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Study to determine the suitability of utilizing the audio modular instructional approach as an alternative in-service training technique in communication for adult educators.

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STUDY TO DETERMINE THE SUITABILITY OF UTILIZING
THE AUDIO MODULAR INSTRUCTIONAL APPROACH
AS AN ALTERNATIVE IN-SERVICE TRAINING TECHNIQUE
IN COMMUNICATION FOR ADULT EDUCATORS

A Dissertation Presented

By

S. KATHLEEN MCGUIRE

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

May, 1973

EDUCATION
STUDY TO DETERMINE THE SUITABILITY OF UTILIZING
THE AUDIO MODULAR INSTRUCTIONAL APPROACH
AS AN ALTERNATIVE IN-SERVICE TRAINING TECHNIQUE
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May, 1973
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first to my Sisters, the Adorers of the Blood of Christ, in whose concern I have pursued my study of education in order that we make more effective our community's continuing service to the poor through the work of education and also, to the Sisters of St. Joseph of Springfield among whom I have found such good companionship during the time I was pursuing this degree.
ACKNOWLEDGMENTS

At the completion of this study I wish to thank Ms. Nancy Worek for her patient help in the work of assembling the modules. I wish also to thank Dr. Mark Rossman for his interest, help and critique of the modules as well as for his advice and concern with regard to the dissertation. I am grateful to Dr. Arthur Eve for the kindliness and good cheer with which he carried out the duties of official representative at my final oral examination. To Dr. Paul Taylor of the University of Connecticut I wish to express appreciation for his generosity in serving on my dissertation committee as well as for his interest in the dissertation study. I am especially grateful to Dr. Ann Lieberman for her support and understanding of my own enthusiasm and sense of achievement in completing the present study. Finally, I am most grateful to Dr. Roger Peck for his kindness and concern over the past year and a half but more especially for the intellectual challenge I found in carrying out this study with his direction. I feel that much of what I have learned in working toward this degree I have learned as a result of my association with Dr. Peck both in courses he moderated and in my dissertation work.
Study to Determine the Suitability of Utilizing the Audio Modular Instructional Approach as an Alternative In-Service Training Technique in Communication for Adult Educators (May, 1973)

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Directed by: Dr. Roger H. Peck

The study sought to determine the suitability of using the audio modular instructional approach as initial inservice training in communication skills based on Transactional Analysis for adult educators. Suitability was measured according to six criteria: 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 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 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 these six criteria were collected through the use of a written evaluation instrument which included "open-ended" questions and "closed" questions of both an objective and a subjective nature, semantic differential scales, and achievement tests which had been validated and tested for reliability specifically for use in this study.

In addition to evaluating this approach according to the six
criterion for suitability, the study also attempted initial assessment of the degree of internalization by participants of the communication skills presented in the audio instructional modules through the use of a follow-up questionnaire. Internalization was measured according to the scale presented by Krathwohl in *Taxonomy of Educational Objectives, Handbook II: Affective Domain.*

Results of the study indicate that the approach was evaluated positively on all the suitability criteria. Internalization data indicated that participants valued the skills learned through the use of the modules and were willing to receive more training in Transactional Analysis as a result of their initial training with the modules. Major conclusions about the effectiveness of the approach cannot be reached until further studies are conducted to determine whether adult educators would actually select this training approach voluntarily in a natural setting.

Relative to the audio modular instructional approach, recommendations of the study are: construction and validation of more precise instruments for measuring internalization, additional assessments of internalization over a longer period of time, studies comparing the use of the audio modules as the instructional structure for a small group learning experience to the use of the modules as individual learning experience, and refinement of the evaluation model.
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CHAPTER I
INTRODUCTION AND BACKGROUND
TO THE STUDY

The goals and objectives which succeed in bringing forth social systems seldom remain vital sources of the systems they engender. Once a system is in existence, existence seems reason enough for being and survival becomes the prime concern and objective of the system. For this reason social systems tend to be stable and homeostatic, ever desirous of maintaining or regaining the established equilibrium which enabled them to survive to the present moment. In a well-established system almost any new force for change can relatively quickly be assimilated somehow by the already existing forces which then return to an equilibrium closely approximating the state before the change.

Education, no less than other social systems, expends its dearest energies on self-preservation rather than on the goals which brought it into being and which, if reexamined and reformulated for effectiveness, would maintain it as a relevant system. Thus it is that the goals and objectives of education need continual study and revision and the practices of education are in constant need of reexamination, re-evaluation and renewal lest the learner who is presumably to be served by the system gets lost and the machinery of administration obscures the process of education itself.¹

When the learner is actually the focus of education, the basic concern of formal education is conceived as being the learning experience
of the student and the primary goal of the school system is the creation of experiences which will maximize the learning opportunity for the student. In this concept of education, the teacher is primarily concerned with second order, rather than with first order learning; concerned, more basically that is, with influencing the conditions which affect the students' desire and ability to learn rather than chiefly or solely with the instructional process itself. Organizing and presenting content, which is often thought of as the most essential task of the teacher, is only one of these conditions and one, as is being more and more widely recognized, which need not engage the teacher's time during the actual learning experience of the student. It is possible that content be organized and presented to students in other ways, leaving teachers free for more interaction with students, helping them accept and clarify feelings, praising and encouraging, asking questions of procedure, accepting and clarifying ideas and arousing curiosity. And these types of student-teacher interaction, studies are showing, produce more achievement than teacher behavior directly concerned with specific learning experiences.²

Developing alternative ways of organizing and presenting content to the student has become a high priority for educational research. A basic approach that has taken shape is that of modularization, an approach which emphasizes the learning of single concepts through logical and sequential experiences. Basic to this approach is the belief that the integration of learning has to happen within the learner himself or it does not happen at all. If the teacher is freed from the task of organizing and presenting content, he can help students in the process of integrating their learning and identifying learning needs. When needs
are identified, then specific learning experiences or situations ought to be available so that the student can satisfy these needs at this optimal learning time. And modularization seems to provide this availability.

Modularization can generally be described as the process of identifying specific cognitive, affective or psychomotor skills and structuring learning experiences which will enable participants to achieve those specified skills. A comprehensive approach to modularization has not yet become widespread. A national model institute for training Adult Basic Education teachers utilized modular modifications of existing course structures in its one-year program and in its final report hailed the modular structure as presenting revolutionary implications for teacher training and predicted the likelihood that "modular experiences will move to the forefront of higher education and replace courses and units as we now know them." Dr. Philip R. Christensen's conclusions concerning a larger-scale experiment with a completely modular curriculum in the School of Education at the University of Massachusetts are less prophetic in tone but perhaps more significant. The psychology of learning is relatively so new, he says, that we cannot expect any definitive models or approaches to learning in the near future. However, the modular or flexible curriculum provides instructors the opportunity of teaching in almost any imaginable format and students the opportunity of choosing or seeking learning experiences to satisfy whatever needs they identify for themselves at whatever time in their educational agendas they wish. Dr. Christensen does not offer the modular curriculum as the salvation of education but he does recommend it as a significant step in the direction of achieving an educational system responsive to the learner it serves.
Less comprehensive approaches to modularization have been on the educational scene longer and are more widespread. These approaches might be categorized under the heading "packaged learning", designating all of those methods of organization and presentation of content which do not necessitate the presence of the teacher for instruction or facilitation of the learning experience. Programmed texts and teaching machines are well-known approaches which come under this category. Computer Assisted Instruction is a more sophisticated and sensitive variety of the teaching machine. The self-instructional packet or module is another development of modularization.

The self-instructional unit contains not only informational input but is especially characterized by the inclusion of its statement of expected outcomes and guidelines, criteria, tests or other evaluation indicators enabling the learner to assess his own progress.

Programmed texts and teaching machines are already widely used in the formal educational setting at the elementary and high school levels. The self-instructional unit may come to be utilized to a like degree in higher education. Dr. Lee Peterson conducted a study utilizing the self-instructional unit as an alternative pre-service training technique for students of school administration. Even in the formal educational setting the units were perceived as "the best method to use for gaining that which the participants felt they had learned from the two units." But the self-instructional unit would seem to be an even more advantageous approach for potential learners for whom the educational setting is impractical or inaccessible, especially as an in-service training technique. A number of studies have been conducted in the Center for
Leadership and Administration at the School of Education in the University of Massachusetts, to determine the suitability of using the self-instructional approach as an alternative in-service training technique for school administrators. The present study will also focus on determining the suitability of using the self-instructional approach, in this case as an alternative in-service training technique for teachers, specifically for adult education teachers.

Dr. Mark Rossman is currently engaged in producing self-instructional units for teachers of Adult Education for the Region I Adult Education Staff Development Project. Staffs of Adult Education Centers in the New England area indicated in a survey conducted by Rossman that development of interpersonal communication skills is a high priority need among adult educators.

In conclusions drawn from his study of the audio modular instructional approach, Peterson states that communication skills were most often mentioned by participants as the kind of skills which could be learned through this approach. This present study, therefore, attempted to determine the actual suitability of using the self-instructional audio modular approach as an alternative in-service training technique for adult educators.

This study differs from previous studies conducted on the audio modular approach not only with regard to the population it sought to study but also with regard to the complexity of the content. As a basis for the improvement of communication skills, the modular unit presented the concepts of Transactional Analysis. Comprehension of these concepts was an essential pre-requisite for actually practicing new communication
skills based on this approach. This fact necessitated the development of one module totally devoted to the presentation and development of cognitive material. It was recognized from the beginning of the study that the desire to clarify new concepts would make participants keenly aware of the lack of interaction with instructors or with peers in a self-instructional situation. One of the questions which the investigator wanted to answer through this study was whether or not this lack of interaction caused the audio modular approach to be unsuitable for initial training in Transactional Analysis.

A third question which the investigator sought to answer through this study was whether or not knowledge and understanding of Transactional Analysis gained from experience with the audio modular unit would be internalized and in any way applied by participants if there was no opportunity provided for group interaction following the participation in the modules. If no internalization results from the modular experience, the modules are not suitable for use as individualized instruction. However, if there is evidence that some internalization does result, it may be tentatively concluded that the audio modular approach is a suitable means for providing initial training in this approach to behavior analysis and development. If the approach is suitable, it provides a convenient and highly accessible learning experience for teachers in achieving the skills basic to influencing second order learning.

Statement of Purpose

The major purpose of the study was to determine the suitability of utilizing the audio modular instructional approach as an alternative
in-service training technique in communication skills based on Transactional Analysis for adult educators. To achieve this main purpose the following specific objectives were set forth.

**Specific Objectives of the Study.**

1. Develop an audio modular unit based on Transactional Analysis. The modular unit would consist of two separate, sequential modules. As a result of participation in the first module, the participants would be able to define the personality in terms of the ego states and to discriminate among the specific cues of each ego state. Participation in the module would enable participants to apply this knowledge of Transactional Analysis concepts to analyzing actual situations of communication and predicting the outcomes of such situations and indicating how the communication could have been changed.

2. Design a field-testing model for the evaluation of the audio modular unit in order to generate data from which the investigator could arrive at answers to the questions outlined above.

3. Assess the suitability of utilizing the modules for providing adult educators with initial training in communication skills based on Transactional Analysis. The assessment would include collection and analysis of data concerning the particular approach, these specific modules, and the internalization resulting from participation in the modules.

4. Develop recommendations concerning the use of the audio modular instructional approach as an in-service training technique for adult educators.
5. Develop recommendations concerning the use of the audio modular instructional approach for providing initial training in communication skills based on Transactional Analysis.

Definition of Terms

The following terms are defined operationally as they were used in this study.

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

**Adult Educator.** Any person engaged in enabling adults to develop knowledge, training, or skills outside of the formal school structures of elementary, secondary and higher education but within a less formal and less structured schooling situation.

**Audio Modular Instructional Unit.** A learning activity package including an audio tape and guidebook designed to be used without the assistance or the presence of an instructor or facilitator. The unit emphasizes the learning of a single concept through a series of logical and sequential experiences. The package presents the following: a) instructions on how to use the module; b) the performance objectives which the individual should be able to achieve as a result of participation in the module; c) a provision for information input; d) role playing, simulation, or other types of exercises which allow the participant to apply parts of the information received; e) self-evaluation instruments; and f) selected references. For the purposes of this study two audio modules were developed.
"Transactional Analysis Communication Module". The second in a series of two sequential modules. The terminal objective for the unit and consequently for this second and final module of the unit was to enable participants to apply the concepts of Transactional Analysis in analyzing and understanding interactions in their various personal relationships.

"Structural Analysis Communication Module". The first in a series of two sequential modules. This module is a pre-requisite for the "Transactional Analysis Communication Module" and provides enroute objectives dealing with the analysis and understanding of the personality structure in the terms of Transactional Analysis necessary to achieve the terminal objective for the unit.

Audio-Modular Instructional Approach. A learning methodology incorporating the systems approach to instruction. Individuals participate in one or two self-instructional audio modules for the purpose of achieving performance objectives specified for the unit.

Center for Leadership and Administration. A department (or center) within the School of Education, University of Massachusetts, focusing on the training of school administrators. Students currently enrolled in the Center are graduate students working toward an advanced formal degree in Education Administration.

In-Service Program. A program of studies undertaken after the completion of requirements for certification and during the tenure of service in the field of education for the purpose of keeping abreast of the developments in the field of interest.
In-Service Training. Educational activities, organized to impart information and to develop new skills and techniques aimed at the improvement of professional staff members.

Internalization. The process representing a continuous modification of behavior from the individual's awareness of a phenomenon to his pervasive outlook on life which influences all his actions. The procedure for measuring the degree of internalization was based upon the classifications of internalization suggested by Krathwohl in TAXONOMY OF EDUCATIONAL OBJECTIVES, HANDBOOK II: AFFECTIVE DOMAIN.

Participants' willingness to receive or attend to interpersonal communication skills. The degree to which the experience with the audio-modular unit sensitized the participant to the existence of the skills presented.

Participants' willingness to respond to interpersonal communication skills. The degree to which the experience with the audio-modular units caused participants to actively attend to the concepts and analyses presented in the unit.

Participants' valuing of the interpersonal communication skills. The degree to which the experience with the audio modular unit caused participants to recognize the worth of the concepts and skills presented.

Participants' organization of his value system to include interpersonal communication skills. The degree to which the experience with the audio modular unit caused participants to conceptualize for themselves the value of interpersonal communication skills and to
integrate this value into their philosophies of life.

Participants' characterization by interpersonal communication. The degree to which the experience with the audio modular unit effects in participants behavior motivated by the interpersonal communication concepts, analysis and skills presented in the unit.

New England Center for Continuing Education. An administrative agency which is composed of a regional director and regional board (with veto power over the director) which has as its primary purpose the administering of federal funds for adult education programs in the states of Connecticut, New Hampshire, Maine, Massachusetts, Rhode Island, and Vermont.

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 utilizing both subjective and objective assessment approaches. The criteria utilized in this study 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 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 units; and the degree to which the participants were excited about recommending to other persons that they should participate in the unit.

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

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 participant could achieve the learning objectives. The degree to which the connotation of the concept, "Audio-Modular Instructional Approach as One Alternative Approach for In-Service Education for Adult Educators" elicits from the participants a positive rating for a) factors of potency evaluation, receptivity, and activity; and b) the polar traits signifying the degree to which the concept is useful, relevant, promising, interesting and meaningful; in addition, the degree by which the ratings on these previously mentioned factors and traits differ from the ratings assigned to the connotation 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 takes 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 are stated at the beginning of the unit.

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

The expenditure of time and money used in the development and production of the learning modules. The amount of time involved in developing the audio modular instructional unit and the monetary expenditure involved in the production of the unit.

Assumptions of the Study

In analyzing and presenting the findings of this study, the following assumptions had to be made:

1) that participants who used the modules during the second and third field-testing sessions followed the directions given for the participation and the evaluation: i.e., that the pretests were actually completed before the modules were used and that they were not changed after the use of the modules;

2) that participants who were members of the field-testing group reflected their own attitudes and opinions without undue influence from others in the completion of the evaluation instrument.
Limitations of the Study

The following limitations were placed on the study:

1) The purpose of the 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 measured were limited to the definition for suitability as it has been presented in this study. Consequently, the conclusions and recommendations for the study are limited to this definition for suitability.

2) This study was designed to test the suitability of an alternative approach to in-service training of adult educators. Any attempt to generalize on the findings from this data to a larger or different population should take this factor into account.

3) The design used in the study for determining the cognitive change resulting from participation in the modules was the pretest-posttest non equivalent control group design. Although care was exercised in attempting to insure the best possible matching of the control group by selecting thirty-one members from a slightly larger pool of control individuals as suggested by Mayo and Longo, the control group and the experimental group were not equally matched on the criteria of years of experience, highest academic degree held, age and size and setting of the employing school or program. Consequently, there is no certainty that the two groups were similar in relation to their level of performance of the objectives before the experience with the modular unit. Caution must be observed, therefore, in viewing the findings focused
on the gain in achievement relative to the performance objectives.

4) The achievement test was validated and tested for reliability with a group of elementary and secondary teachers. It cannot be said with certainty that this was a group of persons typical in age or social characteristics of adult educators for whom the test was intended. Consequently, care must be taken in viewing the findings based on the achievement tests until the tests are validated and tested for reliability with adult educators.

5) The purpose of this study was to determine in some degree the internalization resulting from experience with the audio modules based on Transactional Analysis. Internalization was measured chiefly through responses to a questionnaire mailed to participants three to five weeks after their experience with the module. Four participants failed to provide information so that the questionnaires could be mailed to them. Other participants failed to respond even though questionnaires and reminders were sent to them. Consequently, the data presented in the study pertaining to internalization is limited by the failure to obtain responses from the total study population.

6) The criteria by which internalization was measured were limited to the operational definition presented in this study. Conclusions and recommendations for the study are limited to this definition of internalization.

The Design of the Study

The study was exploratory in nature in that it was an initial attempt to determine the suitability of utilizing the audio modular
instructional approach in the initial training of adult educators in communication skills based on Transactional Analysis. The study included another level of investigation in that it sought to determine the degree of internalization of the concepts and skills presented in the modules through the use of a delayed questionnaire. The following subsections briefly describe the evaluation design of the study.

Procedures Used for Phase One of the Field Testing

The population for the present study consisted of thirty-one adult educators from the New England area. On the first day of a week-long workshop for teachers of English as a second language, the adult educators participated in the audio modular unit. A second session of field-testing was conducted in Somerville, Massachusetts, with teachers in the adult education program. A third session was conducted in Worcester, Massachusetts, with instructors in the local adult education program in that city. In the second and third testing sessions both modules of the audio unit together with the relatively lengthy evaluation package were given to the teachers who completed the modules and the evaluation at their own convenience. The investigator felt that testing the unit in this way was appropriate since the unit was intended to be self-instructional although there was obvious disadvantage in handing participants so much material all at once.

Assessment Procedures Used to Determine the Suitability of the Unit

The assessment procedures used in this phase of the study were based on the criteria established in the definition for "suitability"
as this term was used operationally in the present study. These criteria, and the assessment procedures used for each criterion are 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 was asked to react to a series of "closed" questions focused on his/her attitude toward the audio modular instructional unit in which he/she had participated. These questions were presented on a written questionnaire, and were administered to the participant immediately upon the completion of the unit. In the "home-testing" sessions participants were asked to complete the evaluation immediately after using the modules or very shortly after the experience. 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 unit. 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 has been 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 several in-service training approaches commonly implemented for adult educators. This rank-ordering process was in relation to the participant's preference
as to which instructional approach he/she would choose to experience.
Within this list, a reference to the audio modular instructional approach was included. The data produced was analyzed in two different ways. The first was to determine the number of times each approach was assigned a certain rank value. The second approach was to weight 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 signifies any other type of experience by which the participant could achieve the same learning experience. The participants were asked to react to two Semantic Differential Scales. On the first scale, the participants were to react to the concept, "The Audio Modular Instructional Approach as One Alternative Approach to In-service Training for Adult Educators". On the second scale, the participants were asked to react to the concept, "In-service Training Programs for Adult Educators in Which You Have Participated (Excluding the Audio Modular Instructional Approach)". The mean polarity scores were calculated for the factors of evaluation, potency, receptivity and activity. The mean polarity scores for a number of individual polarity traits were also calculated. The difference in the mean polarity scores for the two concepts were 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 four 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 as a result of participation in the modular experience.
The pretest-posttest nonequivalent control group quasi-experimental design was used in an attempt to determine the cognitive changes which may have occurred as a result of participating in the audio modular instructional unit. An achievement test, based on the performance objectives for the unit, was constructed, validated and tested for reliability. There was one achievement test for each module. The validation for both tests consisted of the following procedures:

a) Sixteen elementary and high school teachers from the faculty of St. Michael's School in Northampton, Massachusetts, participated in the validation process. These study members were divided into two equal groups: an experimental and a control group. All the study members were given the achievement test (Test 1) designed for the module. One week later a retest (Test 2) was given to all the study members. The Pearson Product-Moment Correlation Formula was used to determine the relationship of the two sets of scores. The correlation coefficient to some degree indicated whether the achievement test possessed the factor of reliability.

b) The eight members of the experimental group participated in the audio modular instructional experience after they had taken the retest (Test 2). They were asked to participate in the module within a week after the retest. Not all of the participants completed the module within a week but there was no lengthy delay between the retest and the participation in the module for any participant. Immediately upon completion of the module participants took Test 3. Test 3 was identical with Test 1 and Test 2. The Pearson Product-Moment Correlation Formula was used to determine the relationship between Test 2 and Test 3 of the experimental group. The correlation coefficient to some degree indicated whether the achievement test possessed the factor of validity. The difference between the mean scores for Test 2 and Test 3 was analyzed for variance to determine if the difference in scores reached a statistical level of significance.

During the field-testing the achievement tests were administered twice to the teachers who participated in the two modules. This experimental group was administered the tests before and after they participated in the modules. The members of the field-testing control group
(the adult educators who did not participate in the modules) were administered the tests only once. The mean score for each group, for the three administrations of the achievement tests, were calculated separately. The difference in the individual group mean scores resulting from the three administrations of the tests were 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 to determine the potential for further development of learning experiences utilizing the same instructional approach. The participants of the field-testing were asked to react to a number of "open-ended" questions presented on a written questionnaire. These questions focused on 1) the participant's desire to participate in any additional audio modular units; 2) the conditions under which they would participate in additional units; 3) the value of developing any more audio modular instructional units; and 4) the types of skills which could be learned through the use of the audio modular instructional approach. The data from these questions were 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. The investigator kept a record of the time spent in the designing, developing and production of the modules. The time estimate in terms of days spent in the development is relatively accurate since the production of these modules was the sole project of this investigator during the time of the development of the modules. The cost factor for the production of the original or master copy has been calculated from the
records of dollar cost incurred in assembling the modules. Then the
cost of producing copies of the module once the master copy is available
has been calculated.

Procedures Used for Phase Two
of the Field Testing

The second phase of the field-testing involved as many as possible
of the original experimental group who participated in the two audio
modules during Phase One of the field-testing. In the second phase
there was an attempt to measure the degree to which internalization of
the concepts of Transactional Analysis resulted from participation in
the audio modules. A brief description of the procedure used during
this phase follows.

Assessment Procedure Used
During Phase Two

The assessment procedure used in this phase of the study was based
on the criteria established in the definition for "internalization" as
the term was used operationally in the present study. "Open-ended"
questions on a written questionnaire were sent to all participants whose
names and addresses were available to the investigator. The responses
from this instrument were used to determine the degree of internalization
of the concepts and skills which had been presented in the audio modules.
The responses are presented in the form of number and percentage of re-
sponses made for the categories established. The data from this proce-
dure has been studied and considered in the development of the conclusions
and recommendations of this study.
Treatment of the Data

Since this evaluation model included both "open" and "closed" questions the data has been treated in two ways. "Closed" questions could be quantitatively treated. Responses to these questions were tabulated and presented in the form of number and percentage of responses made for each choice provided. Then the mean response was calculated and reported. In the cases where the "closed" questions called for a comparison of the audio modular approach with other approaches the data was subjected to a statistical analysis of variance using the t test to determine if the differences in responses showed a significant difference.

"Open" questions had to be interpreted and categorized. They were presented in the form of number and percentage of responses made in each category established. With the "open" question as well as with the "closed" question data have first been presented in tabular form and then discussed in narrative. The narrative discussions and the final conclusions and recommendations have tried to interpret the general pattern of responses as this pattern can be found to be supported by the quantitative data. The conclusions and recommendations have been developed in an effort to answer the questions posed in the introduction to this study:

1a) is the audio modular instructional approach a suitable method for providing initial training in communication skills based on Transactional Analysis?

1b) does any internalization of the concepts and skills presented in the modules result from the experience with the modules?
2) Is the audio modular instructional approach a suitable in-service training alternative for adult educators?

Significance of the Study

Adult educators have indicated a need for improved communication skills. Much work has been done in the area of improving communications but often to avail oneself of these efforts it is necessary to attend group interaction sessions or to travel to human development labs for intensive experiences or to take in weekend or week-long training sessions. No matter how good and effective some of these training techniques may eventually prove to be, the fact remains that for most of the people these occasions will remain inaccessible because of the commitment of time, money or travel which they necessitate.

Eric Berne responded to this precise need in his development of Transactional Analysis. He perceived that many people wanted help but could not get it either because help was too expensive or the process of help was too drawn out to be effective for individuals who wanted to improve their way of life immediately. In developing Transactional Analysis, Berne insisted that the theory be simple and based in observable reality so that the approach could be easily learned and used by man for man.

This study is an effort to determine if the basic understanding of Transactional Analysis can be successfully disseminated through the use of the audio modular approach. This effort is made in response to a need indicated by the adult educators in the area for improvement in communication skills. It is an effort also made in response to a desire to make this approach to the understanding of behavior and communication
easily available especially to teachers because it is the belief of this investigator that this approach has a great potential for causing teachers to engage themselves in influencing second order learning activities. For it is the investigator's further belief that the reformation of the educational system into a relevant social system depends on the operationalizing of the goal of the school system to create experiences which will maximize the learning opportunity for each student.

Organization of the Dissertation

Chapter One of this study has consisted of the statement of the problem and purpose of the study, the definition of terms, the design of the study and the definition of the suitability factor which has been the justification for the entire study. Chapter II presents a review of the development of the systems approach in education, a survey of systems developments in education including the various developments resulting from the concept of instructional systems, a review of the studies closely related to the present study and finally a review of the recent literature on the assessment of training. Chapter III presents a case study of the design and development of the modular unit used in this study. Chapter IV gives a detailed description of the composition of the study population and the procedures used in the assessment of the suitability of the approach. Chapter V is a presentation of the data and an analysis of the findings of the study. Chapter VI includes a summary of the findings, conclusions drawn from the study and recommendations based on the objectives of the study.
Footnotes


3. Final Report of the Institute for Training Adult Basic Education Teachers sponsored by a grant from the Department of Health, Education and Welfare to the University of Southern California.


CHAPTER II
REVIEW OF LITERATURE

The audio modular instructional approach is an instructional methodology which has evolved out of the systems approach to instruction. This chapter presents a review of the literature related to the systems approach in education, including a history of the development of the approach, a description of instructional systems and the developments generated by the use of the systems approach to instruction, and a review of the ways the approach is being applied in education. The chapter also presents a review of research closely related to this present study and a review of the recent literature on training evaluation methodology.

The Systems Approach in Education

An analysis of the writings on the instructional systems approach in educational literature reveals two trends taking shape and then combining in the evolution of what we can recognize as the systems concept in education today. Most obviously, the rapid adaptation of the systems approach to organizations of every kind influenced educators to think of the whole educational organization as a system which might profit from the application of an approach evidently highly successful in the huge organizations represented by the military and by industry. The other trend which enabled educators to realistically think in terms of the systems approach to instruction had been taking shape from the theorists for some time as they tried to refine the relationship between learning
and behavior. How these two trends can be found taking direction from educational thinkers is discussed in this section.

Development of the Systems Concept

Almost all of the writers who make mention of the historical development of the systems approach to education date its beginnings during World War II with the research and development that went into the designing of the weapons systems. As early as 1956 Finn referred to this beginning as Herrmann and Magee later did in their explanation of how the systems concept gained a foothold in industry through the area of business management. Banathy and Geisinger also refer to the weapons systems as the prototype of the systems approach. Twelker, preparing an overview and basic guide to the literature on the systematic development of instruction simply states that the approach can be traced to the weapons system in the military and more recently to the commodities production in industry.

Silvern, however, traces the beginnings of systems analysis and synthesis, not from the military to education, but from education to the military and thence back to education. Early in the nineteenth century Herbart had developed a mathematical model of human performance and had formulated his "formal steps" for education. Silvern is able to trace the formal steps through Ziller and Rein, DeGarmo and McMurry who imported Herbart's concepts into the United States where they were adopted by Charters in his "curriculum construction" dealing with job analysis in 1923. Allen somewhat revised the "formal steps" in 1919 so that they became: preparation, presentation, application and inspection; and
applied them in the field of vocational education. Silvern sees Allen's contribution as an important one for it translated Herbart's thinking into "rational and immediately applicable techniques at the 'large system' level" of education. If Allen's suggestion had been followed in 1929 the development of the systems approach in education might have continued without interruption for he suggested applying the analytic technique, being used already successfully in vocational education, to general education. However, his suggestion did not take hold at that point in time because of a situation Silvern says Keller most aptly described:

The sharpest criticism of the traditional school has been directed against its lack of a sense of reality. Its cloistered teachers, without experience in the world of work transmit to their pupils only what they themselves have learned from other teachers who had no contact with life, and so on as far back as you care to go. Essentially, this has been a just criticism . . . the vocational school never got into the circle because it was predicated upon life itself.

Allen was joined by Cushman in the 1920's in the work of applying theoretical concepts to real-life situations. Later Cushman helped design the civilian employee training programs of the Army and Navy prior to and during World War II. Thus what was born and bred in education was obstructed there and taken into military for its continuing development. In 1941 the War Manpower Commission emphasized the influence of Allen and Cushman on those who initiated the "Training Within Industry" program. By the end of World War II analysis, job analysis and the "formal steps" were organizational concepts being employed not only in vocational education but in military, business and industrial training as well. Only after its development and application in these organizations did the technique become significant to educators in general.
Main aspects of the systems approach. Writing in 1968 Silvern found more than fifteen definitions of the term "system" by practitioners from many disciplines. Most writers would seem to agree on a general definition such as: a set of parts dynamically interrelated. However, which parts are essential and fundamental to the systems approach is not a matter of unanimous agreement.

Silvern sees the concepts of analysis and synthesis which he traced back to Herbart as the fundamental processes of the systems approach.

The application of analysis and synthesis to a system, the iterative, high-speed mental process of analysis . . . synthesis . . . analysis . . . synthesis . . . analysis . . . synthesis . . . may be termed anasynthesis and this is, in fact, the real meaning of "system approach." Analysis, he says, consists of identifying, relating, separating and limiting. Synthesis is the process of combining non-related elements, showing the relationship of these elements to each other in a new, meaningful whole, a new configuration or gestalt which satisfies some particular real-life environmental requirements which face the synthesizer. Silvern used these concepts to review forty-six contributions to system conceptualization between 1954 and 1964.

Banathy says that a system is characterized by three main aspects: purpose, process and content. This particular sequence indicates the priorities among the three aspects. The purpose is the most important aspect since it says what is to be accomplished and is the reason for the selection of process and content. The content is selected on the basis of its ability to make possible the operations or processes which have been selected because of their ability to achieve the purpose for which the system was designed. To these three main aspects, Banathy
adds feedback, the continuous assessment of its output as a necessity for system maintenance.

Other writers who define the main aspects of systems approach are more specific in outlining strategies as main aspects. Kaufman's system is characterized by four major level tasks: selecting a solution strategy, implementing it, determining its performance effectiveness and revising and correcting as necessary. Kaufman's system is characterized by four major level tasks: selecting a solution strategy, implementing it, determining its performance effectiveness and revising and correcting as necessary.\footnote{11} Merrill identifies major components in the educational system: learner, environment and instruction. He describes his system by designating how these three components interrelate in the system input and output.\footnote{12} The essential aspects of Smith's instructional system are the learner and five functions: practice of performance, practice of knowledge, presentation of knowledge, management of students and quality control.\footnote{13} Gagne's system includes statement of purpose followed by three developmental stages: the design stage, the development stage and the testing stage. After the system has been tested, there follows system training, system evaluation and systems operations.\footnote{14} Davis said that the process of systems design includes: preparation of operating description, statement of objectives, trade-off analysis between alternatives, flow charting, production of materials, and evaluation.

In reporting Project Aristotle's extensive study of the nature of systems analysis, Lehmann outlined the following eight steps in the systems approach: statement of need or problem, objectives—measurable learning goals, constraints, alternatives, selection, implementation—pilot operation, evaluation and modification.\footnote{15} Lave and Kyle specify nine steps: goals, scope, objective function, conceptual framework,
analysis model, measurement model, testing, alternative solutions and implementing.\textsuperscript{16} Twelker, in an overview of five systems, found three common denominators: defining, developing and evaluating.

**Impact of systems approach in education.** Writing for *Audiovisual Instruction* in 1968, Canfield identified two distinct levels of impact of the systems approach in the field of education.

During the past five years or so, a potentially powerful approach to instruction has emerged. That approach, called "systems", has encompassed both the concepts of an open (to the environment) system in its larger context and a closed (to the environment) system in its smaller sense.

The open system includes all elements of an instructional system, starting with some form of job and task analysis and terminating with some form of task performance assessment. The encompassed closed system starts with behavioral objectives for small units of instruction and ends with some form of learning assessment and reinforcement.\textsuperscript{17}

Twelker finds three levels of impact of the system approach in education:

1. The end result of systematic development is the instructional system. The instructional system is a tried and tested combination of related materials and events which consistently achieve specified objectives, an empirically developed set of learning experiences which bring about a given learning outcome for a given set of learners with a given degree of reliability.

2. Systematic development consists of a series of planning, developmental and evaluation techniques which provide information to revise the instructional system until it works to the developer's satisfaction.

3. Systems approaches are management techniques of seeking solutions to educational problems or at least of making use of every resource available to the improvement of education.\textsuperscript{18}

Geisinger says that systems analysis has been applied to a wide variety of areas in education: the aims and objectives of education, instructional systems development, the educational institution as a
system, educational finance, plant construction, counselling, school
district processes and educational policies outcomes.\textsuperscript{19}

**Learning as behavior change.** The other trend which has combined
with the widening application of the systems approach in education to
give us the concept of the instructional system is that of defining
learning as behavior change. Loomer says that Tyler was one of the
first to rely on behavior change as evidence for learning.\textsuperscript{20} Tyler is
supported by such present day theorists as Gagne, Glaser, Popham,
Woodruff and, of course, Skinner. A review of what these men have to
say about learning as performance will make clear how this emphasis
changes the focus of the instructional process.

The instructional process as it existed in the traditional school
would be fairly described, I think, by saying that it was a structure
established to facilitate, by means of the teacher's organization and
presentation of the content, the student's acquisition of a certain body
of knowledge. If we use Hedegard's four criteria for classifying in¬
struction with regard to the dimension of activity, the "traditional
school" could be described as adhering to a reactive theory of instruc¬
tion according to all four criteria:

1. Whether the student selects the material for study (active)
or the teacher makes the selection (reactive).
2. Whether the student selects the study activity (active) or
the teacher makes the selection (reactive).
3. Whether the student studies real things (active) or the
symbols for things (reactive).
4. Whether the student's thought processes are presumed to
involve organizational principles (active) or are con¬
sidered passive connections of impressions (reactive).\textsuperscript{21}

Characteristically, the teacher presenting content is the focus of
attention in the "traditional school".
But when learning is described in terms of behavior change and instruction is assessed by measuring the change in the learner's behavior, the focus of instruction shifts from the teacher-presenting-content to observable learner behavior. The difference which this change of focus makes in the organization of instructional system can be understood from Glaser's discussion contrasting component repertories and content repertories:

A subject matter expert usually can divide his subject into subtopics, primarily on the basis of content interrelationships and subject matter logic and arrangement. In contrast, a psychologist considers subject matter analysis less in terms of content-orientation and more in terms of the behavior of the learner and the kind of stimulus-response situations involved. "Content" and "subtopic repertoires" are terms that can be used to refer to a subject matter oriented analysis. The term "component behavioral repertoire" or merely "component repertoire", can be used to refer to a behavioral analysis. The concern of psychologists with taxonomies reflects initial attempts to develop schemes for describing and analyzing component repertoires.

From the point of view of instruction, the practical requirement for component repertoire analysis is to identify the kind of behavior involved so that the learner can be provided with instructional procedures and environmental conditions which best facilitate the learning of that kind of behavior. 

In the reactive instructional system the teacher is the "subject matter expert", content oriented and concerned with subject matter analysis and exposition. In an instructional system based on the theory that learning is behavior change, the concern of the instructor is to analyze his subject matter for the behaviors which the learner needs to achieve and then to provide the learner with the information and practice opportunities necessary for the achievement of those behaviors. The learner is clearly the focus of attention. The teacher takes the unobtrusive role
of facilitator using subject matter in whatever way it serves the learner in acquiring the desired behavior.

Lee describes the changing role of the teacher: "the teacher must function more as a catalyst, as one whose prime obligation is the stimulation of the urge to inquire and the oversight of individual, independent study. Fact and information are vital, of course, but in this perspective they become instruments for teaching and learning rather than ultimate ends in themselves."^{23}

Woodruff offers a perspective for the understanding of learning in terms of behavior change. He says that most often when psychological ideas have been used in the formulation of instructional practices very general concepts are used as the basis for the approach. The result is that the instructional practices developed are internally consistent but lack relation to systematic and validated concepts of learning and behavior. The assessing of learning in terms of behavior change, on the other hand, starts with actual data about human behavior and moves from there to the establishing of educational practices. And this approach Woodruff considers the only productive one.\(^{24}\)

Oliver points out the same kind of difference in approaches in terms of the difference between the scientific approach and the technological approach. The scientific approach, he says, is to do in order to know, whereas the technological approach is to know in order to do. Science studies the environment to explain phenomena while technology studies phenomena in order to control environment. Oliver defines and describes instruction as a technology in its goals and in its modes of functioning.\(^{25}\)
Gagne is using the technological approach as described by Oliver when he begins by studying the phenomenon of behavior and from these observations establishes his categories for kinds of behaviors and the accompanying sets of conditions which facilitate the achieving of the various kinds of behavior.

How can one determine what learning is? The plan to be followed in this volume is to classify some everyday observations about learning, and thus to identify and distinguish some varieties of situations in which learning occurs. Once these varieties of learning have been identified, an account can be given of the conditions that govern the learning occurrences. This will lead to a description of the factors that determine learning, derived insofar as possible from available evidence in controlled experimentation. By this means it will be possible to differentiate several kinds of learning, each requiring a different set of conditions for its occurrence.²⁶

It is important to note that this concept of learning is not merely an interpretation of the theory that all learning is basically association or operant conditioning. Woodruff notes that in contrast to such S-R descriptions of human behavior, a cognitive theory which is assumed by these writers includes a third and important component:

Cognitive theory is an S-O-R (Stimulus-Organism-Response) approach to the study of variables that develop within an organism as a stored residue of experience that subsequently takes on mediating or directive influence over behavior.²⁷

Skinner himself does not hold otherwise in his following defining of the parameters of behaviorism:

Contrary to the frequent assertions, a behavioristic formulation of human behavior is not a crude positivism which rejects mental processes because they are not accessible to the scientific public. It does not emphasize the rote learning of verbal responses. It does not neglect the complex systems of verbal behavior which are said to show that a student has had an idea, or developed a concept, or entertained a proposition. It does not ignore the behavior involved in the intellectual and ethical problem solving called "thinking". It does not overlook the
value judgments said to be involved when one thing is taught rather than another or when the time and effort given to education is defended. It is merely an effective formulation of those activities of teacher and student which have always been the concern of educational specialists.  

He does not argue with the theory that learning is a change in some part of the organism, possibly the nervous system and that behavior is merely the external sign of it. At the same time he points out that "behavior can be much more successfully studied and manipulated than any inner system, even when inferences about the latter are drawn from the behavior with the help of sophisticated statistics."  

The trend that has been identified in the thinking of these writers, the assessing of learning through the measuring of the external sign of it in changed behavior, influences the instructional process by making it descriptive of what the learner will be able to do rather than prescriptive of what he will be done to. This difference is crucial in the instructional systems approach in education.  

**In summary.** In this section we have distinguished two trends which have combined in the development of the concept of instructional systems: the systems approach itself and the assessing of learning as behavior change. In the following section we will describe the instructional system process and review the literature that has appeared in regard to the important aspects of this process.  

Description of Instructional Systems  

Canfield says that no other single writing has had an impact on the emergence of instructional systems equal to Mager's 62-page booklet, *Preparing Instructional Objectives.* Mager's is a practitioner's
handbook for preparing specific instructional objectives for subject or course work. Without denying Mager's influence we need to look to other writers for a description of instructional systems from a broader perspective.

Banathy presents a broad framework and comprehensive explanation of the instructional systems concept, including both the closed and open system Canfield referred to.

Systems are assemblages of parts that are designed and built by man into organized wholes for the attainment of specific purposes. The purpose of a system is realized through processes in which interacting components of the system engage in order to produce a predetermined output. Purpose determines the process required, and the process will imply the kinds of components that will make up the system. A system receives its purpose, its input, its resources, and its constraints from its suprasystem. In order to maintain itself, a system has to produce an output which satisfies the suprasystem.\[31\]

Having established this general definition of a system, Banathy describes education in terms of a system.

Education is certainly a man-made synthetic organism with a specific purpose. Its purpose is usually integrated with and influenced by the purpose of its suprasystem, society. It is society from which education receives its input, resources, constraints, and evaluation of adequacy. Education also has numerous subsystems such as the instructional subsystem, guidance, administration, and so on. Each of these subsystems has its own objective and yet each serves the over-all purpose. As the subsystems function, they influence the performance of their peer subsystems. Education is, furthermore, product oriented, its products being the educated man and the knowledge produced through research. Those responsible for conducting education also try to practice and promote economy. They attempt to maximize output, to improve continuously the performance of the product with the most economical use of resources. We can conclude, then, that education is a system in our specific sense of the term, and that education may therefore benefit from the application of the systems approach.\[32\]

Banathy identifies learning as the purpose of the system in education and instruction as its process. Therefore any interaction of the learner
with the environment which brings about learning is a component of the instructional process. With the purpose and the process of the educational system thus defined, Banathy translates the major system strategies into the domain of education:

1. Formulate specific learning objectives, clearly stating whatever the learner is expected to be able to do, know and feel as an outcome of his learning experiences.
2. Develop tests to measure the degree to which the learner has attained the objectives.
3. Examine the input characteristics and capabilities of the learners.
4. Identify whatever has to be learned so that the learner will be able to perform as expected.
5. Consider alternatives from which to select learning content, learning experiences, components, and resources needed to achieve the stated objectives.
6. Install the system and collect information from the findings of performance testing and systems evaluation.
7. Regulate the system. The feedback from testing and evaluation will serve as a basis upon which the system will be changed—by design—in order to ensure ever-improving learning achievement and optimum systems economy.

Having presented this broad framework of the instructional system, we will review the educational developments which have resulted from the component strategies.

**Formulation of objectives.** The literature discussing the formulation of performance objectives is prolific. This is the strategy which is the most obviously related to the growing identification of learning with behavior change because objectives are to be stated in terms of the expected output performance of the learner.

This is the area of instructional systems upon which Mager has had the impact which Canfield spoke of. Mager was the first to demand a high level of specification in the stating of objectives. He discouraged the use of terms such as: know, understand, *really* understand, appreciate,
fully appreciate, grasp the significance of, believe, have faith in, in the formulation of objectives because these terms are open to many different interpretations. These words denote internal changes which cannot be observed and assessed. If we are to assess learning we must ask the learner to demonstrate overtly his understanding and appreciation.

Mager outlined three requirements for acceptable educational objectives:

First, identify the terminal behavior by name; you can specify the kind of behavior that will be accepted as evidence that the learner has achieved the objective.
Second, try to define the desired behavior further by describing the important conditions under which the behavior will be expected to occur.
Third, specify the criteria of acceptable performance by describing how well the learner must perform to be considered acceptable.\(^3^4\)

To these three essential elements of behaviorally stated instructional objectives, Canfield suggested the addition of a rationale. The rationale would aid the realization of the aims of the approach by clarifying for both teacher and student the purpose of the proposed instruction.\(^3^5\)

Gagne compares Miller's formulation of the elements of a task description, as outlined for the training of technicians in the military, with Mager's characteristics of good performance objectives and finds an amazing similarity. The task description, according to Miller contains the following elements:

1. An indicator (or indication), which is the signal for the beginning of the action. (Example: a light has come on.)
2. An action word, usually a verb and its qualifiers. (Example: push to the right.)
3. A control, a physical object which the individual manipulates or otherwise acts upon. (Example: a toggle switch.)
4. An indication of response adequacy, another signal which tells the individual when his action is correctly completed. (Example: the click of a switch.)\(^3^6\)
Gagne concludes from the fact of the similarity of these two lists of criteria arrived at independently in different fields that "they must both be right and that the technique of description must be a straightforward and unassailable one." His own description of performance objectives or task descriptions stresses characteristics rather than distinct elements.

It is evident, then, that descriptions of tasks must be complete, unambiguous, internally consistent, and reliable (in the sense that two readers would make the same prediction from them), in order to fulfill this function. Descriptions of tasks do not depict "raw behavior"; they do not, in a psychological sense, inform the reader what the human operator is "doing." Instead, they state only the accomplishment or outcome of the behavior, which is usually called performance.

Criticism of performance objectives. Most of the criticism of the systems approach to instruction has been focused on the practice of defining educational objectives in performance terms as the keystone of the systems approach to instruction.

Eisner has been one of the most constant critics of instructional or performance objectives. In School Review (1967) he raised a number of objections:

1. Practitioners who use performance objectives tend to overestimate the degree to which it is possible to predict educational outcomes.
2. All subject matters are analyzed in the same way with regard to the level of specification required in stating objectives.
3. Practitioners of educational objectives do not recognize the difference between applying standards and making judgments in the function of appraisal of educational outcomes.
4. Formulation of educational objectives is required as the first step in curriculum development and hence has displaced psychological priorities in educational planning.

In 1969 Eisner had more objections. Gagne had suggested that the content
of curriculum should be stated as objectives which the student is able
to accomplish and gave the following definition for content: "descrip-
tions of the expected capabilities of students in specified domains of
human activities." Eisner saw the necessity for an absolutely un-
manageable number of objectives if this concept of content were ever
adopted. He carried out some calculations for an elementary teacher
with three groups of students in seven subject areas and found that that
teacher would have to formulate 4,200 behaviorally defined objectives
for a school year. An instructional system which would put such demands
upon the classroom teacher would force the teacher into the role of be-
havioral engineer at the neglect of other aspects of educational encoun-
ter. These other aspects are such that Eisner felt could not be formu-
lated into unambiguously specified instructional objectives: aspects
such as the school's obligation to enable children to make contributions
to his culture by providing opportunities for the individual to make his
own interpretations of reality and experience. He points out elsewhere
that central concern with performance objectives causes educators to
change the focus of their attention from cognitive operations as the
crucial issue to characteristics of the product.

Dyer advances the argument that if the focus of curriculum writers
is on the closed system of designating objectives and evaluating perform-
ances in terms of the given objectives, they may overlook certain out-
comes of the whole system which could not be observed from within the
system. His example is that of the "new curriculum" in the sciences
which appeared adequate and efficient systems in themselves except that
enrollment in the courses dropped drastically.
Ebel shares Eisner's fear that the number of educational objectives will grow beyond all bounds and that teachers will end up spending all their time writing objectives instead of teaching. He continues with a more philosophical objection in that he sees the educational objectives approach to structuring curriculum as bringing about the learning of a host of particulars which we cannot be sure will serve tomorrow's adult at all.

In a free and changing world in how much detail can the behavior of free men be prescribed and predetermined? Can members of this generation foresee accurately how members of the next ought to behave when they become adults? Should education be viewed more as a means of increasing the resources of the individual as he seeks to choose his own behavior wisely? Should it not enlarge the repertory of alternative courses of action available to him? Should it not improve the accuracy of his perceptions of the probable consequences of choosing each? Should it not emphasize the cognitive input to decision making rather than the behavior output? To those who believe it should, behavioral objectives have lost some of their luster. 

Loomer sees difficulties with the practice of using specific educational objectives as structures for instruction. A teacher in a classroom, he says, is continually faced with the task of transferring objectives into meaningful chunks of learning or making meaningful chunks of learning fit into the prescribed objectives. He also believes with Eisner that for some internal reactions of the learner there may be no available way of expressing experienced understandings or values. His final objection deals with the assumption which forms part of the basis for performance objectives: that learning is sequential. He says that the discovery method has shown that nothing is more logical than the illogical way children learn. Emphasis on sequential learning could
destroy individuals' private approach to problem solving and the very essence of creative behavior.\textsuperscript{45}

Louise Tyler formulates the following eight reasons for teachers resisting specification of ends and appropriate means of instruction.

1. Teachers are accustomed to thinking in terms of what they do, i.e., how they select films, how they distribute books or how they mark papers.
2. Teachers are convinced that the difficult task in teaching is to motivate students.
3. Most teachers think behavioral objectives are highly specific and usually insignificant.
4. Teachers believe it is an overwhelming task to formulate objectives for all the students in classes—yet this must be done if individual differences are to be considered.
5. Teachers believe that what is presented is less important than how.
6. Pre-specification of objectives makes it difficult for a teacher to pursue ideas which emerge spontaneously in classrooms.
7. If objectives are prespecified, learners are not involved in the formulation, and according to some teacher they should be.
8. Some objectives do not lend themselves to measurement, yet they may be more important than those that are measurable.\textsuperscript{46}

Popham offers a different list of reasons for the general avoidance of behavioral objectives. In addition to some of those Tyler gives, he finds these objections raised:

1. Besides pupil behavior changes, there are other types of educational outcomes which are important, such as changes in parental attitudes, the professional staff, community values, etc.
2. Measurability implies behavior which can be objectively, mechanistically measured, hence there must be something dehumanizing about the approach.
3. It is somehow undemocratic to plan in advance precisely how the learner should behave after instruction.
4. That isn't really the way teaching is; teachers rarely specify their goals in terms of measurable learner behaviors; so let's set realistic expectations of teachers.
5. In certain subject areas, e.g., fine arts and the humanities, it is more difficult to identify measurable pupil behaviors.
6. While loose general statements of objectives may appear worthwhile to an outsider, if most educational goals were stated precisely, they would be revealed as generally innocuous.

7. Measurability implies accountability; teachers might be judged on their ability to produce results in learners rather than on the many bases now used as indices of competence.

8. It is far more difficult to generate such precise objectives than to talk about objectives in our customarily vague terms.47

Criticism of performance objectives answered. The concerns related to highly specified educational objectives fall into three categories: concern for the difficulty either because too many objectives would be required and teachers would become behavioral engineers or it becomes increasingly difficult to specify terminal performances the more complex the learning tasks; concern for creativity, spontaneity, individuality, discovery and insight in the learning experience; concern for the ethics of deliberately manipulating the behavior of other individuals.

To those who believe that complex learning behaviors are so difficult that teachers will settle for operationalizing and emphasizing trivial learner behaviors, Popham answers that on the contrary stating objectives explicitly will enable teachers to identify trivial or unimportant aims and reject them for more important instructional outcomes. He agrees that operationalizing more complex learning is much more difficult but he believes that in the absence of such specific operationalization, teachers tend to express profound and laudable aims and goals while expecting only the most trivial kinds of pupil behavior as terminal performance. Recognition of the triviality of the kinds of learning most emphasized in the classroom might bring painful moments of truth to
teachers but it is part of experience of walking in the light after being long accustomed to maneuvering in dim and gloom of imprecision and non-directed teaching.

To the charge that the task of stating behavioral objectives for all subject areas appropriate to all students is not in reality humanly feasible, Popham points out that it is not necessary that each teacher formulate the objectives he uses in the classroom, no more, we might add, than it was ever expected that each teacher write all his own textbooks. He refers to the fact that there are more teachers than there are jobs and that now is the time to let the teacher become a professional decision-maker. "This is the time when we must give the teacher immense help in specifying his objectives. Perhaps we should give him objectives from which to choose, rather than force him to generate his own." Popham suggests that federal funds could well be spent on commissioning agencies to produce alternative behavioral objectives for all fields and all levels.

Gagne answers the concern that the rigorous sequencing of learning could destroy the creative element in learning. He does not deny the facts that long-range outcomes of behavior are more important than immediate ones and that all of the outcomes of learning experiences cannot be foreseen or predicted. He finds nothing in these facts to prevent planning for some specific, expected outcomes which are immediately demonstrable. In fact, the alternate approach would be ridiculous: to believe that because long-range outcomes are more important than immediate ones and because not all outcomes can be predicted there should be no expectation of immediate demonstration of learning. Gagne does not
deny the value of creativity or insight and does not hold that all learning is sequential. However, he does insist that instruction ought to be planned. If discovery and insight and creativity are not logical so that it is not possible to structure instruction to the expectation of these kinds of changes, educators ought to plan for the kinds of learning that can be observed to occur sequentially, lest they plan for and achieve no learning at all.

Finally, the objection about the deliberate manipulation of the learner's behavior is answered by Kosimar and McClellan. Formal instruction has always been manipulative and undemocratic by nature. At least with educational objectives stated behaviorally, instructor and learner will know to what end the learner is being manipulated. This knowledge will give both the instructor and the learner more control over the learning environment and thus the instructional system will be more democratic than the traditional educational situation has ever been.

The analysis of learning tasks. The literature on this component strategy of the systems approach focuses on efforts to analyze learning for the kinds of competencies involved: what capabilities must the learner have in order to perform in the expected way. Need for this kind of analysis has led to significant efforts to classify types of learning. The earliest of these efforts to gain recognition were made by Bloom and his associates in the Taxonomy undertaking. This group described six major categories of learning, each containing a variety of subcategories. The major categories are: knowledge, comprehension, application, analysis, synthesis and evaluation. The Taxonomy achieved widespread popularity among educators and sparked interest in formulating
more measurable educational objectives. However, as more stress came to be placed on inferring learning from observable behavior, fault was found with the language of the Taxonomy.

Any attempt to use the Taxonomy in the formulation of objectives must take into account its lack of precision in indicating either specific overt behaviors to be performed by the learner or the conditions under which they will be performed. . . . Rather than identifying classes of observable behaviors which can be used in task description and task analysis, the categories of the Taxonomy describe mental processes which are inferred from skills and capabilities described in general terms in the Bloom et al. Handbook. . . . The Taxonomy's lack of specificity in dealing with task analysis and task description renders it useless for the purpose of sequencing instruction.52

In leveling this criticism against the Taxonomy, Sullivan had his own classification system to promote in place of Bloom's. The Association for the Advancement of Science published a list of ten performance descriptions in 1965. Sullivan took that classification, reduced the number and modified the definitions to eliminate the overlap he found in the AAAS list and came up with six categories. It is possible, he says, to classify nearly all the learner behaviors related to cognitive tasks in school learning. His final categories are: identify, name, describe, construct, order and demonstrate.53

Probably the most extensive work on classification of learning done in the Sixties is that of Gagne. His classifications vary slightly from publication to publication. In most of his writings he distinguishes six54 or seven categories.55 But in The Conditions of Learning he distinguishes eight types of learning: signal learning, stimulus-response learning, chaining, verbal-associate learning, multiple discrimination, concept learning, principle learning and problem solving.56
Efforts such as these to classify types of learning have not been made for the sake of evolving a theory of learning. They are practice oriented, established only to help the instruction designer determine the learner's needs in attaining a specified performance.

**The design of the system.** Once the strategy of task analysis has specified what the learner has to learn in order to perform successfully, the work of designing the system consists in determining how the system can best facilitate the learning tasks. Banathy sees four strategies necessary to carry out this phase of the instructional process:

1. Functions analysis (what has to be done and how).
2. Components analysis (who or what has the potential to do it).
3. Distribution of functions among components (who or what will do exactly what).
4. Scheduling (when and where it will be done).

Much educational research and exploration concentrates on studying this part of the educational process known as the pre-design or programming of learning.

Gagne has attended to this area of instruction in his efforts to determine for each kind of learning that can be distinguished the optimal conditions for its occurrence. Since learning is inferred from observable performance, the conditions that surround the event can be noted and described in objective language. It is possible then when a task analysis has been provided for the learning which has to take place, to manipulate the environment in such a way that the requisite learning happens effectively and efficiently. For each type of learning which he identifies Gagne discusses two sets of conditions: conditions within the learner and conditions in the learning situation. The conditions
within the learner are the prerequisites for the type of learning under
discussion and Gagne believes that these constitute the most important
class of conditions to be attended to. This emphasis can be noted in
the importance placed by instructional designers on sequencing of in-
struction. Once he has identified eight types of learning and set forth
the conditions of each type of learning, Gagne suggests that the content
of familiar subjects be reorganized in terms of learner competencies.
To demonstrate his suggestion he presents "learning sequences" for the
important curricular subjects: mathematics, science, foreign languages
and English. Once learning sequences have been established, the neces-
sary action is the establishment of the specific conditions required for
the type of learning designated in the sequence at hand. Here Gagne
indicates two possibilities: establishment of conditions by predesign
or extemporaneous design of conditions and he proceeds to present con-
vincing arguments in favor of the predesign:

1. The selection of proper learning conditions may be made
   as an unhurried choice, rather than in "spur of the moment"
decisions.
2. A "quality control" of the choice of learning conditions
   is ensured and maintained. Quality does not suffer from
   variations in teachers' skills.
3. Predesign makes possible pretesting. Whether or not a set
   of learning conditions has been correctly chosen and de-
   signed can be determined by trying it out on students, and
   revising if necessary.
4. Predesign of learning conditions greatly reduces the neces-
   sity for the teacher to use valuable time in extemporaneous
   design, and thus makes it possible for a proper emphasis
   to be restored to the teacher functions of managing in-
   struction, motivating, generalizing, and assessing. 59

The suggestion of the predesign of instruction can be traced back
to Throndike in 1912: "if, by a miracle of mechanical ingenuity, a book
could be so arranged that only to him who had done what was directed on
page one would page two become visible, and so on, much that now required personal instruction could be managed by print. The idea did not command attention then but with the advance of technology it has rapidly been developed in the last two decades. First, technology was used in education to produce devices for mass instruction. Late in the fifties the teaching machine was recognized as an important development of education automation. In 1960 the Department of Audiovisual Instruction of the National Education Association published its first source book on teaching machines and the techniques of instruction that are associated with them. In 1965 it published its second volume, this time not a sourcebook of basic papers on the topic but a book of integrative review chapters on the data and directions of educational technology. There are numerous writers on the predesign of instruction but probably the authors of Teaching Machines and Programed Learning, II represent the most noted researchers in the field. Among these are Skinner, Gagne, Stolurow, Davis, Lumsdaine, Mechner, Silberman, Markle, Komoski, and, of course, Glaser. These are authors whose names appear time and again in the literature on programed learning, self-instructional devices, and the predesign of instruction.

Implementation and quality control. According to Banathy the function of quality control requires two strategies: system monitoring and performance testing. The systems design brings to education a new emphasis in evaluation. For a long time recognition has been given to evaluation of student progress and student achievement, the pronouncement of judgment on the quality of the product, while evaluation of the process which produced the product was practically non-existent. As long
as educational goals are stated in terms of invisible mental and affective achievements of learners, it is impossible to determine how adequately or efficiently the educational process facilitates the learning. To counteract the tendency among educators to neglect the strategy of evaluation of the process, in his model for instructional systems, Smith develops an entire subsystem for quality control. Banathy recommends that once the system is in operation, the designer continue to assess its adequacy by asking continuously the questions that had to be asked in the initial design of the system: have all the learning tasks been designated? are the designed learning experiences providing environments in which the learner is actually accomplishing these tasks? are the learning experiences as designed requiring the learner to engage in any irrelevant activities? are there more efficient learning experiences for the student arriving at the expected output performance? As these questions are answered, appropriate changes should be introduced into the system.

In the area of performance testing, perhaps the most significant emphasis which can be attributed to the systems approach is that of measurement of the input competence since the output competence has been an area of testing on which educators have focused for a long time. The importance of this measurement of input competence can be inferred from Gagne's stress of the importance for learning of the conditions within the learner which constitute the prerequisite for the learning task at hand. Measurement of input competence is necessary to determine that the learner has the prerequisites. It will also help determine whether in fact the instructional design will constitute a learning experience
for the student, or if he has already had this learning experience through some alternate situation.

In summary. In this section we have discussed the developments which have grown out of the systems approach to instruction: the use of performance objectives in the structuring of curriculum, the development of taxonomies in the work of analyzing learning for behavior competencies, the predesign or programming of instruction and the emphasis on pre-testing or evaluation of prerequisites as a condition of learning.

In the next section of this chapter we will briefly review the reports of research carried out on the systems approach in education.

The Systems Approach in Education Research

The two kinds of research that could be expected to relate to the systems approach to instruction could be termed "snapshot" studies and "panoramic" studies. "Snapshot" studies would concentrate on a particular strategy, function or design within the system approach. "Panoramic" studies would examine all interrelated aspects of the systems operations. Cook says that the impact of systems approach is fugitive because applications of the approach are not recorded and so it is difficult to point to examples and results. He further suggests that reports are not made because the systems approach is often applied within a larger framework, to a subsystem rather than to the total environment. It is therefore difficult to assess the impact of the systems approach alone. Then, too, because educational research has often "attempted to study an unarticulated, incompletely defined and poorly controlled set of activities which were called a "method" there is little precise and specific data
on other approaches to instruction with which to compare the impact of
the systems approach. Most of the reports of applications of the systems
approach in education are descriptive in nature and do not include evalu-
ative studies of the projects.

Jung reports on an inservice program designed to provide needed
competencies for an entire staff of a school district to engage in sys-
tems analysis and synthesis prior to assessing educational needs and
developing curriculum to meet the needs. The project was one carried
out by the Northwest Regional Educational Laboratory in Portland.66

Tondow describes the results of a committee's study of problems
related to the systems approach. Palo Alto Unified School District
constructed and implemented several information systems: a student
information system to deal with scheduling, attendance, report cards,
and testing; a personnel system; and a simulation of a segment of the
counselling process.67

At Livonia, Michigan, the systems approach is used for administra-
tive work.68 The University of Connecticut has used the approach to
construct carrels to be used for self-instruction. A general evaluation
of this application is that the trainee's self-confidence is developed
with his use of processes and equipment.69 South Connecticut State
College designed Engleman Hall for multimedia instructional systems use.
The Hall is equipped with open and closed circuit TV, a TV production
center, a development laboratory, a mobile TV unit, preparation rooms
for assembling multimedia, a lecture hall, classrooms with cameras and
a discussion amphitheatre, a learning resources center with curriculum
library, a reading center, and psychological laboratories. Before the
class convenes for the first time, a team of teachers meets, decides on course content, demonstrations, and related activities for independent learning. Costs data is provided in the report but it is not clear how the instructional system is evaluated.  

Oakland Community College is perhaps the most outstanding example of an extensive development of the systems approach to instruction in education. Under the direction of Postlethwait of Purdue University the College developed the Learner-Centered Instructional Systems Approach. The teaching staff constructed its curriculum in statements of behavioral objectives. The learner is oriented by means of study guides and his participation in learning experiences is completely self-paced. The quality control strategy which the staff carried out through its evaluation of criterion responses enabled the College to assess its achievement, its strengths and its weaknesses after its first semester and its first year of operation. Consequently, it could revise its operation based on an analysis of the data that was collected from its evaluation. The report of the Oakland Community College experiment is an ideal instance of the application of the systems approach to instruction.  

The University of Wisconsin used the systems approach in a less extensive program in an Articulated Instructional Media (AIM) Program. The program was established to extend higher education to individuals who would not be able to continue their education normally. Each course in the program is treated like a system. In a pre-construction stage learner behaviors and objectives are precisely stated and achievement tests are constructed, tested and revised. In the construction stage, the instruction is designed, using media which has been determined to be
the most efficient for accomplishing the learning tasks and goals. Subsequent steps in the program are like those in programmed learning.\textsuperscript{72}

Schure reports on a complex research experimentation project called ULTRA. The objective of ULTRA is to develop human talent to its fullest potential and to qualify each student for a career objective. Information on each student is fed into the computer which compares the data with information on Occupational Inventories and Schools Inventories and predicts success probability. Using computer evaluations, students are directed to one of four educational programs. Entry level is assessed so that the student can enter at exactly the point of his need. He leaves the program, not after a predetermined number of years but when he has satisfied the objectives of the program.\textsuperscript{73}

The Systems Development Corporation approached the educational institution as a system and undertook an extensive project to find new ways to implement instructional media through analysis and simulation of school organization.\textsuperscript{74} The project involved selecting and analyzing five innovative high schools, constructing a computer simulation vehicle, simulating and studying results of the selected schools. At the conclusion of this major project it was found that in order to adapt to individual differences school programs must be revised to include adequate self-study, instructional materials and adequate systems to provide information to instructors, counsellors, and administrators about the status of individual students. To accomplish these revisions, the project recommended (a) development of a computer-based system to assist in planning, (b) study of information processing for student instruction, (c) in-service training of school personnel in preparation of
individualized course materials, and (d) development of procedures for management of changes in schools.

Dressel and Koenig report on the use of system analysis in studying costs. McKenney and Yurkovich describe the use of construction systems in designing physical facilities. Cogswell and Estaban developed a counselling program for computer including review of student progress, collection of student comments, counsellor's reactions to student plans and assistance for students in planning their schedule of courses. The automated counselling was compared with responses of the original human counsellor and the study indicated potential value of the automated guidance.

Sisson found that through analyzing and simulating the functions of a high school district he could predict optimum policy in terms of given district parameters. Scribner simulated the activities of a school board. Dye analyzed the relationships of economic development variables and political system variables to educational policy outcomes using a conceptual framework provided by David Easton.

Grossman and Home developed a system able to serve as many as 300,000 pupils in registering, scheduling, attendance records, accounting, grade reporting, test scoring and analysis. Cumulative records were stored on master file tapes in a regional center. A regional type center as contrasted to a local center could operate on a $2.50 to $3.00 cost per pupil per year.

Rhyne reports a study of the Stanford Research Institute of the future perspective on employer-based career education. The study projected various alternative futures for America and by means of the
systems approach predicted the timeliness of EBCD in each of those futures.\textsuperscript{83} Jones reports the design of a comprehensive career guidance system for the American Institute for Research in the Behavioral Sciences. His description does not include any evaluation of its suitability or efficiency.\textsuperscript{84}

Blommel\textsuperscript{85} and Southwell\textsuperscript{86} describe two instances of the application of the systems approach in the observation and evaluation of teaching. Blommel reports that ratings of participants on a Satisfaction Survey indicate the potential of the program which needs further testing. Southwell was interested in achieving both a theoretical and empirical approach to validating an instrument for analyzing teaching roles. Results of the data analysis indicate that the observation system TRACE has great potential for discriminating among teachers' classroom behaviors.

Englebart describes a two-year project exploring the value of computer aids in augmenting human intellectual capability. The report includes an informal description of a user's experience in applying the augmentation tools and techniques. The conclusion of the researchers of this project is that the use is bound to become widely developed and adopted. The only uncertainty in the minds of the project staff involves the rate and direction of development and what can be done to improve both rate and direction for the earliest possible application of these systems to solving the real problems facing society.\textsuperscript{87}

Weiss reports the design of a project to be used in setting district-wide goals and objectives for educational planning.\textsuperscript{88} The project is still in the developmental stages and there is no report of effectiveness. This project and many others reported apply the systems approach
to the work of cost analysis. A survey of the systems approach applications in current literature shows that the other major area of this concept approach application is that of building and space design and use. Reports of comprehensive use of the systems approach to the instructional process are quite infrequent.

In summary. The first sections of this chapter have presented the development of the systems concept in education including a history of the development, a review of the ways the concept has been applied in education, and a detailed description of the application of the concept to instruction and a discussion of the important developments in education which have resulted from this application. In the final sections this chapter presents a review of the studies closely related to this present study and a review of the current literature on training evaluation methodology.

Related Research

Suitability Studies on Audio Modular Instruction

The audio modular instructional approach is a precise application of the concept of instructional systems. As described in Chapter One the approach is characterized by: identification of a single skill or concept to be learned, formulation of performance objectives necessary to enable the participant to learn the skill or concept, design of exercises through which the participant can learn the skill or concept, necessary and sufficient information delivered to the participant for his successful accomplishment of the exercises, immediate feedback to
the participant concerning his performance. It will be noted that these characteristics are common to the application of instructional systems.

Unique to the audio modular instructional approach is the means by which this instruction is delivered. The approach utilizes a cassette tape and a printed guidebook as the essential media through which the instruction is presented.

Recently a series of studies has been conducted to determine the suitability of using this approach as an in-service training technique for school administrators. The limited populations studied caused the investigators to report that their studies did not establish suitability with definitive assurance. However, the evaluation which they reported indicated that school administrators found their experience with the approach valuable and worthwhile.

Herriman's Study

Herriman applied the systems approach to instruction in the design of two self-instructional audio modules for the continuing education of school administrators. Each module contained the stated objectives for that segment of instruction together with the rationale for the acquisition of the particular skill to be learned through experience with the module. All materials needed by the participant were either included in the module or described. Evaluation was an integral part of the module. Participants were asked for feedback concerning the feasibility of future development of the audio instructional modules. Herriman found that participants were interested in and excited by their experience with the modules. They found them equal to or better than
other types of in-service training they had experienced. The module was easy and convenient to use. Herriman drew no conclusion as to the suitability of the approach since there was still question of the cognitive and attitudinal changes resulting from the modular experience.

Peterson's Study

Peterson designed a study to assess the suitability of using the same approach for providing pre-service training for school administrators in the university setting. If the modules proved effective he felt they might serve a number of purposes: introduction of a student to a particular area of interest through a brief experience with the module, more effective use of the professor's time through the packaging of presentations which were needed over and over again, availability of presentation for students for whom the class was not accessible. From his study of the approach Peterson concluded that: participants preferred the approach over other more traditional instructional approaches for the training of school administrators; the approach provided a more active and promising experience than other preservice instructional approaches in which the individuals involved had participated; the major strengths of the approach was the ease of convenience of its use and its active involvement of participants; the major weakness was the lack of teacher-student identity. Participants suggested that communication skills, skills in self-analysis and skill in decision-making could be gained through this instructional approach. They felt that the development of other modules would be beneficial. From his study Peterson recommended that modules not require more than one and one-half hours for
their completion, that they provide for active involvement and interaction of participants, that feedback procedures be included throughout the modules while redundancy or statement of the obvious be carefully avoided, that the cassette tapes be of high technical quality and the guidebooks be attractive and readable, and that printed material be provided for participants to take away from the experience for future reference.

Levine's Study

Levine\textsuperscript{31} carried out a study comparing an audio module with an audio visual module as in-service training techniques for school administrators. He found that the audio module was as suitable as the audio-visual module. He, too, found that participants found the experience interesting and exciting, valuable as a learning experience and one which was worth repeating. The experience was perceived as being equal in worth to discussion group sessions with other administrators and greater in worth than attendance at administrative conferences, attendance at seminars, reading a professional book or visiting a neighboring school district. Levine recommended that modules should require not more than an hour to complete and that instruction begin on the audio tape rather than in the guidebook. Other recommendations were similar to those made by Peterson from his study. Concerning the visual component of the audio visual module, Levine recommended that it not be used as a major medium for instruction but only for presentation which could not be made adequately in the guidebook or on the audio tape. These two media are preferred when they are adequate because of their convenience and accessibility.
Bryniawsky's Study

Bryniawsky is currently concluding a study on the audio modular instructional approach utilizing it to train school administrators in skills pertaining to staff development. The study is designed to determine the suitability of using the approach to train administrators in communication skills in such a way that they can facilitate the training of others in the same skill. Bryniawsky reports these conclusions from his study of using the approach for staff development training:

1. The experience with the audio modular instructional approach is perceived by the participants as being of more worth than (a) attending an administrative conference in which a number of seminars are held; (b) attending an administrative conference to listen to speakers; (c) purchasing a professional level book and reading it; (d) visiting a neighboring school district; and (e) having a discussion group session with other administrators from the district.

2. The audio modular approach is perceived of as being more relevant, more useful, more promising, more interesting and more meaningful than other in-service instructional approaches in which the individuals have participated.

3. The audio modular approach elicits a significantly higher positive connotative meaning when compared to other in-service approaches in which individuals have participated.

4. After being exposed to an audio modular instructional unit, the participants wish to participate in additional units developed with the same format.

The Present Study

These studies instigated the present study. If the findings of these studies indicate that the approach will be found suitable for school administrators as a preferred technique for in-service training, would the approach also prove suitable for adult educators who express need for training in communication skills? This study is exploratory in nature, trying to define the parameters for this particular application
of the systems approach to instruction. The study has been conducted with a different population within the educational community and the modules are designed to teach a relatively complex set of concepts and skills in the area of communication.

In summary. This section has presented a review of the research closely related to the present study. In the concluding section the current literature on training evaluation methodology is reviewed.

Research Methodology

A review of the literature on training and the evaluation of it indicates that there is much to be done in the development of an adequate methodology. In The Assessment of Change in Training and Therapy, Belasco and Trice estimate that 99 percent of all ongoing training efforts are not evaluated systematically. Reasons which they suggest for this state of affairs range from the threat potential which evaluation holds for the practitioner to the right to privacy which the trainee sometimes feels is being violated when he is required to give information about his reaction to training on evaluation instruments. The authors discuss four strategic problems in the evaluation of change:

1. the criterion problem or the need to determine the focus of the program;
2. the problem of control or the need to eliminate intervening variables between change agent and recorded results;
3. the contamination problem or the difficulty of avoiding distortion of recorded results because of the effects of pre-assessment instruments, the passage of time and uncontrolled events and the sources and manner of data collection;
4. the detection problem or the need to follow through the field-testing with each trainee to avoid self-selection bias.
Based on their discussion of these strategic problems, the following list of characteristics essential to good evaluation is offered by Belasco and Trice:

1. A clear statement of the expected results of the change experience. The statement should be in observable terms, including the time span over which a specific result can be measured.
2. The development of relevant, reliable yardsticks which measure progress toward the stated objectives.
3. Application of the yardsticks in terms of the time span implied by the objective.
4. The establishment of an evaluation design which enables the researcher to distinguish the effects of change from those of other intervening contaminants.
5. The establishment of the kinds and sources of information required to evaluate the change experience in terms of the objective. At least two sources of information should be utilized to minimize bias.
6. A specification and examination of those underlying personality and situational factors which explain the identified change.

Belasco and Trice identify two approaches at the disposal of the researcher: the subjective approach through which he would try to ascertain the trainee's reaction to the program of training; and the objective approach through which he would try to gather information from the trainee on elements of the program external to the trainee. Both approaches can use either the personal interview technique or the written questionnaire. Both of these techniques can use the "open" question or the "closed" question for obtaining information. However, the researcher must know the strengths and weaknesses of the techniques he is using. The "closed" question has the advantage of fixed responses so that data on the question can be quantified and does not need to be interpreted by the researcher. The "closed" question also reduces the barriers to responding by presenting the respondent with response stimuli.
However, "closed" questions data can be distorted for these reasons: it forces the respondent to take a position even though he may not have one; and the respondent is given no way to express feelings which do not fit the choices provided. The "open" question avoids these two disadvantages and has the additional advantage of eliciting a great deal more information and a much greater variety of information. However, the disadvantages of this technique are the necessity of a middle-man interpretation of responses for the sake of classification and comparison of data in the process of evaluation.  

Campbell's opinion of the assessment of training is likewise pessimistic. He feels that "training and development literature is voluminous, nonempirical, nontheoretical, poorly written and developed." In assessing evaluation he recommends that the evaluation model measure:

1) trainee reaction; 2) trainee learning; 3) trainee behavior on the job; 4) results within the organization. Campbell finds that many evaluations focus on only the first of these elements to the exclusion of the other three dependent measures.

Peck and Dingman were focusing on such multiple criteria when they report measuring the attainment of training objectives by student teachers through the significant pupil gains in the classroom.

Gagne and Biel also agree that on the job performance is the ultimate criterion for evaluation of a training program. Practitioners can learn something about the training program from "intermediate evaluation" at the close of the formal training sessions but the assessment of transfer is the more critical evaluation.
In a review of the literature on training evaluation Bergman and Siegel\textsuperscript{100} summarized the problems and difficulties of evaluation as:

1. too much use of rational rather than empirical methods;
2. too much subjectivity when objectivity is needed;
3. evaluation research is too often limited by monetary considerations.

They found the most recognized trend in evaluation methodology to be the use of multidimensional criterion measures.

Webb points out that the subjective approach to evaluation is often the only justifiable approach to be used.\textsuperscript{101} This is especially true when the ultimate criterion is heavily subjectively loaded, as it is in leadership skills or teamwork training or in communication skills. The subjective approach is also a necessity when the ultimate criterion is so complex that only a holistic evaluation of the trainee in situations requiring varied skills and varied sequences of skills and techniques will provide adequate assessment. Webb also suggests that, since on the job evaluation is the only critical kind of evaluation and yet such evaluation presents insurmountable difficulties for the assessor, that testing be conducted in "on-the-job" simulations.\textsuperscript{102}

In a commentary introductory to "Basic Issues in Training Research" DuBois and Mayo\textsuperscript{103} discuss the importance of two concepts for educational evaluation: validated instruction and individualized instruction. They feel that standardized packaging of instruction goes a long way in solving the reliability problem in the preparation of validated instructional material for it makes possible the stabilizing of instruction during the validation process and the freezing of the validated revised form
of instruction. The development of packaged instruction also points the way to the goal of individualizing training since it can provide not only individual pacing through the instructional process but also selection of the most effective means of enabling the individual to move from his position to the desired position.

Mayo and Longo\textsuperscript{104} discuss the practical problems involved in the use of the matched group design in quasi-experimental control. The major difficulty arises from the need to identify and use a variable which correlates satisfactorily with the criterion measure in matching the subjects prior to differential treatment of the groups. Loss of subjects during treatment necessitates elimination of the matched subject and the consequent narrowing of the study population. The authors suggest a matching procedure which overcomes this difficulty. "Basically, the procedure involves pairing of subjects from two or more treatment pools after the completion of training or other treatment, but without knowledge of the performance of the subjects or any other information concerning the subjects, except the score made on the matching variable." They suggest that it is relatively easy to establish a control pool substantially larger than the experimental group pool so that pairing of individuals is facilitated. This experimental design is quite suitable for a two group study. It is not as easy to handle when more than two groups are involved.

Summary

This chapter has presented a review of the literature related to the development of the systems concept in education, the developments
which have grown out of the concept of instructional systems and the applications of the systems approach in the various areas of educational planning. In the concluding sections, a review of the studies which closely relate to the present study was presented along with a review of the current literature on the assessment of training. The next chapter presents a description of the development of the specific instructional subsystem used in the present study.
Footnotes


6 Silvern.


8 Silvern.


10 Instructional Systems, pp. 1-16.


12 Lee.

13 Lee.

14 Lee.

16. Lee.


27. "Cognitive Models of Learning and Instruction."


29. Skinner.

31 Instructional Systems, p. 12.
32 Ibid., p. 17.
33 Ibid., p. 22.
34 Preparing Instructional Objectives, p. 12.
38 Ibid., p. 31.
45 Loomer, loc. cit.

Ibid.

Ibid.


Ibid., pp. 74-76.


p. 19, ff.

Instructional Systems, p. 56.

The Conditions of Learning, p. 4.

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Instructional Systems, pp. 77-86.

65Ibid.


Edmond H. Weiss and Jerry Ackerman, "System for Trenton's Educational Planning (STEP) Year 1," ED 056 371, 1972.


L. T. Peterson, "A Study to Determine the Suitability of Utilizing the Audio Modular Instructional Approach as One Alternative Pre-Service Training Technique for Presenting Selected Concepts and Skills for Students of School Administration" (Unpublished Dissertation, University of Massachusetts, 1972).


G. Bryniawski, "A Study to Determine the Suitability of Utilizing the Audio Modular Instructional Approach for Training School Administrators in Skills Pertaining to Staff Development" (Unpublished Dissertation, University of Massachusetts, 1973).

94 Ibid., p. 33.

95 Ibid., pp. 34-36.


102 Ibid.


CHAPTER III

DESCRIPTION OF THE BACKGROUND, DEVELOPMENT AND FIELD TESTING
OF THE AUDIO MODULAR INSTRUCTIONAL UNIT
IN COMMUNICATION FOR ADULT EDUCATORS

The development of the audio modular instructional unit is directly related to the systems approach to instruction which was reviewed in Chapter II. Not only is the unit a single component of a larger system for adult education which is being developed, but it is itself developed as a subsystem applying the systems approach in the design of the instruction. In this chapter the background and development of the unit is described as a component of the larger system. Then the design, installation and testing of the unit is described as a self-contained instructional subsystem.

Background and Development

The initial "component strategy" of the systems approach to instruction as defined by Banathy is the formulation of objectives. In the "Adult Education System" for the Commonwealth of Massachusetts objectives were formulated through the use of a delphi survey conducted in 1971-1972 by Dr. Mark Rossman. It was the purpose of that survey to identify particular needs for staff development as those needs could be determined through consultation of the staff members of urban adult learning centers in the Commonwealth. The survey further asked participants to select from a list of possible in-ser-
vice training approaches those which they considered to be the most appropriate and efficient ways for meeting the needs they identified.

The process of this survey, although it has provided the formulation of objectives and the analysis of learning tasks, was not an instance of a rigorous application of the systems approach. However, with the information gained from this survey, Dr. Rossman proposed some alternative designs by which the very generally defined needs might be met. Because programs for preparation of adult educators and certification in adult education are almost non-existent, adult educators are more heterogeneous than other groups of teachers. Often, too, adult education is an avocation for these teachers and frequently they are engaged in full-time work of another kind. These two factors caused Dr. Rossman to suggest that one of the most effective and efficient ways to meet the individual needs of so diverse a group, perhaps, might be through the use of individualized learning packages. Teachers could select materials to meet their own needs and use these materials at their own convenience. Therefore, as one of the ways to meet the needs identified by his survey, Dr. Rossman proposed to develop learning packages in areas in which general needs had been identified.

At this point there were then two givens: general need areas designated by the adult education staff members and the learning package format proposed by Dr. Rossman. Specific decisions had to be made about what capabilities the adult educator would need to possess in order for him to feel competent or adequate in the areas defined
as need areas. When these capabilities were decided upon, they in turn became objectives for instructional subsystems.

This investigator proposed that knowledge and experience with Transactional Analysis could enable adult educators to improve their communication skill on the level of personal interaction. Behavioral objectives were formulated for instruction in Transactional Analysis. With the formulation of these objectives, a new subsystem had been initiated.

Development

The particular design of the learning packages in communication was chosen after much study. The investigator was acquainted with the "audio modular instructional units" which had been developed for administrators by the Center for Leadership and Administration at the School of Education at the University of Massachusetts. Studies conducted on the use of these units indicated that school administrators found this approach to in-service and pre-service training preferable to other approaches they had experienced.

Learning packages formed the core of the State Teacher Certification Program in Florida. The investigator visited the State department of Education in Florida to review the teacher training materials in use there and to confer with the directors of the program. Materials reviewed ranged from learning packages completely printed to combinations of cassette tape and printed booklet to packages with 16 mm film and printed exercise components.
Conferences with the directors of the program for the Florida Department of Education, together with a review of materials gathered there and an evaluation of the studies conducted on both the audio-modular instructional approach and the audio-visual modular instructional approach resulted in the selection of the audio modular instructional approach as the format design for the learning packages in communication for adult educators. This approach combined the strength of the printed packages with the variety of recorded spoken input or information. Levine's study had recommended that the visual component of the filmstrip should be included in the learning package only when a more convenient medium was not adequate since the introduction of the film or filmstrip into the package decreased its convenience and therefore its usefulness. The cassette recorder, on the other hand, did not seem to impose limitations equal to the advantages it added to the experience.

The audio modular instructional approach as it has been developed in the Center for Leadership and Administration at the School of Education, University of Massachusetts is an adaptation of the IBM Audio Instructional Unit, utilizing an audio tape and guidebook. The IBM units were designed to teach sophisticated technical skills.

An adaptation of the units was made at the university for the purpose of imparting human relation skills. The units were individualized allowing the participant to select the skill he/she wanted to improve. The modules within each unit were self-evaluating, providing
the participant an opportunity to determine his progress as a result of the experience.

The physical appearance of the original modules developed at the university were basically the same. All of the module's components: the cassette tape and a printed text, were enclosed in a plastic three-ring binder. The text included: a title page with the name of the module and the name of the developer of the materials, a table of contents, an introduction stating the objectives of the modules, a description of the module, the prerequisites for participation and the time required to complete the modular experience, instructions to the participants and follow-up activities. The audio tape provided the informational input. As later modules have been developed, the packaging of the modules has changed somewhat but the basic format has been maintained.

The long range goal which had been set for the instructional unit based on Transactional Analysis was for participants, through the application of the concepts of Transactional Analysis, to be able to analyze, understand, and gain control over their interaction with others. Levine's study on the audio modular approach had shown that modules to be maximally effective should not require more than an hour to complete. From the outset it was obvious that to approach the goal set for the instruction would require more than an hour. Therefore it was decided that at least two modules would be included in the unit. In the first segment the participant would concentrate on learning the basic concepts of the personality structure used in
Transactional Analysis. In the second segment the participant would use those concepts in analyzing transactions.

Performance objectives were then formulated for each segment or module within the unit. Achievement tests were constructed by which attainment of the objectives could be measured. Next, exercises by which participants could attain the objectives were designed. Finally, narration was composed through which participants were given the information necessary and sufficient for engaging successfully in the exercises. Self-evaluation instruments were provided for each of the exercises. These components were put together in rough form and given to a small number of individuals to experience. Upon recommendations of these individuals, corrections were made, some exercises were changed and narration was clarified and simplified. The modules were then duplicated in semi-final form for the purpose of field-testing the unit. The final form of the modules would be determined after a study of the data gathered in the field-testing.

Design of the Instructional Subsystem

The basic design of the unit maintains the format for the audio modular instructional unit developed in the Center for Leadership and Administration. It utilizes an audio tape and a guidebook which together present a) an introduction, overview and rationale for the module, b) performance objectives for the module, c) a narration recorded on tape with accompanying charts and/or diagrams which present
information to the participant, d) exercises which allow the participant to apply the information which has been presented in the narration; e) self-evaluation instruments and f) selected references. The unit consists of two modules sequentially developed, basically similar in format.

The first module is entitled "Structural Analysis—Communication Module" and is designed to teach the concepts of Transactional Analysis. The guidebook, printed in reduced type, is a spirally bound 8 1/2 x 5 1/2 booklet covered with clear cellutex. The guidebook provides a description of the materials contained in the module, the time requirement for the module, and the initial instructions to the participant. This guidebook also contains the achievement test for the module. The introductory pages of this guidebook are included in Appendix C.

The second component of the module is the cassette audio tape. In brief narrations ranging from three to seven minutes in length the cassette tape provides information to the participants and then directs them to engage in appropriate exercises applying the information given. The sound of a bell on the tape signals the participant to stop the tape and proceed with the exercise. The tape also provides the participant with directions for self-evaluation of his progress through the module.

The third component of the module was designed as a result of Peterson's recommendation that "tear-out" materials be provided for the participants in the guidebook. The exercise booklet is a separate replaceable component of the module. The "Structural Analysis Worksheet
Booklet", a spirally bound 5 1/2 x 8 1/2 booklet, provides the exercises for the module as well as follow-up exercises for the participant to use at his own convenience and interest subsequent to experience with the module. The booklet becomes the property of the participant when the module is completed.

The fourth component of the module, the Evaluation Cards, is unique to this module. The cards are 5 x 8 index cards. They are contained in a manila envelope labeled "Evaluation Cards". Side A of each card provides information for the evaluation of the exercises. Side B contains additional information for the participant who is not satisfied with his achievement on that particular exercise. Additional information was provided in this way so that participants who do not find a need for additional information can proceed uninterruptedly through the module while those who want more information or need the information repeated need not search for it on the tape. The printed information on the cards also reinforce learning for participants who find that they are heavily print-oriented and are more secure with seeing information in addition to hearing it.

The second module is entitled "Transactional Analysis--Communication Module" and has three separate components: the guidebook, the cassette audio tape and the worksheet booklet. The major change in the format of this module was the inclusion of the evaluation information in the guidebook. Part I of this guidebook includes the introduction, rationale and objectives of the module, lists the time requirement and the pre-requisite and gives the initial instructions for the partici-
pants. Part II of the guidebook contains diagrams and evaluation
guides for the exercises of the module. Selected references on Trans-
actional Analysis are also included in this guidebook. A copy of the
guidebook is included in Appendix C. The cassette tape functions in
this module as it did in the first module of the unit: to provide brief
informational narrations and directions for engaging in the exercises
and evaluating performance. The exercises are completed in the work-
sheet booklet and this booklet becomes the property of the participant
upon completion of the module.

The evaluation cards were not used in this module for the sake of
convenience. In the first module, participants referred to the guide-
book only at the beginning and at the end of the module. During the
module the participant was only handling the worksheet booklet and the
evaluation cards. In this second module the participant needed to
refer to the guidebook throughout the module for the diagrams. There-
fore it seemed more convenient to incorporate the evaluation material
into the guidebook and to eliminate the cards rather than require par-
ticipants to attend to three sets of materials during the module.

In this semi-final form the modules were simply placed in 7 x 10
clasp envelopes labeled with the name of the module. In final form
the modules will be packaged in a vinyl folder which will hold the
cassette tape in a clear vinyl pocket on one side and a pocket for
the spirally bound booklets on the other. Affixed above the cassette
pocket will be brief instructions directing the participant to obtain
a cassette player and to begin work with the module by beginning the
Installation and Evaluation of the Subsystem

The first session of field-testing of the audio modular unit on communication was conducted within a week-long workshop for adult educators on the campus of the University of Massachusetts. The workshop was held from February 19 to February 23 for teachers of English as a Second Language. The first day of the workshop was devoted to field-testing the modules. Twenty-seven administrators and teachers of adult education participated in the session. Fifteen of the participants formed the control group and eleven formed the experimental. The experimental group used the first module of the unit in the morning session and the second module of the unit in the afternoon. Equipment and accommodations were provided so that participants could use the modules either privately or in small groups.

A second session of field-testing was conducted in Somerville in a situation more closely resembling that for which the modules were intended. The director of the Adult Education Program in Somerville, Massachusetts was given the modules and the evaluation instruments. She gave the materials to teachers in the program who volunteered to participate in the field-testing of the modules and asked them to use the modules any time within the following week. In this session participants took the modules home and used them privately.

The third and final session of field-testing was conducted in Worcester, Massachusetts. Here, too, the modules and evaluation in-
Instruments were given to the director. In this session, however, participants used the modules at the Adult Education Center on two consecutive Thursday evenings as alternative in-service training.

Summary

This chapter has described the application of the systems approach in the design and development of instruction in Transactional Analysis. The description has included these strategies outlined by Banathy: identification of what has to be learned so that the learner will be able to perform as expected; consideration of alternatives from which to select learning content, learning experiences, components, and resources needed to achieve the stated objectives; installation of the system and collection of information from the findings of performance testing and systems evaluation.

In the next chapter a detailed description of the methodology used in the collection of information from the findings of performance testing and systems evaluation will be presented.
CHAPTER IV

METHODOLOGY OF THE STUDY

The previous chapter described the systematic development, design and installing of an instructional subsystem as one alternative in-service training technique for adult educators. This chapter will describe in detail the methods used in collecting information about the performance testing and systems evaluation of the audio modular instructional unit. This description has three sections: 1) the composition of the study populations which participated in the study; 2) the assessment procedures used to collect evaluative information about the modules in order to determine the suitability of utilizing this approach for the initial training of adult educators in communication skills based on Transactional Analysis; and 3) the methods used to process, analyze and present the data collected.

Composition of the Study Population

Prior to the field-testing of the modules a study group was engaged to assist in the testing of the cognitive component of the evaluation model. This group assisted the investigator solely in establishing the validity and reliability of the achievement tests for the two modules. (A detailed description of this phase of the study is included in Appendix A.) Evaluation data were not collected from this group of participants. However, it seems appropriate to present a description of this group in comparison with the field-testing groups since reports of the cognitive measures for the experimental group and the control group of the field-testing phase are based upon instruments tested with this somewhat dissimilar population.
Study Population

Three separate groups comprised the population for this study: the validation group which was in turn subdivided into a control group and an experimental group, a field-testing experimental group and a field-testing control group. The validation group, as Chapter III indicated, consisted of sixteen elementary and high school teachers. The field-test experimental group consisted of thirty-one adult education teachers or administrators who experienced the two sequential modules in one of the three field-testing sessions described in Chapter III. The field-test control group consisted of thirty-one adult education teachers or administrators who completed only the achievement portion of the two modules without experiencing the modules. In this section a description of the composition of the three groups will be presented in relation to the following criteria: 1) sex, 2) age, 3) present position, 4) number of years of experience, 5) setting of the school or program in which the individual member was employed and 6) highest academic degree held by the participants.

Composition of the groups in relation to sex and age. In Table 1 the composition and comparison of the three groups regarding the sex and age of the individuals is presented.

The data in the table shows that ten members of the experimental group and eleven members of the control group are male while there are no males included in the validation group. Nineteen members of the experimental group and twenty members of the control group are female while all sixteen members of the validation group are female. It is
evident that on the criterion of sex the experimental group and the control group are similar with 32.3 percent and 35.5 percent male members respectively and 61.3 and 64.5 female members respectively, while the validation group differs in that 100 percent of its members are female.

TABLE 1

A COMPARISON OF THE COMPOSITION OF THE VALIDATION GROUP AND THE TWO FIELD TEST GROUPS IN RELATION TO SEX AND AGE

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Validation Group (N=16)</th>
<th>Experimental Group (N=31)</th>
<th>Control Group (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Unidentified</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Age:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-30</td>
<td>8</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>31-40</td>
<td>5</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>41-50</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>51-over</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Unidentified</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

The data on the criterion of age indicate that eleven members of the experimental group, fourteen members of the control group and eight members of the validation group are between the ages of twenty-one and thirty. For the age groups thirty-one to forty and forty-one to fifty, the number of members in the two groups are reversed for the experimental group and the control group. Eight members of the experimental group and three members of the control group are between the ages of thirty-one to forty, while three members of the experimental group and eight members
of the control group are between the ages of forty-one to fifty. Of the validation group five members are in the thirty-one to forty age group and two in the forty-one to fifty. Six members of the experimental group, five members of the control group and one member of the validation group are over fifty, while three members of the experimental group and one member of the control group chose not to give their ages.

This data shows that the highest percentage of members in each of the three groups is in the twenty-one to thirty age group: 35.5 percent of the experimental group, 45.2 percent of the control group and 50.0 percent of the validation group. Thirty-five percent of both the experimental group and the control group is between the ages of thirty-one and fifty with the experimental group being considerably younger since 25.8 percent of its members are between thirty-one and forty as contrasted with only 9.7 percent of the control group in this age group. Over 19 percent of the experimental group and 16 percent of the control group are over fifty-one years of age.

In summary, the experimental and control groups are somewhat similar according to three broad age categories: 35.5 and 45.2 percents of the two groups respectively are thirty or under; 35.5 percent of both groups is between the ages of thirty-one and fifty; 19.3 and 16.1 percents of the groups respectively are over fifty years of age; 9.7 and 3.2 percents of the groups respectively did not give this information. The validation group differs somewhat with these comparable distributions: 50 percent is under thirty; 43.7 percent is between thirty-one and fifty; and 6.2 percent is over fifty years of age.
The Composition of the Groups in Relation to Present Position. In Table 2 the composition and comparison of the three groups with regard to the present position of the members is presented.

**TABLE 2**

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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Validation Group (N=16)</th>
<th>Experimental Group (N=31)</th>
<th>Control Group (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part time Adult Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Teacher</td>
<td>0</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Full time Adult Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Teacher</td>
<td>0</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Guidance Counselor</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Nurse</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Aide</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Formal Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elem. Principal</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Elem. Teacher</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Secondary Teacher</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>*Graduate Student</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The graduate student is preparing for involvement in adult education.*

As illustrated by this data, four members of the control group are involved in adult education administration and the remaining twenty-seven members are teachers in adult education programs. In the experimental group, only one member is involved in adult education administration, twenty-three members are teachers in adult education programs, while three members serve as counselors, two as aides and one as a nurse in adult education programs. Although there is a greater
variety of positions among the experimental group, a large majority of both the experimental and the control group are teachers of adults, totaling 74.2 percent of the experimental group (combining part time and full time teachers) and 87.1 percent of the control group. Fifteen members (93.7 percent) of the validation group are involved in teaching and one member is involved in administration.

This data shows that the groups have a basic similarity among the large majorities of all three groups compared in relation to teaching and administration. However, the validation group is significantly different in that all its members are involved in formal education as contrasted with the total population of the experimental group and the control group which is involved in adult education.

The data illustrates that seventeen members of the experimental group and sixteen members of the control group serve in part time positions in adult education while thirteen members of the experimental group and fifteen members of the control group serve in full time positions in adult education. There is a notable difference in the two groups, however, in that the 45.5 percent of the members of the control which serves full time in adult education is involved in either teaching or administration, while in the experimental group of the 42.0 percent which serves full time in adult education only 22.7 percent is involved in teaching, none in administration, and the remaining 19.3 percent is involved in other staff positions.

This data shows that the experimental group and the control group are similar on the criterion of involvement in adult education. The validation group differs from these two groups in that its members are
involved in formal education. In all three groups, there are small percentages of administrators and large majorities of teachers.

Composition of the Groups in Relation to Years of Experience.

Table 3 presents the composition and comparison of the three groups using the criterion of years of experience in the participants' present educational position.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Validation Group (N=16)</th>
<th>Experimental Group (N=31)</th>
<th>Control Group (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Years in</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Present Education Position</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 1</td>
<td>0</td>
<td>0.0</td>
<td>10</td>
</tr>
<tr>
<td>2 - 3</td>
<td>5</td>
<td>31.2</td>
<td>9</td>
</tr>
<tr>
<td>4 - 5</td>
<td>0</td>
<td>0.0</td>
<td>8</td>
</tr>
<tr>
<td>6 - 10</td>
<td>5</td>
<td>31.2</td>
<td>4</td>
</tr>
<tr>
<td>11 - over</td>
<td>6</td>
<td>37.5</td>
<td>0</td>
</tr>
</tbody>
</table>

This data illustrates that none of the validation group had less than two years of teaching experience while ten members of the experimental group and four members of the control group had one year or less experience in present positions.

Nineteen members of both the experimental group and the control group have three years or less experience in their present positions. The experimental group had no study members with more than ten years of experience in the present position while the control group had five
members with more than ten years experience in present positions and
the validation group had six members with eleven years of more experi-
ence in present positions. Thirty percent of the validation group had
less than five years experience, over thirty percent had between five
and ten years experience and over thirty-seven percent had more than
ten years experience. Over 60 percent of the experimental group and
the control group have less than four years of experience while in the
validation group over 60 percent have more than six years experience.
No teachers at all in the experimental group have more than ten years
of experience while 16.1 percent of the control group has more than ten
years of experience. The control group shows a very uneven distribution
with almost 50 percent of its members having two or three years of ex-
perience while the experimental group shows a more even distribution
with the percentages decreasing steadily as the years increase. This
data shows that although some similarities can be found to exist between
the experimental group and the control group, the groups vary considerably
when compared on the basis of years of experience in present positions.

Comparison of the Groups in Relation to Setting of the Schools or
Programs. Table 4 shows the composition and comparison of the three
groups with regard to the setting of the school or program in which the
individual is employed at the present time.

This data indicates that the experimental and control groups are
similar in that the majority of members of both groups are employed in
programs or schools in an urban setting. The only notable difference
in these two groups in this regard is that six members (19.4 percent)
of the control group are employed in a program in a suburban setting
while only one member (3.2 percent) of the experimental group is employed in a suburban setting. The validation group is substantially different in this regard since all the members are employed in a suburban setting.

### Table 4

A COMPARISON OF THE COMPOSITION OF THE VALIDATION GROUP WITH THE EXPERIMENTAL GROUPS AND THE CONTROL GROUP IN RELATION TO THE SETTING OF THE SCHOOL IN WHICH THE MEMBER IS EMPLOYED

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Validation Group (N=16)</th>
<th>Experimental Group (N=31)</th>
<th>Control Group (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Setting of the School of Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>0</td>
<td>0.0</td>
<td>28</td>
</tr>
<tr>
<td>Suburban</td>
<td>16</td>
<td>100.0</td>
<td>1</td>
</tr>
<tr>
<td>Rural</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>*Other</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
</tbody>
</table>

*One graduate student is not employed in a school or program at the present time and two participants are employed in a program which encompasses urban, suburban and rural settings.

Composition of the Groups with Regard to the Size of School or Program in Which the Member Is Employed. Table 5 shows the composition and comparison of the three groups with regard to the size of the school or program in which the member is employed.

The data from Table 5 shows that the three groups vary measurably when compared on the criterion of size of school or program. The experimental group and the control group are comparable in that about 50 percent of both groups teach in programs of less than one hundred participants while somewhat less than 50 percent teach in larger programs. Both groups
had members employed in schools or programs of less than 25 participants as well as in schools or programs of 200 or over. However, the largest percentages of the experimental group teach in schools or programs of 0-25 and 100-200 while the largest percentages of the control group teach in schools or programs of 50-100 and 100-200.

TABLE 5

COMPARISON OF THE COMPOSITION OF THE VALIDATION GROUP WITH 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>Validation Group (N=16)</th>
<th>Experimental Group (N=31)</th>
<th>Control Group (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Size of the School or Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 25</td>
<td>0</td>
<td>0.0</td>
<td>12</td>
</tr>
<tr>
<td>26 - 50</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
</tr>
<tr>
<td>51 - 100</td>
<td>0</td>
<td>0.0</td>
<td>4</td>
</tr>
<tr>
<td>100 - 200</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>200-500</td>
<td>16</td>
<td>100.0</td>
<td>11</td>
</tr>
<tr>
<td>*Other</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
</tbody>
</table>

*Other refers to: graduate student not employed in a school or program, state-wide director of Adult Education, three members in programs exceeding 500.

Composition of the Groups with Regard to the Highest Academic Degree Held. In Table 6 are presented the data illustrating the composition of the groups in relation to the highest academic degree held by the member.

The data from Table 6 indicates that a large majority of all three groups hold an academic degree. 45.2 percent of the experimental group
and 51.6 percent of the control group hold the Masters degree as compared with 12.5 percent of the validation group holding that degree. Of the experimental group 38.7 hold a Bachelors degree while 45.2 percent of the control group report a Bachelors as the highest academic degree held. Of the validation group 87.5 hold the Bachelors degree. Three members of the experimental group hold no academic degree while only one member of the control group holds no degree. No members of the validation group are without an academic degree.

TABLE 6

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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Validation Group (N=16)</th>
<th>Experimental Group (N=31)</th>
<th>Control Group (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Degree Held</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Bachelors -</td>
<td>0</td>
<td>0.0</td>
<td>3</td>
</tr>
<tr>
<td>Bachelors</td>
<td>9</td>
<td>56.2</td>
<td>5</td>
</tr>
<tr>
<td>Bachelors +</td>
<td>5</td>
<td>31.3</td>
<td>7</td>
</tr>
<tr>
<td>Masters</td>
<td>2</td>
<td>12.5</td>
<td>4</td>
</tr>
<tr>
<td>Masters +</td>
<td>0</td>
<td>0.0</td>
<td>10</td>
</tr>
<tr>
<td>*Other</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
</tr>
</tbody>
</table>

* Other here refers to: one participant who serves as a nurse and is an R.N. and one participant who did not give this information.

This data illustrates that the experimental group and the control group are comparable in relation to the highest degree held while the validation group differs by having a substantially lower percentage of members who hold an academic degree beyond the Bachelors degree.
In summary. In this section of Chapter IV a description of the three groups involved in the performance testing and evaluation study of the audio modular instructional units in communication was presented. Data has been presented in tabulation and in narration comparing the groups in relation to the criteria of: 1) sex, 2) age, 3) present position, 4) years of experience in present position, 5) setting and size of the school or program in which the member is employed, and 6) the highest academic degree held by participants. On all these criteria there has been shown a large degree of similarity between the experimental group and the control group while the validation group has been shown to differ from the other groups especially on the criteria of sex and present position.

Methods of Gathering and Processing the Data

The recommendations made in the literature relating to the assessment of training were studied in designing the procedures for gathering information from the findings of performance testing and system evaluation. Campbell recommends that the evaluation model measure: 1) trainee reaction; 2) trainee learning; 3) trainee behavior on the job; and 4) results with the organization. Webb suggests that the subjective approach to evaluation is often the only justifiable approach to be used when the skills which are the training goals are complex as in the area of communication. Bergman and Siegel found many researchers of the opinion that in most evaluation there is too much subjectivity
when objectivity is needed. Belasco and Trice outline the strengths and weaknesses of the "open" question and the "closed" question and point out that both techniques can be used in subjective evaluation as well as in objective evaluation. Finally, Campbell, Gagne, Biel, Peck and Dingman, and Webb agree that the critical evaluation of training is "on the job" performance. Therefore, in designing the evaluation methodology, this investigator collected information which would enable her to evaluate: 1) trainee reaction, 2) trainee learning, and 3) trainee behavior on the job. It did not seem feasible to evaluate results within the organization since the time span between this evaluation and the time of the training has been very brief and because relatively few members of any one program or school have received the training. Following Webb's suggestion that only subjective evaluation can be justified when training has taken place in a complex skill, the evaluation included the subjective approach but not to the exclusion of seeking objective information relative to the organization and quality of presentation of the instruction and the convenience of the packaging. Finally, in order to tap the strengths and counter the weaknesses of each technique, the evaluation design used both "open" and "closed" questions in the subjective and in the objective areas of the evaluation. The written questionnaire was the means for collecting the information.

In the section which follows the specific procedures used in this study will be described. The evaluation model sought information on two major questions: are these audio instructional modules suitable for initial training or participants in communication skills based on Transactional Analysis? and is the audio modular instructional approach
suitable as an inservice training technique for adult educators? The procedures designed to collect information on the first question are presented in the first part of this section. The second part of the section presents the procedures used to collect information on the second question.

Procedures Used to Determine the Suitability of These Modules for Initial Training of Participants in Communication Skills Based on Transactional Analysis

The suitability of these specific modules as an initial training technique in communication skills was assessed on four of the suitability criteria: interest and motivation, the perceived worth of the experience, the cognitive change resulting from the experience, and the suggestions for further development of communication modules and for improvement of the existing modules. In addition, the procedures used to determine internalization of the skills presented in the modules are described. In the subsections which follow the procedures used to collect information pertaining to these criteria are described. Following the descriptions of collecting procedures, a final subsection describes the methods used in processing and analyzing the data.

Procedures used to determine participants' interest and motivation resulting from experience with the modules. After each participant in the experimental group completed the two modules in the audio instructional unit, he was asked to respond to three "closed" questions which were subjective in approach and three "open" questions which were objective in approach. The three "closed" questions focused on 1) the participant's interest during his experience with the modules, 2) the
probability of the participant's choice to participate in the modules with complete knowledge of what the experience would be, and 3) the participant's interest in recommending the modules as learning experiences to peers. A sample of these questions is presented in Figure 1.

Opinionnaire for the audio modular instructional unit

I found participating in the audio instructional module:

___ a) very interesting.
___ b) somewhat interesting.
___ c) somewhat boring.
___ d) very boring.

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.

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 defined for the suitability concept.

The three "open" questions which were objective in approach asked the participants to focus on the strengths and weaknesses they perceived in the modules and to recommend which portions of the modules should
definitely be retained and which portions removed in the revising of the modules. A sample of these questions is presented in Figure 2.

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

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

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 defined for the suitability concept.

Procedures Used to Determine Participants' Perceived Worth of the Experience. Four questions utilized the subjective approach in obtaining information about the participants' perceived worth of the experience. Two closed questions asked participants to respond with regard to the value of the learning experience for them and with regard to the worth of the experience considering the amount of time expended on the experience. A sample of these "closed" questions is presented in Figure 3.

Two "open" questions asked participants to state what they had learned from the module and what other existing instructional method they would have preferred to participate in in order to learn what they had learned. The investigator considered this question to be important in collecting information about the suitability of using this instructional approach for initial training in Transactional Analysis.

One "closed" question and three "open" questions were designed to obtain information about the worth of the experience from an objective
approach. The "closed" question asked for the participants to report
the length of time spent in participating in the two modules. The three
"open" questions asked participants to focus specifically on the modules
in three ways by completing sentence fragments. A sample of these
questions is presented in Figure 4.

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.

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 utilizing the subjective
approach to determine participants' perceived worth of the
experience as the concept is defined for the present study.

Procedures Used to Determine the Cognitive Change Resulting from
Experience with the Modules. The procedures used to assess the cognitive
changes resulting from experience with the two modules utilized the sub-
jective approach in an "open" question asking participants to state
briefly what they had learned from the use of the two modules. The
objective procedure used to assess cognitive change was the implementation
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.

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. 4 — A sample of the questions utilizing the objective approach to determine participants' perceived worth of the modular experience as the concept is defined for the present study.

---

of the pretest-posttest non-equivalent control group design in the administration of an achievement test for each module.

The first achievement test consisted of twenty-five closed questions designed to assess not only the knowledge level of the participants but the comprehension level as well. A copy of this instrument is included in Appendix B. The achievement test for the second module consisted of sixteen closed questions designed to assess the participants' ability to apply the principles explained and practiced during the use of the second communication module. A copy of this instrument is included in Appendix B. The achievement tests were administered twice to the experimental group: once before and once after experience with the modules.
The control group did not participate in the modules and took the achievement tests once.

**Procedures Used to Measure the Potential for Revision of Existing Modules and for Further Development of Modules in Communication.** Two "open" questions utilizing the objective approach were designed to gain information for the revision of these two modules. Participants were asked to respond to these two questions:

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?

A "closed" question asked participants to focus on the technical aspects in their evaluation. The "closed" question directed the participants' attention to seven technical aspects of the modules and solicited a rating of 1-5 for each aspect. A sample of the question together with an explanation of the rating scale is presented in Figure 5. The results from this data will be used to recommend revision of the modules for final form.

**Procedures Used to Determine the Internalization Resulting from Experience with the Modular Unit.** In order to gather data pertaining to the degree of internalization which resulted from participants' use of the modular unit, the evaluation model included a questionnaire sent to the participants three-five weeks after their experience with the modular unit. The questionnaire contained five "open-ended" questions designed to generate information regarding the various levels of internalization as these were outlined in Chapter I. A sample of this instrument is included in Appendix B.
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 text ............................... 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. 5—A sample of the "closed" question used in the study, focusing on the technical aspects of the instructional modules.

Participants were asked to respond to the following stimulus:
"List some of the concepts or terms you recall from your experience with Transactional Analysis through the use of the modules." Information gained from responses to this question or stimulus was used to gain data concerning the participants' willingness to receive or attend to the interpersonal skills which had been presented in the modular unit. The information will to some extent also give information pertaining to the participants' willingness to respond to interpersonal communication skills since reporting what is recalled after three to
five weeks requires the participants' active attention to the skills at least cognitively during the reporting.

Participants were asked to respond to a question concerning the worth they perceived in the experience after an interval of three to five weeks. The question read, "Do you feel that participation in the two modules was a worthwhile experience for you?"

Information generated by this question enabled the investigator to determine the participants' valuing of the interpersonal skills presented in the modules. Recognition of the worth of the concepts and skills presented is the criterion for this level of internalization.

A second question used to generate data concerning the participants' valuing of the concepts and skills presented in the modules was: "Do you want to know more about Transactional Analysis?" A final question which generated data concerning the participants' perceived worth of the experience pertained to potential for further development of modules in Transactional Analysis. Participants were asked to respond to the question: "If further modules on Transactional Analysis were to be developed, what suggestions for method and/or content would you offer to the designer?" Responses to this question indicate the potential and the value of additional modules based on these concepts and skills and thus also give information about the perceived worth of the present modules.

Lastly, participants were asked to respond to a question relating to their own efforts to internalize the concepts and skills presented in the modules: "Have you yourself tried to learn more about Transactional Analysis?" Data generated by this question will enable the
investigator to determine to some extent the degree to which the experience with the modular unit caused the participants to conceptualize for themselves the value of interpersonal communication skills and to integrate these skills into their philosophies of life. To a lesser extent responses to this question also enabled the investigator to determine participants' characterization by interpersonal communication by the evidence they give of behavior motivated by the interpersonal communication concepts, analysis and skills presented in the unit.

In summary. This section has presented the procedures used to gain information through which the investigator could answer the question: are these audio instructional modules suitable for initial training of participants in communication skills based on Transactional Analysis. The procedures were based on four of the suitability criteria: interest and motivation of the participants as a result of their experience, participants' perceived worth of the experience, the cognitive change resulting from the experience and potential for further development of modules based on Transactional Analysis, and the criteria for internalization presented in Chapter I.

Procedures Used to Determine the Suitability of the Audio Modular Instructional Approach as an In-Service Training Technique for Adult Educators

The suitability of using the audio modular instructional approach as an in-service training technique for adult educators was assessed on the six criteria of suitability presented in Chapter One: interest and motivation resulting from experience with this training
The Procedures Used to Measure the Responses Relating to the Participants' Interest in the Experience and Their Motivation as a Result of the Experience. In assessing the participants' interest and motivation resulting from their experience with this particular instructional approach, one "closed" question utilizing the subjective approach was asked of the participants. The question was designed to discover if participants would welcome additional participation in learning experiences utilizing this instructional approach. A sample of this "closed" question is presented in Figure 6.

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. 6--A sample of the closed question relating to the interest and motivation resulting from audio modular instructional approach as the concept was defined for suitability study.
Two "open" questions utilized the objective approach asking participants to focus upon strengths and weaknesses of this particular in-service training approach. Participants were asked to complete the following statements:

The major strengths of the audio modular instructional approach as an inservice technique are:

The major weaknesses of the audio modular instructional approach as an inservice technique are:

The data from these questions along with the responses of the participants indicating their interest and motivation resulting from these particular modules will enable the investigator to ascertain the suitability of utilizing this instructional approach for adult educators on the basis of the criteria of interest and motivation as defined for this study in Chapter One.

The Procedures Used to Measure the Data Relating to the Perceived Worth of The Experience, as Compared to Alternative Experiences. The procedures used to measure the perceived worth of the audio modular instructional approach as compared to alternative experiences were subjective in approach. The first of the two procedures was an "open" question asking participants what other method of inservice training they would have preferred for learning what was learned through their experience with the two modules. Data generated by this question was also used to help determine the suitability of using this approach specifically for training in Transactional Analysis.

The second procedure was one designed to determine the participants' order of preference of alternative instructional approaches. This subjective evaluation was sought by means of a "closed" question, asking
participants to rank-order six different alternatives commonly used in inservice training for adult educators. Additional blanks were provided at the bottom of the list to make it possible for individual participants to indicate preference for training techniques not included in the list. Included in the list of six was the audio modular approach. Figure 7 presents the "closed" question asking participants to rank-order inservice training approaches.

Suppose you were given the option to participate in the following inservice 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. 7--A sample of the "closed" question asking participants to rank order inservice approaches according to preference.

The Procedures Used for Determining the Connotative Meaning of the Experience. On a semantic differential scale participants were asked to react to the concept of audio modular instruction as one alternative
approach for in-service training of adult educators. On a second semantic differential scale participants were asked to react to concepts of in-service training approaches which they had experienced to the exclusion of the audio modular instructional approach. The semantic differential scales were constructed in such a way as to generate data for four factors: evaluation, potency, receptivity and activity. The factors and the related groups of polar traits are listed below:

1) Evaluation = (good-bad) (untimely-timely) (pleasant-unpleasant) (meaningless-meaningful) (useless-useful) (true-false) (skeptical-believing) (promising-disappointing) (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)

The Procedures Used to Determine the Cognitive Change that Took Place as a Result of Participating in the Experience. As described earlier, the pretest-posttest non-equivalent control group quasi-experimental design was used in an attempt to determine cognitive changes which occurred as a result of the audio modular experience. During the field testing the achievement tests were administered twice to the members of the experimental group, once before they experienced the module being tested and once after they had experienced the module. The members of the field-testing control group were administered the achievement tests only once.
Procedures Used to Measure 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 participants were asked to react to two "open" questions utilizing the subjective approach. They were asked to complete the following statements:

I would spend time participating in an audio modular instructional unit only if . . .

I would definitely not spend time participating in an audio modular instructional unit if . . .

Utilizing the objective approach, three "open" questions were asked of the participants to elicit suggestions as to conditions under which further instruction utilizing this approach might be undertaken and recommendations for skills and topics which might be advantageously taught through this approach.

The Procedure Used to Measure the Time and Money Factors Involved in the Development of the Audio Modular Instructional Units. In an attempt to measure the time and money factors related to the development of the two audio modules, the investigator kept a record of the time and money expended in the development and productions of the modules. The data has been reported in two ways. First, the cost of the development and production of the master copy of each module has been calculated. Second, the cost of producing additional copies of the module once the master copy is available has been calculated.

The time factor has been reported in a similar way. First, the time spent in producing the master copy of each module has been reported. Second, the time needed to reproduce multiple copies of each module is
calculated and reported. The time reported is that spent by the chief developer of the modules in the work of designing, development and production. The figures reported do not include the time or money spent in consultation and study prior to the work of design and development. Nor do they include the cost of the secretarial assistance provided the designer.

Methods Used to Process, Analyze and Present the Data Generated by the Described Procedures

The two basic techniques used in the evaluation model were the "open" question and the "closed" question. Because of the difference in amount and variety of information elicited by these two techniques, one set of procedures has been used for the processing, analyzing and presentation of data generated by the "open-ended" questions and a different set of procedures was developed for analyzing and presenting the data generated by the "closed" questions. A description of these two sets of procedures follows.

Procedures for Processing, Analyzing, and Presenting Data Generated by "Open-Ended Questions." The wide variety of responses generated by "open-ended" questions was interpreted and categorized for the sake of reporting. Responses were then presented in the form of number and percentage of responses for each category in a tabular format. When a response could not be grouped without deleting an essential element of the response, it was assigned a category of its own. Finally, the data presented in tabular form was discussed in narrative form in order to clarify the relation of the data to the criterion being measured.

Procedures for Processing, Analyzing and Presenting Data Generated by "Closed" Questions. Responses to "closed" questions were of four
different types: responses on a Likert-type scale, rank-orderings, achievement tests, and ratings on Semantic Differential Scales. The processing of each of these types of responses is described separately.

**Processing of Data Generated on Likert-type Scales.** Data collected from questions having a Likert-type response pattern were presented in tabulation in the form of number and percentage of responses for each level of the scale. In addition, the levels of response were weighted and the mean weighted response for each question was calculated. Tabular presentations were discussed in order to clarify the relation between the data presented and the criterion being measured.

**Processing of Data Generated by Rank-Ordering.** The data from the question asking participants to rank-order according to order of preference six in-service training techniques were processed in two ways. The first way of processing it was to count the number of times each approach was assigned a certain value. The second way was to assign numerical values to each response and then determine the weighted mean score for the group for each technique listed. The numerical values that were assigned are presented in Figure 8.

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

Fig. 8—The numerical value assigned to the rank given each value item from Question #14.
Processing of the Scores on the Achievement Tests. The three sets of test scores generated by the implementation of the pretest-posttest non-equivalent control group quasi-experimental design were subjected to statistical analysis. The mean score 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 tests were subjected to a statistical analysis of variance to determine if the differences in the mean scores reached a statistical level of significance. The results of these calculations are also discussed in narrative as well as presented in tabular form.

Processing of Data Generated by Ratings on the Semantic Differential Scales. Ratings on the semantic differential scales were assigned values according to the response pattern illustrated below.


Mean polarity scores for each of the two concepts being assessed through the use of the Semantic Differential Scales were determined for the four factors: evaluation, potency, receptivity and activity and for the individual polarity traits: (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 was subjected to a statistical analysis of variance to determine if the difference in these scores reached a statistical level of significance.
Summary

In three sections Chapter IV has presented the methodology of the study. In the first section the various study populations have been described. In the second section the assessment procedures based on the criteria established in the definition of suitability have been presented together with the assessment procedures based on the criteria established in the definition of internalization. First the four criteria by which the modules were measured to determine the suitability of utilizing this approach for initial training in Transactional Analysis were set forth and the assessment procedures were described. Secondly, the assessment procedures used to determine internalization were described. Thirdly, the six criteria by which the suitability of utilizing this approach as an in-service training technique for adult educators has been measured was set forth together with a description of the procedures used to gather data for measuring these criteria. In the third section, the methods used to process, analyze, and present the data generated by the assessment procedures were described. In the following chapter, the data are analyzed and presented.
CHAPTER V
PRESENTATION AND ANALYSIS OF FINDINGS

As it has been explained this study is concerned with two major questions: are these audio instructional modules suitable for initial training of participants in communication skills based on Transactional Analysis? and is the audio modular instructional approach suitable as an in-service training technique for adult educators? The evaluation model was designed to generate data which could be used to arrive at least at a tentative answer to these two questions. In the first section of this chapter the data generated to determine the suitability of using these modules in the initial training of participants in communication skills based on Transactional Analysis will be presented and analyzed. In the second section the data generated to determine the suitability of utilizing the audio modular instructional approach as an in-service training technique for adult educators will be presented and analyzed.

Suitability of Utilizing Modules for Initial Training in Communication Skills Based on Transactional Analysis

In the following sections, presentation and analysis of the data will be made according to the four criteria by which the suitability of utilizing the modules for initial training in communication skills based on Transactional Analysis is to be established: the interest of the participants in the experience, their attitudes toward specific aspects of the module and their motivation as a result of experience with the
modules, the perceived worth of the experience, the cognitive change resulting from the experience, and the suggestions for improvement of the existing modules and for further development of communication modules.

Results of the Questions Used to Determine the Interest of the Participants and Their Motivation Resulting from the Experience

In order to solicit information pertaining to this criterion, the evaluation design utilized three subjective "closed" questions and three objective "open-ended" questions on the immediate evaluation instrument. On the questionnaire sent to participants three to five weeks after the experience one subjective "open" question was used. Responses to these questions are illustrated in the following subsections.

"Closed" questions pertaining to interest and motivation. The results of the question pertaining to the interest the participant experienced in using the modules are presented in Table 7.

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Very interesting</td>
<td>18</td>
</tr>
<tr>
<td>Somewhat interesting</td>
<td>12</td>
</tr>
<tr>
<td>Somewhat boring</td>
<td>1</td>
</tr>
<tr>
<td>Very boring</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>31</td>
</tr>
</tbody>
</table>
The data in this table show that thirty of the thirty-one participants found their experience with the two modules interesting. Fifty-eight percent of the participants said that the experience was "very interesting" while 38.7 percent reported their experience as being "somewhat interesting." A single participant reported the experience as being "somewhat boring." Almost 97 percent of the responses to this question were positive. Responses were weighted according to the following scale: "very interesting"—3, "somewhat interesting"—2, "somewhat boring"—1, "very boring"—0. The weighted mean for responses to this question was found to be 2.6 or "very interesting."

The results of the question pertaining to the participants' free option to participate in the module once they knew what the experience was, is illustrated in Table 8.

TABLE 8
RESULTS 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=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>HAVE DEFINITELY PARTICIPATED</td>
<td>11</td>
</tr>
<tr>
<td>HAVE PROBABLY PARTICIPATED</td>
<td>16</td>
</tr>
<tr>
<td>NOT KNOW WHETHER I WOULD OR WOULD NOT HAVE PARTICIPATED</td>
<td>3</td>
</tr>
<tr>
<td>HAVE PROBABLY NOT PARTICIPATED</td>
<td>1</td>
</tr>
<tr>
<td>HAVE DEFINITELY NOT PARTICIPATED</td>
<td>0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>31</td>
</tr>
</tbody>
</table>
The data from this table show that eleven participants express definite motivation as a result of the experience with the module. Just over half of the participants expressed probable willingness to use the modules. Three participants were undecided as to whether or not they would have participated in the modules while one expressed probable unwillingness to participate. The responses show that over 87 percent of the participants express definite or probable willingness to participate in the modules if they had been fully aware of what participation in the modules would be like.

A third question designed to determine the motivation of the participants asked about their willingness to recommend the module to a peer. Responses from this question are illustrated in Table 9.

**TABLE 9**

RESULTS 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=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>VERY EXCITED</td>
<td>9</td>
</tr>
<tr>
<td>SOMewhat EXCITED</td>
<td>14</td>
</tr>
<tr>
<td>NO FEELING EITHER WAY</td>
<td>6</td>
</tr>
<tr>
<td>WOULD BE RELUCTANT TO RECOMMEND IT</td>
<td>2</td>
</tr>
<tr>
<td>DEFINITELY WOULD NOT RECOMMEND IT</td>
<td>0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>31</td>
</tr>
</tbody>
</table>
The data from this table show that nine participants express great excitement about recommending the modules to peers. Fourteen members express some excitement about recommending the modules to their peers. Six participants report that they would be neither excited about recommending the modules nor reluctant to recommend them while two participants report reluctance in recommending the modules to peers. Approximately 75 percent of the participants indicate excitement at the opportunity to recommend the modules to peers while approximately 25 percent would be neutral or reluctant. On a Likert-type scale 75 percent of the responses would fall on the positive side of the scale, 6 percent on the negative side and 19 percent would appear neither positive nor negative. When responses are weighted according to the following scale: "very excited"--4, "somewhat excited"--3, "no feeling"--2, "reluctant"--1, "definitely would not"--0, the weighted mean score is 3.0 or "somewhat excited."

In summary. The results from the "closed" questions pertaining to interest and motivation indicate that the participants were excited about their own experience with the modules, most of them would have freely chosen to participate in the modules, and approximately 75 percent of them would be excited about recommending the modules to others.

"Open-Ended" questions pertaining to interest and motivation. In an effort to have participants focus on elements of the modular experience exterior to themselves in reporting their interest and motivation "open" questions as to the modules' strengths, weaknesses and expendable portions were asked of the participants. Table 10 illustrates the responses
to the question pertaining to the major strength of these specific audio modules.

**TABLE 10**

RESULTS OF THE RESPONSES TO THE QUESTION: "WHAT WAS THE MAJOR STRENGTH OF THIS SPECIFIC AUDIO INSTRUCTIONAL MODULE?"

<table>
<thead>
<tr>
<th>Categorizations</th>
<th>Responses Made (N=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>AUDIO COMPONENT</td>
<td>2</td>
</tr>
<tr>
<td>BOOKLET PROVIDED FOR PARTICIPANT</td>
<td>1</td>
</tr>
<tr>
<td>CLARITY OF INSTRUCTIONS</td>
<td>5</td>
</tr>
<tr>
<td>CONTENT</td>
<td>12</td>
</tr>
<tr>
<td>CONVENIENCE</td>
<td>1</td>
</tr>
<tr>
<td>IMMEDIATE APPLICATION</td>
<td>2</td>
</tr>
<tr>
<td>IMMEDIATE FEEDBACK (SELF-EVALUATION)</td>
<td>5</td>
</tr>
<tr>
<td>INDIVIDUAL PACE</td>
<td>5</td>
</tr>
<tr>
<td>ORGANIZATION</td>
<td>1</td>
</tr>
<tr>
<td>REINFORCEMENT OF LEARNING (STEP BY STEP)</td>
<td>1</td>
</tr>
<tr>
<td>RELAXED AND NON-THREATENING ATMOSPHERE</td>
<td>1</td>
</tr>
<tr>
<td>REVIEW AT WILL</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>39</strong></td>
</tr>
</tbody>
</table>

The data from the table indicate that the content was the strength most often pointed out by the participants. Twenty-five of the responses may be interpreted as pertaining to the specific design of the modules: audio component, clarity of instruction, immediate application, immediate feedback and self-evaluation, individual pace, organization, reinforcement.
of learning, and the chance to review at will. More than thirty percent of the responses focused on the content of the modules. Sixty-four percent of the responses focused on the design. It must be noted that the number of responses exceeded the number of participants. Some participants indicated aspects of the module pertaining to content as well as elements of the design in indicating the major strength. Others pointed out more than one element of the design.

A corresponding "open-ended" question asked participants to focus on the major weakness of the modules. The results of this question are illustrated in Table 11.

TABLE 11

RESULTS OF THE RESPONSES TO THE QUESTION: "WHAT WAS THE MAJOR WEAKNESS OF THIS SPECIFIC AUDIO INSTRUCTIONAL MODULE?"

<table>
<thead>
<tr>
<th>Categorizations</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>CONCEPTS TOO ADVANCED FOR THIS MEDIUM</td>
<td>2</td>
</tr>
<tr>
<td>IRRITATING QUALITY OF THE BELL</td>
<td>1</td>
</tr>
<tr>
<td>LACK OF APPLICATION TO ADULT EDUCATORS</td>
<td>1</td>
</tr>
<tr>
<td>LACK OF CLARITY OF SECOND MODULE</td>
<td>2</td>
</tr>
<tr>
<td>LACK OF INTERACTION: WITH INSTRUCTOR</td>
<td>2</td>
</tr>
<tr>
<td>WITH PARTICIPANTS</td>
<td>5</td>
</tr>
<tr>
<td>MATERIALS CONFUSING</td>
<td>3</td>
</tr>
<tr>
<td>NARRATION OF SECOND MODULE RUSHED</td>
<td>2</td>
</tr>
<tr>
<td>NEED OF A CASSETTE</td>
<td>2</td>
</tr>
<tr>
<td>REDUNDANCY</td>
<td>1</td>
</tr>
<tr>
<td>TOO LONG</td>
<td>3</td>
</tr>
<tr>
<td>NONE</td>
<td>7</td>
</tr>
<tr>
<td>TOTALS</td>
<td>31</td>
</tr>
</tbody>
</table>
The data from the table illustrate that seven of the participants found no weakness in the modules while an additional two participants report no weakness in the modules but found the need of a cassette a hindrance. Seven participants found the lack of interaction a weakness in the modules. Three participants found a weakness in the content of the instruction: concepts were too advanced for the medium and there was a lack of application. Eight participants reported a weakness in the presentation of the content: lack of clarity in the second module, rushed narration, lengthiness, and redundancy. Six participants reported a weakness in the physical aspects of the module: irritating bell on the cassette recording; materials provided in the module were initially confusing; and cassette players were inconvenient to obtain.

Another pair of questions was designed to elicit response from the participants concerning aspects of the modules which they were excited about sufficiently to "definitely retain" in the event of revision of the modules and other portions which might be eliminated if necessary. The results of the question pertaining to the "definitely retain" portions are illustrated in Table 12.

Data from this table indicate that when asked to designate specific portions of the module which should be definitely retained in revision nine participants did not focus on any particular aspect. The response most often made likewise did not focus on any particular aspect but recommended the retention of both modules intact or the retention of the complete Module I. These responses, i.e., those which indicated no specific portion and those which indicated complete modules, constitute 70 percent of the total responses. These results may indicate that this
TABLE 12

RESULTS OF RESPONSES TO THE QUESTION: "IF . . . YOU WERE INVOLVED IN REVISING [THE MODULE], WHAT PORTION WOULD YOU DEFINITELY KEEP IN THE MODULE?"

<table>
<thead>
<tr>
<th>Categorizations</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>AUDIO</td>
<td>1</td>
</tr>
<tr>
<td>AUDIO AND GUIDEBOOK</td>
<td>1</td>
</tr>
<tr>
<td>BEHAVIOR TRANSACTIONS</td>
<td>3</td>
</tr>
<tr>
<td>EVALUATION GUIDES</td>
<td>1</td>
</tr>
<tr>
<td>EVERYTHING</td>
<td>5</td>
</tr>
<tr>
<td>MODULE I COMPLETELY</td>
<td>5</td>
</tr>
<tr>
<td>PRINTED PORTIONS</td>
<td>2</td>
</tr>
<tr>
<td>WORKSHEET BOOKLETS</td>
<td>1</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

instructional subsystem was sufficiently integrated that the components did not seem to function independently and thus were not perceived as independently removable. Responses to the companion question pertaining to which portions might be removed from the modules are illustrated in Table 13.

The data from this table indicate that 55 percent of the participants did not focus on any component of the module as functioning so little that it could be removed from the module if the module needed to be shortened. Six of the participants indicated that the pretest should be removed. However, it must be noted that the pretest was not designed as an integral
TABLE 13

RESULTS OF RESPONSES TO THE QUESTION: "IF . . . YOU WERE INVOLVED IN REVISION [THE MODULES], WHAT PORTION WOULD YOU REMOVE?"

<table>
<thead>
<tr>
<th>Categorizations</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>AUDIO: COMPLETELY</td>
<td>1</td>
</tr>
<tr>
<td>IN PART</td>
<td>1</td>
</tr>
<tr>
<td>CHILD EGO STATE INFORMATION</td>
<td>1</td>
</tr>
<tr>
<td>PRETEST</td>
<td>6</td>
</tr>
<tr>
<td>REPETITION OF DIRECTIONS</td>
<td>3</td>
</tr>
<tr>
<td>REPETITION OF BACKGROUND (MODULE II)</td>
<td>1</td>
</tr>
<tr>
<td>REVIEW</td>
<td>1</td>
</tr>
<tr>
<td>NOTHING</td>
<td>17</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

part of the modules. Participants were only asked to complete the pre-test in the field-testing situations to enable the investigator to measure to some extent the cognitive changes which resulted from participation in the module. Thus when the 19.4 percent of the participants suggesting the removal of the pre-test is added to the 54.9 percent of the participants who suggested no portions for removal, the percent, in effect suggesting no portions for removal, totals 74.3. One participant suggests that a component of the module, the audio tape, could be removed. One participant suggests that a portion of the content be removed. The other six participants do not actually suggest portions which might be removed, but only reorganizations to eliminate any redundancy.
The information from this table seems to support the suggestion made earlier that the components of the modules were integrated sufficiently in the opinions of the participants that no portion seemed able to be removed from the modules without weakening the modules. However, before this suggestion could be substantiated, questions more directly eliciting information concerning the degree of integration the participants found in the modules would need to be included in the evaluation instrument.

**Summary of results of the "open-ended" questions pertaining to interest and motivation.** The "open-ended" questions pertaining to the interest and motivation of the participants concerning their experience with the modules generated a variety of responses. Responding to the stimulus question about the major strength of the modules, participants most often mentioned the content. Three other categories of responses equally received the next highest number of responses: clarity of instructions, immediate feedback and individualized pace. The stimulus question concerning the major weakness generated only one category of response with a substantial percentage: that of lack of interaction, if lack of interaction with instructor is combined with lack of interaction with other participants. The stimulus question pertaining to portions of the modules which should definitely be retained in the event of revision for the sake of shortening most often generated the response to retain either Module I completely or both modules. The stimulus question pertaining to removable portions of the modules failed to generate information about portions which could actually be removed from the module except in the responses of two participants: one suggesting removal of
the audio component, the other suggesting removal of a portion of the content.

Results of the Questions Used to Determine the Participants' Perceived Worth of the Experience

In order to elicit information pertaining to this criterion, the evaluation design utilized two "closed" questions and two "open-ended" questions subjective in approach and one "closed" question and three "open-ended" questions objective in approach. On the mailed questionnaire, participants were asked to react to one "open-ended" question subjective in approach. Responses to all except the final question are illustrated and discussed in the following subsections.

Subjective questions pertaining to the perceived worth of the experience. The results of the question pertaining to the value the participant found in the experience of the module as a learning experience are illustrated in Table 14.

TABLE 14

RESULTS 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=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>VERY VALUABLE</td>
<td>8</td>
</tr>
<tr>
<td>OF SOME VALUE</td>
<td>19</td>
</tr>
<tr>
<td>NEITHER VALUABLE NOR WORTHLESS</td>
<td>4</td>
</tr>
<tr>
<td>SOMewhat WORTHLESS</td>
<td>0</td>
</tr>
<tr>
<td>COMPLETELY WORTHLESS</td>
<td>0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>31</td>
</tr>
</tbody>
</table>
The data in the table show that twenty-seven of the participants answered positively to the question about the value of the participation in the modules as learning experiences. Four participants indicated that for them participation in the modules was neither valuable nor worthless as a learning experience. When answers were weighted according to the following scale: "very valuable"--4, "of some value"--3, "neither valuable nor worthless"--2, "somewhat worthless"--1, and "completely worthless"--0, the mean score for the responses was calculated to be 3.13 or "of some value."

The results of the question asking participants to relate the amount of time which they spent on the modules to the worth of the experience for them are illustrated in Table 15.

### TABLE 15

RESULTS 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=31)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAS DEFINITELY WORTH THIS AMOUNT OF TIME</td>
<td>12</td>
<td>38.7</td>
</tr>
<tr>
<td>WAS PROBABLY WORTH THIS AMOUNT OF TIME</td>
<td>12</td>
<td>38.7</td>
</tr>
<tr>
<td>MAY OR MAY NOT HAVE BEEN WORTH THIS AMOUNT OF TIME</td>
<td>5</td>
<td>16.2</td>
</tr>
<tr>
<td>WAS PROBABLY NOT WORTH THIS AMOUNT OF TIME</td>
<td>2</td>
<td>6.4</td>
</tr>
<tr>
<td>WAS DEFINITELY NOT WORTH THIS AMOUNT OF TIME</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>31</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
The data from the table indicate that twenty-four of the participants responded positively to this stimulus. Twelve of the participants found the experience definitely worth the amount of time spent upon it. An equal number of participants indicated that the experience was probably worth that amount of time. Approximately 20 percent of the participants indicated doubt as to whether or not the experience was worth the amount of time spent on it. Sixteen percent indicated real hesitation: "may or may not," while 6 percent or two participants indicated a probable negative relation between the time required and the worth gained.

These responses need to be judged with the following data in mind. Table 16 illustrates responses to the question asking how much time participants spent in using the modules.

**TABLE 16**

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

<table>
<thead>
<tr>
<th>Response Categories</th>
<th>Responses Made (N=31)</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-45 minutes</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>45-60 minutes</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>60-75 minutes</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>90-105 minutes</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>105-120 minutes</td>
<td>6</td>
<td>19.3</td>
<td></td>
</tr>
<tr>
<td>over 2 hours</td>
<td>10</td>
<td>32.3</td>
<td></td>
</tr>
<tr>
<td>over 2-1/2 hours</td>
<td>15</td>
<td>48.4</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>31</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>
The data from the table indicate that only six of the participants spent two hours or less on the two modules. Ten participants indicated that they spent more than two hours on the modules. Approximately half of the participants indicated that they spent more than two and one-half hours on the modules. Two of the last group indicated that they spent much more than 2-1/2 hours. It is well to note that all the participants who indicated doubt about the worth of the experience in view of the amount of time it required of them had spent in excess of 2-1/2 hours with the modules. At the same time one of the two participants who indicated that the modules had required far more than 2-1/2 hours responded that the experience was definitely worth the amount of time and the other participant indicated that it was probably worth that amount of time.

These responses indicate that although the participants spent far more than the maximum time requirement recommended by previous studies conducted on the audio modular instructional approach, 77.4 percent of the participants nevertheless indicated that the experience was definitely or was probably worth that amount of time.

Results of the objective questions pertaining to the perceived worth of the experience. In an effort to generate data about the worth of the modular experience from an objective approach, participants were asked to focus on specific aspects of the modules in their reactions. Results of three such "open-ended" questions are presented in this section.

Responses to the stimulus sentence fragment focusing on the exercises included in the modules are illustrated in Table 17. The data from the table show that there was a wide variety in the responses. The investigator felt that eight of the responses could not be categorized with
TABLE 17

RESULTS OF THE STIMULUS: "THE EXERCISES, CONNECTED TO THE MODULE, WHICH I PARTICIPATED IN . . ."

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>COMPLETE</td>
<td>1</td>
</tr>
<tr>
<td>CONFUSING AT FIRST GLANCE</td>
<td>1</td>
</tr>
<tr>
<td>EASIER TO FOLLOW IN FIRST MODULE</td>
<td>1</td>
</tr>
<tr>
<td>INTEGRATING</td>
<td>3</td>
</tr>
<tr>
<td>INTERESTING-VERY INTERESTING</td>
<td>6</td>
</tr>
<tr>
<td>MODULE I: EXCELLENT; MODULE II: POOR</td>
<td>1</td>
</tr>
<tr>
<td>REINFORCING OF LEARNING</td>
<td>3</td>
</tr>
<tr>
<td>SOMEWHAT EASY, SOMETIMES BORING</td>
<td>1</td>
</tr>
<tr>
<td>STIMULATING</td>
<td>1</td>
</tr>
<tr>
<td>VALUABLE/HELPFUL LEARNING Tools</td>
<td>5</td>
</tr>
<tr>
<td>VARIED IN DEGREES OF DIFFICULTITY</td>
<td>1</td>
</tr>
<tr>
<td>VERY GOOD</td>
<td>1</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>6</td>
</tr>
<tr>
<td>TOTALS</td>
<td>31</td>
</tr>
</tbody>
</table>

other responses without distorting the meaning intended by the respondents. However, some of the categories can be combined under a classification of: positive value. Included in this classification would be the categories: integrating, interesting-very interesting, reinforcing of learning, stimulating, valuable/helpful learning tools and very good. Percentages in these categories total 61.4. Combining this percentage with the percentage of participants who did not respond to the stimulus, a total of 81 percent either reacted positively or did not react at all to the stimulus. One response indicates a generally negative reaction to the exercises:
somewhat easy and sometimes boring. The other 16 percent could be
classified as neither negative or positive but informative or "both
negative and positive."

In an effort to stimulate reactions to components which they may
not have found valuable in their way of functioning in the modules, par-
ticipants were asked to indicate one change they would make. Table 18
illustrates responses to this stimulus.

<table>
<thead>
<tr>
<th>Responses or Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>CHANGE: Second Tape</td>
<td>1</td>
</tr>
<tr>
<td>CLARIFY: Instructions</td>
<td>2</td>
</tr>
<tr>
<td>Pre-Tests</td>
<td>1</td>
</tr>
<tr>
<td>ELIMINATE: Bell</td>
<td>2</td>
</tr>
<tr>
<td>Field-test</td>
<td>1</td>
</tr>
<tr>
<td>Pre-test</td>
<td>1</td>
</tr>
<tr>
<td>Recording</td>
<td>1</td>
</tr>
<tr>
<td>INCLUDE: Group Discussion</td>
<td>1</td>
</tr>
<tr>
<td>PROVIDE: More copies of achievement tests</td>
<td>1</td>
</tr>
<tr>
<td>Discussion after exercises</td>
<td>1</td>
</tr>
<tr>
<td>Explanation for some exercises</td>
<td>1</td>
</tr>
<tr>
<td>More examples, repetition, review</td>
<td>1</td>
</tr>
<tr>
<td>Variety of voices on tape</td>
<td>1</td>
</tr>
<tr>
<td>More introduction to the approach</td>
<td>1</td>
</tr>
<tr>
<td>More participation</td>
<td>1</td>
</tr>
<tr>
<td>SHORTEN: Recording</td>
<td>3</td>
</tr>
<tr>
<td>SCHEDULE: Modules on different days</td>
<td>1</td>
</tr>
<tr>
<td>SIMPLIFY: Some exercises</td>
<td>1</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>1</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>8</td>
</tr>
</tbody>
</table>
The data from the table show that there was no agreement among participants when they were responding to an "open-ended" question about changes that should be made in the modules. Eight participants responded that they would make no changes. Three participants would shorten the recorded input. Two participants would eliminate the bell signaling the participant to stop the recording in order to engage in some designated activity. Two other participants would clarify some instructions. All other suggested changes were made by single participants. These results indicate that there was no component of the modular experience which was not deemed worth its function in the instruction with one exception: one participant indicated in response to this question and to a number of other stimuli provided that the recorded component lessened the functionality of the module.

A companion question asked the participants about an aspect of the modules which should definitely remain the same. The responses to this stimulus are illustrated in Table 19.

The data from this table show a greater clustering of responses than occurred on the previous question. Again for this question the percentage of participants who did not respond was relatively high: 22.8. Six of the participants indicated that the recorded presentation should remain unchanged. Three participants indicated that no changes should be made, that everything should be retained as they experienced it. Four other participants indicated that Module I should remain completely unchanged. This question, besides generating data about the components of the modules which the participants found most valuable, also help to indicate the particular strengths the participants found in these modules.
TABLE 19

RESULTS OF THE RESPONSES TO THE STIMULUS: "ONE ASPECT OF THESE MODULES WHICH SHOULD DEFINITELY REMAIN THE SAME . . ."

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>BEHAVIORAL SITUATIONS</td>
<td>1</td>
</tr>
<tr>
<td>CONCISENESS AND PRECISENESS</td>
<td>2</td>
</tr>
<tr>
<td>DIAGRAMS</td>
<td>1</td>
</tr>
<tr>
<td>EVALUATION CARDS</td>
<td>1</td>
</tr>
<tr>
<td>EVERYTHING</td>
<td>3</td>
</tr>
<tr>
<td>EXAMPLES PRECEDING EXERCISES</td>
<td>1</td>
</tr>
<tr>
<td>EXERCISES</td>
<td>1</td>
</tr>
<tr>
<td>MODULE I</td>
<td>4</td>
</tr>
<tr>
<td>NARRATOR’S CLEAR VOICE</td>
<td>2</td>
</tr>
<tr>
<td>PRINTED COMPONENTS</td>
<td>1</td>
</tr>
<tr>
<td>RECORDED PRESENTATION</td>
<td>6</td>
</tr>
<tr>
<td>STEP BY STEP LEARNING</td>
<td>1</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

Summary of results of the questions pertaining to the perceived worth of the experience. Of the thirty-one participants, twenty-seven indicated that participation in the modules was a valuable learning experience for them. The other four participants indicated doubt about the worth. No participant indicated that the experience was even somewhat worthless. Table 16 indicates that twenty-five of the participants spent over two hours completing the modules. Yet when asked about the worth of the experience in the light of the time spent on it, only two participants indicated that it was probably not worth that amount of
time to them. Five participants were not sure if it was worth that amount of time to them. The remaining twenty-four participants felt that it was definitely or probably worth that amount of time. In suggesting possible changes, only three participants indicated that they would shorten the time commitment. The only other change suggested by more than one participant was the elimination of the sound of the bell from the recordings. At least 60 percent of the participants responded positively to the stimulus of the exercises in the modules. When the worth of the modules was tested in the form of a question about what aspect of the modules should definitely remain the same, respondents most often designated the recorded presentation. However, when the categories "Everything" and "Module I" are combined, at least 20 percent designated that at least the complete Module I should remain the same. Responses from these questions indicate that participants found the experience valuable.

Results of the Procedures Used to Determine the Cognitive Change Resulting from Experience with the Modules

In order to assess any cognitive changes resulting from the participants' experience with the modules, the evaluation model utilized one "open-ended" question from the subjective approach. A second procedure was much more elaborate: achievement tests which had been tested and found to be reliable and valid as described in Appendix A. The results of the procedures for measuring cognitive change are presented in the following subsections.
Results of the "open-ended" question pertaining to cognitive changes resulting from the experience. The results of the "open-ended" question pertaining to the cognitive changes which the participants experienced from participation with the modules are presented in Table 20.

**TABLE 20**

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

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses Made (N=31)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESPONSES Made (N=31)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AWARENESS OF PATTERNS OF PERSONAL TRANSACTIONS</td>
<td>6</td>
<td>19.4</td>
</tr>
<tr>
<td>AWARENESS OF SELF AS VITAL TOOL IN RELATING TO PEOPLE</td>
<td>8</td>
<td>25.9</td>
</tr>
<tr>
<td>DIFFICULTY OF CONDENSING MCH INTO A THIRTY-MINUTE MODULE</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>HOW TO LEARN FROM THIS MEDIUM</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>KNOWLEDGE OF TA, ABILITY TO IDENTIFY CONCEPTS IN MY PERSONALITY, LIMITED ABILITY TO APPLY TO COMMUNICATION</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>PERSONALITY BASIS FOR TRANSACTIONAL ANALYSIS</td>
<td>9</td>
<td>29.1</td>
</tr>
<tr>
<td>SOMETHING RELEVANT AND REALISTIC</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>SOMETHING REFRESHING AND CLEAN-CUT</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>AN UNDERSTANDING OF TA SUPPLEMENTARY TO READING BERNE'S AND HARRIS' BOOKS</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>NOT MUCH</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>TOTALS</td>
<td>31</td>
<td>100.0</td>
</tr>
</tbody>
</table>
The data from the table indicate that twenty-seven of the participants reported learning or understanding Transactional Analysis to some extent. Although two participants were very general, merely indicating that they had learned "something relevant" or something "refreshing" twenty-five participants speak of their learning in terms of the objectives formulated for the two modules. One participant did not respond to the question. The data generated from this subjective approach shows that 87 percent of the participants believe that they had learned from the experience. This data is supported by the results of the question "I found participating in the audio instructional module . . . ." which also indicated that 87 percent of the participants felt that participation in the modules had been a valuable learning experience for them.

Results of the achievement tests designed to measure the cognitive changes resulting from experience with the modules. Utilizing the objective approach to measuring cognitive change, the pretest-posttest nonequivalent control group quasi-experimental design was implemented in this evaluation model. The following subsections present the findings from these procedures.

Results of achievement test I. The achievement test for Module I consisted of twenty-five objective questions based on the performance objectives for the module. The test was constructed, validated and tested for reliability prior to the field-testing sessions. During the field-testing the achievement test was administered to the thirty-one members of the control group and to the thirty-one members of the experimental group prior to any experience with the module.
The experimental group was again administered the test after they had used Module I. 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. Table 21 presents the data computed from the results of the three administrations of the test.

**TABLE 21**

**COMPARISON OF THE RESULTS OF THE THREE ADMINISTRATIONS OF THE ACHIEVEMENT TEST FOR MODULE I**

<table>
<thead>
<tr>
<th>Control Group (Test)</th>
<th>Experimental Group (Pretest)</th>
<th>Experimental Group (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER 31</td>
<td>NUMBER 31</td>
<td>NUMBER 31</td>
</tr>
<tr>
<td>MEAN SCORE 10.9</td>
<td>MEAN SCORE 14</td>
<td>MEAN SCORE 20.3</td>
</tr>
<tr>
<td>*x^2 241</td>
<td>*x^2 936</td>
<td>*x^2 325</td>
</tr>
<tr>
<td>VARIANCE 8.03</td>
<td>VARIANCE 31.2</td>
<td>VARIANCE 10.83</td>
</tr>
</tbody>
</table>

*x^2 = the sum of the squared deviations from the mean.

The data in Table 21 indicate that the mean score for the single testing of the control group was 10.9 while the mean score for the pretest of the experimental group was 14.0. The mean score for the experimental group posttest was 20.3. The variance for the scores of the single testing of the control group was computed to be 8.03. The variance for the pretest of the experimental group was 31.2 and the variance for the posttest was 10.83.
The t Test was applied to the difference in the scores to determine if the differences were statistically significant. Table 22 illustrates the application of the t Test to the difference in mean scores between the experimental group pretest and posttest.

**TABLE 22**

THE t TEST APPLICATION TO THE DIFFERENCE IN MEAN SCORES BETWEEN EXPERIMENTAL GROUP PRETEST AND POSTTEST

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group (Pretest)</th>
<th>Experimental Group (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN SCORE</td>
<td>14</td>
<td>20.3</td>
</tr>
<tr>
<td>VARIANCE</td>
<td>31.2</td>
<td>10.83</td>
</tr>
<tr>
<td>NUMBER OF SAMPLES</td>
<td>31</td>
<td>31</td>
</tr>
</tbody>
</table>

*t VALUE = 5.34

*The distribution of the t Table entered with 30 degrees of freedom and a probability level of 0.05 yields a t value of 2.042.

The table illustrates that the difference in the mean scores for the two administrations of the test to the experimental group (once prior to experience with the module and once after using the module) was 6.3. When the t Test was applied to this difference it yielded a value of 5.34. Compared with a table of distributions of t values entered with 30 degrees of freedom at a 0.05 level of significance for a two-tailed test, the difference was determined to be significant since the t value at the indicated intersection of the t Table was found to be 2.042.

Table 23 illustrates the application of the t Test to the difference in mean scores between the single testing of the control without any
experience with the module and the posttest of the experimental group. The data from this table show that the difference in the mean scores was 9.4. When the t Test was applied to this difference it yielded a value of 11.9. The table of distributions of t values entered with 30 degrees of freedom at a 0.05 level of significance yielded a value of 2.042. The t value of 11.9 showed a significant difference in the mean scores of the two tests.

**TABLE 23**

THE t TEST APPLICATION TO THE DIFFERENCE IN MEAN SCORES BETWEEN THE CONTROL GROUP TESTING AND THE EXPERIMENTAL GROUP POSTTEST

<table>
<thead>
<tr>
<th>Control Group (Test)</th>
<th>Experimental Group (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN SCORE</td>
<td>10.9</td>
</tr>
<tr>
<td></td>
<td>20.3</td>
</tr>
<tr>
<td>VARIANCE</td>
<td>8.03</td>
</tr>
<tr>
<td></td>
<td>10.83</td>
</tr>
<tr>
<td>NUMBER OF SAMPLES</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>31</td>
</tr>
</tbody>
</table>

*t VALUE = 11.9

*The distribution of the t Table entered with 30 degrees of freedom and a probability level of 0.05 yields a t value of 2.042.

In summary. Using the pretest-posttest nonequivalent control group design, these procedures for measuring the cognitive change resulting from participation in Module I by the administrations of achievement tests based on the performance objectives for the module indicate that a significant cognitive change resulted in part, at least, from participation in the module. Both the difference in scores for the pretest and posttest of the experimental group and the difference in scores for the
uncontaminated control group and the posttest of the experimental group were found to be significant at a 0.05 level.

Results of achievement test II. The achievement test for Module II consisted of sixteen objective questions based on the performance objectives for the second module. This test was also constructed, validated and tested for reliability as reported and described in Appendix A. The procedures for measuring the cognitive change resulting from participation in Module II were similar to the procedures used in measuring cognitive change from participation in Module I. During the field-testing the achievement test was administered to the thirty-one members of the control group and to the thirty-one members of the experimental group prior to any experience with the second module. Table 24 presents the data computed from the results of the three administrations of the second achievement test.

**TABLE 24**

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

<table>
<thead>
<tr>
<th>Control Group (Test)</th>
<th>Experimental Group (Pretest)</th>
<th>Experimental Group (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER 31</td>
<td>NUMBER 31</td>
<td>NUMBER 31</td>
</tr>
<tr>
<td>MEAN SCORE 7.23</td>
<td>MEAN SCORE 8.74</td>
<td>MEAN SCORE 12.74</td>
</tr>
<tr>
<td>(x^2) 39</td>
<td>(x^2) 377</td>
<td>(x^2) 256</td>
</tr>
<tr>
<td>VARIANCE 1.3</td>
<td>VARIANCE 12.57</td>
<td>VARIANCE 8.53</td>
</tr>
</tbody>
</table>

\(x^2\) = the sum of the squared deviations from the mean.
The data in the table indicate that the mean score for the single testing of the control group was 7.23 while the mean score for the pretest of the experimental group was 8.74. The mean score for the posttest was 12.74. For the experimental group this data shows a gain of four points on the achievement test while between the control group testing and the posttest for the experimental group the data shows a difference of 5.5. The variance for the control group scores was low: 1.3. The variance for the pretest of the experimental group was high: 12.57. The variance for the posttest was 8.53. These differences were subjected to the t Test to determine if they were statistically significant.

Table 25 illustrates the application of the t Test to the difference in mean scores between the experimental group pretest and posttest.

**TABLE 25**

**THE t TEST APPLICATION TO THE DIFFERENCE IN MEAN SCORES BETWEEN THE EXPERIMENTAL GROUP PRETEST AND POSTTEST**

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group (Pretest)</th>
<th>Experimental Group (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEAN SCORE</td>
<td>8.74</td>
<td>12.74</td>
</tr>
<tr>
<td>VARIANCE</td>
<td>12.75</td>
<td>8.53</td>
</tr>
<tr>
<td>NUMBER OF SAMPLES</td>
<td>31</td>
<td>31</td>
</tr>
</tbody>
</table>

* t VALUE = 4.76

*The distribution of the t Table entered with 30 degrees of freedom (N-1) and a probability level of 0.05 yields a t value of 2.042.

The data in the table show that the difference between the mean scores of the pretest and the posttest reach a statistically significant level at 4.76 since at the point of intersection on a table of t values entered
with 30 (N-1) degrees of freedom and a 0.05 level of significance yields a value of 2.042.

In order to verify that the gain was not unique to this group alone the difference in the mean score for the control group and the mean score for the experimental group posttest was subjected to the t test. Table 26 illustrates the results of this computation.

**TABLE 26**

THE t TEST APPLICATION TO THE DIFFERENCE IN MEAN SCORES BETWEEN THE CONTROL GROUP TESTING AND THE EXPERIMENTAL GROUP POSTTEST

<table>
<thead>
<tr>
<th></th>
<th>Control Group (Test)</th>
<th>Experimental Group (Posttest)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEAN SCORE</strong></td>
<td>7.23</td>
<td>12.74</td>
</tr>
<tr>
<td><strong>VARIANCE</strong></td>
<td>1.3</td>
<td>8.53</td>
</tr>
<tr>
<td><strong>NUMBER OF SAMPLES</strong></td>
<td>31</td>
<td>31</td>
</tr>
</tbody>
</table>

*t VALUE = 9.67

*The distribution of the t Table entered with 30 (N-1) degrees of freedom and a probability level of 0.05 yields a t value of 2.042.

The data in Table 26 illustrate that the t value is substantially higher for the difference in mean scores of the control group test and the posttest of the experimental group. The t value for the difference in these mean scores is 17.22 as compared to the value of 5.797 computed for the t value of the difference between the pretest and posttest of the experimental group.

**Summary of results for achievement test II.** These procedures for measuring the cognitive change resulting from participation in Module II by the administrations of the achievement test based on the performance
objectives for the module indicate that a significant cognitive change results from participation in the module. Since this evaluation design utilized the pretest-posttest technique some of the change result may be attributable to the pretest contamination effect. However, results obtained from the present field-testing indicate that the t values of 4.76 and 9.67 show that significant cognitive changes resulted from participation in Module II.

Summary of Results of Procedures Used to Determine the Cognitive Change Resulting from Experience with the Modules

In response to an open question utilizing the subjective approach 87 percent of the participants of the experimental group indicated that they experienced cognitive changes pertaining to the performance objectives which had been formulated for the two modules. These responses are supported by the data gained from the administration of the achievement test using the objective approach to measure change in the cognitive domain. The gain in mean scores between the pretest and the posttest for Module I was computed to be significantly high as judged by the t value 5.34. The mean score for the posttest of Module II was likewise judged significantly higher than the mean score for the pretest since the t value of the difference was found to be 4.76. The t value of significance at the 0.05 level with 30 (N-1) degrees of freedom is 2.042.

Procedures Used to Measure the Potential for Revision of the Existing Modules and for Further Development of Modules in Communication

To obtain this data the evaluation design utilized the objective approach supplementing the information gained from "closed" questions with responses to "open-ended" questions.
Results of procedures used to determine the potential for revision of the existing modules. The two "open" questions used to generate data for this criterion have already been presented in Tables 12 and 13 together with the responses obtained from these questions. As those tables show, the largest percentages of responses indicate that one or both modules should be retained as they are. The only component which more than one participant suggested removing from the experience was the pre-test which was not designed as an integral part of the modular experience. Three participants indicated that they would revise the recorded presentation in order to eliminate the repetition of directions for the evaluation of exercises engaged in throughout the modules.

A second procedure used to determine the potential for revision of the two modules utilized the "closed" question approach. Participants were asked to focus on seven specific technical aspects of the modules and to rate them on a Likert-type scale. The data generated by this question are presented in Table 27.

As the data on the table show, the technical aspects of the modules received a majority of responses on the positive end of the scale. 61.3 percent of the participants rated the general appearance of the modules "outstanding" or "very good" while 9.7 percent found the modules lacking in quality in this aspect. 71.1 percent of the participants perceived the clarity of the instructions as "outstanding" or "very good" while 22.5 percent found the instructions unclear. 77.5 percent of the participants rated the statement of the objectives "outstanding" or "very good" while only 3.2 percent thought the statements were less than average. 65.5 percent of the participants indicated that the appearance of the
TABLE 27

RESULTS OF THE RESPONSES TO THE TECHNICAL ASPECTS OF THE AUDIO MODULAR UNIT

<table>
<thead>
<tr>
<th>Technical Aspects</th>
<th>Response Categories and Number of Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outstanding</td>
</tr>
<tr>
<td></td>
<td>no.</td>
</tr>
<tr>
<td>GENERAL APPEARANCE</td>
<td>8 25.8</td>
</tr>
<tr>
<td>CLARITY OF INSTRUCTIONS</td>
<td>10 32.3</td>
</tr>
<tr>
<td>STATEMENT OF OBJECTIVES</td>
<td>8 25.8</td>
</tr>
<tr>
<td>APPEARANCE OF TEXT</td>
<td>6 19.3</td>
</tr>
<tr>
<td>QUALITY OF TAPE</td>
<td>13 42.0</td>
</tr>
<tr>
<td>SYNCHRONIZATION (TEXT AND TAPE)</td>
<td>8 25.8</td>
</tr>
<tr>
<td>EASE AND CONVENIENCE OF USE</td>
<td>7 22.6</td>
</tr>
</tbody>
</table>
text was "outstanding" or "very good" while 12.9 percent felt it needed improving. 90.4 percent of the participants rated the quality of the recording "outstanding" or "very good" while a single participant felt that the quality of the tape was very poor. 74.2 percent of the participants perceived the synchronization of recording and text "outstanding" or "very good" while three participants felt the synchronization needed more precision. 67.8 percent of the group rated the ease and convenience of the modular unit "outstanding" or "very good" while 12.9 percent of the participants felt that the unit was not easy or convenient to use.

The mean response for the technical aspects of the modular unit as a whole was calculated as well as for each aspect separately. The following weighting of the response categories was used: "outstanding"--4; "very good"--3; "average"--2; "needs improving"--1; "very poor"--0. Table 28 presents the results of these calculations.

**TABLE 28**

THE MEAN RESPONSES FOR EACH OF THE TECHNICAL ASPECTS OF THE MODULAR UNIT AS WELL AS THE MEAN RESPONSE FOR ALL TECHNICAL ASPECTS

<table>
<thead>
<tr>
<th>Technical Aspect</th>
<th>Mean Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL APPEARANCE</td>
<td>2.8</td>
</tr>
<tr>
<td>CLARITY OF INSTRUCTIONS</td>
<td>2.8</td>
</tr>
<tr>
<td>STATEMENT OF OBJECTIVES</td>
<td>3.0</td>
</tr>
<tr>
<td>APPEARANCE OF TEXT</td>
<td>2.8</td>
</tr>
<tr>
<td>QUALITY OF TAPE</td>
<td>3.3</td>
</tr>
<tr>
<td>SYNCHRONIZATION OF TEXT AND TAPE</td>
<td>2.8</td>
</tr>
<tr>
<td>EASE AND CONVENIENCE OF USE</td>
<td>2.8</td>
</tr>
<tr>
<td>MEAN RESPONSE FOR ALL TECHNICAL ASPECTS</td>
<td>2.9</td>
</tr>
</tbody>
</table>
The data in the table show that the mean response for the technical aspects was "very good" for each of the aspects separately as well as for the technical aspects taken together. However, the substantial percentage of responses which rated the technical aspects "average," "needs improvement" or "very poor" indicates that in the revision of the modules for final form each of these aspects needs to be attended to in order to improve the quality of the modular unit.

Results of Procedures Used to Determine the Extent of Internalization Resulting from Experience with the Module

The procedure used to determine the potential for further development of modules on communication based on Transactional Analysis was the brief questionnaire sent to participants three to five weeks after they had used the modules. It was believed by this investigator that lack of group interaction during the acquisition of knowledge and understanding of Transactional Analysis through the use of the audio modular instructional unit might cause participants to quickly forget what they had learned through the audio modular experience or prevent participants from actually applying the knowledge and comprehension they had gained. Therefore, this investigator felt that the potential for further development of modules in Transactional Analysis should be measured by responses to the modular experience after a time lapse had occurred. The strategic problem caused by this design is the detection problem discussed by Belasco and Trice. These authors indicate that unless all the "treated" population can be reached a self-selection bias
is introduced into the results or some other bias is introduced, the nature of which it may be close to impossible to determine.

This investigator has not escaped this problem. Two factors hinder the follow-up of the entire study population. Four of the participants did not indicate name or address so that the investigator could not reach them with the mailed questionnaire. The second factor is time-based. In order to allow a time lapse of any length between the experience and the completion of the final questionnaire, the investigator delayed sending the questionnaires as long as possible. The time interval between the sending of the questionnaires and the writing of these results has been so brief that only first reminders could be sent to participants who did not respond to the questionnaire immediately. Consequently, the data presented in this section represent responses from only 68 percent of the experimental group.

Participants were asked to respond to a question by listing concepts or terms recalled from their experience with the two modules. The responses are illustrated in Table 29.

The data in the table illustrate that 28.6 percent of the participants responding to the questionnaire recalled the two basic concepts presented in the modules: the personality structure and the crossed and complementary transactions. An additional 28.6 percent could recall one of the two concepts. 19 percent of the respondents indicated very generally what they had learned. The remaining 23.8 percent gave no evidence of recalling either of the two concepts.

These responses show that at least 57.2 percent of the responding participants give evidence of the most basic level of internalization:
TABLE 29

RESULTS OF THE RESPONSES TO THE STIMULUS: "LIST SOME OF THE CONCEPTS OR TERMS YOU RECALL FROM YOUR EXPERIENCE WITH TRANSACTIONAL ANALYSIS THROUGH THE USE OF THE MODULES."

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses Made (N=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>BASIC PERSONALITY STRUCTURE ACCORDING TO TRANSACTIONAL ANALYSIS</td>
<td>4</td>
</tr>
<tr>
<td>CONCEPTS OF CROSSED AND COMPLEMENTARY TRANSACTIONS</td>
<td>2</td>
</tr>
<tr>
<td>PERSONALITY STRUCTURE AND TRANSACTIONAL CONCEPTS</td>
<td>6</td>
</tr>
<tr>
<td>NO CONCEPTS OR SKILLS RECALLED</td>
<td>3</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>2</td>
</tr>
<tr>
<td>VERY GENERAL RESPONSES</td>
<td>4</td>
</tr>
<tr>
<td>TOTALS</td>
<td>21</td>
</tr>
</tbody>
</table>

the willingness to receive or attend to the concepts and skills presented in the modules. 23.8 percent of the respondents do not give evidence of this level of internalization and 19 percent responded so generally that the level cannot be determined.

Participants were asked to respond to a question pertaining to the perceived worth of the experience after the three to five week interval since the experience. Table 30 illustrates the responses to this question.

The data in the table indicate that 23.7 percent of the respondents did not perceive the experience as having been worthwhile after a period of three to five weeks. 47.6 perceived it as worthwhile. An additional 28.8 percent perceived it as worthwhile and indicated what the worth of the experience had been for them.
TABLE 30

RESULTS OF THE RESPONSES TO THE QUESTION, "DO YOU FEEL THAT PARTICIPATION IN THE TWO MODULES WAS A WORTHWHILE EXPERIENCE FOR YOU?"

<table>
<thead>
<tr>
<th>Categories of Response</th>
<th>Responses Made (N=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>NO</td>
<td>5</td>
</tr>
<tr>
<td>YES</td>
<td>10</td>
</tr>
<tr>
<td>YES + EXPRESSION OF HOW</td>
<td>6</td>
</tr>
<tr>
<td>TOTALS</td>
<td>21</td>
</tr>
</tbody>
</table>

The data indicate that 76.4 percent of the respondents give evidence that internalization may be present to the extent that participants value the interpersonal skills presented in the modular unit. However, this conclusion must remain tentative since the responses which were not clarified with additional comments may have been made in relation to the experience with the audio modular approach and not in relation to the concepts presented.

Participants were asked to respond to a question pertaining to desire to know more about Transactional Analysis. Table 31 illustrates these responses.

Data generated by this question indicate that although 76.4 percent of the respondents indicated that their experience was worthwhile, only 57.1 percent indicate willingness to internalize the concepts to any greater degree than that provided by the modules.

Finally, one question was asked pertaining to the participants' motivation to conceptualize for themselves the skills to which they had
TABLE 31
RESULTS OF RESPONSES TO THE QUESTION, "DO YOU WANT TO KNOW MORE ABOUT TRANSACTIONAL ANALYSIS?"

<table>
<thead>
<tr>
<th>Responses</th>
<th>Responses Made (N=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>NO</td>
<td>9</td>
</tr>
<tr>
<td>YES</td>
<td>12</td>
</tr>
<tr>
<td>TOTALS</td>
<td>21</td>
</tr>
</tbody>
</table>

been introduced and to integrate these skills into their philosophies of life. Table 32 illustrates the responses to this question.

TABLE 32
RESULTS OF RESPONSES TO THE QUESTION, "HAVE YOU YOURSELF TRIED TO LEARN MORE ABOUT TRANSACTIONAL ANALYSIS?"

<table>
<thead>
<tr>
<th>Responses</th>
<th>Responses Made (N=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>NO</td>
<td>10</td>
</tr>
<tr>
<td>NO OPPORTUNITY</td>
<td>6</td>
</tr>
<tr>
<td>YES</td>
<td>1</td>
</tr>
<tr>
<td>YES + DESCRIPTION OF EFFORT</td>
<td>4</td>
</tr>
<tr>
<td>TOTALS</td>
<td>21</td>
</tr>
</tbody>
</table>

The data from the table indicate that five respondents give evidence of motivation to conceptualize for themselves the skills presented in the modules and to integrate them into their lives. 47.6 percent of the respondents give no indication that they are motivated to internalize the concepts further and these data are supported by the corresponding
42.9 percent who indicated that they did not care to learn more about Transactional Analysis. Six respondents indicated desire to learn more without available opportunity as of yet.

The final question pertained not directly to the degree of internalization. Respondents were asked for suggestions as to method or content for further modules based on Transactional Analysis. Responses to this question are illustrated in Table 33.

**TABLE 33**

RESULTS OF RESPONSES TO THE QUESTION, "IF FURTHER MODULES ON TRANSACTIONAL ANALYSIS WERE TO BE DEVELOPED, WHAT SUGGESTIONS FOR METHOD AND/OR CONTENT WOULD YOU OFFER TO THE DESIGNER?"

<table>
<thead>
<tr>
<th>Categories of Response</th>
<th>Responses Made (N=21)</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAKE THEM BRIEFER</td>
<td></td>
<td>3</td>
<td>14.2</td>
</tr>
<tr>
<td>USE SMALL GROUP SETTING WITH MODULES AS SUPPLEMENTARY</td>
<td>2</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>INCORPORATE SMALL GROUP DISCUSSION AND ROLE-PLAYING EXERCISES</td>
<td>4</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td>USE 33-1/3 RPM RECORD FOR PLAYER AVAILABILITY/ELIMINATE CASSETTE</td>
<td>2</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>PROVIDE ORIENTATION</td>
<td></td>
<td>1</td>
<td>4.8</td>
</tr>
<tr>
<td>HAVE NO SUGGESTIONS</td>
<td></td>
<td>4</td>
<td>19.0</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td></td>
<td>5</td>
<td>23.8</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td>21</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The data from the table indicate that 28.6 percent of the respondents suggest incorporation of group interaction in future modules. 14.2 percent of the respondents offered no suggestions.
Summary of findings pertaining to the internalization of skills and concepts resulting from experience with the modular unit. Only 68 percent of the experimental group responded to the procedures by which internalization of skills and concepts was measured. Results from this limited response show that 57.2 percent of the respondents give evidence of internalization to the extent of willingness to receive or attend to concepts and skills presented. 76.4 percent of the respondents give evidence of internalization to the extent of valuing the experience. 57.1 percent of the respondents indicated internalization to the extent of wanting to know more about Transactional Analysis. 23.7 percent of the respondents indicated that internalization has reached the level of motivating them to try to learn more on their own about the skills and concepts of Transactional Analysis, and an additional 28.7 percent indicated motivation without present opportunity. These findings indicate that internalization to some extent does result from the experience with the modular unit. Before any conclusions can be drawn concerning internalization, however, the total study population would have to be assessed with regard to these criteria.

Suitability of Using the Audio Modular Instructional Approach as an Alternative In-Service Training Technique for Adult Educators

In the following sections, presentation and analysis of the data will be made according to the six criteria by which the suitability of utilizing the modules for in-service training of adult educators is to be established: interest and motivation resulting from experience with this training approach, the perceived worth of the experience as compared
with other in-service training experiences, the degree of negative or positive connotation participants associated with the audio modular instructional approach and the comparison of this connotation with that associated with other in-service training experiences the participants have had, the cognitive changes resulting from this type of experience, the potential for further development of instruction utilizing this approach, and the expenditure in time and money involved in the production of instruction utilizing this approach. The subsections in this section of the chapter correspond to those six criteria.

Results of the Procedures Used to Measure Responses Relating to Participants' Interest and Motivation

In order to elicit information pertaining to this criterion, the evaluation design included one "closed" question from the subjective approach and two "open-ended" questions from the objective approach. Responses to these questions are illustrated in the following subsections.

Results of the "closed" question pertaining to interest and motivation. The results of the question pertaining to the participants' interest and motivation in participating in additional modules are presented in Table 34.

The data in this table show that twenty-seven of the participants feel that they definitely or probably would be motivated to participate in additional modules if they had the opportunity. One participant was unsure whether he would welcome the opportunity while two participants thought they probably would not. One participant failed to respond to the question. When the responses are weighted according to the following
TABLE 34

RESULTS 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=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>YES, DEFINITELY</td>
<td>9</td>
</tr>
<tr>
<td>YES, PROBABLY</td>
<td>18</td>
</tr>
<tr>
<td>I DON'T KNOW</td>
<td>1</td>
</tr>
<tr>
<td>PROBABLY NOT</td>
<td>2</td>
</tr>
<tr>
<td>DEFINITELY NOT</td>
<td>0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>*30</td>
</tr>
</tbody>
</table>

*One participant did not respond to this question.

scale: "Yes, definitely"--4; "Yes, probably"--3; "I don't know"--2; and "Probably not"--1; "Definitely not"--0, the mean response is 3.0 or "Yes, probably."

Results of the "open" questions pertaining to interest and motivation related to the audio modular approach. Participants were asked to complete two statements pertaining to the strengths and the weaknesses of this particular instructional approach. The results of the first question are illustrated in Table 35.

The data from Table 35 indicate that the major strengths of the audio modular instructional approach as it was perceived by the participants of the field-testing are the accessibility and convenience as pointed out by 25.8 percent of the participants, the immediate application of knowledge which it provides through the exercises as pointed out by 12.9 percent of the participants, its ability to develop concentration
TABLE 35

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

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESSIBILITY AND CONVENIENCE</td>
<td>8</td>
<td>25.8</td>
</tr>
<tr>
<td>ACTIVE PARTICIPATION</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>APPROACH FOR THE SELF-MOTIVATED</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>BEHAVIORAL SITUATIONS PROVIDED</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>BREVITY</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td>CONDENSATION</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>DEVELOPMENT OF SINGLE CONCEPT</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>ECONOMY</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>FLEXIBILITY (USE BY INDIVIDUAL OR SMALL GROUP)</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>IMMEDIATE APPLICATION IN EXERCISES</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td>DEVELOPS CONCENTRATION</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td>INDIVIDUAL PACING</td>
<td>7</td>
<td>22.6</td>
</tr>
<tr>
<td>VARIETY OF AUDIO</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>INTRODUCTORY POTENTIAL</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>AVAILABILITY OF REVIEW, REINFORCEMENT AND REPETITION</td>
<td>5</td>
<td>16.1</td>
</tr>
<tr>
<td>PRE-SELECTION OPPORTUNITY</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>SELF-EVALUATION</td>
<td>2</td>
<td>6.4</td>
</tr>
</tbody>
</table>

indicated by 12.9 percent of the participants, the opportunity it provides for individual pacing mentioned by 22.6 percent of the participants and the availability of the instruction for replay, review and reinforcement at will as pointed out by 16.1 percent of the participants. There were forty-three responses to this question made by twenty-eight of the participants. Three participants did not respond to the question.
It should be noted that the data on the table lists the number of times an aspect was pointed out as a major strength and the percentage of the total group of participants making that response.

The results of the question pertaining to the major weaknesses of the approach are illustrated in Table 36.

TABLE 36

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

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses No.</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIFFICULTY OF CONCENTRATION</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td>INADAPTABILITY TO INDIVIDUAL LIKES</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>LACK OF INTERACTION WITH INSTRUCTOR OR PARTICIPANTS</td>
<td>15</td>
<td>48.4</td>
</tr>
<tr>
<td>NEED FOR CASSETTE PLAYER</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>SUPERFICIALITY OF APPROACH</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>TOO LONG</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td>NO WEAKNESSES</td>
<td>2</td>
<td>6.4</td>
</tr>
<tr>
<td>EXCESSIVE PAPERWORK OF EVALUATION</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>ASSUMES CORRECTNESS OF A POINT OF VIEW</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>33</strong></td>
<td></td>
</tr>
</tbody>
</table>

It should be noted again that the data in Table 36 illustrate the number of times a particular aspect was mentioned as a major weakness and the percentage of total participants who mentioned that aspect as a weakness. The data in Table 36 indicate that a major perceived weakness is the lack of interaction with either instructor or fellow participants.
provided by this approach. One other weakness pointed out by four participants is the difficulty of concentration when the attention is engaged by listening alone rather than by listening and watching. Five of the responses pertain to the particular modules the participants experienced rather than to the audio modular instructional approach as such: the three responses pertaining to the length of the modules, the response pertaining to the assumption of the correctness of a method of analysis, and the response pertaining to the excessive paperwork. The last response pertains more directly to the lengthy evaluation instrument which field-testing participants were asked to complete.

**Summary of findings pertaining to participants' interest and motivation related to the audio modular approach.** As the results of the "closed" question and the two "open" questions indicate 87.2 percent of the participants indicated interest and motivation in further experience with the audio modular instructional approach. Responses concerning the major strengths of the approach were varied but there was some concentration around the aspects of accessibility, convenience, brevity, immediate application in the exercises, individual pacing and availability of the instruction for review, reinforcement and repetition. Approximately 50 percent of the participants indicated that lack of interaction was the major weakness of the approach. "Difficulty of concentration" was the only other aspect pointed out as a weakness by more than one participant.

It appears from this data that the participants did find the approach suitable as an in-service training technique and would welcome opportunity for further training through this approach, especially if group interaction were incorporated into the modular experience.
Results of the Procedures Used to Measure the Perceived Worth of the Experience as Compared with Other In-Service Experiences

Using the subjective approach the evaluation design included two procedures to measure the perceived worth of the experience as compared with other in-service training experiences. The following subsection illustrates the results of the "open-ended" question used to gain information concerning this criterion.

Results of the "open-ended" question pertaining to the perceived worth of the audio modular approach. Table 37 illustrates the responses to the "open-ended" question pertaining to methods preferred for learning what was learned through the modules.

### TABLE 37

**RESULTS 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>Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>BOOK</td>
<td>1</td>
</tr>
<tr>
<td>GROUP DISCUSSION</td>
<td>7</td>
</tr>
<tr>
<td>LIVE INSTRUCTION</td>
<td>3</td>
</tr>
<tr>
<td>MODULES SUPPLEMENTED WITH GROUP DISCUSSION</td>
<td>3</td>
</tr>
<tr>
<td>MODULES SUPPLEMENTED WITH FILMSTRIP</td>
<td>1</td>
</tr>
<tr>
<td>QUESTION AND ANSWER LECTURE METHOD</td>
<td>1</td>
</tr>
<tr>
<td>ROLE PLAYING</td>
<td>1</td>
</tr>
<tr>
<td>TV PRESENTATION</td>
<td>1</td>
</tr>
<tr>
<td>TEXTBOOK OR PROGRAMED TEXT</td>
<td>2</td>
</tr>
<tr>
<td>NO METHOD PREFERRED TO THIS ONE</td>
<td>3</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>8</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

The data from this table indicate that eleven participants did not name any method which they would have preferred to the one they experienced. Seven participants indicated that they would have preferred some group discussion method. Three other participants wanted to keep the audio modular presentation and supplement it with group discussion. Four participants indicated that they would have preferred some other form of individualized instruction: programed text, textbook, or reading a book. All the remaining participants who indicated a preferred method named a method which would involve interaction of participants and/or instructor. These data support the data gained from the question about the major weakness of the approach which stimulated responses from approximately 50 percent of the participants that lack of interaction is the major weakness of the audio modular approach.

Results of the "closed" question pertaining to the perceived worth of the audio modular approach as compared to other techniques for in-service training. Participants were presented with a list of six common in-service training techniques and were asked to rank them in their order of preference. The data presented in Table 38 provide the results of this rank-ordering process.

As the data in the table indicate, six participants ranked the audio modular approach as highest in the order of preference. Eight participants ranked it as their second choice and nine ranked it as their third choice. Twenty-three participants ranked the audio modular approach as first, second, or third choice. Twenty participants ranked visiting sites as first, second or third choice. Seventeen participants ranked attending a seminar as first, second or third choice. Sixteen participants
### TABLE 38

RESULTS OF THE RESPONSES TO THE RANKING OF IN-SERVICE APPROACHES
IN AN ORDER OF PREFERENCE

<table>
<thead>
<tr>
<th></th>
<th>*Number of Participants</th>
<th>Rank Ordering = 28</th>
<th>Sum of Weighted Scores</th>
<th>Weighted Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highest 1 2 3 4 5 6</td>
<td>Lowest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attend a seminar</td>
<td>7 5 5 4 2 5</td>
<td></td>
<td>108</td>
<td>3.86</td>
</tr>
<tr>
<td>Participate in a course</td>
<td>7 4 5 8 2 2</td>
<td></td>
<td>112</td>
<td>4.00</td>
</tr>
<tr>
<td>Read a professional book</td>
<td>1 1 2 9 9 7</td>
<td></td>
<td>71</td>
<td>2.54</td>
</tr>
<tr>
<td>Visit sites to observe</td>
<td>8 6 6 5 3 0</td>
<td></td>
<td>123</td>
<td>4.39</td>
</tr>
<tr>
<td>Adult education programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participate in an audio</td>
<td>6 8 9 1 3 1</td>
<td></td>
<td>122</td>
<td>4.36</td>
</tr>
<tr>
<td>Modular instructional unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discover material</td>
<td>0 2 2 2 8 13</td>
<td></td>
<td>53</td>
<td>1.89</td>
</tr>
<tr>
<td>Through independent study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Three participants did not rank order the in-service approaches.*
chose participating in a course as first, second or third choice. Reading a professional book and independent study were both chosen only four times as first, second or third choices.

When the responses were weighted according to the scale presented in Figure 8 of Chapter IV, the results of calculations determining the mean score for each approach supported the raw scores. The two right-hand columns of Table 38 present the sum of the weighted scores and the mean score for each approach. As illustrated in the table visiting sites to observe adult education programs ranks highest with a mean score of 4.39 exceeding the mean score for participation in an audio modular instructional unit by 0.03. The mean score for the audio modular approach was 4.36. Participation in a course ranked third according to weighted mean scores with a score of 4.00. Attending a seminar was fourth in rank with a mean score of 3.86. Reading a professional book ranked fifth with a mean score of 2.54 while independent study ranked last with a mean score of 1.89.

Summary of results of procedures used to determine the perceived worth of the audio modular instructional approach. The two procedures used to collect data pertaining to this criterion were an open question asking for preferred methods for learning the material presented in the modular unit and a closed question asking participants to rank order to their preference six common in-service training techniques for adult educators.

In response to the question concerning the preferred method for learning the material presented 35.6 percent of the participants indicated no preference over the audio modular approach. Another 12.9
preferred to retain the audio modular presentation and supplement it with group discussion or visual presentations. 38.7 percent preferred a method which provided more interaction between instructor and participants. 12.9 percent of the participants preferred another individualized approach.

The analysis of the responses to the ranking of in-service approaches in order of preference showed that the audio modular approach ranked fourth as a first choice, first as a second choice and first as a third choice. It was most often designated as a first, second or third choice. When the mean scores for each approach were calculated the audio modular approach ranked almost equally with the visiting of adult education sites with the mean scores of 4.36 and 4.39 respectively.

It is evident that adult educators find the lack of interaction a weakness in the approach. Yet they rank it as high or higher than other common in-service approaches.

Results of the Procedures Used to Determine the Connotative Meaning of the Audio Modular Approach

To measure the connotative meaning of the concept of the audio modular approach the evaluation model included two semantic differential scales. On the first scale participants were asked to react to the concept of the audio modular instructional approach. On the second scale participants were asked to react to the concept of "in-service educational programs for adult educators in which you have participated" excluding the audio modular instructional approach. The data in Table 39 illustrate the participants' responses to the semantic differential scales as
### TABLE 39

The results of the responses toward the audio modular instructional approach compared with other forms of in-service educational programs for adult educators, as related to the factors of evaluation, receptivity, potency and activity

<table>
<thead>
<tr>
<th>Factor</th>
<th>Audio Modular Instructional Approach</th>
<th>Other Forms of In-Service Training</th>
<th>Difference</th>
<th>*t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Score</td>
<td>Variance</td>
<td>Mean Score</td>
<td>Variance</td>
</tr>
<tr>
<td>EVALUATION</td>
<td>4.38</td>
<td>1.85</td>
<td>4.01</td>
<td>2.08</td>
</tr>
<tr>
<td>RECEPTIVITY</td>
<td>4.28</td>
<td>1.92</td>
<td>3.85</td>
<td>2.31</td>
</tr>
<tr>
<td>POTENCY</td>
<td>4.08</td>
<td>1.67</td>
<td>3.67</td>
<td>2.36</td>
</tr>
<tr>
<td>ACTIVITY</td>
<td>3.84</td>
<td>2.61</td>
<td>3.04</td>
<td>2.18</td>
</tr>
</tbody>
</table>

*The distribution of the *t* Table entered at 30 degrees of freedom and a probability level of 0.05 yields a *t* value of 2.042.
these responses relate to the factors of evaluation, receptivity, potency and activity.

The data on the table indicate that the mean score for each of the factors: evaluation, receptivity, potency and activity was 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 an analysis of variance, the differences were found significant at the 0.05 level.

The mean polarity scores for a number of individual polarity traits were calculated and subjected to statistical analysis of variance to determine if the differences in these scores reached a statistical level of significance. These results are presented in Table 40.

As the data in the table indicate the mean polarity scores calculated for individual traits were higher for the audio modular approach than the mean scores for other training approaches. However, none of the differences between the mean scores for the individual traits reached a statistical level of significance.

Summary of results of procedures used to determine the connotative meaning of the audio modular approach. The responses of the participants on the semantic differential scales measuring the connotative meaning of the concepts: Audio Modular Instructional Approach and In-Service Educational Program (Excluding the Audio Modular Instructional Approach) were weighted. Mean polarity scores were then calculated for the factors of evaluation, receptivity, potency and activity for each concept. The difference in the scores for each factor was analyzed for variance and found to be statistically significant. The mean polarity traits of
<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean Polarity Scores Audio Modular (N=30)</th>
<th>Mean Polarity Scores Other Forms (N=26)</th>
<th>Difference</th>
<th>t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELEVANCY</td>
<td>4.6</td>
<td>4.2</td>
<td>0.4</td>
<td>1.00</td>
</tr>
<tr>
<td>USEFULNESS</td>
<td>4.7</td>
<td>4.3</td>
<td>0.7</td>
<td>0.52</td>
</tr>
<tr>
<td>PROMISE</td>
<td>4.2</td>
<td>3.9</td>
<td>0.3</td>
<td>1.69</td>
</tr>
<tr>
<td>INTEREST</td>
<td>4.5</td>
<td>3.6</td>
<td>0.9</td>
<td>1.96</td>
</tr>
<tr>
<td>MEANINGFULNESS</td>
<td>4.7</td>
<td>1.24</td>
<td>3.29</td>
<td>0.99</td>
</tr>
</tbody>
</table>

*The distribution of the t Table entered at 29 degrees of freedom and a probability level of 0.05. Yields a t value of 2.045.
relevancy, usefulness, promise, interest and meaningfulness were then treated separately. While the concept of the audio modular instructional approach ranked higher than the other training approaches on all five traits of relevancy, usefulness, promise, interest and meaningfulness, when the t Test was applied the difference was not found to be statistically significant.

The data presented in this section show that the concept of the audio modular instructional approach has a more positive connotation for the participants than does the concept of in-service training approaches excluding the audio modular instructional approach. The weighted mean response for the audio modular instructional approach was 4.23. The weighted mean response for other in-service training techniques was 3.75. The t value of the difference was found to be 6.0 and was judged statistically significant.

Results of Procedures Used to Determine Cognitive Change Resulting from the Audio Modular Instructional Approach

The procedures used to measure results according to this criterion have already been presented and analyzed in part one of this chapter. The results of the two objective achievement test, gained from the use of the pretest-posttest nonequivalent control group design, showed that significant cognitive change resulted from experience with Module I and also from experience with Module II. The achievement tests used had been validated and tested for reliability before being used as measures of cognitive change resulting from the modules.
Results of Procedures Used to Measure the Potential for Further Development of Learning Experiences Utilizing the Same Instructional Approach

In order to determine the participants' receptivity to further development of instruction utilizing this approach, two subjective "open-ended" questions were asked of participants. The responses to those questions are illustrated in the following section.

**Results of subjective "open-ended" questions pertaining to further developments.** Participants were asked to complete the statement, "I would spend time participating in an audio modular instructional unit only if . . .". Table 41 presents the results of this procedure.

The data from the table show that 19.4 percent of the participants would not choose the audio modular approach if another preferred method for learning the same material were available. Most of the participants in that category indicated that they wanted an instructor present for questions and discussions. One participant wanted a course so that materials would be hers at the end of the course. The two major categories which provide information for further development are: practical application and interest. 19 percent of the participants would want to use additional modules only if there were practical applications for their teaching resulting from the experience. Another 19 percent of the participants indicated that they would want to participate in modules only if the topic were of interest to them personally.

In a second "open-ended" question participants were asked to indicate under what circumstances they definitely would not spend time participating in audio modular units. The results are illustrated in Table 42.
### TABLE 41

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

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>PREFERABLE LEARNING EXPERIENCE WERE NOT AVAILABLE</td>
<td>6</td>
</tr>
<tr>
<td>I HAD MORE TIME</td>
<td>2</td>
</tr>
<tr>
<td>I HAD TIME AND WERE PAID</td>
<td>1</td>
</tr>
<tr>
<td>I COULD SELECT THE TOPIC</td>
<td>1</td>
</tr>
<tr>
<td>INSTRUCTOR WERE PRESENT</td>
<td>1</td>
</tr>
<tr>
<td>IT HAD PRACTICAL APPLICATION FOR TEACHING</td>
<td>6</td>
</tr>
<tr>
<td>IT WERE INTERESTING</td>
<td>6</td>
</tr>
<tr>
<td>IT WERE ON TRANSACTIONAL ANALYSIS</td>
<td>1</td>
</tr>
<tr>
<td>SYSTEM PROVIDED FOR INTERACTION</td>
<td>1</td>
</tr>
<tr>
<td>UNIT WAS SIMILAR TO THESE</td>
<td>1</td>
</tr>
<tr>
<td>I ENJOYED IT</td>
<td>1</td>
</tr>
<tr>
<td>NO QUESTION; I WOULD</td>
<td>1</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>31</strong></td>
</tr>
</tbody>
</table>

Table 42 indicates that the only clustering of responses to this stimulus is that around the category relating to interest in the topic of the module. In addition to this clustering, three participants responded that they would not participate in modules in the future if they were too time consuming. Three other participants named a different approach which they would select in preference to the audio modular approach if they had the choice.

The data indicate that interest in the topic of the modules would be the deciding factor for the largest number of participants.
Practical application for teaching is the other criterion designated by a substantial number of participants on which selection of the audio module would be made.

Results of objective "open" questions pertaining to potential for further development of the audio modules. The evaluation model included three "open" questions requiring participants to focus on considerations about the audio modular approach which were external to them. The first of these pertained to the value participants saw in further development of audio modules. Table 43 illustrates the results of this procedure.

The data illustrated on this table show that a substantial number of the participants did not respond to this question. 41.9 percent of

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>COURSE WERE OFFERED</td>
<td>1</td>
</tr>
<tr>
<td>GOALS AND PRESENTATION WERE NOT CLEAR</td>
<td>1</td>
</tr>
<tr>
<td>I DID NOT HAVE PRE-REQUISITES</td>
<td>1</td>
</tr>
<tr>
<td>I DID NOT HAVE THE TIME</td>
<td>1</td>
</tr>
<tr>
<td>IT WERE NOT OF GENERAL APPLICATION</td>
<td>1</td>
</tr>
<tr>
<td>IT WERE NOT OF INTEREST TO ME</td>
<td>8</td>
</tr>
<tr>
<td>LANGUAGE WERE TOO TECHNICAL</td>
<td>1</td>
</tr>
<tr>
<td>PERSONAL PRESENTATION WERE AVAILABLE</td>
<td>1</td>
</tr>
<tr>
<td>PROGRAMED TEXT WERE AVAILABLE</td>
<td>1</td>
</tr>
<tr>
<td>IT WERE TOO TIME CONSUMING</td>
<td>3</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>8</td>
</tr>
</tbody>
</table>
the participants failed to complete the statement. One participant felt that the work of developing additional modules would take more time than it would be worth. Two participants felt that more experimentation would need to be done on the approach to prove its worth. The remaining 48.5 percent of the participants perceived the further development of audio modules as worthwhile.

Participants were asked to indicate skills and knowledge areas which could be learned through the use of the audio modular approach. The responses to this question are illustrated in Table 44.

As the table illustrates, participants made a total of thirty-five responses to this question. Eight participants did not respond to the question.
TABLE 44

RESULTS 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>Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>ANYTHING NOW IN A TEXTBOOK OR TAUGHT BY OTHER APPROACHES</td>
<td>8</td>
</tr>
<tr>
<td>BASIC TEACHING SKILLS</td>
<td>1</td>
</tr>
<tr>
<td>COGNITIVE SKILLS OF ANY KIND</td>
<td>2</td>
</tr>
<tr>
<td>COMMUNICATION</td>
<td>2</td>
</tr>
<tr>
<td>CONSUMER EDUCATION</td>
<td>1</td>
</tr>
<tr>
<td>FOREIGN LANGUAGE</td>
<td>1</td>
</tr>
<tr>
<td>GROUP DISCUSSION</td>
<td>1</td>
</tr>
<tr>
<td>HOBBIES</td>
<td>1</td>
</tr>
<tr>
<td>INTRODUCTORY VEHICLE FOR ANYTHING</td>
<td>1</td>
</tr>
<tr>
<td>LANGUAGE SKILLS (LISTENING, READING VOCABULARY DEVELOPMENT, GRAMMAR, WRITING, FOLLOWING DIRECTIONS)</td>
<td>15</td>
</tr>
<tr>
<td>MATH AND SCIENCE</td>
<td>1</td>
</tr>
<tr>
<td>SELF-STUDY HABITS</td>
<td>1</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>43</td>
</tr>
</tbody>
</table>

The table shows that the various skills of language arts are those most often indicated by participants as able to be learned from the audio modular approach. Ten participants believed that the approach could be adapted to teach anything which is taught in other ways presently.
Basic teaching skills, consumer education, foreign language, group discussion, hobbies, math and science and self-study habits were each indicated by a single participant as being adaptable to the audio modular instructional approach.

The final question pertaining to the potential for further development of audio modules asked participants to suggest additional topics which might be adapted to this method of instruction. The results of this question are illustrated in Table 45.

**TABLE 45**

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

<table>
<thead>
<tr>
<th>Categories of Responses</th>
<th>Responses Made (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>COUNSELING (MARRIAGE AND FAMILY)</td>
<td>1</td>
</tr>
<tr>
<td>HOBBIES AND TRADES</td>
<td>1</td>
</tr>
<tr>
<td>INTRODUCTIONS TO: EDUCATION, ECONOMICS, POLITICS</td>
<td>1</td>
</tr>
<tr>
<td>LANGUAGE</td>
<td>2</td>
</tr>
<tr>
<td>LITERATURE</td>
<td>1</td>
</tr>
<tr>
<td>MATHEMATICS</td>
<td>1</td>
</tr>
<tr>
<td>NO LIMITS TO ADAPTABLE TOPICS</td>
<td>5</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>1</td>
</tr>
<tr>
<td>NO RESPONSE</td>
<td>20</td>
</tr>
<tr>
<td>TOTALS</td>
<td>33</td>
</tr>
</tbody>
</table>

The data from this table indicate that most of the participants did not respond to this question. The 35.5 percent of the participants who
did respond most often indicated that there were no limits to the variety of topics which could be adapted. Two participants suggested that language be adapted to the approach. Counseling, hobbies and trades, literature, mathematics and science were each suggested by single participants.

**Summary of procedures to determine the potential for further development of modules utilizing this approach.** Participants indicated that their main criterion for future participation in audio modular units would be their interest in the topics, not the particular approach. Approximately 20 percent of the participants indicated that they would not participate in modules in the future if a live presentation of the same material were available because of the opportunity for interaction in the live presentation situation. 48.5 percent of the participants positively responded to the stimulus concerning someone developing more audio modular units. Participants most often suggested language arts skills as having the greatest potential for being adapted to the audio modular approach. 25 percent of the participants felt that any skill or knowledge could be adapted to the approach. The most frequent response to a question about what additional topics might be adapted was that any topic could be adapted. These results indicate that the participants perceived the approach as serving a definite need and felt that it could be broadly used in instructional designs.

**Results of Procedures Used to Determine the Time and Money Factors Involved in the Development of the Audio Modular Instructional Unit**

The procedure used to determine the time and cost factor involved in the development of the audio modular unit was a simple record-keeping
of the time spent on the work of development and the money spent in producing and assembling the unit. As it was stated in Chapter IV, the record did not include the preparatory time and money spent in consultation and study. Nor does the record include the secretarial time involved in the setting up of the master copy for the printed portions of the modules.

This investigator spent approximately six weeks in the designing, development and production of the two modules included in this unit. Calculated in number of hours spent in development and revision, the time spent was between 350 and 400 hours for both modules. Since this was the investigator's first experience with assembling completely self-instructional materials, the time spent in designing and developing the first of the two modules was close to 250 hours. Development of the second module took much less time. Approximately 100 to 150 hours were spent on the second module.

The cost of producing the master copy for these modules is relatively high. The closest estimate that this investigator can make is $55.00 for the master copy of each module. $50 of that total sum for each module was spent for the professional recording of the narration. This cost estimate does not include the final packaging of the components in a vinyl folder.

The cost of producing copies of the modules once the master copy is available is relatively low. Reproduction of the recorded component costs approximately $2.00. Reproduction of the printed components costs approximately $1.00. If the cost of the vinyl folder is estimated at $2.00, the cost of reproducing copies of the original modules is $5.00.
apiece or $10.00 for the modular unit. The cost could be lower if a less expensive method of reproducing the printed portions were used. The copies so far reproduced have been Xeroxed.

Summary

This chapter has presented the findings of the evaluation model in two sections. In the first section the findings pertaining to the suitability of using the audio modular instructional approach for the initial training of adult educators in communication skills based on Transactional Analysis were presented according to four criteria: the interest and motivation of the participants toward the modules based on Transactional Analysis, their perceived worth of the modules, the cognitive changes that had resulted from experience with the modules and suggestions for revisions and further developments. In the second section, the chapter presented the findings pertaining to the suitability of using the audio modular approach as an in-service training technique for adult educators according to six criteria: their interest and motivation for the audio modular approach, their perceived worth of the audio modular approach, the cognitive change resulting from experience with this approach, the connotative meaning of this approach as compared with the connotative meaning of other in-service approaches they had experienced, the potential the participants could envision for revision of existing modules and development of further modules utilizing this approach, and finally, the cost and time factor involved in the production of the audio modular instructional unit.
Footnotes

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study was exploratory in nature in that it was an initial attempt to determine the suitability of utilizing the audio modular instructional approach as an alternative in-service training technique for adult educators in communication skills based on Transactional Analysis. This study attempted to go beyond previous suitability studies in a second phase which attempted to assess the degree of internalization of skills and concepts resulting from experience with the modular unit. The analysis and presentation of the findings of this study has been presented in Chapter V in two major sections. In the first section were presented the data and analysis of findings pertaining both to the suitability of utilizing this approach for the initial training of adult educators in communication skills based on Transactional Analysis and to the internalization of the skills and concepts. In the second section the data and analysis pertaining to the suitability of utilizing the audio modular instructional approach as an in-service training technique for adult educators were presented.

This chapter presents a summary of the findings of the study, the conclusions based on the findings, and recommendations for further audio modular instructional developments as well as recommendations for further studies concerning this approach.
Summary of Findings

The summary of findings is organized to correspond with the presentation of findings in Chapter V. First, the summary of findings pertaining to the use of the audio modular approach as an initial training technique in communication skills based on Transactional Analysis is presented according to the four criteria for suitability and the criteria for internalization set forth in Chapter IV. Second, the summary of findings pertaining to the use of the audio modular approach as an alternative in-service training technique for adult educators according to six criteria for suitability is presented.

Summary of Findings Pertaining to the Use of the Audio Modular Approach as an Initial Training Technique in Communication Skills Based on Transactional Analysis. This section is subdivided into five sections: motivation and interest, perceived worth of the experience, cognitive change resulting from the experience, potential for further development, and internalization.

Motivation and Interest. The "closed" questions used to determine the interest and motivation of the participants as a result of their experience with the modules elicited positive responses to the questions about interest from 97 percent of the participants; 87 percent of the participants indicated willingness to participate in the modules after knowing what they were like; 74 percent of the participants expressed excitement about recommending the modules to others.

"Open-ended" questions used to supplement information gained from
the "closed" questions elicited information about the strengths and weaknesses of these specific modules; 31 percent of the participants indicated that the content was the major strength of the modular unit; 64 percent indicated that the design of the modules was the major strength. The major weakness indicated by 22.7 percent of the participants was lack of interaction with the instructor or with peers provided by this unit. Another 22.7 percent of the group indicated no weakness in the modules. Other weaknesses perceived were: irritating quality of the bell on the recording, lack of clarity in the second module, confusing materials, need for a cassette and redundancy.

Questioned about portions which should definitely remain in the modules, 16 percent of the participants wanted to keep everything and 18 percent wanted to keep the first module in its entirety. Other responses made by one, two or three participants recommended that: audio portion, audio and guidebook portions, information and exercises pertaining to transactions, evaluation guides, all the printed portions or worksheet booklets be retained.

Questioned about portions which might be deleted from the modules to make them shorter, participants had fewer suggestions. The one response on which 19 percent of the participants did agree was the elimination of the pretest. However, this instrument was not designed as part of the modules but was part of the evaluation model used in the field-testing of the modules. One participant suggested eliminating the audio portion completely. Another participant would shorten the recording. One participant suggested removing the information about
the Child ego state. Four participants suggested eliminating the repetition of directions.

**Worth of the Experience.** Twenty-seven of the participants indicated on a "closed" question that the experience was valuable for them. Four participants indicated a neutral feeling about the value of the experience. No one found the experience worthless. Twenty-five participants spent over two hours on the modules. Two participants felt the experience was probably not worth that amount of time, five were doubtful. The other twenty-four participants felt that the experience was probably or definitely worth that amount of time.

Questioned about the worth of particular aspects through the use of the stimulus, "One aspect of these modules which should definitely remain the same..." participants showed little agreement. Six participants indicated the recorded presentation, four indicated "all of Module I" and three indicated "everything". Two participants wanted the conciseness of the Modules retained and two recommended keeping the narrator the same. Single responses suggested retention of behavioral situations, diagrams, evaluation cards, exercises, printed components and the step by step design of the learning.

**Cognitive Change Resulting from the Experience.** Questioned with an "open-ended" question about what they had learned, participants indicated awareness of patterns of personal transactions, awareness of self as the vital tool in relating to others, and personality structure which serves as the basis for transactional analysis most often in their responses. Other responses were singular. One participant did
not respond to the question and one participant responded negatively that not much had been learned.

Mean scores on the achievement test designed for the modules showed significant differences between the pretest-posttest scores for the experimental group, and between the one-test scores of the control group and the posttest scores of the experimental group. The t value for the t Test application to the difference in mean scores between the experimental pretest and posttest for Module I was 5.34. Applied to the difference in mean scores between the single testing of the control group which did not experience the module and the experimental group posttest for Module I, the t test yielded a value of 11.9. A t value of 2.042 is significant at a 0.05 level with 30 (N-1) degrees of freedom.

The value derived from the t Test application to the difference in mean scores between the experimental pretest and posttest for Module II was 4.76. Applied to the difference in mean scores between the single testing of the control group which did not experience the module and the experimental group posttest for Module II, the t test yielded a value of 9.67.

Potential for Revision of the Existing Modules and Further Development of Modules in Communication. In addition to indicating strengths and weaknesses of the modules and aspects of the modules which should definitely be retained in revision and portions which might be removed, participants were asked to rate the more technical aspects of the modules. Weighting the response categories as follows:
"outstanding" = 4; "very good" = 3; "average" = 2; "needs improving" = 1 and "very poor" = 0; the weighted mean score for each aspect was calculated. General appearance, clarity of instructions, appearance of text, synchronization of text and tape and ease and convenience of use were rated 2.8 or very good. Statement of objectives was rated 3.0, also very good. Quality of tape received the highest rating of the technical aspects with a 3.3 mean score.

Asked three to five weeks after their experience with the modules to make suggestions for further development of modules based on Transactional Analysis, participants suggested incorporation of group discussion into the module. Participants also suggested that future modules should be shorter than the two modules experienced.

**Internalization of Skills and Concepts.** 68 percent of the experimental group responded to a questionnaire designed to elicit information which would enable the investigator to determine the degree of internalization which had resulted from experience with the modular unit. Results from the limited response showed that the most basic degree of internalization had evidently occurred for at least 57.2 percent of the respondents. 76.4 percent gave evidence of the valuing level of internalization of the past experience. 57.1 percent indicated that they valued the skills and concepts sufficiently to want to know more about Transactional Analysis. 23.7 percent of the respondents manifested a further level of internalization in their motivation to learn more about Transactional Analysis through their own effort.
Summary of Findings Pertaining to the Use of the Audio Modular Approach as an Alternative In-Service Training Technique for Adult Educators. This section is subdivided into six sections corresponding to the six criteria established for suitability in this study: interest and motivation, the perceived worth of the experience as compared with other in-service experiences, the connotation of the concept of the audio modular approach as an in-service training technique as it compares with the connotation of the concept of in-service training approaches excluding the audio modular approach, the cognitive change resulting from the experience with the approach, and the potential for further development.

Interest and Motivation. To determine participants' interest and motivation for the audio modular approach resulting from experience with the modules, participants were asked if they would participate in additional modules if they had the opportunity. 87 percent of the participants responded positively.

Participants most often named accessibility and convenience as the major strength. Seven participants pointed to individual pacing as a major strength. Five participants named the constant availability of review, reinforcement and repetition as the major strength. Four participants thought the aspect of immediate application in exercises to be the major strength of the approach and four felt that its major strength lay in its ability to develop concentration.

Fifteen participants designated lack of interaction as the major weakness of the approach. Four responses referred to the difficulty
of concentration as a major weakness and three responses focused on
the length of these audio modules as a major weakness.

**Perceived Worth of the Audio Modular Approach.** In response to a
question concerning a method they would have preferred for learning
what was presented in the modules, 35.6 percent of the participants in¬
dicated no preference over the audio modular approach. 12.9 percent
preferred to retain the audio modules and to supplement them with
group discussion or visual presentations. 38.7 percent of the partic¬
cipants preferred an approach which incorporates interaction between
learner and instructor or learner and other learners.

The analysis of the responses to the ranking of in-service ap¬
proaches in order of preference showed that the audio modular was the
first choice of six participants, the second choice for eight partici¬
pants and the third choice for nine participants. It was most often
designated first, second or third choice. When mean scores for each
approach were calculated, there was a difference of 0.03 between the
mean score of the highest ranked approach, the visiting of adult edu¬
cation sites, and the mean score for the second ranked approach, audio
modular instruction.

**Connotation Meaning of the Audio Modular Approach.** Participants
were asked to react to Semantic Differential Scales for determining
the connotative meaning of the concepts: 1) "audio modular instruction
as one alternative approach to in-service education for adult educa¬
tors," and 2) "in-service educational programs for adult educators in
which you have participated (excluding the audio modular instructional
The analysis of the data derived from the scales showed that the audio modular approach elicited a greater positive reaction than did the concept signifying other in-service training programs for adult educators for the factors of evaluation, receptivity, potency and activity. The difference in the weighted mean scores for each factor was found to be statistically significant at the 0.05 level when the t test was applied.

The audio modular approach received more positive reactions on each of five traits: relevancy, usefulness, promise, interest and meaningfulness although the difference in the mean scores did not reach statistical significance when the t test was applied. The difference in mean scores for the two concepts for all the factors combined was 0.48 which was found to have a t value of 6.0.

**Cognitive Change Resulting from the Audio Modular Approach.** The summary of these findings has already been presented in the section devoted to the suitability of utilizing the audio modular approach for initial training of adult educators in communication skills based on Transactional Analysis.

**Potential for Further Development.** When participants were asked to indicate under what conditions they would participate in audio instructional modules in the future, there was no major point of agreement. The largest percentage of the group indicated that their interest in the topic would be the main criterion. When they were asked under what conditions they would definitely not participate in
other modules, participants most often responded that lack of interest in the topic would be the condition which would cause them not to participate.

48.5 of the participants perceived the undertaking of developing more audio modules as a worthwhile project. Asked to suggest skills or topics which might advantageously be adapted to the approach, participants mentioned the various skills of language arts in 48.4 percent of their responses. 25.8 of the responses indicated that anything presented in textbooks could be adapted to the audio modular approach. Other topics or skills suggested were: basic teaching skills, communication, consumer education foreign language, group discussion, hobbies, math and science, self-study habits, and marriage and family counseling.

**Time and Money Factor Involved in Production of Audio Modules.**

From a record of time and money spent in the design, development and production of the audio modular unit, the cost of the master copy for each module is estimated at $55.00. The cost of producing complete copies of the modules, with printed and recorded components, is estimated at $5.00 per module or $10.00 per unit. The investigator spent six weeks in the development of the modules or approximately 350-400 hours in developing the unit. Copies of the modules can be produced on an average of 30 minutes per module when multiple copies are being reproduced.
Conclusions

From the analysis and summary of the findings of this study no conclusions pertaining to the major questions explored in this study can be drawn. From the findings of this study it could not be determined whether:

1) adult educators would attend to audio modular units as a technique for meeting their needs for in-service training;

2) behavioral changes took place as a result of the in-service training experience with the audio modular approach;

3) adult educators perceived the audio modular approach as a viable technique for in-service training.

A major conclusion affirming the suitability of the audio modular instructional approach as an alternative in-service training technique for adult educators in communication skills based on Transactional Analysis cannot be drawn until these questions are answered.

However, some minor conclusions can be drawn from the analysis of the findings of the present study. These conclusions relate to the two questions explored by the study: suitability of utilizing the communication unit for the initial training in communication skills based on Transactional Analysis and the suitability of utilizing the audio modular instructional approach as an in-service training technique for adult educators.

Conclusions Relative to the Suitability of Utilizing the Communication Unit for Initial Training in Communication Skills Based on Transactional Analysis. The communication unit including two sequential modules provided an experience which was perceived by the parti-
Participants as a) interesting, b) valuable, c) worth the time spent on the modules, d) worth being recommended to fellow teachers, and e) one which they would have chosen if they had known what it was like beforehand.

The perceived major strength of the communication unit was the content of the unit. Particular aspects of the design of the unit were perceived by individuals to be major strengths.

3. The major weakness of the unit was the lack of learner-instructor or learner-learner interaction provided throughout the experience.

4. Cognitive change does occur as a result of participation in each module of the unit. Cognitive change was determined through the use of separate achievement tests for each module. The achievement tests were based on the performance objectives formulated for the modules and stated in the introduction printed in the guidebook for each module. The tests were validated and tested for reliability before they were included in the evaluation design.

Conclusions Relative to the Suitability of Utilizing the Audio Modular Instructional Approach as an alternative In-Service Training Technique for Adult Educators. 1. Having experienced the modular approach, participants would choose to participate in additional audio modules if the topic were of interest to them.

2. Participants perceived the audio modular approach as being of equal professional worth to visiting sites of adult education programs and of more worth than a) participating in a course, b) taking
a seminar, c) reading a professional book, and d) discovering material through independent study.

3. Participants reacted more positively to the audio modular instructional approach concept than they did to the concept of other in-service training programs when reaction was calculated for the factors of evaluation, potency, activity and receptivity. Participants also rated the audio modular approach concept significantly higher than they rated the concept of other in-service programs on the traits of usefulness, relevance, interest and meaningfulness.

Recommendations

Two categories of recommendations are made from the findings of this study. The first category is relative to the development and use of further audio modules based on Transactional Analysis. The second category is relative to further studies of the audio modular instructional approach.

Recommendations Relative to the Further Development and Use of Audio Modules. 1. Further modules for in-service training of adult educators should be developed using basically the same format for the audio and printed components of the modules. The modules should meet these criteria:

a) Care should be taken that separate modules within a unit do not require at the maximum more than an hour to complete.

b) Exercises applying the information presented should be provided during the modules.

c) Guides for evaluation of performance in the exercises should be provided for the participant.
d) Segments of informative input on the recording should not exceed three to five minutes.
e) Charts, diagrams or outlines should be provided for visual focus while participants are required to listen to the recorded information.
f) Care should be taken that the recorded presentation is clear and precise. Redundance, especially of directions, should be carefully avoided.
g) The recording should be professionally done.
h) Printed components of the module should be attractive and easily readable. Caution must be especially observed in this regard if the print is to be reduced.
i) A brief initial instruction for beginning the module should be printed obviously on the packaging of the module.

2. Modules should be developed providing more visual focus for participants during the recorded informational input. The visual focus should reinforce the presentation of the recording rather than function as a separate component.

3. Modular units developed for adult educators should be oriented to a small discussion group setting rather than to completely individualized learning situations.

4. The two modules of the communication unit developed for this study should be revised in accord with the findings of this study. It is suggested that these two modules should be redesigned into three shorter modules. Module I should be reorganized into a module presenting the Parent and Child ego states and a second module presenting the Adult ego state. Module II should become Module III and should be revised to provide better synchronization of recording and text. The
exercises of the modules should be redesigned to provide for group interaction. Additional charts and/or diagrams should be designed to accompany the reorganized unit.

5. Additional follow-up exercises should be developed for Module II of the present communication unit used in this study. These exercises should provide participants a design by which they can analyze transactional situations they observe in various situations: novels, movies, TV programs, and situations of personal involvement.

6. The communication unit developed for this study should be revised without orientation to adult educators. Recent demonstration of the modules at the Educational Marathon at the School of Education at the University of Massachusetts resulted in the communication unit being requested by various social organizations. Therefore, the unit should be produced also in a revised form for general use in schools and other organizations.

7. An additional communication unit should be developed around the concepts "OK-ness" and "NOT OK-ness" and the four life positions described by Transactional Analysis.

Recommendations Relative to Further Studies of the Audio Modular Instructional Approach. 1. More detailed instruments for measuring the internalization resulting from experience with the modules should be constructed and validated. These instruments should be used in future studies to determine attitudinal and behavioral change resulting from experience with the audio modular approach.

2. The revised modules used in this study should be further
tested. Field-test populations should be assessed at intervals follow¬
ing the training carried out through the use of the audio modular ap¬
proach to determine the level of internalization resulting from audio
modular instructional training.

3. A study should be conducted comparing the suitability of
utilizing the audio modules developed for this study as the instruc-
tional structure for a small group learning experience with the suita-
bility of utilizing the audio modules as a completely individualized
learning experience.

The study population should consist of two groups. Members of
one group should use the modules in a group setting (5-6 members).
Members of the second group should use the modules individually.
Evaluation designs for the two groups should be similar. Findings
should be analyzed separately and compared to determine if there is a
significant difference in the attitudes of the two groups toward the
audio modular experience.

A second phase of this study should attempt to assess and compare
the degree of internalization resulting from the two different experi-
ences with the modules to determine whether group interaction results
in greater internalization of the skills and concepts presented in the
modules.

4. Future investigators utilizing an evaluation design similar
to the one used in this study should take care that the evaluation in-
strument be completed in sessions separate from the sessions in which
study members participate in the modules. There is informal evidence
that pretests immediately preceding participating in the modules and obligation to complete lengthy evaluation instruments immediately following participation in the modules cause negative attitudes toward the experience because of the burden of paperwork imposed by the field-testing evaluation model. An additional difficulty is that it is impossible to determine whether participants' comments regarding the time commitments required by the modular experience refer to time spent with the modules only or the time spent on the modules plus the time spent on the evaluation.

5. The evaluation design utilized in this study should be revised to include additional "closed" questions concerning: the integration of the various components of the audio modular instructional unit, the components of the module which should definitely remain the same, the components of the modules which might be changed or eliminated, the helpfulness of the exercises and the internalization of the skills and concepts presented in the modules.
APPENDICES
APPENDIX A

THE RELIABILITY AND VALIDITY STUDY

Achievement Test I

The reliability study. In order to ascertain the reliability and validity of the achievement instrument for Module I a group of sixteen elementary and secondary teachers from the faculty of St. Michael's School in Northampton, Massachusetts, was asked to participate in the study. The teachers were divided into two equal groups. All of the study members were given the achievement test for Module I. These tests were collected upon completion. One week later study members were all retested with the identical test (Test 2). The scores for Test 1 and Test 2 (Retest) are presented in Table 46.

TABLE 46

SCORES FOR TEST 1 AND TEST 2 (RETEST) FOR ACHIEVEMENT TEST I

<table>
<thead>
<tr>
<th>No. of Samples</th>
<th>Test 1</th>
<th>Test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>10</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>11</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>14</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>16</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>
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 are presented in Table 47.

**TABLE 47**

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

<table>
<thead>
<tr>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>18</td>
<td>256</td>
<td>324</td>
<td>288</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>12</td>
<td>81</td>
<td>144</td>
<td>108</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>8</td>
<td>49</td>
<td>64</td>
<td>56</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>10</td>
<td>81</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>9</td>
<td>144</td>
<td>81</td>
<td>108</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>7</td>
<td>49</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>12</td>
<td>144</td>
<td>144</td>
<td>144</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>10</td>
<td>64</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>9</td>
<td>13</td>
<td>19</td>
<td>169</td>
<td>361</td>
<td>247</td>
</tr>
<tr>
<td>10</td>
<td>17</td>
<td>19</td>
<td>289</td>
<td>361</td>
<td>323</td>
</tr>
<tr>
<td>11</td>
<td>13</td>
<td>16</td>
<td>169</td>
<td>256</td>
<td>208</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>10</td>
<td>64</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>13</td>
<td>16</td>
<td>16</td>
<td>256</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>14</td>
<td>11</td>
<td>12</td>
<td>121</td>
<td>144</td>
<td>132</td>
</tr>
<tr>
<td>15</td>
<td>17</td>
<td>18</td>
<td>289</td>
<td>324</td>
<td>306</td>
</tr>
<tr>
<td>16</td>
<td>13</td>
<td>13</td>
<td>169</td>
<td>169</td>
<td>169</td>
</tr>
</tbody>
</table>

ΣX=188  ΣY=209  ΣX²=2394  ΣY²=2977  ΣXY=2644

The Pearson Product-Moment Correlation Formula and computations are presented in Figure 9. The correlation coefficient of reliability was found to be 0.88.
\[ r = \frac{\Sigma XY - \frac{\Sigma X \cdot \Sigma Y}{n}}{\sqrt{\frac{\Sigma X^2 - \frac{\Sigma X^2}{n}}{n} \cdot \frac{\Sigma Y^2 - \frac{\Sigma Y^2}{n}}{n}}} \]

\( r \) = 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 2**

\[ r = \frac{2644 - \frac{(188)(209)}{16}}{\sqrt{2394 - \frac{(188)(188)}{16} \cdot \sqrt{2977 - \frac{(209)(209)}{16}}} \]

\[ = \frac{2644 - \frac{39292}{16}}{\sqrt{2394 - \frac{35344}{16} \cdot \sqrt{2977 - \frac{43681}{16}}} \}

\[ = \frac{2644 - 2456}{\sqrt{2394 - 2209} \cdot \sqrt{2977 - 2730}} \]

\[ = \frac{188}{\sqrt{185} \cdot \sqrt{247}} \]

\[ = \frac{188}{(13.60)(15.72)} \]

\[ = \frac{188}{213.79} \]

\[ = 0.88 \]

Fig. 9--The Pearson Product-Moment Correlation Formula and Computation for Test 1 and Test 2 (retest).
The Validity Study. The eight members of the experimental group were given communication Module I after they had taken Test 2 (retest). They were asked to use the module within the following week at their convenience. After experience with the module, they took Test 3 which was identical to Test 1 and Test 2. The scores of Test 2 and Test 3 of the experimental group are presented in Table 48.

**TABLE 48**

<table>
<thead>
<tr>
<th></th>
<th>Test 2</th>
<th>Test 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>10</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>11</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>13</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>15</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>16</td>
<td>13</td>
<td>20</td>
</tr>
</tbody>
</table>

The Pearson Product-Moment correlation formula was used to determine the degree of relationship between Test 2 and Test 3 of the experimental group. The data computed for the formula are presented in Table 49. The coefficient of correlation was found to be 0.91. The computations of the formula are presented in Figure 10.

Variance Factor. To reflect the variability of the test scores, the variance and standard deviation for each set of scores were calculated.
TABLE 49

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

<table>
<thead>
<tr>
<th>n</th>
<th>X</th>
<th>Y</th>
<th>X^2</th>
<th>Y^2</th>
<th>X*Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>19</td>
<td>25</td>
<td>361</td>
<td>625</td>
<td>475</td>
</tr>
<tr>
<td>10</td>
<td>19</td>
<td>23</td>
<td>361</td>
<td>529</td>
<td>437</td>
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<tr>
<td>11</td>
<td>16</td>
<td>22</td>
<td>256</td>
<td>484</td>
<td>352</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>18</td>
<td>100</td>
<td>324</td>
<td>180</td>
</tr>
<tr>
<td>13</td>
<td>16</td>
<td>24</td>
<td>256</td>
<td>576</td>
<td>384</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>20</td>
<td>144</td>
<td>400</td>
<td>240</td>
</tr>
<tr>
<td>15</td>
<td>18</td>
<td>23</td>
<td>324</td>
<td>529</td>
<td>414</td>
</tr>
<tr>
<td>16</td>
<td>13</td>
<td>20</td>
<td>169</td>
<td>400</td>
<td>260</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>123</strong></td>
<td><strong>175</strong></td>
<td><strong>1971</strong></td>
<td><strong>3867</strong></td>
<td><strong>2742</strong></td>
</tr>
</tbody>
</table>
\[
\begin{align*}
\text{r} &= \frac{\Sigma \text{XY} - \Sigma X \cdot \Sigma Y}{n} \\
&= \frac{\sqrt{\Sigma X^2 - \frac{\Sigma X \cdot \Sigma X}{n}} \cdot \sqrt{\Sigma Y^2 - \frac{\Sigma Y \cdot \Sigma Y}{n}}}{2742 - 2691} \\
&= \frac{2742 - (123)(175)}{8} \cdot \frac{\sqrt{1971 - (123)(123)} \cdot \sqrt{3867 - (175)(175)}}{\sqrt{1971 - 1891} \cdot \sqrt{3867 - 3828}} \\
&= \frac{51}{\sqrt{80} \cdot \sqrt{39}} = \frac{51}{(8.94) \cdot (6.25)} = \frac{51}{55.87} \\
&= 0.91
\end{align*}
\]

\textit{r} = correlation coefficient between X and Y

\( n \) = number of cases

\( X \) = individual scores for Test 2

\( Y \) = individual scores for Test 3

Computation of Formula - Data from Table 4

\textit{Fig. 10-The Pearson Product-Moment Correlation Formula and Computations for Test 2 and Test 3 of the Experimental Group}
The data computed for the variance formula are presented in Table 50.

### TABLE 50

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

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>x</th>
<th>x²</th>
<th>Y</th>
<th>y</th>
<th>y²</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>19</td>
<td>+4</td>
<td>16</td>
<td>25</td>
<td>+3</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>19</td>
<td>+4</td>
<td>16</td>
<td>23</td>
<td>+1</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>16</td>
<td>+1</td>
<td>1</td>
<td>22</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>-5</td>
<td>25</td>
<td>18</td>
<td>-4</td>
<td>16</td>
</tr>
<tr>
<td>13</td>
<td>16</td>
<td>+1</td>
<td>1</td>
<td>24</td>
<td>+2</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>-3</td>
<td>9</td>
<td>20</td>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>18</td>
<td>+3</td>
<td>9</td>
<td>23</td>
<td>+1</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>13</td>
<td>-2</td>
<td>4</td>
<td>20</td>
<td>-2</td>
<td>4</td>
</tr>
</tbody>
</table>

\[ \Sigma x^2 = 81 \quad \Sigma y^2 = 39 \]

The variance formulae and computations are presented in Figure 11. The variance for the second test of the experimental group was found to be 11.57. The standard deviation was 3.40. The variance of the third test was found to be 5.57 and the standard deviation was 2.50.

**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 statistical significance. The t test formula and computations are presented in Figure 12. The t value (value by which the statistical significance of the mean differential is judged) was found to be 4.17. 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 was N-1 or 7. The distribution of t table values was entered at a probability level of 0.05. The point of intersection yielded a
\[ s^2 = \frac{\sum x^2}{n-1} \]

\( s^2 \) = 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**

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{81}{8-1} = \frac{81}{7} = 11.57 \]

Standard Deviation = \( \sqrt{11.57} = 3.4 \)

**Variance for Test 3**

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{39}{8-1} = \frac{39}{7} = 5.57 \]

Standard Deviation = \( \sqrt{5.57} = 2.50 \)

**Pooled Variance for Test 2 and Test 3**

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

\[ s^2 = \frac{8(11.57) + 8(5.57)}{8 + 8 - 2} \]

\[ s^2 = \frac{137.12}{14} = 9.79 \]

---

Fig. 11—The Variance Formulae and Computations for Test 2 and Test 3 of the Experimental Group for Achievement Test I
\[
t = \frac{\bar{X}_2 - \bar{X}_3}{\sqrt{\frac{s^2}{n_2} + \frac{s^2}{n_3}}}
\]

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

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

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

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

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

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

**t Formula Computation**

\[
t = \frac{15.38 - 21.88}{\sqrt{\frac{9.79}{8} + \frac{9.79}{8}}}
\]

\[
t = \frac{6.5}{\sqrt{\frac{19.48}{8}}} = \frac{6.5}{\sqrt{2.435}} = \frac{6.5}{1.56}
\]

\( t = 4.17 \)

---

Fig. 12--The t Test Formula and Computation for Test 2 and Test 3 of the Experimental Group for Achievement Test I
Summary of the validation process for achievement test I. The correlation coefficient of Test 1 and Test 2 was found to be 0.88. The correlation coefficient of Test 2 and Test 3 was found to be 0.91. The t value of the difference in mean scores of Test 2 and Test 3 of the experimental group was found to be 4.17 and was judged significant at a 0.05 level. The statistical data obtained from this very limited study population indicate that the test may reflect with some reliability and validity the achievement of the participants after their experience with the module. However, it must be kept in mind that this study was conducted with elementary and secondary teachers. Reliability and validity of the test conducted with an adult educator population may yield different results. Therefore, the test should be validated more specifically for that population if any decisions are to be based upon scores resulting from the test.

Achievement Test II

The reliability study. The reliability testing for the achievement test for the second module was conducted in the same way as the reliability study for the first test. At the first session all sixteen participants were given the achievement test for the second module. One week later all the study members were again given the achievement test (retest). After the retest the experimental group which had participated in the first module was given module two and asked to use the module within the following week. As soon as they had individually completed the module, they again took the achievement test (test 3). The experimental group for this achievement test was identical to the experimental
group for the first achievement test. It was necessary to retain the
group since participation in the first module is a pre-requisite for
participation in the second module. The control group for this achieve-
ment test was similar to the control group for the first achievement
test but the membership was not identical.

The Pearson Product-Moment Correlation Formula was used to discover
the degree of relationship between the scores for Test 1 and Test 2.
The scores for these tests are presented in Table 51. The data computed
for the correlation formula are presented in Table 52. The formula and
computations are presented in Figure 13. The coefficient of correlation
was found to be 0.91.

TABLE 51

<table>
<thead>
<tr>
<th>No. of Samples</th>
<th>Test 1</th>
<th>Test 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
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</tr>
<tr>
<td>5</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
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<tr>
<td>16</td>
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</tr>
</tbody>
</table>
TABLE 52

DATA COMPUTED FOR THE PEARSON PRODUCT-MOMENT CORRELATION
(TEST 1 AND TEST 2) FOR ACHIEVEMENT TEST II

<table>
<thead>
<tr>
<th>n (no. of cases)</th>
<th>X (raw score for Test 1)</th>
<th>Y (raw score for Test 2)</th>
<th>$X^2$</th>
<th>$Y^2$</th>
<th>$X\cdot Y$</th>
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</table>

$\sum X = 126$  $\sum Y = 136$  $\sum X^2 = 1100$  $\sum Y^2 = 1276$  $\sum X\cdot Y = 1175$
\[ r = \frac{\sum_{i=1}^{n} x_i y_i - \frac{\sum_{i=1}^{n} x_i \sum_{j=1}^{n} y_j}{n}}{\sqrt{\sum_{i=1}^{n} x_i^2 - \frac{\sum_{i=1}^{n} (x_i)^2}{n}} \cdot \sqrt{\sum_{j=1}^{n} y_j^2 - \frac{\sum_{j=1}^{n} (y_j)^2}{n}}}
\]

\[ r = \frac{1175 - \frac{(126)(136)}{16}}{\sqrt{1100 - \frac{(126)(126)}{16}} \cdot \sqrt{1276 - \frac{(136)(136)}{16}}}
\]

\[ r = \frac{1175 - \frac{17136}{16}}{\sqrt{1100 - \frac{15876}{16}} \cdot \sqrt{1276 - \frac{18496}{16}}}
\]

\[ r = \frac{1175 - 1071}{\sqrt{1100 - 992} \cdot \sqrt{1276 - 1156}}
\]

\[ r = \frac{104}{\sqrt{108} \cdot \sqrt{120}} = \frac{104}{(10.39)(10.95)}
\]

\[ r = \frac{104}{113.77} = 0.91
\]

Fig. 13-The Pearson Product-Moment Correlation Formula and Computation for Test 1 and Test 2 for Achievement Test II
The Validity Study for Achievement Test II. The scores of Test 2 and Test 3 of the experimental group are presented in Table 53. The Pearson Product-Moment Correlation Formula was again used to determine the degree of relationship between Test 2 and Test 3 of the experimental group. The data computed for the formula are presented in Table 54.

### Table 53

<table>
<thead>
<tr>
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<tbody>
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<td>15</td>
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</tbody>
</table>

### Table 54

<table>
<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>256</td>
<td>112</td>
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<tr>
<td>TOTALS</td>
<td>58</td>
<td>127</td>
<td>424</td>
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<td>921</td>
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</table>
The computation of the formula is presented in Figure 14. The coefficient of correlation was found to be 0.15. Study members had experienced the second module between Test 2 and Test 3.

\[ r = \frac{\sum X Y - \frac{\sum X \cdot Y}{N}}{\sqrt{\sum X^2 - \frac{\sum X \cdot \bar{X}}{N}} \cdot \sqrt{\sum Y^2 - \frac{\sum Y \cdot \bar{Y}}{N}}} \]

\[ r = \frac{921 - \frac{(58)(127)}{8}}{\sqrt{424 - \frac{(58)(58)}{8}} \cdot \sqrt{2017 - \frac{(127)(127)}{8}}} \]

\[ r = \frac{921 - \frac{7366}{8}}{\sqrt{424 - \frac{3364}{8}} \cdot \sqrt{2017 - \frac{16129}{8}}} \]

\[ r = \frac{921 - 920.75}{\sqrt{424 - 420.5} \cdot \sqrt{2017 - 2016.13}} = \frac{0.25}{\sqrt{3.5} \cdot \sqrt{0.87}} \]

\[ r = \frac{0.25}{1.8 \times 0.9} = \frac{0.25}{1.62} = 0.15 \]

Fig. 14—The Pearson Product-Moment Correlation Formula and Computation for Test 2 and Test 3 of the experimental group for Achievement Test II.

**Variance Factor.** To reflect the variability of the test scores, the variance and standard deviation were computed for Test 2 and Test 3 of the experimental group. The data computed for the variance formula are presented in Table 55. The calculations are presented in Figure 15.
The variance for the second test was 0.57 and the standard deviation was 0.075. The variance for the third test was 0.14 and the standard deviation was 0.037.

**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 Figure 16. The t value was found to be 28.3. 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 significant.
\[ s^2 = \frac{\sum x^2}{n-1} \]

\( s^2 \) = 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**

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{4}{7} = .57 \]

Standard Deviation = \( \sqrt{.57} = .075 \)

**Variance for Test 3**

\[ s^2 = \frac{\sum x^2}{n-1} = \frac{1}{7} = .14 \]

Standard Deviation = \( \sqrt{.14} = .037 \)

**Pooled Variance for Test 2 and Test 3**

\[ s^2 = \frac{n_2 s_2^2 + n_3 s_3^2}{n_2 + n_3 - 2} \]

\[ s^2 = \frac{8(.57) + 8(.14)}{8 + 8 - 2} \]

\[ s^2 = \frac{5.68}{14} = 0.406 \]

---

Fig. 15--The Variance Formulae and Computations for Test 2 and Test 3 of the Experimental Group for Achievement Test II
\[
t = \frac{\bar{X}_2 - \bar{X}_3}{\sqrt{\frac{s^2}{n_2} + \frac{s^2}{n_3}}}
\]

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

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

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

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

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

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

\textbf{t Formula Computations}

\[
t = \frac{7 - 16}{\sqrt{\frac{.406}{8} + \frac{.406}{8}}} = \frac{-9}{\sqrt{.812}} = \frac{-9}{.1015}
\]

\(t = \frac{-9}{.318} = 28.3\)

\textbf{Fig. 16--The t Test Formula and Computation for Test 2 and Test 3 of the Experimental Group for Achievement Test II}
Summary of the validation process for achievement test II. The correlation coefficient of Test 1 and Test 2 was found to be 0.91. The correlation between Test 2 and Test 3 of the experimental group was 0.15. Members had participated in the audio module between Test 2 and Test 3. When the t test was applied to the mean differential of Test 2 and Test 3 the t value was found to be statistically significant at the 0.05 level. This statistical data has been computed for a very limited study population. Therefore, although this data does seem to indicate that the tests are reliable and valid, it is recommended that the studies be conducted with a much greater population before decisions of any kind are based on results from these test scores.
AUDIO MODULAR INSTRUCTION QUESTIONNAIRE

BIOGRAPHICAL DATA

Date: ______________________

Name: ______________________

Address: ____________________________________________

Street __________ City __________ State __________ Zip Code __________

Date of Birth: ______  ______ Sex: Female ______ Male ______

Month _______ Year ______

Present Position _______ Prior Position _______ Degree Held at Present Time Bachelors ______

Graduate Student _______ Part-time Adult Educator _______ Bachelors+ ______

Full-time Adult Educator _______ Masters ______

Guidance Counselor for Adult Education _______ Masters+ ______

Part-time Director of Adult Education _______ Specialist ______

Full-time Director of Adult Education _______ Doctorate ______

Other _______ Other (explain) _______

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

0 - 25 _______ 100 - 200 _______

25 - 50 _______ 200 - 500 _______

50 - 100 _______ 500 up _______

School Setting: Urban _______ Suburban _______ Rural _______

Student socioeconomic 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

Opinionnaire 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 which was completely 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. _____ 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
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 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 __________________________
One aspect of this module which should definitely remain the same.

Opinionaire 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.

1. If you had the opportunity, would you participate in an audio module?
   
   ___ a) Yes, definitely
   ___ b) Yes, probably
   ___ c) I don't know
   ___ d) Probably not
   ___ e) Definitely not

2. 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)
3. The major strengths of the audio modular instructional approach in-service techniques are:

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

5. 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 ____________________________

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

7. What additional topics might be adopted to audio modular instruction?

8. 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 check-mark 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 check-mark 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 check-mark 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 check-mark 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

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</tr>
</tbody>
</table>

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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)

|--------------------|-------------------------------------------|
ACHIEVEMENT TEST I

Use the separate answer sheet provided to indicate your responses.

1. In terms of Transactional Analysis the personality can be described as:
   a. the totality of personal responses to the environment expressed through one of the three ego states.
   b. the combination of Parent, Child and Adult perceptions surviving in the subconscious.
   c. an ego state variously called Child, Parent and Adult depending on the dominant attitude characterizing the ego state at a given time.
   d. behavior patterns derived from warring factions of the Adult, Parent and Child in the unconscious.

2. In terms of Transactional Analysis which of the following does not describe the "ego state"?
   a. a function of the personality
   b. a distinct set of attitudes, feelings, behaviors and perceptions.
   c. a personality function of the subconscious
   d. an expression of the personality

3. Which of the following characteristics are not attributed to a person in the natural Child ego state?
   a. anger
   b. sulking
   c. play
   d. self-indulgence
   e. none of the above

4. Which of the following characteristics are not attributed to the Adapted Child?
   a. obedience
   b. self-gratification
   c. withdrawal
5. Which of the following characteristics are not attributed to the Critical Parent?
   a. punitive
   b. authoritative
   c. demanding
   d. traditionalist
   e. none of these

6. Which of the following characteristics are not attributed to the Nurturing Parent?
   a. protective
   b. reserved
   c. comforting
   d. helpful
   e. none of these

7. Which of the following characteristics are not attributed to the Adult ego state?
   a. evaluative
   b. alert
   c. observant
   d. thoughtful
   e. none of these

8. Which of the following functions are not attributed to the Adult ego state?
   a. collects information
   b. reacts impulsively
   c. evaluates experiences
   d. responds authentically
   e. none of these
In numbers 9-15 indicate which of the following most correctly completes the sentences. Use the letters a, b, c, d or e to record your answers.

   a. Natural Child
   b. Adapted Child
   c. Nurturing Parent
   d. Critical Parent
   e. Adult

9. Guilt is a feeling response attributed to ____.
10. Restrictive impositions are attributed to ____.
11. Reflection is attributed to ____.
12. Sensuousness is attributed to ____.
13. Compliance is attributed to ____.
14. Aggression is attributed to ____.
15. Sympathy is attributed to ____.

In each of the following excerpts decide whether the person referred to by the underlined word is acting from the Natural Child, the Adapted Child, the Nurturing Parent, the Critical Parent or the Adult. Use the following answer code:

   a. Natural Child
   b. Adapted Child
   c. Nurturing Parent
   d. Critical Parent
   e. Adult

16. "suddenly she shrank together as though she were afraid of being hit and were defending herself".
17. "he felt ashamed of himself, humiliated, guilt-laden, deprived of any possibility of purging his humiliation".
18. I wept with relief
19. "you must control yourself". she whispered in reprimand.
20. Without willing it I had gone from being ignorant of being ignorant to being aware of being aware. And the worst part of my awareness was that I didn't know what I was aware of. I knew I knew very little, but I was certain that the things I had yet to learn wouldn't be taught to me at George Washington High School.

21. She tried hard to make me into something she could reasonably accept.

22. By all accounts those storytellers, born black and male before the turn of the twentieth century, should have been ground into useless dust. Instead they used their intelligence to pry open the door of rejection and not only became wealthy but got some revenge in the bargain.

23. There were no favorite students. No teacher's pets. If a student pleased her during a particular period, he could not count on special treatment in the next day's class and that was as true the other way around. Each day she faced us with a clean slate and acted as if ours were clean as well. Reserved and firm in her opinions, she spent no time in indulging the frivolous.

24. She stayed awake to drive me out to the car barn at four thirty in the mornings or to pick me up when I was relieved just before dawn. ...She was not about to trust a taxi driver with her baby.

25. It was brutal to be young and already trained to sit quietly and listen to charges brought against my color with no choice of defense. (person speaking)
ACHIEVEMENT TEST II

For each transactional stimulus given below, there is provided one or more transactional responses. Consider each response and decide whether that response would complete the transaction as complementary or crossed. Use an equal sign (=) to indicate the response(s) which would complete a complementary transaction. Use an "x" to indicate the response(s) which would complete a crossed transaction.

Instructor: You're not filling in that form correctly.
You ought to read the directions before you try to begin.

1. _____ Chuck: How do you expect me to read directions printed as small as that?
2. _____ Chuck: I have a habit of jumping into things. Shall I start a new form?
3. _____ Chuck: What the hell do you need all this information for anyhow?

Mary: (slamming a book closed) This is stupid. Why should I waste my time learning about some dumb man who lived two hundred years ago?

4. _____ Instructor: Are you having trouble reading that material?
Or are you really bored by that book?
5. _____ Instructor: You signed up for this course. The least you can do is to have the character to stick to it.

Center Director: John, do you remember what time we scheduled that staff meeting for tomorrow night?

6. _____ John: Can't help you there, Dave. I believe it's at 7:30 but I can't be sure of that.
7. _____ John: Some administrator you make. You ought to make a few notes if you can't remember things like that.
Center Director: You all know there is no parking in the front drive. Now would anyone parked out there please move his car to the back parking lot.

8. _____ Participant: If you ask me, if you want people to participate in your program the least you could do is to stop treating us like your high school hoodlums.

9. _____ Participant: Sir, is it really causing anyone any inconvenience? It seems unnecessary to use the back parking lot at night when the numbers using the building are much smaller than during the day.

Mrs. Doerr: Pardon me, ma'am. I'd like to register for some courses. Could you tell me how to go about it?

10. _____ Secretary: The directions are printed over there as big as you please—if you can read. Course descriptions are right under the sign.

11. _____ Secretary: The first thing you'll want to do is look over the courses we're offering if you've not had a chance to see them yet. Then the actual steps for registering are printed over there for your convenience. Course descriptions are on the table under the sign.

Instructor: Mr. Abel could sure use a course or two in administration. I can't understand how one man can create so much chaos.

12. _____ Fellow Instructor: There are a lot of loose ends, it's true. Sometimes I get so frustrated I think I need to look for a more structured job myself.

13. _____ Fellow Instructor: Listen, this is just the beginning. Wait until we have people coming in here every night of the week if you want to see some disorder.

Center Director: Bill, can you cover for Jim Thursday night? He has a meeting with some church organization this week.

14. _____ Instructor: I seem to be an easy target for substituting.

15. _____ Instructor: That guy belongs to more organizations than any other man I know of. Wonder if he ever considers maybe he's involved in too many things.

16. _____ Instructor: I'd appreciate having the night off. But if you're really up against it, I can cover for him.
Final Questionnaire
Concerning Two Communication Modules

Do you feel that participation in the two modules was a worthwhile experience for you?

List some of the concepts or terms you recall from your experience with Transactional Analysis through the use of the modules.

Do you want to know more about Transactional Analysis? Have you yourself tried to learn more about Transactional Analysis?

If further modules on Transactional Analysis were to be developed, what suggestions for method and/or content would you offer to the designer?

Thank you for your participation and cooperation.
APPENDIX C
STRUCTURAL ANALYSIS - COMMUNICATION MODULE

These Audio-Modular Instructional Materials have been developed by:

S. Kathleen McGuire

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
The more faithfully you listen to the voice within you the better you will hear what is sounding outside.

And only he who listens can speak.

Is this the starting point of the road towards the union of your two dreams -

to be allowed in clarity of mind to mirror life

and in purity of heart to mold it?

----Dag Hammarskjold
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INTRODUCTION

PURPOSE OF THE AUDIO INSTRUCTIONAL MODULE

The instructional module is designed to teach a single concept through instruction, learning exercises and self-evaluation. This instructional module, the first in a series, is designed for the use of educators, specifically for adult education staff members either individually or in small groups. Surveys of the members of adult education centers in the New England area have shown that improvement of communication is one of the most keenly felt needs of adult educators. This module has been developed to fulfill, at least partially, that need.

Transactional Analysis has rapidly become one of the most helpful approaches ever developed for the understanding of communication. It focuses on words and behaviors easily observable. It uses a simple language, precise and clear. It does not threaten with revelation of a hidden past but encourages with the promise of a brighter future. When Tom Harris, one of the early developers of Transactional Analysis, begins to work with people, he first spends an hour or so introducing them to the basic language of Transactional Analysis so that both he and the people he works with have a basic tool for understanding interpersonal communications.

The purpose of this first module is to provide you with "that hour or so" introduction to the basic language and concepts of Transactional Analysis, so that you too, will possess this tool for understanding and will be able to begin using it in understanding your own feelings and behaviors. A second module will help you extend the use of this tool to interpersonal situations.
RATIONALE FOR THE MODULE

This module deals with Transactional Analysis as a basic way of understanding human communication. In offering this method to you, the adult educator, as a means of helping you improve your communication skills, a number of beliefs about the whole approach to improvement of communication is firmly held.

1) communication techniques threaten to become manipulative unless they grow out of your increased understanding and empathy.

2) understanding of your own behavior is the most essential element in improving your human communication.

3) we communicate as much or more by other behaviors as we do by the behavior of speech.

4) improving your own ability to understand precisely what you are communicating by the behavior you engage in and increasing your ability to change this behavior if it communicates a message you do not wish to send is the only communication improvement you can control.

5) a precise vocabulary is a helpful tool in understanding human communication.

6) Transactional Analysis is helpful in your effort to understand your own behavior and to change it if you wish to do so.

DESCRIPTION OF THE MODULE

During this module, you will be using self-instructional materials. You will first find out just what it is that the module will enable you to do. Then in a series of practice cycles, you will be given some information, asked to test your comprehension of this input in some way, and provided with feedback so that you can evaluate
your performance. If you decide that your performance is inadequate, you may repeat any segment of the cycle as often as you like or read additional explanations provided within the module until your performance meets your expectations.

OBJECTIVES

Upon completion of this module, you should be able to:

1. Describe the personality in terms of Transactional Analysis.
2. Identify words and behaviors commonly attributed to persons acting from the Child ego state.
3. Identify words and behaviors commonly attributed to persons acting from the Adult ego state.
4. Identify words and behaviors commonly attributed to persons acting from the Parent ego state.
5. Predict the general type of behavior a person will engage in if he is dominated by his:
   a) Child, adapted or natural;
   b) Parent, critical or nurturing;
   c) Adult.
6. Discriminate between Parent, Adult and Child behaviors by identifying specific cues of the various ego states.

TIME REQUIREMENT

Approximately one hour for the module
MATERIAL AND RESOURCES REQUIRED

1. Audio instruction two-track magnetic cassette tape, recorded at a speed of 1 7/8 inches per second. The tape for the "Structural Analysis" module is enclosed in the material provided.

2. A cassette tape recorder-player

3. This Audio-Instruction Module Guidebook

4. A pencil or pen

5. The evaluation instrument located in the 9 x 12 envelope found in the packet of materials. (This envelope should be opened only upon completion of the module.)

MATERIAL FOUND IN THE "STRUCTURAL ANALYSIS" AUDIO MODULE

Before you begin working with this module, please be sure the packet is complete and contains the following materials:


2. Printed general directions and guidebook found spirally bound in the packet.


4. Envelope labeled Evaluation Cards.

5. Evaluation packet found in a brown 9 x 12 envelope along with a biographical data sheet.
INSTRUCTION TO THE PARTICIPANT

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

1. Take the module where you will not be subjected to interruptions, and give it your complete attention.
2. Set aside sufficient time (approximately one and three-quarters hours) so that you can follow the instruction through to its conclusion.
3. Insure yourself a good measure of accomplishment by following directions accurately. The worksheets have been constructed in such a way that you will have a set of essential notes about structural analysis at the end of the module if you complete them as directed.
4. Complete the evaluation packet soon after completion of the module. In this way your evaluation will have greater accuracy and your suggestions for possible changes will be fresh in your mind.

The cassette tape and worksheets -

The information which you will receive during this module is recorded on the cassette tape included in this packet. After the introduction of each new concept you will be asked to test your comprehension of the concept by using it in some appropriate exercise. The "Structural Analysis" learning exercises worksheets correspond to the tasks you will be asked to perform by the taped instruction. The booklet of worksheets becomes your property when you have completed it.
The sound of a bell will be the signal to stop the tape and perform the task indicated before continuing with the recording. You should now be ready to participate in the module.

Close the guidebook and start the tape.
TRANSACTIONAL ANALYSIS - COMMUNICATION MODULE

These Audio-Modular Instructional Materials have been developed by:

S. Kathleen McGuire

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
How am I to find the strength

to live as a free man

detached from all that was unjust in my past

and all that is petty in my present

and so daily to forgive myself?

Life will judge me by the measure of the love

I myself am capable of

and with patience

according to the measure of my honesty

in attempting to meet its demands

and with an equity

before which the feeble explanations

and excuses of self-importance

carry no weight whatsoever.

Dag Hammarskjold
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INTRODUCTION

PURPOSE OF THE AUDIO INSTRUCTIONAL MODULE

The instructional module is designed to teach a single concept through instruction, learning exercises and self-evaluation. This instructional module, the second in a series of two, is designed for the use of educators, specifically for adult education staff members, either individually or in small groups. Surveys of the members of adult education centers in the New England area have shown that improvement of communication is one of the most keenly felt needs of adult educators. This instructional unit, containing two modules based on Transactional Analysis, has been developed as one way of meeting that need for educators who do not find it feasible to participate in lengthier courses, labs or workshops designed to help participants improve their communication skills.

As described in the first module, Transactional Analysis has rapidly become one of the most helpful approaches ever developed for the understanding of communication. It focuses on words and behaviors easily observable to anyone. It uses a simple language, precise and clear in its meanings. It does not threaten with revelation of a hidden past but encourages with the promise of a brighter, freer future. When Tom Harris, one of the early developers of Transactional Analysis, begins to work with people, he first spends an hour or so introducing them to the basic language of Transactional Analysis so that both he and the people he works with have a basic tool for understanding interpersonal communications.

The first module of the unit provided an introduction to the basic concepts and language of Transactional Analysis. This second module will demonstrate the use of Transactional Analysis as a tool for use in analyzing and improving interpersonal communications, especially as these take place in an Adult Education Program setting.
RATIONALE FOR THE MODULE

This module deals with Transactional Analysis as a basic way of understanding what happens in our interactions with others. It is believed that this understanding will give you the power to change those interactions which you do not find fruitful or satisfying. This belief is based on the following assumptions about people and the personal freedom that can be theirs if only they will claim it:

1) People can choose their present and their future—they cannot change their past. Therefore, attention is most fruitfully directed to the shaping of the present and the future rather than to the mourning of the past. There is no future in regretting the past nor in blaming it on other people.

2) People are responsible for the selves they communicate and they are potentially free to communicate the selves they wish.

3) By what they say and what they do, people largely determine what people say and do to them. Therefore most of the communications which people find personally unsatisfying could be changed by them if only they knew how.

Although this module has been designed for you in your role of Adult Educator, what you learn here about communication can be of help to you in all your interpersonal relations. On the other hand, this module can only provide you with the necessary information and some initial practice in analyzing and changing communication. The actual use of this knowledge and experience remains a matter of your personal choice and determination.
DESCRIPTION OF THE MODULE

During this module you will be using self-instructional materials. There is no need to have an instructor present. This guidebook and the cassette tape provide you with all the information you need. In this introduction you find out what it is the module has been designed to teach and what it is you will be able to do when you have completed the module. Then through a series of practice cycles you will proceed through this module. Each cycle includes the following steps.

1) You will receive some information by means of the tape and this guidebook;
2) You will test your comprehension of the information through the use of some practice exercises provided in the Transactional Analysis Worksheet Booklet;
3) You will evaluate your performance according to the criteria provided in this guidebook.
4) If you decide that your performance is too unsatisfactory for you to advance to the next cycle you may choose to repeat any segment of that cycle or previous cycles until you are satisfied with your performance; if you are satisfied with your performance, you will advance to the next cycle on the tape.

Upon completion of the series there will be a posttest by which you can evaluate your achievement on the whole module. When you have finished the module the Transactional Analysis Worksheet Booklet becomes your property.
OBJECTIVES

Upon completion of this module you should be able to:

1) identify a transactional as defined in Transactional Analysis
2) formulate and explain two basic rules of communication in Transactional Analysis;
3) identify some of the behavioral clues of the three ego states as you observe them in printed or recorded transactions;
4) analyze and diagram complementary transactions;
5) analyze and diagram crossed transactions;
6) change a complementary transaction into a crossed transaction;
7) change a crossed transaction into a complementary transaction.

TIME REQUIREMENT

1) Approximately one hour for the module
2) Approximately one-half hour for the evaluation

PRE-REQUISITE

Completion of the first module in this unit: the Structural Analysis--Communication Module.

MATERIAL FOUND IN THE TRANSACTIONAL ANALYSIS AUDIO MODULE

Before you begin working with this module, you will need to provide yourself with a cassette player, a pen or pencil and a complete packet. The packet is complete if it contains the following materials:

1. Guidebook found spirally bound in the packet containing general directions, diagrams and evaluations for the practice cycles of this module.
2. Cassette tape containing information and directions for the Transactional Analysis module.

3. Transactional Analysis Worksheet Booklet.

4. Evaluation packet found in a brown 9 x 12 envelope along with a biographical data sheet.

If the pack is not complete, postpone your use of the module until you obtain the missing material(s).

INSTRUCTIONS TO THE PARTICIPANT

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

1. Take the module where you will not be subjected to interruptions, and give it your complete attention.

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

3. Insure yourself a good measure of accomplishment by following directions accurately.

4. Complete the evaluation packet soon after completion of the module. In this way your evaluation will have greater accuracy and your suggestions for possible changes will be fresh in your mind.

When you have finished reading these instructions you will be ready to turn on the tape. While you are listening to the tape you will need to refer to the guidebook and to use the Transactional Analysis Worksheet Booklet. The Worksheet Booklet becomes your property when you have completed the module.

The sound of the bell on the tape will be your signal to stop the tape and perform the task indicated before continuing with the recording.

You should now be ready to start the tape.
THE GUIDEBOOK CONTAINING THE DIAGRAMS
AND EVALUATION GUIDES
FOR THE MODULE
BEGINNS ON THE NEXT PAGE.

PLEASE START THE TAPE.
TRANSACTIONAL ANALYSIS WORKSHEET #1 EVALUATION GUIDE

S

"What you say, Henry?' Hank asks, reaching for the oars. 'You want me to take it across?'

T The old man shakes his head and takes up the oars himself."

"Hank is the first to break the painful current of the stare. Dropping his eyes, he grins warmly and attempts to pass off the tension by reaching out to playfully squeeze the boy's kneebone. 'What ya say, bub? You going to like New York for a home...?'

T "Mmm, wait, I--"

S "She's a brute, she is. She got my house last winter an' my barn this, by gum. Swallered 'em up."

r/s 'So you wouldn't recommend my building here waterside?'

r 'Wouldn't recommend or wouldn't not recommend, neither one. Do what you please. I just tell you what I seen. That's all."

"He ... found Viv behind a tarpaper fruit stand on the highway, scratching estimated weights into the green rind of a pile of melons with a sharp stick: look at a melon, think a few seconds, then scratch a number."

S 'You just guess?' he asked, coming up behind. 'How do you know you're right?'

She straightened up and shaded her eyes to look at him. A lock of sorrel hair was sweated to her brow."

T 'I'm generally pretty close,' she said."

"Lee had smiled at the man's uncontrolled frustration and then had laughed out loud at the cool and Christian way his big brother had fished him back into the boat and asked sympathetically as a patient policeman might question a hysterical child, did Leslie want to go wet into town like a rat fished from the well? Or did he want to be toted back across for a change into different clothes? 'Because we'll sure wait on you, Les, if you want to go back up to your place and get into a dry outfit; whatever you say. ...'"

"The little man thrashed ecstatically about the front of the boat, jerking his torn face from side to side in a frenzied attempt to miss nothing. Hand and Lee turned to share a brief grin of amusement behind his knotted back."

"'I could still turn around and go back,' I reminded myself. 'I could still do that.'"

S 'What's that?' asked the man sitting across the aisle from me, an unshaven sack of odors that I had not noticed before. 'What's that you say?'

T 'Nothing. Excuse me' I was just thinking out loud."

"
"'I dream like the dickens, predictions an' everything.'
To prove his point he let his head drop back to the pillow on
the seat and closed his eyes. He grinned broadly--'You'll
see'--his lips slackened, parted, and in another minute he was
snoring and muttering away. 'Ya must not buy that place from
Elkins. Mark this well ...' Great God, I thought, looking
at the yellow grillwork of this new dragon, what have you
come back to?"

"At the foot of the stairs Hank stopped; his eyes lifted to
mine for an instant--'Uh ... Lee ... I wish I could of been
there.' I didn't say anything; in that quick click-and glitter
of lifted eyes I saw a hint of more than guilt, more than con-
trition.
'I really wish there'd been something I could of done.' Meaning:
Was there?
'I don't know, Hank.' Meaning: You did enough."

* Lee is reacting to the scene which he observes; he is not
responding as we speak of it in terms of transactions.
"His big brother" provides a transactional stimulus to
"Les" but the excerpt does not include a transactional re-
sponse.

** The man who "dreams like the dickens" might be thought of
as providing two stimuli, one while he was awake and another
to someone in his dream. However, neither transaction is
completed because no one responds to him.

On the other hand, the narrator could be thought of as
accepting the whole scene as a stimulus to his inner self
to which he responds: Great God. ... But this is not the
kind of exchange or interaction commonly meant by "transaction."
PHYSICAL AND VERBAL CLUES FOR THE THREE EGO STATES

**Parent Physical Clues**
- furrowed brow
- pursed lips
- pointed index finger
- head-wagging
- the "horrified look"
- foot-tapping
- hands on hips
- folded arms
- wringing hands
- tongue-clucking
- sighing
- patting another on the head

**Parent Verbal Clues**
- once and for all
- always (do, be)
- never (do, be, say)
- evaluative, judgmental words:
  - stupid
  - naughty
  - ridiculous
  - disgusting
  - shocking
  - asinine
  - lazy
  - nonsense
  - absurd
  - poor thing

The clues listed above are typical Parent gestures. There are other Parent gestures peculiar to one's own Parent. Also there are cultural differences. Absolute words are often indicative of the Parent ego state because it is a state closed to new data and information.

**Child Physical Clues**
- tears
- quivering lip
- pouting
- temper tantrum
- high-pitched voice
- whining voice
- rolling eyes
- shrugging shoulders
- downcast eyes
- teasing
- delight
- laughter
- hand-raising for permission to speak
- nail-biting
- nose-thumbing
- quirming
- giggling

**Child Verbal Clues**
- baby talk
- I wish
- I want
- I dunno
- I gonna
- I don't care
- I guess
- when I grow up
- mine is bigger than
- biggest
- better than
- best
- compulsive use of superlatives

Since the Child's earliest responses to the external world were non-verbal, the most readily apparent Child clues are seen in physical expressions of emotions.

Physical and Verbal Clues for the Adult Ego State, p. 9.
Adult Physical Clues

- straightforward face
- tilted head sometimes when listening
- curious expressions
- intense absorption of interest
- excited expressions (facial) mirror
- insights and discoveries
- versatile facial expressions

Adult Verbal Clues

- why
- what
- where
- when
- who
- how
- how much
- in what way
- to what extent
- comparative
- true
- false
- probable
- possible
- unknown
- objective
- I think
- I see
- it is my opinion

The word which might best characterize Adult physical behavior is alertness which is evidenced by continual eye movement, responsive changes in facial expressions, and composed body movements. Adult verbal clues indicate information processing and information evaluation. Adult use of evaluative words strives for precision and is often carefully qualified. Easy and ready use of evaluative words is most often Parent expression of judgment based on automatic, unexamined standards inherited from the past.
TRANSACTIONAL ANALYSIS WORKSHEET #2 EVALUATION GUIDE

Parent Verbal Clues Which Indicate State is Closed to New Information:
- once and for all
- always
- never
- and other such terms as: absolutely, final, totally, positively

Parent Physical Clues Which Indicate Standards Have Been Violated
- furrowed brow
- head-wagging
- "horrified look"
- foot-tapping with head action
- hands on hips
- tongue-clucking
- sighing
- and other prohibitive behaviors

Physical Clues of the Uninhibited Natural Child
- tears
- temper tantrum
- delight
- laughter
- giggling
- and other spontaneous actions which reveal freedom from restraint and complete unconcern for what "others might think"

Physical Clues Which Clearly Express the Adapted Child
- quivering lip
- pouting
- whining voice
- shrugging shoulders
- downcast eyes
- hand raising for permission
- nail-biting
- nose-thumbing
- squirming
- and other learned behaviors which indicate a tension or compromise between natural feelings and imposed expectations

Difference Between Parental and Adult Use of Evaluative Words

Adult: I am shocked—the person expressing the evaluation owns that the shock is a person experience resulting from the fact that the action violated some standard the person holds.

Parent: Your actions are positively shocking—the statement expresses an absolute judgment or criticism about the person's actions indicating that the actions were objectively wrong or bad.
Mr. Barlow: You didn't make it to class again last Tuesday night, did you, John?

John: You keep quite a close check on me, don't you, sir.

Betty: Mrs. Jackson certainly didn't use much tact in telling Laura about the change of schedule this morning.

Sally: Tell me when that woman ever uses tact with anyone but the higher-ups.
RULE ONE:

When stimulus and response on the P-A-C transactional diagram make parallel lines, the transaction is complementary and can go on indefinitely.

RULE TWO:

When stimulus and response cross on the P-A-C transactional diagram, communication stops or takes a totally new turn.
Mr. Barlow: You missed class again last Tuesday night, didn't you, John?

John: Yes, I did. The transmission went out on my car and I can't make bus connections down here after 6:30 in the evening.

Betty: Mrs. Jackson certainly didn't use much tact in telling Laura about the change of schedule this morning.

Sally: Was Laura hurt by something Mrs. Jackson said to her?
TRANSACTIONAL ANALYSIS WORKSHEET #3 EVALUATION GUIDE

Transaction #1

Mrs. Roberts: Her duty is home with the children.
Mrs. Daniels: She obviously has no sense of duty.

Transaction #2

Instructor: Mary, do you have trouble finding a way to class?
Mary: No, I have a ride. My trouble is that my babysitter doesn't always show up.

Transaction #3

Instructor: Mary, do you have trouble finding a way to class?
Mary: No, I have a ride. My trouble is that my babysitter doesn't always show up.

Transaction #4

Center Director: Larry, for God's sake. I've never seen anyone handle a situation so stupidly.
Larry: I can't help it. That man ticks me off every time he opens his mouth.

Instructor: I don't care what you do tonight. I'm tired of trying to find something to please you.
Joe: As far as I'm concerned this is the stupidest waste of time I can think of and they told me it would be great.
TRANSACTIONAL ANALYSIS WORKSHEET #5 EVALUATION GUIDE

Transactional #1

Mrs. Roberts (Parent): Her duty is home with the children.

Mrs. Daniels (Adult): I don't know the circumstances very well.

or

Money problems may be forcing her to take a job.

or

Does she have small children under school age?

or

She seems to need a change.

or

Any question or comment concerned with the real facts in the situation.

Transactional #2

Center Director (Parent): Larry, for God's sake, I've never seen anyone handle a situation so stupidly.

Larry (Adult): I should have been more careful. I know that I tend to lose my temper with that man.

or

I'm sorry if I seemed too brusk with him, sir. But his constant whining is only encouraged by a gentle approach.

or

Do you think I was too curt with him?

or

Any question which would invite the Center Director to make a precise criticism or suggestion.

Transactional #3

Instructor (Adult): Mary, do you have trouble finding a way to class?

Mary (Child): Anything you could do about it if I do?

or

What's that question supposed to mean?

or

Just because you can walk out of the house whenever you please doesn't mean that everyone else can. I have two small children at home that need a mother or a babysitter.

or

Any response that is packed with emotion, hurt or guilt.
Transaction #4

Instructor (Child): I don't care what you do tonight. I'm tired of trying to find something to please you.

Joe (Parent): It's your duty to find something that will help me.

or

You're the poorest excuse for an instructor I can imagine.

or

You always act like it's my fault. You haven't been able to teach me one decent thing since I've been coming here.

or

I could be pleased with anything worth my time. But you have tried to make me sit through the most ridiculous lessons that a child would be bored with.

or

Any comment that finds fault with the instructor, that criticizes him or the program, that expresses standards or expectations of the instructor.
More About Transactional Analysis

Popular, Easy Reading


More Technical Reading


The following paper can be obtained upon request from S. Kathleen McGuire, School of Education, University of Massachusetts, Amherst, Massachusetts, 01002:

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