the amount of time spent. Twelve (or 30.0 percent) were unsure as to whether the experience may or may not have been worth the time spent. The weighted mean score using the same Likert-type scale was 1.9 or comparable to an experience worth the amount of time spent.

In Table 17 the result of the responses from the "closed" question directed at determining the length of time it took the participants to experience the modules is presented.

TABLE 17

RESULT OF THE RESPONSES TO THE QUESTION: "WHICH OF THE FOLLOWING RESPONSES REPRESENTS THE TOTAL TIME YOU SPENT PARTICIPATING IN THE MODULE?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 - 40 minutes</td>
<td></td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>45 - 60 minutes</td>
<td></td>
<td>20</td>
<td>50.0</td>
</tr>
<tr>
<td>60 - 75 minutes</td>
<td></td>
<td>15</td>
<td>37.5</td>
</tr>
<tr>
<td>90 - 105 minutes</td>
<td></td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>105 - 120 minutes</td>
<td></td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>over 2 hours</td>
<td></td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>over 2 1/2 hours</td>
<td></td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In Table 17 twenty participants (or 50.0 percent) felt that they spent between forty-five and sixty minutes participating in each module.
Significantly more than half (or 57.5 percent) of the participants spent an amount of time not in excess of that time recommended by prior studies. While previous research indicates that any module which takes more than an hour to complete is undesirable for utilizing the audio-modular instructional unit concept, it is conceded that most of such research has pertained to administrators and less so to teachers. A sizeable percentage (or 37.5 percent) spent between sixty and seventy-five minutes to complete each module. The six negative responses relevant to the time element exhibited by the response pattern of the participants indicated a displeasure with the way the time was structured for the workshops rather than the length of time spent experiencing the modules, whereas seventy percent of the participants have indicated that the time spent on the modules was worthwhile. The weighted mean score for this question was 2.4 or a median time of about an hour to seventy-five minutes spent by the participants on each module.

In the use of three "open" questions directed toward evaluating specific aspects of the modules, the participants were asked to complete several sentence fragments.

In Table 18 the participants' reactions to the statement concerned with the exercises connected to the modules is presented.
TABLE 18
RESULT OF THE RESPONSES TO THE STATEMENT: "THE EXERCISES, CONNECTED TO THE MODULE, WHICH I PARTICIPATED IN. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=45)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>&quot;easy/clear&quot;</td>
<td>3</td>
</tr>
<tr>
<td>&quot;easy in Module I, difficult in Module II&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;helpful and applicable to concepts presented&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;informative/enlightening&quot;</td>
<td>5</td>
</tr>
<tr>
<td>&quot;interesting&quot;</td>
<td>9</td>
</tr>
<tr>
<td>&quot;non-threatening&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;outstanding&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;practical&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;repetitive but reinforcing&quot;</td>
<td>3</td>
</tr>
<tr>
<td>&quot;useful&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;valuable learning experiences&quot;</td>
<td>3</td>
</tr>
<tr>
<td>&quot;very good&quot;</td>
<td>3</td>
</tr>
<tr>
<td>&quot;well done/well structured&quot;</td>
<td>8</td>
</tr>
<tr>
<td>No response</td>
<td>5</td>
</tr>
</tbody>
</table>

**TOTALS** 45 100.0

The data in Table 18 illustrates a wide range of responses in respect to how the participants perceived the exercises included in the modules. The vast majority (or 84.4 percent) of the responses could be
categorized as relating positively to the functioning of the modules. Only five participants (or 11.1 percent) failed to complete the evaluative statement. Seven participants (or 15.6 percent) felt either completely negative or positive about the exercises but indicated that the exercises were either too easy, too difficult, or repetitive. The positive responses elicited from the participants were categorized as: helpful, applicable, informative, enlightening, interesting, non-threatening, outstanding, practical, useful, valuable, very good, well done and/or well structured.

In Table 19 the participants' reactions to the statement concerned with one change that they would make in the modules is presented.
<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N=40)</td>
<td>%</td>
</tr>
<tr>
<td>&quot;all answers should be at the end of each module rather than after each section&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;be less impersonal&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;be more brief&quot;</td>
<td>2</td>
<td>4.8</td>
</tr>
<tr>
<td>&quot;clarify questions asked (Module II)&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;decrease amount of writing (Module II)&quot;</td>
<td>3</td>
<td>7.1</td>
</tr>
<tr>
<td>&quot;decrease/clarify instructions&quot;</td>
<td>9</td>
<td>21.4</td>
</tr>
<tr>
<td>&quot;eliminate all directions on audio component&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;eliminate pre-test&quot;</td>
<td>4</td>
<td>9.5</td>
</tr>
<tr>
<td>&quot;improve vocabulary (too difficult)&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;increase opportunity for group discussion&quot;</td>
<td>2</td>
<td>4.8</td>
</tr>
<tr>
<td>&quot;more elaboration of content&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;more elaboration of vignettes&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;more explanation of material presented (Module II)&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;more specific choices for questions (Module II)&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;provide for a facilitator&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;remove introductory pages of guidebook&quot;</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>No changes</td>
<td>8</td>
<td>19.0</td>
</tr>
<tr>
<td>No responses</td>
<td>3</td>
<td>7.1</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>42</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
The data from Table 19 illustrates both a wide range of suggested changes with little agreement by the participants on any one portion of the modules which should be changed. Eight participants (or 19.0 percent) felt that no changes were needed, whereas three (or 7.1 percent) failed to respond to the statement. The largest percentage of responses, nine (or 21.4 percent), indicated that the instructions provided in the modules could be both decreased and/or clarified. Four participants (or 9.5 percent) elicited responses pertaining to the elimination of the pre-test and is indicative of the second highest number of responses for change.

The third "open-ended" question utilized in evaluating various aspects of the modules is presented in Table 20 and pertains to one aspect of the module which the participants felt should definitely remain the same.
TABLE 20

RESULT OF THE RESPONSES TO THE STATEMENT: "ONE ASPECT OF THIS MODULE WHICH SHOULD DEFINITELY REMAIN THE SAME. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N=42)</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>&quot;all of the material&quot;</td>
<td>3</td>
</tr>
<tr>
<td>&quot;alternative/enabling exercises&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;application of concepts to real life situations&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;audio component&quot;</td>
<td>8</td>
</tr>
<tr>
<td>&quot;content:&quot;</td>
<td>4</td>
</tr>
<tr>
<td>for both modules</td>
<td>1</td>
</tr>
<tr>
<td>for Module I</td>
<td></td>
</tr>
<tr>
<td>&quot;delivery process/system&quot;</td>
<td>2</td>
</tr>
<tr>
<td>&quot;exercises accompanying modules&quot;</td>
<td>5</td>
</tr>
<tr>
<td>&quot;guidebook/text&quot;</td>
<td>2</td>
</tr>
<tr>
<td>&quot;Module I completely&quot;</td>
<td>2</td>
</tr>
<tr>
<td>&quot;Module II completely&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;pre-test&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;post-test&quot;</td>
<td>2</td>
</tr>
<tr>
<td>&quot;quality of both tape and text&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;synchronization between tape and text&quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot;vignettes&quot;</td>
<td>3</td>
</tr>
<tr>
<td>No responses</td>
<td>4</td>
</tr>
<tr>
<td>TOTALS</td>
<td>42</td>
</tr>
</tbody>
</table>
In Table 20 the responses elicited were as wide-ranged as those for the previous question. Of the forty-two responses, the largest number (or 19.0 percent) indicated that the audio component should definitely remain the same. Five (or 11.9 percent) of the responses indicated that the exercises should be retained, whereas four (or 9.5 percent) indicated that the content of both modules should be retained. Four participants (or 9.5 percent) failed to respond to the statement. The remaining twenty-one responses indicate a varied and somewhat positive range of thought concerning the major strengths of the modules.

In summary, thirty-seven participants (or 92.5 percent) indicated that participating in the modules was valuable, whereas twenty-eight (or 70.0 percent) felt the experience worthwhile in respect to the amount of time spent. A significant number (twelve or 30.0 percent) of the participants were "unsure" about the worth of the experience. In terms of the average amount of time spent by the participants on each module, 37.5 percent spent between one and a half hours per module with 57.5 percent of the participants spending an hour or less. A few of the participants indicated a negativism toward the time frame of the workshop within which they were experiencing the modules rather than towards the time it took to complete the modules. In respect to the exercises inherent within the structure of the modules, about 84.4 percent related positively to the need for them in respect to the effective functioning of the modular system. In terms of suggested changes, the largest number of responses (or 21.4 percent) indicated a need for decreasing and clarifying the instructions with little agreement as to
any one portion of the modules which should be changed. Almost as many responses indicated no change as did those indicating a change in the clarity and/or the amount of instructions. The audio component received the largest number of responses (or 19.0 percent) relating to what should definitely remain the same in the modules. The data from this portion also corroborated the efficacy of the modular exercises. The data reported in this section indicates that the participants found the worth of the modular experience valuable.

Presentation and analysis of the questions used to determine the cognitive change of the individuals resulting from the experience with the modules. In order to evaluate data based on this criterion, the evaluation model utilized one "open" question to evaluate what the participants had learned from experiencing the modules. Achievement tests for each module were also administered in using the pre-test post-test nonequivalent control group quasi-experimental design in an attempt to determine the cognitive changes which may have occurred as a result of participating in the modules.

In Table 21 the participants' responses to the "open" question relevant to evaluating what the participants had learned from experiencing the modules is presented.


TABLE 21

RESULT OF THE RESPONSES TO THE STATEMENT: "BRIEFLY STATE WHAT YOU HAVE LEARNED FROM THESE TWO MODULES. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;adult education content now learned with ease and convenience&quot;</td>
<td></td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>&quot;better skills in evaluating the human behavior of adult learners&quot;</td>
<td></td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>&quot;classification of adult learners&quot;</td>
<td></td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>&quot;content concerned with what motivates and limits the participation of adult students&quot;</td>
<td></td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>&quot;content specifically related to adult educators&quot;</td>
<td></td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>&quot;effectiveness of the audio-modular process of learning&quot;</td>
<td></td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>&quot;identification of potential adult participants&quot;</td>
<td></td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>&quot;motivations of adult learners&quot;</td>
<td></td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>&quot;new and well-structured learning approach oriented specifically for adult educators&quot;</td>
<td></td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>&quot;nothing new&quot;</td>
<td></td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>&quot;potential of the audio-modular process&quot;</td>
<td></td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>&quot;reinforces concern about learning from machines&quot;</td>
<td></td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>&quot;self-instructional medium of learning&quot;</td>
<td></td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>No response</td>
<td></td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>
In Table 21 the highest percentages of responses elicited from the "open" question were in the areas of the specific content used in the modules. Over 62.0 percent of the responses are related to various areas of adult education content.

The pre-test post-test nonequivalent control group quasi-experimental design utilized in the evaluation model was used in an attempt to determine if any significant cognitive changes occurred as a result of the participants experiencing the modules. The Achievement Test for Module I consisted of twenty "closed" questions and was based on the performance objectives for the module. The Achievement Test for Module II consisted of ten "closed" questions and was also based on the performance objectives for the module. Prior to the field testing, the achievement tests were validated and tested for reliability. During the field testing, the achievement tests were administered to the experimental and control groups prior to the experimental group's experience with the modules. The experimental group again experienced the achievement tests for each module once they had experienced the modules. As a result of the three administrations of each achievement test, the mean scores for the tests were calculated for each group. The difference in the individual group mean scores for each of the tests was subjected to a statistical analysis to determine if the differences in the mean scores reached a statistical level of significance.

In Table 22 the data for the three administrations of the Achievement Test for Module I is presented.
Table 22 indicates that the mean score for the single administration of Achievement Test I for the control group was 6.82, whereas the mean score for the pre-test of the experimental group was 6.78. The mean score for the experimental group post-test was 18.57. The standard deviation of the scores for the control group was 2.52. The standard deviation for the pre-test of the experimental group was 3.07, and the standard deviation for the post-test of the experimental group was 1.18.

The t Test was applied to determine if the differences in scores between the experimental group's pre-test and post-test were statistically significant. In Table 23 the data relevant to the application of the t Test to the difference in mean scores between the experimental group's pre-test and post-test for Module I is presented.
Table 23 illustrates that the difference in the mean scores for the two administrations of the test to the experimental group for Module I was 11.79. When the t Test was applied to this difference, it showed a value of 27.1. Compared with a table of distributions of t values entered with thirty-nine degrees of freedom at a 0.01 level of significance for a two-tailed test, the difference was determined to be highly significant with the t value at the indicated intersection of the t Table being 2.704.

In Table 24 the data relevant to the application of the t Test to the difference in mean scores between the achievement test of the control group (having had no experience with Module I) and the post-test (after experiencing Module I) of the experimental group is presented in an effort to verify if the cognitive change resulting from the modular
experience was solely unique to the experimental group.

TABLE 24

THE t TEST APPLICATION TO THE DIFFERENCE IN MEAN SCORES BETWEEN THE CONTROL GROUP TEST AND THE EXPERIMENTAL GROUP POST-TEST FOR MODULE I

<table>
<thead>
<tr>
<th></th>
<th>Control Group (Test)</th>
<th>Experimental Group (Post-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Mean</td>
<td>6.82</td>
<td>18.57</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.52</td>
<td>1.18</td>
</tr>
</tbody>
</table>

*t Value = 26.7

*The distribution of the t Table entered with seventy-eight degrees of freedom and a probability level of 0.01 yields a t value of 2.704.

Table 24 illustrates that the difference in mean scores between the control group test and the post-test of the experimental group was 11.75. Applying the t Test to this difference in mean scores, it showed a value of 26.7. The table of distributions of t values entered with seventy-eight degrees of freedom at a 0.01 level of significance yielded a value of 2.704. The t value of 26.7 was determined to show a highly significant difference in the mean scores of the two tests.

The Achievement Test for Module II consisted of ten "closed" questions and, as stated earlier, was based on the performance objectives for the module. The procedures for measuring the cognitive change resulting from participation in Module II were comparable to those used in Module I.
In Table 25 the data for the three administrations of the Achievement Test for Module II is presented.

**TABLE 25**

**COMPARISON OF THE DATA FOR THE THREE ADMINISTRATIONS OF THE ACHIEVEMENT TEST FOR MODULE II**

<table>
<thead>
<tr>
<th></th>
<th>Control Group (Test)</th>
<th>Experimental Group (Pre-test)</th>
<th>Experimental Group (Post-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Mean</td>
<td>3.31</td>
<td>4.25</td>
<td>9.32</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.60</td>
<td>1.48</td>
<td>0.82</td>
</tr>
</tbody>
</table>

The data in Table 25 indicates that the mean score for the single administration of Achievement Test II for the control group was 3.31, whereas the mean score for the pre-test of the experimental group was 4.25. The mean score for the experimental group post-test was 9.32. The standard deviation for the pre-test of the experimental group was 1.48, and the standard deviation for the post-test of the experimental group was 0.82.

For Achievement Test II, the t Test was applied to determine if the differences in scores between the experimental group pre-test and post-test were statistically significant. In Table 26 the data relevant to the application of the t Test to the difference in mean scores between the experimental group pre-test and post-test for Module II is presented.
Table 26 illustrates that the difference in the mean scores for the two administrations of the test to the experimental group (once before and once after experiencing the modules) was 5.07. Applying the t Test to this difference showed a value of 19.3. Compared with a table of distribution of t values entered with thirty-nine degrees of freedom at a 0.01 level of significance for a two-tailed test, the difference was determined to be highly significant with the t value at the indicated intersection of the t Table being 2.704.

For the Achievement Test designed for Module II, and in an effort to determine if any cognitive change resulting from the modular experience was solely unique to the experimental group, the difference in the mean score for the control group and the mean score for the experimental group's post-test was subjected to a t Test. In Table 27 the data relevant to the application of the t Test is presented.
### Table 27

**The t Test Application to the Difference in Mean Scores Between the Control Group Test and the Experimental Group Post-Test for Module II**

<table>
<thead>
<tr>
<th></th>
<th>Control Group (Test)</th>
<th>Experimental Group (Post-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Mean</td>
<td>3.31</td>
<td>9.32</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.60</td>
<td>0.82</td>
</tr>
</tbody>
</table>

* *t Value = 21.1*

*The distribution of the t Table entered with seventy-eight degrees of freedom and a probability level of 0.01 yields a t value of 2.704.*

Table 27 illustrates that the difference in mean scores between the control group test (having had no experience with Module II) and the post-test of the experimental group (after experiencing Module II) was 6.01. Applying the t Test to this difference in mean scores, it showed a value of 21.1. The table of distributions of t values entered with seventy-eight degrees of freedom at a 0.01 level of significance yielded a value of 2.704. The t value of 21.1 was determined to show a significant difference in the mean scores for the two tests.

In the "open" question specifically designed for measuring the cognitive change resulting from participating in the modules, 63.0 percent of the experimental group felt that they had experienced a cognitive change relating to content relevant to adult learners and adult education per se. Fifteen percent of the responses to the same "open" question related either to the potential or the effectiveness of learn-
ing from the audio-modular process. The data gained from the administration of the achievement tests for both modules not only corroborates the responses elicited from the "open" question but also appears to indicate a significant cognitive change as a result of participating in the modules. The gain in mean scores between the pre-test and post-test for both modules was judged to be highly significant at the .01 level as indicated by the t values of 27.1 and 19.3 for Module I and Module II, respectively.

Presentation and analysis of the questions used to determine the potential for the revision and further development of these modules for adult educators. Two "open" questions and one "closed" question were used to evaluate the possible need for revising existing modules and the potential for further development of other modules. The two "open" questions as well as the participants' responses were presented in Table 13 and 14 of this chapter. The responses elicited and reported from one of the "open" questions related to this criterion indicated that nearly 54.0 percent felt that the content, audio portion, or "everything" in the modules should be retained. The second "open" question related to this criterion elicited the largest percentages of responses for delimiting the amount of writing required in Module II (17.5 percent) and eliminating the pre-test (15.0 percent). The largest percentage of responses (32.5 percent) indicated that nothing should be removed. It was also noted when reporting the responses for these two "open" questions that the pre-test was designed to measure some degree of cognitive change in the participants once they had participated in the modules and that it
was not viewed as an indispensable part of either module.

A seven-part "closed" question was used to evaluate and determine what technical aspects of the modules may need revision. Participants were asked to focus on seven technical aspects of the audio instructional modules and were rated on a Likert-type scale.

In Table 28 the result of the responses to the "closed" question used to evaluate and determine what technical aspects of the modules are in need of revision is presented.
<table>
<thead>
<tr>
<th>Technical Aspects</th>
<th>&quot;Outstanding&quot;</th>
<th>&quot;Good&quot;</th>
<th>&quot;Average&quot;</th>
<th>&quot;Needs Improving&quot;</th>
<th>&quot;Very Poor&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>General appearance</td>
<td>8</td>
<td>20.0</td>
<td>28</td>
<td>70.0</td>
<td>2</td>
</tr>
<tr>
<td>Clarity of instructions</td>
<td>16</td>
<td>40.0</td>
<td>13</td>
<td>32.5</td>
<td>5</td>
</tr>
<tr>
<td>Statement of objectives</td>
<td>15</td>
<td>37.5</td>
<td>18</td>
<td>45.0</td>
<td>5</td>
</tr>
<tr>
<td>Appearance of text (guidebook)</td>
<td>16</td>
<td>40.0</td>
<td>19</td>
<td>47.5</td>
<td>2</td>
</tr>
<tr>
<td>Quality of tape component</td>
<td>22</td>
<td>55.0</td>
<td>14</td>
<td>35.0</td>
<td>1</td>
</tr>
<tr>
<td>Synchronization (tape and text)</td>
<td>23</td>
<td>57.5</td>
<td>9</td>
<td>22.5</td>
<td>6</td>
</tr>
<tr>
<td>Ease and convenience with which the modular material could be utilized</td>
<td>13</td>
<td>32.5</td>
<td>18</td>
<td>45.0</td>
<td>7</td>
</tr>
</tbody>
</table>
The data from Table 28 illustrates that the technical aspects of the modules received a high percentage of positive responses. The lowest combined percentages of responses categorized as "outstanding" and "good" for any one of the seven technical aspects of the modules rated was 72.5 percent for the aspect concerning "clarity of instructions." The highest combined percentages of "outstanding" and "good" for any of the seven technical aspects pertaining to the modules rated was 90.0 percent for the aspects of "general appearance" and the "quality of the tape," respectively. A more specific breakdown of the response categories in Table 28 illustrates that twenty-eight of the participants (or 70.0 percent) felt that the general appearance of the modules was "good." Eight participants (or 20.0 percent) elicited responses indicating that the general appearance was "outstanding." Two participants (or 5.0 percent) rated the technical aspects "average" with a comparable percentage indicating that the general appearance of the modules "needs improving." No participant rated this aspect "very poor."

Interestingly, particularly in light of the fact that 21.4 percent of the participants indicated previously that they would decrease and/or clarify the instructions (refer to Table 19), sixteen (or 40.0 percent) of the participants indicated that the technical aspect of clarity of instructions was "outstanding." Thirteen (or 32.5 percent) rated this same aspect as "good;" five participants (or 12.5 percent) each categorized the clarity of instructions as "average" and "needs improving," whereas one participant (or 2.5 percent) rated this aspect as "very poor."
Fifteen participants (or 37.5 percent) rated the statement of objectives as "outstanding," whereas eighteen (or 45.0 percent) rated this aspect as "good." Five (or 12.5 percent) rated this aspect "average," and two participants (or 5.0 percent) categorized this aspect concerned with the stated objectives as "needs improving." No one responded that the statement of objectives aspect was "very poor."

Sixteen participants' responses (or 40.0 percent) indicated that the appearance of the text was "outstanding," whereas nineteen (or 47.5 percent) indicated that the appearance of the text was "good." The 87.5 percent categorization of either "outstanding" or "good" in appearance is commensurate with 90.0 percent of the responses indicating the same for the general appearance of the modules. Two participants (or 5.0 percent) felt that the appearance of the text was "average," whereas three (or 7.5 percent) felt that the text "needs improving."

 Twenty-two participants (or 55.0 percent) indicated that they felt that the quality of the tape was "outstanding," whereas fourteen participants (or 35.0 percent) felt that the quality was "good." One participant rated the quality of the tape as "average;" two participants (or 5.0 percent) felt that it "needs improving," and one participant indicated a response of "very poor."

A majority of the participants (or 57.5 percent) rated the synchronization between tape and text as "outstanding." Nine participants (or 22.5 percent) categorized this aspect as "good." Six participants (or 15.0 percent) felt that the technical aspect of synchronization between tape and text was "average;" one (or 2.5 percent) felt that it "needs
In rating the technical aspect of the modules in respect to the ease and convenience with which they could be utilized, thirteen participants (or 32.5 percent) indicated this aspect as "outstanding;" eighteen participants (or 45.0 percent) rated it as "good;" seven participants (or 17.5 percent) rated it as "average" with one participant (or 2.5 percent) each categorizing this aspect as "needs improving" and "very poor," respectively. No clear indication from the data indicates that, despite the need for a cassette player, the use of the modules is any more inconvenient than any other alternative for presenting comparable material. Conversely, over two thirds of the participants felt that the convenience of use was either "outstanding" or "good." At the risk of overinterpreting, the fact that the modules are individualized and save travel time and expense may more than offset the inconvenience of the need for a machine.

The mean responses for the seven technical aspects of the modular units and the mean response for all aspects were calculated individually and weighted on a Likert-type scale of "outstanding"-1, "good"-2, "average"-3, "needs improving"-4, "very poor"-5. This data is presented in Table 29.
<table>
<thead>
<tr>
<th>Technical Aspect</th>
<th>Mean Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>General appearance</td>
<td>2.0</td>
</tr>
<tr>
<td>Clarity of instructions</td>
<td>2.1</td>
</tr>
<tr>
<td>Statement of objectives</td>
<td>1.9</td>
</tr>
<tr>
<td>Appearance of text</td>
<td>1.8</td>
</tr>
<tr>
<td>Quality of tape</td>
<td>1.7</td>
</tr>
<tr>
<td>Synchronization of text and tape</td>
<td>1.7</td>
</tr>
<tr>
<td>Ease and convenience of use</td>
<td>2.0</td>
</tr>
</tbody>
</table>

TOTAL MEAN RESPONSE 1.9

Table 29 illustrates that the mean response for the technical aspects of the modules were rated between "outstanding" and "good" in the areas of statement of objectives, appearance of the text, the quality of the tape, and the synchronization of text and tape. The areas concerned with the general appearance, clarity of instructions, and the ease and convenience with which the modular materials could be utilized elicited a mean response comparable to "good." The mean responses pertaining to the seven technical aspects of the modules evaluated were significantly positive.
The Suitability of the Audio-Modular Instructional Approach as an Alternative In-service Training Technique for Adult Educators

The second major aspect of inquiry undertaken in this study was concerned with the suitability of the audio-modular instructional approach as an alternative in-service training technique for adult educators. The presentation and analysis of the findings relating to the question concerned with this aspect of the study are based on the six criteria established pertaining to the definition of suitability as used in this study. The six criteria used are: (1) the participants' interest and motivation in participating in additional modules as a result of experiencing the audio-modular instructional approach, (2) the participants' perceived worth of the experience compared with other in-service training experiences, (3) the negative or positive attitude toward the audio-modular approach compared with the negative or positive attitude toward other in-service training experiences, (4) the cognitive change as a result of experiencing the modules, (5) the potential for the further development of learning experiences utilizing the same instructional approach, and (6) the expenditure of time and money in the development and production of the designed modules used in the approach.

Presentation and analysis of the questions used to evaluate the participants' interest and motivation in participating in additional modules as a result of experiencing the audio-modular instructional approach. Once the participants had experienced the modules, they were asked to respond to one "closed" question and two "open" questions used to evaluate the participants' interest and motivation to participate in addi-
tional audio instructional modules after experiencing those used in this study.

In Table 30 the result of the responses to the "closed" question used to evaluate the degree to which the participants were interested and motivated to participate in additional modules is presented.

**TABLE 30**

RESULT OF THE RESPONSES TO THE QUESTION: "IF YOU HAD THE OPPORTUNITY, WOULD YOU PARTICIPATE IN ADDITIONAL MODULES?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, definitely</td>
<td></td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Yes, probably</td>
<td></td>
<td>21</td>
<td>52.5</td>
</tr>
<tr>
<td>I don't know</td>
<td></td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Probably not</td>
<td></td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Definitely not</td>
<td></td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 30 illustrates that 87.5 percent of the participants indicated that they would either definitely or probably participate in additional modules if given the opportunity, whereas four participants (or 10.0 percent) indicated that they didn't know whether they would or not. Once the responses were weighted using the Likert-type scale of "yes, definitely"-1, "yes, probably"-2, "I don't know"-3, "probably not"-4, "definitely not"-5, the mean response was 1.8 or between "yes, definitely" and "yes, probably."
Two "open" questions were used to augment the information obtained from the one "closed" question used to evaluate the suitability of utilizing the modular approach for adult educators based on the participants' interest and motivation.

In Table 31 the result of the "open" question relating to the participants' responses in respect to the major strengths of the audio-modular instructional approach as an in-service training technique is presented.
TABLE 31

RESULT OF THE RESPONSES TO THE STATEMENT: "THE MAJOR STRENGTHS OF THE AUDIO-MODULAR INSTRUCTIONAL APPROACH AS AN IN-SERVICE TECHNIQUE ARE. . ."  

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=55)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Achievement of objectives</td>
<td>3</td>
</tr>
<tr>
<td>Audio tape/Guidebook combination</td>
<td>1</td>
</tr>
<tr>
<td>Clarity and effectiveness</td>
<td>2</td>
</tr>
<tr>
<td>Convenience of use</td>
<td>9</td>
</tr>
<tr>
<td>Flexibility (for both individual and small group use)</td>
<td>3</td>
</tr>
<tr>
<td>Flexibility of review from audio component</td>
<td>2</td>
</tr>
<tr>
<td>Fosters concentration</td>
<td>1</td>
</tr>
<tr>
<td>Good sequential order (of the entire modules)</td>
<td>14</td>
</tr>
<tr>
<td>Individualized (self-paced)</td>
<td>14</td>
</tr>
<tr>
<td>Interesting</td>
<td>2</td>
</tr>
<tr>
<td>Overall opportunity for review</td>
<td>2</td>
</tr>
<tr>
<td>Potentiality of content</td>
<td>1</td>
</tr>
<tr>
<td>Presentation of soundly researched content</td>
<td>2</td>
</tr>
<tr>
<td>Provision for small group discussion</td>
<td>2</td>
</tr>
<tr>
<td>Reinforcement of learning (feedback)</td>
<td>5</td>
</tr>
<tr>
<td>Review from audio tape providing time for group discussion</td>
<td>1</td>
</tr>
<tr>
<td>Speed and effectiveness of learning</td>
<td>1</td>
</tr>
<tr>
<td>Statement of objectives</td>
<td>1</td>
</tr>
<tr>
<td>Well condensed</td>
<td>1</td>
</tr>
<tr>
<td>Well structured</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>55</td>
</tr>
</tbody>
</table>

Table 31 illustrates that the largest number of responses (or 41.9 percent) elicited categorized the major strengths of the audio-modular approach as its individualization (self-paced) and the convenience with which it can be used.

In Table 32 the result of the "open" question relating to the participants' responses in respect to the major weaknesses of the audio-
modular instuctional approach as an in-service training technique is presented.

**TABLE 32**

RESULT OF THE RESPONSES TO THE STATEMENT: "THE MAJOR WEAKNESSES OF THE AUDIO-MODULAR INSTRUCTIONAL APPROACH AS AN IN-SERVICE TECHNIQUE ARE. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Ambiguity of questions (Module II)</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Amount of educational jargon</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Directions lack clarity</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Expense (need for equipment)</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Impersonal</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Lack of facilitator</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Lack of group interaction</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Lack of time to complete</td>
<td>2</td>
<td>5.0</td>
</tr>
<tr>
<td>Length and amount of writing involved (Module II)</td>
<td>6</td>
<td>15.0</td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>Threat as a potential requirement</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Too individualized for large groups</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>No response</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The data in Table 32 illustrates that the largest percentage of participants' responses (or 22.5 percent) indicated that the lack of
group interaction was the major weakness of the modular approach, whereas the next largest percentage of responses (or 15.0 percent), excluding that percentage which failed to respond, indicated that the length and amount of writing required in Module II was the major weakness. Four participants (or 10.0 percent) indicated that the modular approach was too impersonal, whereas a comparable number felt that no major weaknesses existed.

Recapitulating the responses of the one "closed" question and the two "open" questions utilized to evaluate the participants' interest and motivation in participating in additional modules, it appears that several general conclusions can be drawn. First, 87.5 percent of the participants indicated a high degree of probability in their interest and motivation for participating in additional modules. Second, the range of responses elicited concerning the major strengths of the modular approach were quite varied. Two significant strengths (representing 41.9 percent of the responses) were the individualization and the convenience of using the approach. Overall, the data appears to indicate many characteristics desirable to the functioning of the modules as well as a wide range of qualities that could be construed as possibly providing a varied interest and motivation for participating in additional modules. Third, the lack of group interaction and the amount of writing required in Module II elicited the largest number of responses (or 37.5 percent combined) concerned with the major weaknesses of the modular approach. Four responses (or 10.0 percent) indicated that a major weakness was that the audio-modular approach was impersonal. The data appears to in-
dicate that the participants' interest and motivation in the audio-modular approach was varied in a positive manner and that the vast majority found it a suitable approach for the in-service training of adult educators.

Presentation and analysis of the questions used to evaluate the participants' perceived worth of the experience as compared with other in-service training experiences. In order to evaluate the data based on this criterion, the evaluation model utilized one "open" and one "closed" question. The "open" question was used to evaluate what other existing instructional approach the participants would have preferred to participate in, in order to learn the same thing. The "closed" question asked the participants to rank order a list of six different in-service approaches commonly used in the in-service training of teachers. One of the six choices included the audio-modular unit with additional space provided for participants to write in additional preferences for in-service training techniques not included as choices.

Table 33 represents the findings of the "open" question relating to what other existing instructional method that the participants would have preferred to participate in, in order to learn the same thing.
TABLE 33

RESULT OF THE RESPONSES TO THE QUESTION: "WHAT OTHER EXISTING INSTRUCTIONAL METHOD WOULD YOU HAVE PREFERRED TO PARTICIPATE IN, IN ORDER TO LEARN THIS?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Book</td>
<td>1</td>
</tr>
<tr>
<td>Film presentation</td>
<td>3</td>
</tr>
<tr>
<td>Group discussion</td>
<td>8</td>
</tr>
<tr>
<td>Independent study</td>
<td>1</td>
</tr>
<tr>
<td>Lecture</td>
<td>1</td>
</tr>
<tr>
<td>Lecture combined with discussion</td>
<td>2</td>
</tr>
<tr>
<td>Live instruction</td>
<td>1</td>
</tr>
<tr>
<td>Modules combined with group discussion</td>
<td>4</td>
</tr>
<tr>
<td>No other method preferred</td>
<td>7</td>
</tr>
<tr>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Seminar directed by a specialist/facilitator</td>
<td>2</td>
</tr>
<tr>
<td>Visit sites</td>
<td>5</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>40</td>
</tr>
</tbody>
</table>

Table 33 illustrates that eight of the participants' responses (or 20.0 percent) indicated that group discussion as an existing instructional method would have been preferred to the one they experienced. Seven of the participants' responses (or 17.5 percent) did not indicate
any preferred method. Five participants' responses (or 12.5 percent) indicated that they would have preferred to visit sites, four participants (or 10.0 percent) failed to respond to the question with a comparable number of responses indicating that they would have preferred a combination of the modular approach and group discussion.

In Table 34 the "closed" question asking the participants to rank order a list of six different in-service approaches commonly used in the in-service training of teachers including the audio-modular instructional approach is presented.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Rank Ordering (N=40)</th>
<th>*Weighted Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest Preference</td>
<td>Lowest Preference</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Attend a seminar where the material is presented in lecture form</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Participate in a course where the material in question is presented sometime within the context of the course</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Purchase a professional book and read it</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Visit sites to observe adult education programs</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Participate in an audio-modular instructional unit</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Discover the material through independent study</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note: The highest rank value was equal to one with the lowest rank value equal to six.
Table 34 indicates that a combined number of twenty-nine participants (or 72.5 percent) ranked the audio-modular approach as either their first or second preference. Twenty-one participants (or 52.5 percent) ranked the visitation to observe adult education programs as either their first or second choice. Seventeen participants (or 42.5 percent) ranked participating in a course where the material is presented sometime within the context of the course as their first and second preference as an in-service training technique. Ten participants (or 25.0 percent) ranked attending a seminar where the material is presented in lecture form as either their first or second choice.

Once the rank ordering of in-service training techniques was categorized in terms of participants' preferences, the responses were assigned a numerical value of one for the highest preference training technique to six for the lowest preference. The weighted mean scores for each approach are indicated in Table 34. Participating in an audio-modular approach ranked highest in terms of the numerical values assigned with a mean score of 2.0. The mean score of visiting sites to observe adult education programs was 2.8 or the second highest preferred in-service training approach.

Both the "open" question and the "closed" questions were used to evaluate the participants' perceived worth of the modular experience compared to alternative in-service training experiences commonly used for teachers. The "open" question used to gather and analyze data to evaluate what other existing instructional approach the participants would have preferred as an existing instructional method indicated 20.0
percent of the responses preferred a group discussion. Including the 12.5 percent who indicated that they preferred to visit sites, 55.0 percent of the responses elicited indicated a method which would involve interaction with others. The "closed" question used to rank order a list of six different in-service approaches elicited responses ranking the audio-modular approach first in preference and the visitation of sites to observe adult education programs as second. Although the weighted mean score of the audio-modular approach exceeded the mean score for visiting adult education sites by 0.8 percent, the lack of group interaction is indicated as a primary weakness of the audio-modular instructional approach.

Presentation and analysis of the two Semantic Differential Scales used to evaluate the connotative meaning of the audio-modular approach. The participants were asked to react to two Semantic Differential Scales relating to the connotative meaning of the audio-modular approach compared to other types of in-service training experiences by which they could achieve the same learning objectives. On the first scale, and in an effort to evaluate the connotative meaning of the modular approach, the participants were asked to react to the concept, "Audio-Modular Instruction As One Alternative Approach to In-service Education for Adult Educators." On the second scale, in an effort to evaluate the connotative meaning of other in-service approaches, the participants were asked to react to the concept, "In-service Education Programs for Adult Educators in Which You Have Participated (excluding the audio-modular instructional approach, but including course work and other
In Table 35 the result of the participants' responses relating to the Semantic Differential Scales as they pertain to the factors of evaluation, receptivity, potency, and activity is presented.
A COMPARISON OF THE RESULTS OF THE RESPONSES TOWARD THE AUDIO-MODULAR INSTRUCTIONAL APPROACH AS AN ALTERNATIVE IN-SERVICE EDUCATIONAL PROGRAM COMPARED WITH OTHER FORMS OF IN-SERVICE EDUCATIONAL PROGRAMS FOR ADULT EDUCATORS AS RELATED TO THE FACTORS OF EVALUATION, RECEPITIVITY, POTENCY, AND ACTIVITY

<table>
<thead>
<tr>
<th>Factor</th>
<th>Concept I Audio-Modular Approach</th>
<th>Concept II Other Forms of In-service Training</th>
<th></th>
<th>t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>Standard Deviation</td>
<td>Mean Score</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>Evaluation</td>
<td>57.50</td>
<td>8.45</td>
<td>53.35</td>
<td>10.40</td>
</tr>
<tr>
<td>Potency</td>
<td>28.42</td>
<td>5.32</td>
<td>27.75</td>
<td>5.32</td>
</tr>
<tr>
<td>Receptivity</td>
<td>25.47</td>
<td>3.80</td>
<td>22.75</td>
<td>3.99</td>
</tr>
<tr>
<td>Activity</td>
<td>19.30</td>
<td>3.42</td>
<td>18.52</td>
<td>3.74</td>
</tr>
</tbody>
</table>

*The factors of evaluation and receptivity were determined to be highly significant at the .01 level for a two-tailed test with thirty-nine degrees of freedom. The factors of potency and activity were not statistically significant at the 0.05 level for a two-tailed test with thirty-nine degrees of freedom.
The data in Table 35 illustrates that the mean scores for each of the factors of evaluation, potency, receptivity, and activity were higher for the audio-modular approach. The difference in the mean scores for the audio-modular instructional approach and other forms of in-service training was subjected to a statistical analysis of variance to determine if the differences in these scores reached a statistical level of significance. The factors of evaluation and receptivity were determined to be highly significant at the .01 level, whereas the factors of potency and activity were not determined statistically significant at the 0.05 level.

The mean scores for five individual polarity traits on the Semantic Differential Scales were subjected to a statistical analysis of variance to determine if the differences in these scores reached a statistical level of significance. The data is presented in Table 36. In this particular instance, the numerical value of one indicates the least desirable mean score with seven representing the most desirable.
TABLE 36

MEAN POLARITY SCORES FOR FIVE INDIVIDUAL POLARITY TRAITS ON THE SEMANTIC DIFFERENTIAL SCALES MEASURING THE CONNOTATIVE MEANING OF THE AUDIO-MODULAR APPROACH AS COMPARED TO THE CONNOTATIVE MEANING OF OTHER IN-SERVICE TRAINING APPROACHES

<table>
<thead>
<tr>
<th>Factor</th>
<th>Concept I Audio-Modular Approach</th>
<th>Concept II Other Forms of In-service Training</th>
<th>*t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Score</td>
<td>Standard Deviation</td>
<td>Mean Score</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>Meaningful</td>
<td>5.90</td>
<td>5.38</td>
<td>1.02</td>
</tr>
<tr>
<td>Interesting</td>
<td>5.70</td>
<td>5.10</td>
<td>1.31</td>
</tr>
<tr>
<td>Promising</td>
<td>5.83</td>
<td>5.20</td>
<td>1.14</td>
</tr>
<tr>
<td>Relevant</td>
<td>5.58</td>
<td>5.20</td>
<td>1.20</td>
</tr>
<tr>
<td>Useful</td>
<td>5.95</td>
<td>5.42</td>
<td>0.89</td>
</tr>
</tbody>
</table>

*The distribution of the t Table entered at thirty-nine degrees of freedom and a probability level of 0.05 yields a t value of 2.021.
Table 36 illustrates that the mean polarity scores for the five individual traits were higher for the audio-modular instructional approach than they were for other in-service educational programs experienced by the participants. The t Test was applied to the differences in mean scores for the five polarity traits to determine if they reached a statistical level of significance. The traits of meaningful, promising, and useful were determined to be statistically significant at the 0.05 level. The traits of interesting and relevant did not reach a statistical level of significance at the 0.05 level.

Presentation and analysis of the methods used to evaluate the cognitive change that took place in the participants as a result of participating in the modules. The results of the methods for evaluating the cognitive change of the participants after participating in the modules were presented in the first part of this chapter. In order to evaluate data based on this criterion, the evaluation model used one "open" question to determine what the participants had learned from experiencing the modules. An achievement test for each module was also administered utilizing the pre-test post-test nonequivalent group quasi-experimental design. In the "open" question, 63.0 percent of the experimental group felt that they had experienced a cognitive change relating to content relevant to adult education with 15.0 percent of the responses indicating experiencing a cognitive change related to either the potential or effectiveness of learning from the audio-modular process. The participants' gain in mean scores between the pre-test and post-test was subjected to a statistical analysis of variance to deter-
mine if the differences in mean scores were significant and was computed to be highly significant at the .01 level.

Presentation and analysis of the questions used to evaluate the potential for further development of learning experiences utilizing the same instructional approach. In order to determine the potential for further development of the audio-modular approach, the participants were asked to react to three "open-ended" questions. In Table 37 the result of the responses to the statement focusing on the participants' desire to participate in additional units is presented.
TABLE 37

RESULT OF THE RESPONSES TO THE STATEMENT: "I WOULD SPEND TIME PARTICIPATING IN AN AUDIO-MODULAR INSTRUCTIONAL UNIT ONLY IF...

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=43)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Content was of interest</td>
<td>7</td>
</tr>
<tr>
<td>Content was relevant to my teaching needs (practical)</td>
<td>11</td>
</tr>
<tr>
<td>Educationally beneficial and practical</td>
<td>5</td>
</tr>
<tr>
<td>Given the choice</td>
<td>2</td>
</tr>
<tr>
<td>Not overly time consuming</td>
<td>3</td>
</tr>
<tr>
<td>Made convenient and available</td>
<td>3</td>
</tr>
<tr>
<td>Paid to participate</td>
<td>2</td>
</tr>
<tr>
<td>Required</td>
<td>2</td>
</tr>
<tr>
<td>Review and discussion accompanied it</td>
<td>2</td>
</tr>
<tr>
<td>The content was challenging</td>
<td>1</td>
</tr>
<tr>
<td>Used in small groups of four or more people</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>43</td>
</tr>
</tbody>
</table>

Table 37 illustrates that the highest number of participants' responses elicited (or 25.6 percent) indicated that they would spend more time participating in additional modules if the content was relevant to their particular teaching needs. Seven participants (or 16.3 percent) indicated that they would do so if the content was of interest, whereas
five (or 11.6 percent) indicated that they would participate in additional modules if they were educationally beneficial and practical. While not exactly similar, these five responses are closely related to the eleven responses indicating relevance and if considered as such, would result in a combined 37.2 percent of the total responses for this particular statement.

The major category eliciting the most responses concerned with the future development of the audio modules was in the area collectively categorized as providing relevant, practical, and interesting content within the modules.

A second "open" statement was used to elicit responses focusing on the circumstances which would cause the participants to definitely not spend time participating in additional audio modules. The result of these responses is presented in Table 38.
Table 38

RESULT OF THE RESPONSES TO THE STATEMENT: "I WOULD DEFINITELY NOT SPEND TIME PARTICIPATING IN AN AUDIO-MODULAR INSTRUCTIONAL UNIT ONLY IF..."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=43)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A preferable learning experience was not available</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Content was irrelevant to my teaching needs (practical)</td>
<td>9</td>
<td>20.9</td>
</tr>
<tr>
<td>Content was uninteresting</td>
<td>9</td>
<td>20.9</td>
</tr>
<tr>
<td>I wasn't paid to participate</td>
<td>3</td>
<td>7.0</td>
</tr>
<tr>
<td>It was required</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Lacking in behavioral goals</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Not accompanied by group discussion</td>
<td>3</td>
<td>7.0</td>
</tr>
<tr>
<td>Not of educational value</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Poorly prepared or poorly structured</td>
<td>3</td>
<td>7.0</td>
</tr>
<tr>
<td>The modules did not have a variety of formats</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Time was available for other types of learning experiences</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>No response</td>
<td>10</td>
<td>23.3</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>43</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Table 38 illustrates that an equal number of participants' responses (or 41.8 percent) indicated that if the content was not relevant, practical, and interesting, they would definitely not spend time participating in additional modules compared to those who responded to...
the statement indicating they would spend time if such circumstances existed. A significant 23.3 percent failed to respond to the statement. Otherwise, the responses concerned with the circumstances for definitely not participating in the modules were as varied as those responding positively in the previous statement.

The third "open" question was used to evaluate the participants' responses concerned with the value of developing any additional audio-modular instructional units. The result of the responses is presented in Table 39.
TABLE 39

RESULT OF THE RESPONSES TO THE STATEMENT: "FOR ANY ONE TO DEVELOP ANY MORE AUDIO-MODULAR INSTRUCTIONAL UNITS WOULD. . ."

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Be a good idea</td>
<td>3</td>
</tr>
<tr>
<td>Be advantageous</td>
<td>2</td>
</tr>
<tr>
<td>Be beneficial—Generally</td>
<td>5</td>
</tr>
<tr>
<td>To new teachers</td>
<td>2</td>
</tr>
<tr>
<td>If carefully researched</td>
<td>1</td>
</tr>
<tr>
<td>Be creative</td>
<td>1</td>
</tr>
<tr>
<td>Be helpful if improving teaching skills were identifiable as the primary goal</td>
<td>1</td>
</tr>
<tr>
<td>Be interesting</td>
<td>1</td>
</tr>
<tr>
<td>Be valuable</td>
<td>2</td>
</tr>
<tr>
<td>Be worthwhile if placed in a resource center</td>
<td>1</td>
</tr>
<tr>
<td>Depend on the content</td>
<td>5</td>
</tr>
<tr>
<td>Was unsure</td>
<td>1</td>
</tr>
<tr>
<td>No response</td>
<td>15</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>40</td>
</tr>
</tbody>
</table>

Table 39 illustrates that a significant number of the participants (fifteen or 37.5 percent) did not respond to this question. However, thirteen responses (or 32.5 percent) of the participants indicated that the potential for further development of any more audio-modular units would be either beneficial, a good idea, or advantageous, whereas five
participants (or 12.5 percent) felt it would depend on the content used in the modules. Excluding the forty percent of the participants who either failed to respond to the question or who felt unsure about developing more audio-modular units, twenty-four (or 60.0 percent) could be considered as responding positively in respect to the potential for future development of additional audio-modular units.

A fourth "open-ended" question asked for the participants' responses indicating the kind of selected skills and concepts which could be learned through the use of the audio-modular approach. The result of the responses is presented in Table 40.
TABLE 40

RESULT OF THE RESPONSES TO THE QUESTION: "WHAT KIND OF SKILLS AND KNOWLEDGE DO YOU THINK COULD BE LEARNED THROUGH THE USE OF AUDIO-MODULAR INSTRUCTION?"

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anything now learned through conventional instructional approaches</td>
<td>12 25.0</td>
</tr>
<tr>
<td>Cognitive skills--In adult learning theory</td>
<td>2 4.2</td>
</tr>
<tr>
<td>Generally</td>
<td>2 4.2</td>
</tr>
<tr>
<td>Group interaction</td>
<td>1 2.1</td>
</tr>
<tr>
<td>Language skills (listening, following directions, phonics, reading, vocabulary development)</td>
<td>14 29.0</td>
</tr>
<tr>
<td>Math, reading, science</td>
<td>2 4.2</td>
</tr>
<tr>
<td>Motor control in sequential areas of content</td>
<td>1 2.1</td>
</tr>
<tr>
<td>Recruitment and survey skills in adult education</td>
<td>2 4.2</td>
</tr>
<tr>
<td>Retention</td>
<td>1 2.1</td>
</tr>
<tr>
<td>Skills and background knowledge that could be applied to improving instruction oriented specifically toward adults (methodology)</td>
<td>5 10.4</td>
</tr>
<tr>
<td>Social studies</td>
<td>2 4.2</td>
</tr>
<tr>
<td>No response</td>
<td>4 8.3</td>
</tr>
<tr>
<td>TOTALS</td>
<td>48 100.0</td>
</tr>
</tbody>
</table>

Twenty responses (or 41.8 percent) indicated that anything presently learned through conventional instructional approaches including
additional cognitive skills in adult learning theory, math, reading, science, and social studies could be learned from the audio-modular approach. Fourteen responses (or 29.0 percent), the second largest number, are categorized as various language skills as indicated in the table. Five responses (or 10.4 percent) elicited indicated that the audio-modular approach could be used to teach skills and background knowledge that could be applicable toward improving instructional techniques specifically oriented toward adult learners.

The final question used to evaluate the potential for the further development of the audio-modular approach asked the participants to react to additional topics that they felt might be adapted to this particular instructional approach. The result of the responses is presented in Table 41.
### TABLE 41

**RESULT OF THE RESPONSES TO THE QUESTION: "WHAT ADDITIONAL TOPICS MIGHT BE ADAPTED TO AUDIO-MODULAR INSTRUCTION?"**

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Characteristics of students who tend to remain in adult education programs versus those who drop out</td>
<td>1</td>
</tr>
<tr>
<td>Civic education (content on citizenship)</td>
<td>3</td>
</tr>
<tr>
<td>Content specifically oriented toward special education (e.g. identifying learning disabilities)</td>
<td>4</td>
</tr>
<tr>
<td>Drills in English as a Second Language</td>
<td>1</td>
</tr>
<tr>
<td>Infinite number of adaptable topics</td>
<td>5</td>
</tr>
<tr>
<td>Language skills (phonics, grammar, reading, spelling)</td>
<td>4</td>
</tr>
<tr>
<td>Math, social studies</td>
<td>4</td>
</tr>
<tr>
<td>Performance objectives relevant to specific topics being taught</td>
<td>1</td>
</tr>
<tr>
<td>Problem solving (critical incidences)</td>
<td>1</td>
</tr>
<tr>
<td>Student motivations</td>
<td>1</td>
</tr>
<tr>
<td>Types of methods and materials appropriate for applying adult learning theory</td>
<td>2</td>
</tr>
<tr>
<td>No response</td>
<td>13</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>40</td>
</tr>
</tbody>
</table>

Table 41 illustrates that a significant percentage (32.5 percent) of the participants did not respond to the question. Nine participants
(or 22.5 percent) indicated that virtually any meaningful topic could be adapted to the approach and indicated mathematical and social studies as general topic areas. Twelve participants' responses (or 30.0 percent) reflected suggested topics specifically related to adult learners and can be simply categorized as follows: (1) civic education, (2) characteristics of adult "drop-outs," (3) English as a Second Language, (4) language skills, (5) student (adult) motivations, and (6) adult learning theory. Four participants' responses (or 10.0 percent) reflected concern for applying content related generally to special education, but not unrelated to adult education, such as identifying learning disabilities, to the modular approach.

As the presentation and analysis of findings concerned with the potential for further development of the audio-modular instructional approach indicates, the evaluation model utilized four criteria: (1) the participants' desire to participate in additional units, (2) the conditions under which they would participate in additional units, (3) the value of developing any additional units in adult education, and (4) additional topics which could be adapted for presentation utilizing the audio-modular instructional approach. The participants indicated that the major criteria for participating in additional units would be related to the relevancy, practicability, and interest of the modules. A majority of the participants who chose to respond also indicated that they would definitely not spend time participating in additional modules if the same conditions motivating them to spend time participating in additional modules did not exist. A vast majority who chose to respond to the statement related to the value of developing additional
audio-modular units indicated a positiveness about the value of doing so. Generally, the most often suggested topics for presentation using this approach were categorized as any of those knowledge areas now learned in conventional approaches. More specifically, the participants most often suggested that the area of language skills (listening, following directions, phonics, reading, vocabulary development) as having the greatest value and potential for developing additional modules. Overall, the participants elicited a varied and positive response pattern in evaluating the potential for further developing learning experiences utilizing the audio-modular approach.

The informal findings of this investigator resulting from note-taking, discussion, and the general reactions of the participants. Most of this investigator's observations and perceptions resulting from note-taking, discussion, and oral reactions of the participants were corroborated by the results of the data collected using the evaluation model. Generally, the informal reactions of the participants indicated a positive and receptive attitude toward the audio-modular approach. As a whole, the participants indicated that the module was interesting, valuable as a learning experience, and were appreciative of the amount of research and time involved in developing the modules that dealt with content specifically related to adult education. Many inferences were made that virtually nothing has been done to improve the teaching methodologies of adult educators and that most of what has been accomplished has been directed toward the "university bound" adult educator and not the practitioner. Many comments supported research cited indicating that
adult educators are seeking approaches to improve their teaching skills conveniently and in a manner which meets a diversity of their instructional needs. Conversely, many teachers remarked that the lack of group discussion was a serious limitation of the audio-modular approach, whereas others felt that their fear about learning from a machine was only reinforced. Several participants, both in the pilot phase of the modules and in the actual field testing, remarked that specific techniques and methods for implementing adult learning theory applicable for adult students would be very valuable content utilizing this particular approach. Although an additional "open-ended" statement encouraging participants to make additional comments was included at the end of the evaluation model, the number of participants responding was disappointing (over 60.0 percent failed to respond), and the substantive value of the responses did not significantly differ from that information gathered from the evaluation procedures and data presented earlier.

Presentation and analysis of the procedures used to measure the time and money factors involved in the development and production of the audio-modular instructional approach. The procedures used to attach a cost factor to each of the modules produced involved a careful account of the "dollar cost" for the prototype of each module and the cost of reproducing additional copies. As stated in Chapter IV, the factor of "time spent" in the development and production of the modules was recorded. The time factor includes the actual time spent by the developer in designing, developing, and producing each of the prototype modules once the outline, critiques, and research for each module had been con-
The hours spent researching and gaining background knowledge of the content area chosen, as well as the travel, consultation, and secretarial assistance prior to and after the development and production of the modules are not included as part of the recorded time factor.

It took approximately six weeks to design, develop, and produce the two prototype modules included in this study. In developing and refining both modules, the total time spent approximates 350 to 400 hours. The experience gained from developing the first module did decrease the amount of time needed to about 100 to 150 hours to complete the development of the second module.

The production cost of the prototype copies is best estimated at $50 for the professionally recorded narration and use of recording studio and $5 for Xerox copying and binding costs or $55 for each prototype module. This cost does not include the final cost of packaging the modular components. The cost of reproducing each additional module is relatively low considering the recorded component costs approximately $2 and reproduction of the printed material approximately $1. Using packaging cost estimates of $2, the cost of reproducing the additional modules is $5 each or $10 for the modular unit.

Summary

Chapter V has been a presentation and analysis of the findings as a result of utilizing the evaluation model specifically designed for the audio-modular instructional approach. The findings and analysis of the data have been presented in two parts. The first part of the chapter...
dealt with the suitability of the audio-modular instructional approach for presenting selected knowledge, skills, and concepts to adult educators in the area of adult learning theory based on the four criteria of: (1) the participants' interest and motivation after experiencing the modules, (2) the participants' perceived worth of the experience, (3) the cognitive change resulting from the experience, and (4) the suggestions for further development and revisions of audio-modular instructional units. The second part of the chapter was concerned with the suitability of the audio-modular instructional approach as an alternative in-service training technique for adult educators utilizing six primary criteria: (1) the participants' interest and motivation in participating in additional modules as a result of experiencing the audio-modular instructional approach, (2) the participants' perceived worth of the experience compared with other in-service training experiences, (3) the negative or positive attitude toward the audio-modular approach compared with other types of in-service training experiences, (4) the cognitive change as a result of experiencing the approach, (5) the potential for further revision and development of additional modules utilizing this approach, and (6) the expenditure of time and money used in developing the approach.
CHAPTER VI
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was an attempt to determine the suitability of utilizing the audio-modular instructional approach as one alternative in-service training technique for teachers of adult education in the area of adult learning theory. The evaluation model for determining suitability as defined in this study was divided into two major aspects of inquiry: (1) to determine whether or not the audio-modular instructional units were a suitable alternative methodology for presenting selected concepts and skills to adult educators in the area of adult learning theory, and (2) whether or not the audio-modular instructional approach was a suitable alternative in-service training technique for adult educators. In Chapter V the analysis and findings of the data concerning the two major aspects of inquiry are presented separately. Consequently, this chapter presents the summary based on the findings for the two major aspects of inquiry utilized in the evaluation model. The conclusions and recommendations are also presented as a result of the findings.

The four criteria for suitability utilized in the first major aspect of inquiry were: (1) the participants' interest and motivation after experiencing the modules, (2) the participants' perceived worth of the experience, (3) the cognitive change resulting from the experience, and (4) the suggestions for further development of such modules and the improvement of existing modules. The six criteria for suitability uti-
lized in the second major aspect of inquiry were: (1) the participants' interest and motivation in participating in additional modules as a result of experiencing the audio-modular approach, (2) the participants' perceived worth of the experience compared with other in-service training experiences, (3) the negative or positive attitude toward the audio-modular approach compared with the negative or positive attitude toward other in-service training experiences, (4) the cognitive change as a result of experiencing the modules, (5) the potential for the further development of learning experiences utilizing the same instructional approach, and (6) the expenditure of time and money in developing and producing the modules designed for this approach.

Summary of the Findings Pertaining to the Suitability of the Audio-Modular Approach for Presenting Selected Concepts and Skills to Adult Educators

The interest and motivation of the participants after experiencing the modules. Three "closed" and three "open" questions were used to determine the participants' interest and motivation after experiencing the modules. The first "closed" question indicated that 97.5 percent found participating in the modules interesting. The weighted mean score (using the Likert-type scale) was 1.6 indicating that the average response of the participants was between "very interesting" and "somewhat interesting." The second "closed" question indicated that 87.5 percent of the participants were positively motivated to participate in additional modules once they were familiar with experiencing them. The weighted mean score for this question was 1.8 indicating that the average response was between would "have definitely participated" and would "have probably
participated." The third "closed" question indicated that 67.5 percent expressed excitement about recommending the modules to other adult educators with 27.5 percent indicating that they had "no feeling either way." The weighted mean score was 2.2 or "somewhat excited."

One of the three "open" questions used to determine the participants' interest and motivation after experiencing the modules focused on the major strength of the modules and elicited fifty-two responses with the single highest percentage of responses (23.1 percent) indicating the content as the greatest strength. Categorizing various related responses, 67.1 percent indicated that the overall design of the modules was the major strength. The second "open" question indicated that the single highest percentage or 20.0 percent of the fifty responses elicited felt the major weakness to be the lack of group interaction. Eighteen percent, or the second highest percentage, indicated the pre-test as the major weakness of the modules. The third "open" question asked the participants to react to which portions of the modules should definitely remain the same and those portions which should be removed. Of the forty-three responses elicited, 25.6 percent felt that the content should definitely be retained with 14.0 percent indicating that the audio portion should be retained, whereas 14.0 percent also responded that "everything" should be kept. The highest percentage of the forty responses elicited, 32.5 percent, indicated that nothing should be removed, whereas 17.5 percent indicated that the amount of writing in Module II should be reduced. Fifteen percent indicated that the pre-test should be removed.
The worth of the audio-modular instructional units as perceived by the participants. Thirty-seven participants for a combined percentage of 92.5 percent perceived the participation in the modules as valuable. The remaining three participants (or 7.5 percent) perceived the experience as neither valuable nor worthless.

Responding to a second "closed" question used to determine the worth of the experience in respect to the time spent, 70.0 percent felt it worthwhile with 30.0 percent unsure as to whether it was worth the time or not. More than half of the participants spent an hour or less on the modules, whereas 37.5 percent spent between sixty to seventy-five minutes.

Three "open" questions were utilized to evaluate the worth of specific aspects of the modules. Of the forty-five participants' responses pertaining to the value of the exercises connected to the modules, 84.4 percent could be categorized as relating the exercises positively to the functioning of the modules. Responding to the statement, "One change I would make in these modules...," the most significant number of responses (21.4 percent) indicated that a need for decreasing and/or clarifying instructions was desired with 19.0 percent indicating that no changes should be made. The third "open" question pertained to the responses elicited concerning one aspect of the modules which should definitely remain the same. The audio component received the single largest percent of responses (19.0 percent) for this question.

The cognitive change of the individuals resulting from the experience with the modules. The one "open" question used to evaluate what
the participants had learned from experiencing the modules elicited responses indicating that over 62.0 percent felt that what they had learned was content matter directly related to adult education.

The data gained from administering the achievement tests for both modules indicated a significant cognitive change as a result of participating in the modules. Mean scores on the achievement tests designed for both modules indicated a highly significant difference between the pre-test and post-test scores of the experimental group. When the t Test was applied to the difference in mean scores for the two administrations of the Achievement Test for the experimental group in Module I, it showed a t value of 27.1 which was determined to be highly significant at the 0.01 level with thirty-nine degrees of freedom. Applying the t Test to the difference in mean scores between the control group taking the test (having no experience with the module) and the experimental group's post-test for Module I resulted in a t value of 26.7. This value was determined to be highly significant at the 0.01 level with seventy-eight degrees of freedom.

The t Test was applied to the difference in mean scores for the two administrations of the achievement test for the experimental group in the second module as well. The t value for this difference was 19.3 and was also determined to be highly significant at the 0.01 level with thirty-nine degrees of freedom. The t Test was also applied to the difference in mean scores for the control group (having no experience with the module) and the experimental group's post-test of the second module and resulted in a t value of 21.1. This value was determined to be
highly significant at the 0.01 level with seventy-eight degrees of freedom. As a consequence, the cognitive change of the participants resulting from the modular experience was not only highly significant but also was shown not to be solely unique to the experimental group. However, it should be noted that the experimental and control groups were not equally matched on the identified criteria.

The potential for revision and further development of existing modules in adult learning theory. In addition to responding to the major strengths, weaknesses, and portions of the modules which should be either retained or removed, the participants were subjected to a seven-part "closed" question used to rate seven technical aspects possibly requiring revision. A Likert-type scale was used which weighted the response categories as follows: "outstanding"-1, "good"-2, "average"-3, "needs improvement"-4, and "very poor"-5. Ninety percent of the participants rated the technical aspects of general appearance of the text and the quality of the audio tape as either "outstanding" or "good" which was the highest number of responses categorized as such. The technical aspects which elicited a mean response between "outstanding" and "good" were the statement of objectives (1.9), appearance of the text (1.8), quality of the tape (1.7), and the synchronization between text and tape (1.7). The technical aspects which elicited a mean response comparable to "good" were the general appearance (2.0), clarity of instructions (2.1), and the ease and convenience of use (2.0).

The second major aspect of inquiry was concerned with determining the suitability of the audio-modular instructional approach as an al-
ternative in-service training technique for adult educators utilizing the six criteria previously mentioned.

**Summary of the Findings Pertaining to the Suitability of the Audio-Modular Approach as an Alternative In-service Training Technique for Adult Educators**

The interest and motivation of the participants as a result of experiencing the audio-modular instructional approach. The participants were asked to react to one "closed" and two "open" questions concerned with determining the suitability of the audio-modular instructional approach. Using the "closed" question, 87.5 percent responded positively when asked if they would participate in additional modules if given the opportunity. The responses were weighted using the Likert-type scale with the weighted mean score for this question 1.8 or between "yes, definitely" and "yes, probably."

When responding to the two "open" question used to augment information obtained for the "closed" question, over 40.0 percent of the participants indicated that the major strengths of the audio-modular approach were its individualization (self-paced) and the convenience with which it can be used.

The participants most often indicated that the major weaknesses of the approach were the lack of group interaction and the amount of writing required in Module II. A comparison of the results of the two "open" questions indicates that the responses to the major strengths of the question varied greater than the responses for the question pertaining to the major weaknesses of the audio-modular approach.
The perceived worth of the audio-modular approach. In response to the one "open" question used to evaluate what other existing instructional approach the participants would have preferred to participate in, 20.0 percent indicated that they would have preferred a group discussion, whereas 17.5 percent of the responses indicated they preferred no other method. A preference for combining the modular experience with group discussion was elicited by 10.0 percent of the responses with 12.5 percent indicating they would prefer to visit adult education sites.

A "closed" question asked the participants to rank order a list of six in-service approaches commonly used in the in-service training of teachers. One of the six choices included the audio-modular approach. Sixteen participants (40.0 percent) ranked the audio-modular approach as their first choice, and thirteen (or 32.5 percent) ranked it as their second preference. A combined 72.5 percent ranked the audio-modular approach as either their first or second choice, whereas a combined 52.5 percent ranked the visitation of adult education sites similarly. Using the Likert-type scale, the audio-modular approach ranked highest in the numerical values assigned with a mean response of 2.0. Visitations to sites for observing adult education programs had the second highest ranking with a mean response of 2.8.

The connotative meaning of the modular approach compared to other types of in-service training experiences. Participants were asked to respond to two Semantic Differential Scales. On the first scale, in an effort to evaluate the connotative meaning of the modular approach, the participants were asked to react to the concept, "Audio-Modular Instruc-
tion As One Alternative to In-service Education for Adult Educators."

On the second scale, the participants were asked to react to the concept, "In-service Education Programs for Adult Educators in Which You Have Participated (excluding the audio-modular instructional approach, but including course work and other learning experiences)." For evaluative purposes ratings on the scales were assigned numerical values. Based on the analysis of this data, the audio-modular approach received a greater positive reaction than the concept used for other in-service training programs for adult educators for the factors of evaluation and receptivity. Although the weighted mean score for the factors of evaluation, potency, receptivity, and activity were higher for the first concept (audio-modular approach), the factors of evaluation and receptivity were determined to be statistically significant at the 0.01 level, whereas the factors of potency and activity were determined not to be statistically significant at the 0.05 level.

The mean scores were also calculated for five individual polarity traits. Applying the t formula, the audio-modular approach was preferred for the polarity traits of "meaningful," "promising," and "useful" and were determined to be statistically significant at the 0.05 level, whereas the traits of "interesting" and "relevant" were not statistically significant at the 0.05 level.

The cognitive change of the participants as a result of participating in the modules. A summary of the findings of the "open" question used to evaluate what the participants had learned from experiencing the modules and the data gained from the administration of the
achievement tests for both modules were presented earlier in this chapter.

The potential for further development of learning experiences utilizing the same instructional approach. The participants reacted to several "open-ended" questions. They were asked to indicate what circumstances would have to be existent in order for them to participate in the audio-modular instruction in the future. The largest number of responses (25.6 percent) indicated that they would do so if the content was relevant and practical in meeting their teaching needs. The second largest number of responses (16.3 percent) indicated that they would do so if the content was of interest. When reacting to the question pertaining to those circumstances which would cause them to definitely not participate in additional modules, the two highest percentages of responses indicated that if the content was either irrelevant (impractical) or uninteresting, they would not do so.

Responding to a third question concerning the worth of developing additional audio-modular instructional units, 37.5 percent of the participants failed to respond to the question, and of the 62.5 percent who did, 60.0 percent responded positively.

When asked to suggest other skills or concepts which they felt could be learned through the use of the audio-modular approach, 41.8 percent indicated anything presently learned through conventional instructional approaches, whereas 29.0 percent indicated various language skills.

The final question utilized to evaluate the potential for the fur-
ther development of the audio-modular approach asked the participants to react to additional topics which might be adapted. A significant 32.5 percent failed to respond to the question with 22.5 percent indicating that any meaningful topic could be adapted to this particular approach. Generally speaking, the participants elicited a varied and positive response pattern in evaluating the potential to further develop learning experiences utilizing the audio-modular approach.

The time and money expenditures involved in the development and production of the audio-modular instructional approach. It took approximately six weeks to design, develop, and produce the two prototype modules used in this study. The total time spent was between 350 to 400 hours.

The production cost of the prototype copies was $55. The cost of producing the modules (including the recorded and printed components) is $5 or $10 for the complete unit.

Conclusions

By the very nature of this study and the analysis and summary of the findings, no definitive conclusion can be made as to the suitability of utilizing the audio-modular instructional approach as one alternative in-service training technique for adult educators. Before any major and definitive conclusions can be stated concerning the suitability of the audio-modular instructional approach in the area of adult learning theory, several questions must be answered:

1. When given the actual choice, will adult educators choose to participate in audio-modular instructional units to
meet their in-service training needs?

2. As a result of experiencing the audio-modular approach as an in-service training technique, what are the behavioral changes (in the affective and cognitive domains) that take place?

3. As a viable alternative in-service training technique for adult educators, to what extent can the audio-modular approach be utilized?

Certain minor conclusions can be stated from a summary of the analysis of findings. Such conclusions are established from the two major aspects of inquiry undertaken in relation to the definition of suitability of the audio-modular approach as used in this study. First, in the areas of adult learning theory, are the audio-modular instructional units a suitable alternative methodology for presenting selected concepts and skills to adult educators? Second, is the audio-modular instructional approach a suitable alternative in-service training technique for adult educators?

Conclusions concerning the audio-modular instructional units as a suitable alternative methodology for presenting selected concepts and skills to adult educators in the area of adult learning theory.

1. The participants found experiencing the modules as: (a) interesting, (b) valuable, (c) worth the amount of time spent, (d) an experience worth recommending to fellow adult educators, and (e) the most preferred method for learning what they did using the audio-modular instructional units compared to five alternative in-service approaches.
2. The participants perceived the content and the overall design as the major strengths of the modules.

3. The major weakness of the modules was the lack of group interaction. The use of the pre-test was perceived by the participants as the second major weakness although it should be understood that it may have been unclear that the pre-tests were used for measuring the cognitive change resulting from the modular experience as well as an indicator of whether or not proceeding with that particular learning experience would be of value to the participant.

4. Through the use of achievement instruments based on performance objectives, it is possible to measure the cognitive change resulting from participation in the modules.

5. Significant cognitive change can occur as a result of participating in the audio-modular instructional units.

Conclusions concerning the suitability of the audio-modular instructional approach as an alternative in-service training technique for adult educators.

1. Assuming that the audio-modular instructional approach was combined with a provision for group interaction, it would take greater preference over other, more traditional in-service education programs for adult educators as indicated by the responses of the participants.

2. After having experienced the audio-modular approach, the participants indicated that they would choose to participate in additional audio-modular units if the content was relevant, practical, and of interest to them.
3. The participants ranked the audio-modular approach highest in preference when compared with five other traditional in-service training approaches commonly used for adult educators.

4. The audio-modular instructional approach was perceived by the participants as a concept more desirable than other forms of in-service educational programs for the factors of evaluation and receptivity. For the individual polarity traits of meaningful, promising, and useful, the participants rated the audio-modular approach significantly higher than for the concept concerning other in-service approaches.

5. The major strengths of the modular approach were perceived by the participants as being its individualization (self-paced) and the convenience with which it can be used.

6. The major weakness of the overall approach was the lack of provision for group interaction.

7. The participating adult educators indicated that it would be beneficial to develop additional audio-modular instructional units.

Recommendations

The recommendations based upon the analysis of the findings and conclusions of this study will be presented in two sections: (1) those that pertain to the further development and use of the audio-modular instructional units, and (2) those that pertain to further studies of the audio-modular instructional approach.

Recommendations pertaining to the further development and use of the audio-modular instructional units.

1. Future modules should be developed utilizing basically the
same format as that used in the present audio-modular instructional units. The following criteria should be utilized:

a. It has been recognized earlier and corroborated by previous studies that future modules developed should take no longer than thirty to sixty minutes to complete. However, most of the previous corroborating research pertained to administrators and less so to teachers. As a result, future studies should not assume a comparable time length for completing future modular units pertaining solely to teachers as definitive unless corroborated by future research.

b. Care should be taken so that all answers for accompanying exercises do not distract the participants completing such exercises.

c. Exercises providing for the application and reinforcement of content should be included in any development of future modules.

d. Enabling or alternative exercises for measuring the participants' proficiency in applying the content should be provided within each module.

e. The recording of the audio component should be professionally recorded, and a high level of technical quality should be maintained. Segments of the narration on the audio tape should not exceed two to four minutes in length.

f. Caution should be exercised when determining the length of
the introductory presentation of the modules as well as the clarity of instructions throughout the modules.

g. Caution should be taken to maintain a high level of attractiveness and readability for the pages in the guidebook.

h. To avoid high cost of reproducing additional modules, throw-away exercise packets should be developed.

i. A post-test or similar self-evaluative instrument should be included at the end of any additional modules developed.

2. In any additional modules developed for adult educators, serious consideration should be given to the inclusion of exercises providing for small group interaction.

3. Extreme caution should be taken in delimiting the amount of writing in the exercises required for the participants' completion.

4. Considerable care should be taken when choosing the content for the future development of modules applicable to adult educators.

5. Based on both the analysis of the findings and other vicarious findings as a result of this study, it is the author's belief that the future development of modules based on adult learning theory is needed.

6. Any additional modules which have content based on adult learning theory should seriously consider a second and sequential module providing for the application of that theory to specific teaching methodologies.

7. Professionally designed packaging of additional modules should
be completed prior to field testing.

**Recommendations pertaining to further studies of the audio-modular approach.**

1. Further research should be done in the pilot phases of validating and determining the reliability of achievement instruments used to measure the cognitive changes of the participants resulting from the modules particularly among a larger, more homogeneous grouping of adult educators.

2. Further studies of the audio-modular approach should consider designing modules oriented toward specificity of needs for adult educators in such areas as: Adult Basic Education, General Education Development, English as a Second Language, and possibly adult vocational training.

3. To ascertain the degree beyond the cognitive domain that the audio-modular instructional approach is functional, the development and field testing of future audio-modular instructional units should be geared toward the application level.

4. Further development of evaluative instruments that can be effectively used to measure the degree of attitudinal and/or behavioral changes resulting from participation in the modules would be desirable.

5. The revised modules used in this study should be further field tested with the use of an evaluative design to determine the value of field testing the modules using small group formats compared to the individualized format.

6. Careful consideration should be given utilizing a comparable
evaluation design as that used in this study in respect to the amount of time involved in completing too many activities such as: pre-tests, several modular experiences, as well as a lengthy evaluation instrument.

7. When field testing the audio-modular approach during in-service workshops, careful consideration should be given to a flexible time allotment for completing the modules although the time difference between completing the modules and the evaluation design should not be ignored.
APPENDICES
APPENDIX A

PAGES FROM THE INTRODUCTION TO THE
ADULT LEARNER CLASSIFICATION AND
ADULT LEARNER PARTICIPATION
AUDIO-MODULAR INSTRUCTIONAL
UNITS
ADULT LEARNER CLASSIFICATION MODULE

These Audio-Modular Instructional Materials have been developed by:

M. Peter Wright

under the direction of

Dr. Mark H. Rossman

To be used in conjunction with the Massachusetts Department of Education, Bureau of Adult Services as an in-service training technique for adult educators with the

Center for Occupational Education

School of Education

University of Massachusetts

Amherst, Massachusetts

February, 1973
If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away.

----Henry David Thoreau

The strength of the mind and the strength of the body should both be enjoyed, each in its own proper season, and the denial of the mind is as great a tragedy as the denial of the body.

----Cyril O. Houle

On the whole, if we did have to estimate...we should estimate adult ability to learn as very close to that of the teens.

----E. L. Thorndike

But today learning for adults goes far beyond the remedial...it deals with all the intellectual and spiritual needs that a man or woman possesses at any time of life.

----J. R. Kidd

...continuing education sustains rather than consumes human life.

----Malcolm S. Knowles
Overview and Rationale for
The Adult Learner Classification Module

This module is one of two units each emphasizing the learning of a single concept through a series of logical and sequential experiences. The combination audio-tape and guidebook present the following: a) instructions on how to use the unit, b) the performance objectives which the individual should be able to achieve as a result of participating in the unit, c) exercises which allow the participants to apply parts of the information which have been presented in the narration, d) self-evaluative instruments, and e) selected references. This particular unit concerns itself with Professor Cyril O. Houle's three classifications of the adult learner. Cyril O. Houle is professor of adult education at the University of Chicago and has authored such books as The Inquiring Mind, Continuing Your Education, and numerous others as well as many articles in his field.

The module is an outgrowth of two significant evaluative reports concerning those needs that appear to be most important in adult education programs in the State of Massachusetts. Both evaluative reports were a result of a contract between the Massachusetts Department of Education, Bureau of Adult Services and the University of Massachusetts, School of Education, and prepared under the direction of Dr. Mark Rossman, Project Director of Adult Education.

As a result of both reports and a review of the related research and literature in adult education, this module is premised on the belief that developing sound educational techniques for the in-service develop-
ment of staffs of adult educators is one way of meeting many, if not all, of the "high priority needs" in adult education in Massachusetts.

The speed of change in our society reflects more than just the importance of our educational system responding to the needs of the young. With the emphasis on change and individuality and an increasing acceptance of adult education as an added dimension to our educational structure, several areas of importance in the field of adult education have become apparent. Strongest among these importances appear to be the areas of in-service training, improved communications, and a more relevant curriculum for adult educators.

Since one of the phenomenon in the twentieth century is the recognition that all life is for learning, establishing a greater knowledge of adult learning theory will hopefully enable teachers of adults to broaden their knowledge of how adults learn and hopefully make them more cognizant of the need for a more relevant curriculum for adults. Learning theory is one of a few areas where any significant research has been done in adult education. Where any considerable body of effective research is available, it has usually been conducted not by adult educators but by social scientists who had available a considerable body of theory, generalizations, and methodologies developed by their disciplines which could be applied to the problems of adult education. Thus, the movement has benefited much from the work of psychologists and to a considerable but lesser extent from that of social psychologists and sociologists.

The use of the module(s) as an in-service technique is an attempt, in light of contemporary time constraints on teachers of adults and the
demand on them to meet changing needs, to offer an alternative methodology of professional preparation for adult educators. Consequently, the creation of this module(s) utilizes the audio-modular instructional approach as an alternative in-service training technique for teachers of adult education in the area of adult learning theory.
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NOTE: THIS MODULE MAY BE USED EITHER INDIVIDUALLY OR IN SMALL GROUPS.

Purpose and Description of the Audio Instructional Module

An instructional module may be defined as a set of learning activities intended to facilitate the achievement of a specific objective or set of objectives. This instructional module, the first in a series, is designed for practicing or aspiring adult educators. The module is an attempt to emphasize the learning of a single concept through a series of logical and sequential experiences. The selected concept in this module concerns itself with the ability of the participant to successfully apply Cyril O. Houle's three classifications of the adult learner to simulated situations defining and/or identifying the appropriate classification of each. The module also has the purpose via audiotaped vignettes of encouraging the participant to be able to differentiate among the classifications, each indicative of a different kind of adult learner; namely, the goal-oriented, activity-oriented, or learning-oriented adult learner.

Basic Contentions of the Module:

This module deals with the area of "Adult Learner Classification."

The following contentions are made:

1. Research concerning the ability of adults to learn has little practical value for the practicing teacher of adults unless pedagogical theory and pedagogical practice can be combined to improve competency based teacher preparation.
2. Education is being increasingly regarded by large segments of the American population as a lifelong process, and the most critical variable in any educational system is the learner.

3. Since the motivations of the adult learner to pursue continuing education are multitudinous, it would be helpful for adult educators to be able to classify the primary kinds or types of adult learners.

4. Being able to identify the adult learner in terms of what motivates him/her to pursue continued education will hopefully enable teachers of adults to recognize the individual needs of the adult learner and aid him in modifying his curriculum to meet these needs as they present themselves.

5. "Adult Learning Theory" is helpful in determining situational demands facing the practicing adult educator.

Upon completion of this module, the participants should be able to:

1. Name the three classifications of adult learners. Participants will be able to list the three classifications.

2. Describe the three classifications of the adult learner. Participants will be able to write out the definition of each type of adult learner including at least two characteristics of each classification.

3. Identify the three classifications of adult learners from audio-taped vignettes (brief word pictures) presented in the module. Participants will be able to match the proper classification
of the adult learner with each vignette presented.

4. Demonstrate their ability to analyze different kinds of adult learner behavior. Participants will be able to decide which adult learner classification is represented within a larger body content of behavioral vignettes as they are presented via audio tape.

TIME REQUIREMENT:

Approximately one hour for the module

Approximately one-half hour for the evaluation material

MATERIALS AND RESOURCES REQUIRED:

1. Audio instruction cassette tape (provided with module guidebook)

2. A cassette tape recorder-player

3. This Audio Instruction Module Guidebook

4. A packet of exercises that go with the guidebook including a pre-test and a post-test

5. Preferably a pencil to write with
Before you begin working with this module, please be sure the packet is complete and contains the following materials:

1. Cassette tape containing informational input on adult learners.

2. Guidebook with printed directions, answers to exercises, including alternative exercises to those on the tape, a pre-test and a post-test.

3. A packet of exercises including answer spaces for the exercises as well as the pre-test and post-test accompanying the guidebook.

4. An evaluation packet found in a brown 9 x 12 envelope containing Phase I and Phase II along with a biographical data sheet.

5. Bibliography of selected references at the end of the module.
INSTRUCTIONS TO THE PARTICIPANT(S)

You will derive the greatest benefit from this instructional module by observing the following suggestions:

1. Although this modular unit is applicable to either individual or small group use, it would be best if in either situation you would participate in a place where you will not be subjected to interruptions and allow it your complete attention.

2. Set aside sufficient time (approximately one and one-half hours) so that you can follow the instruction through to its conclusion.

3. Following directions accurately will insure a greater measure of participant accomplishment.

4. Although it is not absolutely necessary that the participant go immediately into the evaluation packet following the completion of the module, it is desirable that this task be done soon thereafter to insure the greatest possible accuracy. The completion of the evaluation packet will take an additional thirty to forty minutes.

5. On the next page you will participate in a very short pre-test. The pre-test is used only as a measure of determining the participants' level of awareness in knowing what he doesn't know. The pre-test can be used by the individual in justifying whether or not the learning experience would be beneficial.

Please turn to the next page and begin the pre-test. PLEASE READ THE DIRECTIONS TO THE PRE-TEST CAREFULLY!
LIMITING CONDITIONS OF ADULT LEARNER PARTICIPATION MODULE

These Audio-Modular Instructional Materials have been developed by:

M. Peter Wright

under the direction

of

Dr. Mark H. Rossman

To be used in conjunction with the Massachusetts Department of Education, Bureau of Adult Services as an in-service training technique for adult educators with the Center for Occupational Education

School of Education

University of Massachusetts

Amherst, Massachusetts

February, 1973
Every man who rises above the common level has received two educations: the first from his teachers; the second, more personal and important, from himself.

-----Edward Gibbon

Adulthood is a problem. It is also an unfilled opportunity. . . . Adults want to learn.

-----Malcolm S. Knowles

The result [of society's pressures] is sad enough for those who have never been awakened to learning, but the tragedy is even deeper for those who in youth had a zest for knowledge which they have allowed the cares of maturity to extinguish.

-----Cyril O. Houle

. . . Adult learning is not a different kind of order from child learning. Indeed. . . . man must be seen as a whole, in his life-long development.

-----J. R. Kidd

. . . [the] vocation to be more fully human. . . . is not the privilege of an elite, but the birthright of all men.

-----Paulo Freire
Overview and Rational for

Limiting Conditions of Adult Learner Participation Module

This module is one of two units each emphasizing the learning of a single concept through a series of logical and sequential experiences. The combination audio-tape and guidebook present the following: a) instructions on how to use the unit, b) the performance objectives which the individual should be able to achieve as a result of participating in the unit, c) a narration which presents information to the participants, d) exercises which allow the participants to apply parts of the information which have been presented in the narration, e) self-evaluative instruments, and f) selected references. This particular unit concerns itself with Professor Cyril O. Houle's six conditions which he feels have limited the clientele, and thus the participation, of most adult educational programs. Cyril O. Houle is professor of adult education at the University of Chicago and has authored such books as *The Inquiring Mind*, *Continuing Your Education*, and numerous others as well as many articles in his field.

The module is an outgrowth of two significant evaluative reports concerning those needs that appear to be most important in adult education programs in the State of Massachusetts. Both evaluative reports were a result of a contract between the Massachusetts Department of Education, Bureau of Adult Services, and the University of Massachusetts, School of Education, and prepared under the direction of Dr. Mark Rossman, Project Director of Adult Education.
As a result of both reports and a review of the related research and literature in adult education, this module is premised on the belief that developing sound educational techniques for the in-service development of staffs of adult educators is one way of meeting many, if not all, of the "high priority needs" in adult education in Massachusetts.

In terms of content within this module, Houle's research of adult learners merely establishes probabilities. It tells us where to look if we want to find most continuing learners; but, as everyone knows, they are also to be found among the poor, among the isolated, among the newcomers to a community, among the old, among the single, among those who do humble labor, and among those with little formal education.

Houle's primary effort in his research was to examine the lives of a group of adults who are members of our own society. Those adults studied share a common characteristic; they are so conspicuously engaged in various personal friends or by the teachers, counselors, and directors of adult educational institutions. Otherwise, they vary widely in age, sex, race, national origin, social status, religion, marital condition, and level of formal education. All of those adults researched live in urban areas although not necessarily in large cities. University faculty members and people working for degrees are excluded, since they make up two groups for whom continuing education is a special way of life.

According to Houle, anyone who believes all adult education can be fitted into a single neat pattern is either hearing only the reverberations of his ideas or clinging to the uniformities of a day which is now
past. As a field of study matures, it progresses from simple to sophisticated viewpoints, from the certainty of originally perceived truths toward the wisdom which arises from an awareness of complicated patterns, of differences of viewpoint, and of a need to strike a balance among many factors, some conflicting. Both the theory and practice of adult education are now moving toward this kind of complexity. The simplicities of an earlier era are no longer sufficient either to explain or to guide the growing field. It is no longer possible to assume that the seekers for education will all have consistent viewpoints or that their conceptions will agree with those of the providers of education.

Malcolm S. Knowles has summed up the complexity of the adult education movement as well as the future role of higher education in adult education quite well when he stated that the ultimate issue,

...in the 70's is that of survival. The pressure of societal need for massive relevant and dynamic programs for the education of adults is becoming so great that if it cannot be satisfied within our institutions of higher education, it will be satisfied outside of them.1

Since the practical consequences of this greater complexity differ from one situation to another, the use of the module(s) as an in-service technique is an attempt to meet the changing needs of the field of adult education by offering an alternative methodology of professional preparation for adult educators. Consequently, the creation of this module(s) utilizes the audio-modular instructional approach as an alternative in-

service training technique for teachers of adult education to convey that there are at least six conditions which in one way or another limit the participation of adult learners in most communities.
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<th>Section</th>
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<td>Purpose and Description of Audio Instructional Module</td>
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<td>Basic Contentions of the Module</td>
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<td>18</td>
</tr>
<tr>
<td>BIBLIOGRAPHY OF SELECTED REFERENCES</td>
<td>20</td>
</tr>
</tbody>
</table>
NOTE: THIS MODULE MAY BE USED EITHER INDIVIDUALLY OR IN SMALL GROUPS.

Purpose and Description of the Audio Instructional Module

An instructional module may be defined as a set of learning activities intended to facilitate the achievement of a specific objective or set of objectives. This instructional module, the second in a series, is designed for practicing or aspiring adult educators. The module is an attempt to emphasize the learning of a single concept through a series of logical and sequential experiences. The selected concept in this module concerns itself with the ability of the participant to successfully apply Cyril O. Houle's six conditions which he contends have limited the clientele and the curriculum of adult educational programs. Further, the module elicits from the participants applications of those condition(s) that can be limiting factors in identifying the kinds of clientele served by the curriculum of the communities in which the adult educators are involved. This would likewise help the participants to become cognizant of those adult educational needs not being served. Houle's six limiting conditions emphasize high income grouping, relation of participation to size of the community, religious and nationality limitations, age factor, relationship of marital status and age of children, and the amount of schooling.

Basic Contentions of the Module:

This module deals with the area of "Limiting Conditions of Adult
Learner Participation."

The following contentions are made:

1. Every adult education program has not only basic classifications of adult learners participating but also has been developed in terms of conditions which limit or serve its clientele.

2. While the clientele of each institution has its unique features, research has shown that certain limiting conditions are indicative of most communities thereby limiting the clientele of adult educational programs.

3. That the ability to analyze your own community in terms of what Houle feels are the limiting conditions of adult educational programs common to all groups served will enable educators to be cognizant of those reasons why particular programs are more successful than others in terms of participation.

4. Projected figures estimate that by 1985 one out of every four students will be adults. Consequently, being cognizant of those conditions which limit or serve the clientele of most adult education programs will enable adult educators to analyze the recruiting techniques being used in their communities. It will prepare them to choose new locations for new programs fulfilling one need of a rapidly growing field.

5. Knowledge of conditions which limit or serve the clientele of adult education is helpful when determining curriculum changes
often confronting the practicing adult educator.

Upon completion of this module, the participants should be able to:

1. Describe those conditions which Houle contends limit or serve the clientele of most adult educational programs. Participants will be able to describe at least four out of six of those conditions.

2. Describe those conditions which limit or serve the clientele of adult educational programs from an audio-taped vignette of a particular community described. Participants will be able to explain at least three limiting conditions, and the way each of those conditions limit the participation of adult clientele in the particular community described in the vignette.

3. Demonstrate their ability to write out a brief description of the community in which they are employed as an adult educator (or the one they are most familiar with which may have an adult education program). Participants will describe at least three of Houle's conditions in that community which tend to limit the clientele of adult education programs.

4. Demonstrate their ability to describe those conditions existent within their particular community previously described which limit the clientele of adult educational programs. Participants will include at least two groups of adult clientele either limited (or served) by those conditions.
TIME REQUIREMENT:

Approximately forty-five minutes for the module

Approximately one-half hour for the evaluation material

MATERIALS AND RESOURCES REQUIRED:

1. Audio instruction cassette tape (provided with module guidebook)

2. A cassette tape recorder-player

3. This Audio Instruction Module Guidebook

4. A packet of exercises that go with the guidebook including a pre-test and a post-test

5. Preferably a pencil to write with and a piece of scratchpaper
Before you begin working with this module, please be sure that the packet is complete and contains the following materials:

1. Cassette tape containing informational input on limiting conditions of adult learners.

2. Guidebook with printed directions, answers to exercises, including alternative exercises to those on the tape, a pre-test and a post-test.

3. A packet of exercises including answer spaces for the exercises as well as the pre-test and post-test accompanying the guidebook.

4. An evaluation packet found in a brown 9 x 12 envelope containing Phase I and Phase II along with a biographical data sheet.

5. Bibliography of selected references at the end of the module.
INSTRUCTIONS TO THE PARTICIPANT(S)

You will derive the greatest benefit from this instructional module by observing the following suggestions:

1. Although this modular unit is applicable to either individual or small group use, it would be best if in either situation you would participate in a place where you will not be subjected to interruptions and allow it your complete attention.

2. Set aside sufficient time (approximately forty-five minutes) so that you can follow the instruction through to its conclusion.

3. Following directions accurately will insure a greater measure of participant accomplishment.

4. Although it is not absolutely necessary that the participant go immediately into the evaluation packet following the completion of the module, it is desirable that this task be done soon thereafter to insure the greatest possible accuracy. The completion of the evaluation packet will take an additional thirty to forty minutes.

5. On the next page you will participate in a very short pre-test. The pre-test is used only as a measure of determining the participant's level of awareness in knowing what he doesn't know. The pre-test can be used by the individual in justifying whether or not the learning experience would be beneficial.

Please turn to the next page and begin the pre-test. PLEASE READ THE DIRECTIONS TO THE PRE-TEST CAREFULLY!
APPENDIX B

TABLES AND FIGURES REFERRED TO IN THIS STUDY
TABLE B-1
SCORES FOR TEST 1 AND TEST 2 (RETEST)
FOR ACHIEVEMENT TEST I

<table>
<thead>
<tr>
<th>No. of Cases</th>
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<th>Test 2</th>
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### TABLE B-2

**DATA COMPUTED FOR THE PEARSON PRODUCT-MOMENT CORRELATION FOR TEST 1 AND TEST 2 FOR ACHIEVEMENT TEST I**

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<thead>
<tr>
<th>n</th>
<th>x</th>
<th>y</th>
<th>x²</th>
<th>y²</th>
<th>x·y</th>
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<td>(raw score for Test 1)</td>
<td>(raw score for Test 2)</td>
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</tbody>
</table>

**TOTALS**

| Σx = 119 | Σy = 128 | Σx² = 1035 | Σy² = 1144 | Σxy = 958 |
The Pearson Product-Moment Correlation Formula and Computations for Test 1 and Test 2 (retest) for Achievement Test I.

\[ r = \frac{\sum x y - \sum x \cdot \sum y}{\sqrt{\sum x^2 - \frac{\sum x \cdot \sum y}{n}} \cdot \sqrt{\sum y^2 - \frac{\sum y \cdot \sum y}{n}}} \]

- \( r \) = correlation coefficient between \( x \) and \( y \)
- \( n \) = number of cases
- \( x \) = individual scores of Test 1
- \( y \) = individual scores of Test 2 (retest)

Computation of Formula - Data from Table B-2

\[ r = \frac{958 - (119)(128)}{\sqrt{1035 - (119)(119)} \cdot \sqrt{1144 - (128)(128)}} \]

\[ r = \frac{958 - 15232}{\sqrt{1035 - 14161} \cdot \sqrt{1144 - 16384}} \]

\[ r = \frac{958 - 952}{\sqrt{1035 - 885.06} \cdot \sqrt{1144 - 1024}} \]

\[ r = \frac{6}{\sqrt{149.94} \cdot \sqrt{120}} \]

\[ r = \frac{6}{(12.25)(10.95)} \]

\[ r = \frac{6}{134.14} \]

\[ r = .0447 \]
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<th>No. of Cases</th>
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<td>n (No. of cases)</td>
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<td>y (raw score for Test 2)</td>
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</tbody>
</table>

| TOTALS | Σx=78 | Σy=84 | Σx²=438 | Σy²=502 | Σxy=442 |
\[ r = \frac{\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{\frac{\Sigma x^2 - \Sigma x \cdot \Sigma x}{n}} \cdot \sqrt{\frac{\Sigma y^2 - \Sigma y \cdot \Sigma y}{n}}} \]

- **r**: Correlation coefficient between \( x \) and \( y \)
- **n**: number of cases
- **x**: individual scores of Test 1
- **y**: individual scores of Test 2 (retest)

**Computation of Formula – Data from Table B-4**

\[ r = \frac{442 - \frac{(78)(84)}{16}}{\sqrt{438 - \frac{(78)(78)}{16}} \cdot \sqrt{502 - \frac{(84)(84)}{16}}} \]

\[ r = \frac{442 - 409.5}{\sqrt{438 - \frac{6084}{16}} \cdot \sqrt{502 - \frac{7056}{16}}} \]

\[ r = \frac{32.50}{\sqrt{438 - 380.25} \cdot \sqrt{502 - 441.00}} \]

\[ r = \frac{32.50}{\sqrt{57.75} \cdot \sqrt{61.00}} \]

\[ r = \frac{32.50}{(7.75)(7.81)} \]

\[ r = \frac{32.50}{60.53} \]

\[ r = 0.54 \]

---

Fig. B-2—The Pearson Product-Moment Correlation Formula and Computations for Test 1 and Test 2 (retest) for Achievement Test II.
TABLE B-5
SCORES OF TEST 2 AND TEST 3 OF THE EXPERIMENTAL GROUP
FOR ACHIEVEMENT TEST I

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TABLE B-6

DATA COMPUTED FOR THE PEARSON PRODUCT-MOMENT CORRELATION
FOR TEST 2 AND TEST 3 OF THE EXPERIMENTAL GROUP
FOR ACHIEVEMENT TEST I

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<th>n (No. of cases)</th>
<th>x (raw score for Test 1)</th>
<th>y (raw score for Test 2)</th>
<th>x²</th>
<th>y²</th>
<th>x·y</th>
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</tbody>
</table>

| TOTALS         | Σx=68                   | Σy=133                  | Σx²=636 | Σy²=2253 | Σxy=1146 |
\[ r = \frac{\Sigma xy - \frac{\Sigma x \cdot \Sigma y}{n}}{\sqrt{\frac{\Sigma x^2 - \frac{\Sigma x \cdot \Sigma x}{n}}{\Sigma y^2 - \frac{\Sigma y \cdot \Sigma y}{n}}}} \]

\[ r = \frac{1146 - (68)(133)}{\sqrt{636 - \frac{(68)(68)}{16}} \cdot \sqrt{2253 - \frac{(133)(133)}{16}}} \]

\[ r = \frac{1146 - 904.4}{\sqrt{636 - \frac{4624}{16}} \cdot \sqrt{2253 - \frac{17689}{16}}} \]

\[ r = \frac{1146 - 565.25}{\sqrt{636 - 289.00} \cdot \sqrt{2253 - 1105.56}} \]

\[ r = \frac{580.75}{\sqrt{347} \cdot \sqrt{1147.44}} \]

\[ r = \frac{580.75}{(18.63)(33.87)} \]

\[ r = \frac{580.75}{631} \]

\[ r = .92 \]

Fig. B-3—The Pearson Product-Moment Correlation Formula and Computations for Test 2 and Test 3 for Achievement Test I.
TABLE B-7

THE SQUARED DEVIATIONS FROM THE MEAN FOR TEST 2 AND TEST 3 OF THE EXPERIMENTAL GROUP FOR ACHIEVEMENT TEST I

<table>
<thead>
<tr>
<th>No. of Cases</th>
<th>x</th>
<th>x</th>
<th>x^2</th>
<th>y</th>
<th>y</th>
<th>y^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>6</td>
<td>-2.5</td>
<td>6.25</td>
<td>13</td>
<td>-3.60</td>
<td>12.96</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>1.5</td>
<td>2.25</td>
<td>15</td>
<td>-1.60</td>
<td>2.56</td>
</tr>
<tr>
<td>11</td>
<td>6</td>
<td>-2.5</td>
<td>6.26</td>
<td>18</td>
<td>1.40</td>
<td>1.96</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
<td>-3.5</td>
<td>12.25</td>
<td>19</td>
<td>2.4</td>
<td>5.76</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>4.5</td>
<td>20.25</td>
<td>20</td>
<td>3.4</td>
<td>11.56</td>
</tr>
<tr>
<td>14</td>
<td>11</td>
<td>2.5</td>
<td>6.25</td>
<td>17</td>
<td>0.4</td>
<td>1.60</td>
</tr>
<tr>
<td>15</td>
<td>7</td>
<td>-1.5</td>
<td>2.25</td>
<td>14</td>
<td>-2.6</td>
<td>6.76</td>
</tr>
<tr>
<td>16</td>
<td>10</td>
<td>1.5</td>
<td>2.25</td>
<td>17</td>
<td>0.4</td>
<td>1.60</td>
</tr>
</tbody>
</table>
\[ s^2 = \frac{\sum x^2}{n-1} \]

\( s^2 \) = the variance of a sample

\( x^2 \) = the sum of the squared deviations from the mean

\( n \) = the number of cases

Variance for Test 2

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{58}{8-1} = \frac{58}{7} = 8.29 \]

Standard Deviation = \( \sqrt{8.29} = 2.88 \)

Pooled Variance

\[ s^2 = \frac{n_2s_2^2 + n_3s_3^2}{n_2 + n_3 - 2} \]

\[ s^2 = \frac{8(8.29) + 8(6.39)}{8 + 8 - 2} \]

\[ s^2 = 8.39 \]

Variance for Test 3

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{44.76}{8-1} = \frac{44.76}{7} = 6.39 \]

Standard Deviation = \( \sqrt{6.39} = 2.53 \)

Fig. B-4—The Variance Formula and Computations for Test 2 and Test 3 of the Experimental Group for Achievement Test I.
\[ t = \frac{\bar{x}_2 - \bar{x}_3}{\sqrt{\frac{s^2_2}{n_2} + \frac{s^2_3}{n_3}}} \]

\( t \) = The value by which the statistical significance of the mean difference will be judged.

\( \bar{x}_2 \) = mean of Test 2

\( \bar{x}_3 \) = mean of Test 3

\( s^2 \) = pooled variance for Test 2 and Test 3

\( n_2 \) = the number of subjects in Group 2

\( n_3 \) = the number of subjects in Group 3

**t Formula Computations**

\[ t = \frac{8.5 - 16.6}{\sqrt{\frac{8.39}{8} + \frac{8.39}{8}}} \]

\[ t = \frac{8.1}{\sqrt{16.78}} = \frac{8.1}{\sqrt{2.10}} = \frac{8.1}{1.44} \]

\[ t = 5.62 \]

Fig. B-5--The t Test Formula and Computations for Test 2 and Test 3 for Achievement Test I.
TABLE B-8

SCORES OF TEST 2 AND TEST 3 OF THE EXPERIMENTAL GROUP
FOR ACHIEVEMENT TEST II

<table>
<thead>
<tr>
<th>No. of Cases</th>
<th>Test 2</th>
<th>Test 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>7</td>
<td>10</td>
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<tr>
<td>15</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>n (No. of cases)</td>
<td>x (raw score for Test 2)</td>
<td>y (raw score for Test 3)</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>9</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>10</td>
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<tr>
<td>13</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>Σx=38</strong></td>
<td><strong>Σy=76</strong></td>
</tr>
</tbody>
</table>
\[ r = \frac{xy - \frac{\Sigma x \cdot \Sigma y}{n}}{\sqrt{\frac{\Sigma x^2 - \frac{\Sigma x \cdot \Sigma x}{n}}{\Sigma y^2 - \frac{\Sigma y \cdot \Sigma y}{n}}} \cdot \sqrt{\frac{\Sigma x^2 - \frac{\Sigma x \cdot \Sigma x}{n}}{\Sigma y^2 - \frac{\Sigma y \cdot \Sigma y}{n}}}} \]

\[ r = \frac{360 - \frac{(38)(76)}{16}}{\sqrt{220 - \frac{(38)(38)}{16}} \cdot \sqrt{724 - \frac{(76)(76)}{16}}} \]

\[ r = \frac{360 - \frac{2888}{16}}{\sqrt{220 - \frac{1444}{16}} \cdot \sqrt{724 - \frac{5776}{16}}} \]

\[ r = \frac{360 - 180.50}{\sqrt{220 - 90.25} \cdot \sqrt{724 - 361}} \]

\[ r = \frac{179.50}{\sqrt{129.75} \cdot \sqrt{363}} \]

\[ r = \frac{179.50}{(11.34)(19.05)} \]

\[ r = \frac{179.50}{216.02} \]

\[ r = .83 \]

Fig. B-6--The Pearson Product-Moment Correlation Formula and Computations for Test 2 and Test 3 for Achievement Test II.
<table>
<thead>
<tr>
<th>No. of Cases</th>
<th>x</th>
<th>x</th>
<th>x^2</th>
<th>y</th>
<th>y</th>
<th>y^2</th>
</tr>
</thead>
<tbody>
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<td>9</td>
<td>6</td>
<td>1.2</td>
<td>1.44</td>
<td>9</td>
<td>-0.5</td>
<td>.25</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>-1.8</td>
<td>3.24</td>
<td>9</td>
<td>-0.5</td>
<td>.25</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>-3.8</td>
<td>14.44</td>
<td>10</td>
<td>+0.5</td>
<td>.25</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>1.2</td>
<td>1.44</td>
<td>10</td>
<td>+0.5</td>
<td>.25</td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>-1.8</td>
<td>3.24</td>
<td>9</td>
<td>-0.5</td>
<td>.25</td>
</tr>
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<td>7</td>
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<td>.25</td>
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<td>15</td>
<td>4</td>
<td>-0.80</td>
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<td>+0.5</td>
<td>.25</td>
</tr>
<tr>
<td>16</td>
<td>8</td>
<td>3.2</td>
<td>10.24</td>
<td>9</td>
<td>-0.5</td>
<td>.25</td>
</tr>
</tbody>
</table>
\[ s^2 = \frac{\sum x^2}{n-1} \]

\[ s^2 = \text{the variance of a sample} \]
\[ x^2 = \text{the sum of the squared deviations from the mean} \]
\[ n = \text{the number of cases} \]

**Variance for Test 2**

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{39.52}{8-1} = 5.65 \]

Standard Deviation = \( \sqrt{5.65} = 2.38 \)

**Pooled Variance**

\[ s^2 = \frac{n_2s_2^2 + n_3s_3^2}{n_2+n_3 - 2} \]

\[ s^2 = \frac{8(5.65) + 8(0.29)}{8 + 8 - 2} \]

\[ s^2 = 3.39 \]

**Variance for Test 3**

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{2.0}{8-1} = .29 \]

Standard Deviation = \( \sqrt{.29} = .54 \)

---

*Fig. B-7--The Variance Formula and Computations for Test 2 and Test 3 of the Experimental Group for Achievement Test II.*
\[ t = \frac{x_2 - x_3}{\sqrt{\frac{s_2^2}{n_2} + \frac{s_3^2}{n_3}}} \]

\( t \) = The value by which the statistical significance of the mean difference will be judged.

\( x_2 \) = mean of Test 2

\( x_3 \) = mean of Test 3

\( s^2 \) = pooled variance for Test 2 and Test 3

\( n_2 \) = the number of subjects in Group 2

\( n_3 \) = the number of subjects in Group 3

**t Formula Computations**

\[ t = \frac{4.80 - 9.50}{\sqrt{\frac{3.39}{8} + \frac{3.39}{8}}} \]

\[ t = \frac{4.70}{\sqrt{6.78}} = \frac{4.70}{\sqrt{.848}} \]

\[ t = 5.1 \]

---

Fig. B-8—The t Test Formula and Computations for Test 2 and Test 3 for Achievement Test II.
APPENDIX C

EVALUATIVE INSTRUMENTS USED IN THIS STUDY
ACHIEVEMENT TEST I

Adult Learner Classification Achievement Test

Use the separate answer sheet provided to indicate your responses.

a) Goal-oriented
b) Activity-oriented
c) Learning-oriented
d) Describes all three classifications

1. "...searching for a social milieu."
2. "...learning is in episodes."
3. "...learning is an ever-recurring characteristic of their lives."
4. "...learning has no connection with announced purposes of the activity."
5. "...education might be called a constant."
6. "...needs or interests are often aroused as a learning resource becomes available."
7. "...reads within defined interests or in connection with his/her vocation."
8. "...improper heterosexual adjustment."
9. "...possibly seeking the solitude a classroom can afford."
10. "...all knowledge should be utilized."
11. "...insatiable desire to know."
12. "...in his learning there is a flow and continuity."
13. "...pursues courses and/or programs simply to accumulate the credits or diplomas themselves."
14. "...participation in continuing education is often the result of a learning resource becoming available."
15. "...does virtually no reading."
16. "...strongest need for self-awareness."

17. "...strong need for socialization."

18. "...education is usually motivated by the realization of an interest or identification of a need."

19. "...seek continued education as an escapism."

20. "...learning whose continuity and range of experiences are more than the sum of its parts."
ACHIEVEMENT TEST II

Adult Learner Participation Achievement Test

Use the separate answer sheet provided to indicate your responses.

1. Which of the following conditions does Cyril O. Houle feel is the most universally important factor in limiting the clientele of adult education programs? a) higher income levels; b) amount of formal schooling; c) age; d) all of the above; e) a and b.

2. Which condition most limits participation in adult education programs? a) size of the community; b) low income level; c) percent of single adults; d) all of the above; e) a and c.

3. What is the marital status of those adults who participate most in adult educational programs? a) single; b) married; c) divorced; d) all of the above; e) a and b.

4. As a factor in limiting the clientele who participate in adult education programs, which age category participates least? a) 16 - 22; b) 25 - 45; c) aged 50 and over; d) all of the above; e) a and b.

5. Which group participates in adult educational programs most? a) white collar and clerical workers; b) professional and managerial workers; c) skilled and unskilled workers; d) b and c; e) none of these.

6. Which of the following kinds of adults participate most in adult educational programs? a) single people; b) married people with preschoolers; c) married people with school-age children; d) all of the above; e) b and c.

7. Which of the following would be true? a) the more years of school, the greater the likelihood of participating in adult education programs; b) the fewer years of schooling, the greater the likelihood of participation in adult education programs; c) the number of years of schooling has little relationship to participation in adult education programs; d) none of the above; e) a and b.

8. Which of the following is always true? a) cultural minorities always participate in adult education programs; b) most cultural minorities seldom participate in adult education programs; c) cultural minorities in small urban areas seldom participate in adult education programs; d) cultural minorities in large urban areas seldom participate in adult education programs; e) none of the above.
9. Which of the following would be true? a) the greater number of adults who participate in adult education programs are from the 16-22 age bracket; b) there is a constant level of participation in adult education programs from 25-75; c) the level of participation in adult education programs remains fairly constant until the age of 50 and declines afterward; d) none of these; e) a and b.

10. Which socio-economic group would participate most in adult educational programs? a) low income groups; b) middle income groups; c) high income groups; d) all of the above; e) none of these.
**AUDIO-MODULAR INSTRUCTION QUESTIONNAIRE**

**BIOGRAPHICAL DATA**

Date: _______________

Name: ____________________________________________

Address: ____________________________________________

<table>
<thead>
<tr>
<th>Street</th>
<th>City</th>
<th>State</th>
<th>Zip Code</th>
</tr>
</thead>
</table>

Date of Birth: _______ _______ Sex: Female_______ Male_______

Month Year

<table>
<thead>
<tr>
<th>Present Position</th>
<th>Prior Position</th>
<th>Degree Held at Present Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student</td>
<td></td>
<td>Bachelors</td>
</tr>
<tr>
<td>Part-time Adult Educator</td>
<td></td>
<td>Bachelors+</td>
</tr>
<tr>
<td>Full-time Adult Educator</td>
<td></td>
<td>Masters</td>
</tr>
<tr>
<td>Guidance Counselor for Adult Education</td>
<td></td>
<td>Masters+</td>
</tr>
<tr>
<td>Part-time Director of Adult Education</td>
<td></td>
<td>Specialist</td>
</tr>
<tr>
<td>Full-time Director of Adult Education</td>
<td></td>
<td>Doctorate</td>
</tr>
<tr>
<td>Other (explain)</td>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>

Size of Enrollment in Adult Education Center or Program in which you are presently or were last employed:

<table>
<thead>
<tr>
<th>0 - 25</th>
<th>100 - 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 - 50</td>
<td>200 - 500</td>
</tr>
<tr>
<td>50 - 100</td>
<td>500 up</td>
</tr>
</tbody>
</table>

School Setting: Urban _____ Suburban _____ Rural _____

Student socio-economic background: Upper _____ Middle _____ Lower _____

Any further description of the school: ____________________________________________

Number of years you have had as an Adult Education Administrator, Counselor, or Teacher _____
Part I

Opinionaire for the audio-modular instructional unit.

1. I found participating in the audio instructional module:
   _____ a) very interesting.
   _____ b) somewhat interesting.
   _____ c) somewhat boring.
   _____ d) very boring.

2. I found participating in the audio instructional module:
   _____ a) a very valuable learning experience.
   _____ b) a learning experience of some value.
   _____ c) an experience which is neither valuable nor worthless as far as my own learning.
   _____ d) an experience somewhat worthless.
   _____ e) an experience which was completely worthless.

3. What was the major strength of this specific audio instructional module?

4. What was the major weakness of this specific audio instructional module?

5. Which of the following responses represents the total time you spent participating in the module?
   _____ a) 30-45 minutes.
   _____ b) 45-60 minutes.
   _____ c) 60-75 minutes.
   _____ d) 75-90 minutes.
   _____ e) 90-105 minutes.
   _____ f) 105-120 minutes.
   _____ g) over 2 hours.
   _____ h) over 2 1/2 hours.
6. I feel that the experience I gained from participating in this module

_____ a) was definitely worth this amount of time.
_____ b) was probably worth this amount of time.
_____ c) may or may not have been worth the time.
_____ d) was probably not worth this amount of time.
_____ e) was definitely not worth this amount of time.

7. If it was discovered that this module was too time consuming, and you were involved in revising it, what portion would you definitely keep in the module?

What portion would you remove?

8. Now that I know what the module is like, if I had the choice I would

_____ a) have definitely participated in the module.
_____ b) have probably participated in the module.
_____ c) not know whether I would or would not have participated in the module.
_____ d) have probably not participated in the module.
_____ e) have definitely not participated in the module.

9. How excited would you be in recommending to a fellow educator that he/she participate in this module?

_____ a) very excited.
_____ b) somewhat excited.
_____ c) no feeling either way.
_____ d) would be reluctant to recommend it.
_____ e) definitely would not recommend it.
10. Briefly state what you feel you have learned from this module.

What other existing instructional method would you have preferred to participate in, in order to learn this?

11. The following items focus on the technical aspects of the audio instructional module. Please circle the number at the right of the statement which best represents your evaluation of the particular aspect mentioned in the statement. Use the following scale:

1. Outstanding
2. Good
3. Average
4. Needs improvement
5. Very poor

a) The general appearance of the module

b) The clarity of the module instructions

c) The statement of objectives

d) The appearance of the pages in the text

e) The quality of the cassette tape

f) The synchronization between tape and text

g) The ease and convenience with which the material can be utilized

12. Complete the following statements:

a) The exercises, connected to the module, which I participated in

b) One change that I would make in this module

c) One aspect of this module which should definitely remain the same
Part II

Opinionnaire for the audio-modular instructional approach.

Directions: When completing the multiple choice questions, place a checkmark on the line next to the statement that most appropriately answers the question or completes the sentence. When answering the open-ended questions, write your answer in very brief form.

13. If you had the opportunity, would you participate in additional modules?
   _____ a) Yes, definitely
   _____ b) Yes, probably
   _____ c) I don't know
   _____ d) Probably not
   _____ e) Definitely not

14. Suppose you were given the option to participate in the following in-service educational programs. Assuming they would be somewhat equal in time commitment, rank the following approaches in the order of your preference. Start with the number (1) for your highest preference; number (2) as second, and so on.
   _____ a) attend a seminar where the material is presented in lecture form.
   _____ b) participate in a course where the material in question is presented sometime within the context of the course.
   _____ c) purchase a professional book and read it.
   _____ d) visit sites to observe adult education programs.
   _____ e) participate in an audio-modular instruction unit.
   _____ f) discover the material through independent study.
   (Below, add any additional in-service educational program approaches you might choose as one alternative approach to concept learning.)
   _____ g) _____________________________________________
   _____ h) _____________________________________________
15. The major strengths of the audio-modular instructional approach as an in-service technique are:

16. The major weaknesses of the audio-modular instructional approach as an in-service technique are:

17. Please complete the following statements:
   
   a) I would spend time participating in an audio-modular instructional unit only if ____________________________

   b) I would definitely not spend time participating in an audio-modular instructional unit if ____________________________

   c) For any one to develop any more audio-modular instructional units would ____________________________

18. What kind of skills and knowledge do you think could be learned through the use of audio-modular instruction?

19. What additional topics might be adapted to audio-modular instruction?

20. Any additional comments.
**FIRST SEMANTIC DIFFERENTIAL
INSTRUCTIONS**

**Part III**

The purpose of this study is to measure the meaning of certain things to various people by having them judge them against a series of descriptive scales. In completing this scale, please make your judgments on the basis of what these things mean to you. You will find two concepts to be judged and beneath them a set of scales. You are to rate the concept on each of these scales in order.

Here is how you are to use these scales: If you feel that the concept is very closely related to one end of the scale, you should place your checkmark as follows:


If you feel that the concept is quite closely related to one end of the scale or the other (but not extremely), you should place your checkmark as follows:


If the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should place your checkmark as follows:


The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing which you are judging. If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, and unrelated to the concept, then you should place your checkmark in the middle space.


For the following concepts, place an X between the : : near the word which most nearly represents your feeling about the concept. The closer you place the X to a word, the more the word represents your feeling.

BE SURE TO CHECK EVERY SCALE FOR EACH CONCEPT - DO NOT OMIT ANY.

**Concept 1:** Audio-modular instruction as one alternative approach for in-service education for adult educators

<table>
<thead>
<tr>
<th>Good</th>
<th>Untimely</th>
<th>Pleasant</th>
<th>Comfortable</th>
<th>Bad</th>
<th>Timely</th>
<th>Unpleasant</th>
<th>Uncomfortable</th>
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</table>

<table>
<thead>
<tr>
<th>Meaningless</th>
<th>Useless</th>
<th>True</th>
<th>Skeptical</th>
<th>Meaningful</th>
<th>Useful</th>
<th>False</th>
<th>Believing</th>
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<th>Threatening</th>
<th>Superior</th>
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Concept 2: In-service educational programs for adult educators in which you have participated (excluding the audio-modular instructional approach, but including course work and other learning experiences)

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Monahan, William G., and Miller, Howard E. *Planning and Developing In-service Education*. Iowa City, Iowa: The Iowa Center for Research in School Administration, 1970. (ED 045 611)


**Magazines**


Reports

A Delphi Survey on Adult Education Programs in Massachusetts. Massachusetts: University of Massachusetts, 1972.


Dickinson, Gary. A Survey of the Need for Programs to Prepare Members of the Health Professions as Specialists in Continuing Education. Report to Adult Education Research Center and Division of Continuing Education in the Health Sciences, 1972. Vancouver, Canada: University of British Columbia, 1972. (ED 063 530)


Hayes, Dale K. Removing the Storm Clouds: Cooperative Leadership to Provide Constructive and Viable Solutions to Critical Problems in Education. Lincoln, Nebraska: Tele-lecture from Lincoln, Nebraska, to Raleigh, North Carolina, for workshop on Team Supervision for the State Department of Education of North Carolina, 1970. (ED 045 684)


O'Hanlon, James, and Witters, Lee A. Breakthrough: In-Service Education for all Schools. Lincoln, Nebraska: The State Department of Education, 1967. (ED 015 147)


Southeastern Region Adult Basic Education Staff Development Project. The Planning of In-Service Workshops: A Seminar. Atlanta, Georgia: conducted by the Southeastern Region Adult Basic Education Staff Development Project, February 14-17, 1971. (ED 058 539)


Speeches

Allen, Dr. Dwight W. Address at Dissemination Seminar on Adult Basic Education, Boston, Massachusetts, June 12, 1970.

Unpublished Materials


