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## Development and Validation of an Instructional Program To Teach Observational and Recording Skills in Behavior Modification

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and  
GERALD DAVID HECKER

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Development and Validation of an Instructional  
Program to Teach Observational  
and Recording Skills in Behavior Modification

by

Gerald D. Hecker, Darlene L. Adams

A joint dissertation submitted in partial fulfillment  
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Psychology

Approved:

UTAH STATE UNIVERSITY  
Logan, Utah

1975

### Acknowledgements

The writer wishes to express his sincere appreciation to Dr. Michael DeBloois, Dissertation Chairman, and Dr. Glendon Casto, Committee Chairman, for their encouragement and personal contributions in the preparation of this dissertation. Acknowledgement is also made to the members of the dissertation committee, Dr. Marvin Fifield, Dr. David Stone, and Dr. Devoe Rickert for their advice and encouragement during the development of this dissertation.

A special thank you is extended to Mr. Bill Cottle whose help in the preparation of the media program was invaluable. Also a thank you to Liz McGill, Rich Harward, Bill Larsen, and Carmen Borrowman who helped in many of the technical and clerical aspects of the program. And last, but certainly not least, a very special thank you to my great and good friend Darlene Adams, without whom many things would not be possible.

Gerald D. Hecker



## Acknowledgements

I wish to express my deep gratitude to Dr. Michael DeBloois, Dissertation Chairman, and Dr. Glendon Casto, Committee Chairman, for their professional guidance and extensive personal support of this dissertation. Acknowledgement is also extended to the committee members, Dr. Marvin Fifield, Dr. David Stone, and Dr. Devoe Rickert for their useful comments and advice.

My most sincere appreciation is expressed to Gerry Hecker whose encouragement and cooperative work allowed this dissertation to be completed and to be a true joint accomplishment. Thanks, also, to Bill Cottle for his priceless contributions regarding media, to Carmen Borrowman and Noreen Merritt for their diligent secretarial work, to Tom White and Denny Burns for their excellent editorial assistance, and to Liz McGill for her time and helpful suggestions in the development of the program components.

Finally, a special thank you to my daughter, Susan, whose endurance and sacrifices were an invaluable contribution to the completion of this dissertation and to my years of educational experiences.

Darlene L. Adams

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## Abstract

Development and Validation of an Instructional  
Program To Teach Observational  
and Recording Skills in Behavior Modification

by

Gerald D. Hecker, Darlene L. Adams

Utah State University, 1975

Major Professor: Dr. Glendon Casto  
Department: Psychology

A multimedia program for teaching observational and recording skills was developed and validated using a modified research and development model. The program consisted of two slide carousels (192 slides) with accompanying cassette tape and workbook and three super-sound 8 mm cassettes with accompanying manual and monitor's guide. These materials are available through the Instructional Media Center of the Exceptional Child Center, Utah State University, Logan, Utah. The model employed two phases to determine program effectiveness. Phase I was concerned with the development and formative evaluation of program materials and procedures. In Phase II the program was validated under field conditions.

The effectiveness of the program was determined by comparing experimental and control groups on post-criterion test scores. The participants also filled out a questionnaire rating various aspects of the program.



Validation of the program was conducted at the Utah State University Exceptional Child Center. Four Special Education and one Psychology classes were used for the main field test. The sample population was randomly selected from class roll lists of the accessible population and consisted of 40 subjects, 20 assigned to the experimental group and 20 to the control group.

Each experimental subject was assigned to two sessions in order to complete the program, each session being approximately 1½ hours in length. The sessions were a maximum of four days apart, and for the majority of students were completed within a 24-hour time period.

The hypothesis that the experimental group would have significantly higher posttest mean scores than the control group was tested. An F value of 129.38 was significant at the .001 level for the total program. These results support the hypothesis. On the Student Feedback Form the program was rated overall at 4.93 on a five-point scale as being highly interesting, of value to them, and an efficient way to present this material.

The subjects reached criterion on the data collecting tasks presented. It was concluded from the post-criterion test and the feedback form results that this multimedia program was effective in teaching the basic concepts of observing, defining, and recording behavior.

## CHAPTER 1

### Introduction

#### General Statement of the Problem

Behavior management is of demonstrated effectiveness for children with problems of a physical, academic and an emotional nature (Brown and Elliot, 1965; Chadwick and Day, 1971; Wolf, Risley and Mees, 1964). Because behavior management techniques are effective, many approaches have been designed to teach these skills. One method of training these skills is through the use of programmed materials. Many of the training programs available, however, are global in nature, exposing the student to broad principles and theory rather than to the specific techniques necessary to implement a behavioral change (cf. Becker, 1971). Most of these programs are in printed form requiring the student to translate the principles set forth into applied specific procedures, but without providing the actual practical experience to make this transition.

One program to train parents of severely retarded children in behavior management has combined principles and theory with a practicum experience rather than relying on students to intuitively learn from principles and theory alone (Latham, 1972). This program used a



multimedia approach which shows promise as a systematic means of presenting this material. Once developed it usually requires less of the professional's time in actual instruction than more traditional methods, such as lecture and demonstration.

Latham's (1972) program possesses the positive qualities of multimedia; however, it covers a broad content area in behavior management and is directed toward a highly specific audience of parents of retarded children. What is needed is for more people to be reached with a less broad content area being covered. This could be accomplished by narrowing the skill range to a few carefully delineated basic and necessary behavior management skills and broadening the audience by directing the teaching to students who work with children in several of the behavioral science fields.

In analyzing the sequence of skills which leads to the systematic modification of behavior, Bachrach (1962) stressed measurement as the initial skill to be learned by the behavior manager. Measurement, which includes the skills of objective definition, observation, and recording techniques is basic because it provides a description of events and a way of quantifying them so that experimental manipulation and/or behavioral intervention may be employed (Kunzelmann, 1970).

The programs reviewed which have sections to teach measurement techniques (Anderson, Hodson, Jones, Todd,

Walters and Gregersen, 1972; Favell, 1973; Jackson, Della-Piana and Sloane, 1973; Brown and Presbie, 1974) were in the experimental stage and had not been adequately validated. In the product development model it is essential to field test the product under conditions as similar as possible to those in which it will be used (Borg and Gall, 1971).

A validated self-contained instructional package teaching the skills of observing, defining and recording behavior could be used in conjunction with graduate as well as undergraduate child practicum courses. The problem was that there was a lack of validated, self-instructional, multimedia training programs to teach observing, defining, and recording skills to students working with children.

In response to the above problem, the present study was proposed to develop and assess the effectiveness of an instructional package teaching selected observational and recording skills for behavior management. Utilizing a systems model, which is presented on page 22, four basic steps were delineated and will be discussed in the following chapters.

Chapter 2. (A) Carefully define the problem through the literature review, and (B) Specify objectives, purpose and hypotheses of the study.

Chapter 3. Outline and carry out the procedures to develop and assess the program.



Chapter 4. Report, analyze, and discuss the results of testing the program.

Chapter 5. Summarize and make conclusions and recommendations regarding the study.

## CHAPTER II

### Review of the Literature

This study was concerned with developing and testing a systematic multimedia program designed to train graduate and undergraduate students in defining, observing and recording skills in behavior management. This approach was an alternative to having specially trained personnel instruct students in these skills.

Part I of this review concentrates on the need for these measurement skills while Part II presents the current practices in teaching behavior modification. Part III discusses a systems approach to teaching measurement skills in behavior management, and Part IV is concerned with student training via multimedia.

#### Recording Behavior

A primary concern in a behavior modification program is observing, defining and recording behavior. Powers and Osborne (1972) maintained that in studying behavior it is not possible to deal with events that are inherently nonobservable and unmeasurable. Bachrach (1962) stated that observation and measurement are meaningful ways of (a) providing a description of events, and (b) quantifying them so that experimental manipulation may be achieved.

Sidman (1960) considered obtaining a baseline measurement of performance a prerequisite to "any manipulative study." He stated that in order to describe any



behavioral changes produced, the baseline from which they occurred must be specified. Otherwise insoluble problems of control, measurement, and generality are created.

When a baseline is kept of the occurrences of relevant responses, the effects of the procedures designed to modify these responses can be assessed. An important aspect of the behavior modification approach is that direct observation procedures are carried out over numerous time samples (Hamerlynck, Handy and Mash, 1973). According to Reese (1966), a continuous response record allows for the measurement of the effects of any variable introduced. When changes are not in the desired direction or to the desired extent, procedures can be modified immediately.

Sulzer and Mayer (1972) have observed that if data are scored objectively and procedures modified as a result of the analysis of the data, a behavior modification system has the major advantage of lending itself to the accountability process. Lipinski and Nelson (1974) pointed out that this emphasis on the systematic collection of objective data differentiates the behavior therapist from other types of clinicians.

Thus, by learning the important initial skills of observing, precisely defining and recording behavior, the behavior therapist is able to describe and quantify events as well as measure the effects of any variable

introduced. This method of collecting data has the added advantage of making its users accountable for their results.

### Teaching Behavior Modification

Training in behavioral techniques has taken many forms from lecture series through individualized self-instructional modules. Training may be divided into two general areas: theory, and practice. At the university level instruction in behavior modification is usually geared toward theory (Lloyd and Knutzen, 1969; Sheppard and MacDermot, 1970), while in the field, instruction is often designed for specific application.

Traditional strategies in teaching principles and theory typically consist of a lecture and discussion format. However, specific course outcomes are generally not articulated to the student by the instructor according to Hustuff (1973). Bandura (1969) stated that in many of these courses, the supervisor instructs the learner on how to implement selected change procedures but fails to demonstrate or arrange for the practical application of these procedures.

Instruction in behavior modification based only on principles and theory appears to have little effect on proficiency at the practical level. Gelfand, Elton, and Harmon (1971) found that therapists functioned at an inefficient level when their only training was to read



Patterson and Gullion's (1968) handbook and attend a minimum of one workshop on behavior modification. This was evidenced by the low proportion of occasions in which the therapists correctly reinforced the children during baseline. When the investigators added a feedback portion via videotape and gave the therapists praise for appropriate behaviors, the therapists' performances improved markedly. It was concluded that instructions alone were not sufficient to produce appropriate and effective behavior but that explicit, detailed training is required to provide therapists with behavior modification skills.

An increasing number of investigators are combining theory and practice for students. Gardner (1970) compared the effects of role playing and lectures on training proficiency and knowledge of behavior modification. He found that role playing resulted in greater training proficiency and lectures resulted in greater knowledge. The combination of role playing plus lectures resulted in high knowledge, high proficiency, and greater generalization.

A study by McKeown (1973) investigated the effectiveness of four methods of instructing teachers in principles of behavior modification: (1) laboratory group and manual; (2) laboratory group only; (3) written manual only, and; (4) no information group. Results show that the laboratory group subjects (groups 1 and 2) increased knowledge



compared to the no laboratory subjects (groups 3 and 4), and that the laboratory experience in combination with written manual were superior to any of the other methods.

Panyon and Patterson (1973) found that showing a 3-minute videotape of an experienced trainer modeling the actual behavior modification techniques they wanted the paraprofessional to learn resulted in 37% higher proficiency than the instruction only and video playback only. Based on the findings of the first study, a second study was conducted that investigated the effects of training via live modeling vs. a 20-minute film vs. 4 hours of lecture, discussion and programmed instruction materials. Both the film and live modeling were found to be far more effective training tools than the four-hour lectures and programmed instruction materials.

Other investigators (Ayllon and Azrin, 1964; Buel, 1970; Hopkins, 1968; Madsen, Becker, and Thomas, 1968) have also found that instructions alone were not effective as the sole means of changing behavior. Cohen, Goldiamond, Filyscazk, and Pooley (1968) reported that the most effective method of training students uses both instruction and theoretical and practical application of that subject matter.

In a review of training programs in behavior modification that included both theoretical and practical subject matter, Gardner (1972) stated that most of the training



in behavior modification procedures reported, while successful, made use of a one-to-one intensive contact between the consultant and the student. He observed that such an expenditure of professional time is costly.

Because of this expenditure of professional time, educational techniques which are used by larger numbers of people without a great expenditure of professional time are to be preferred. Walder, Cohen, Breiter, Dastou, Hirsch, and Leibowitz (1969) offered three alternate approaches to one-to-one contact. These approaches were large didactic groups, small groups, and structured laboratory controlled environments in the natural setting.

Approaches to saving the expenditure of professional time in teaching behavior modification procedures have included manuals and kits in a programmed instruction format (Patterson and Gullion, 1968; Becker, Engelmann and Thomas, 1971; Anderson, Jones, Hodson, Todd, Walters, and Gregersen 1972; Brown and Presbie, 1974). However, there appears to be a lack of research on the effectiveness of teaching behavior modification through programmed instruction of these types. Gardner (1972) has noted that:

Despite the close relationship of behavior modification, programmed instruction, and the experimental analysis of behavior, there has been a dearth of studies utilizing these techniques to teach behavior modification. Thus, while there are programmed texts in behavior modification, there is no evidence to indicate the efficiency or effectiveness of this approach (p. 150).



In summary, instructions alone are not sufficient to train behavior managers (Cohen, Goldiamond, Filysczak, and Pooley, 1968). The most effective training techniques combine theory and practical application (Gardner, 1970). Effective methods to accomplish this include laboratory experience and written manual combined (McKeown, 1973) and film or live modeling (Panyon and Patterson, 1973). These methods, although effective, are often based on a one-to-one relationship between trainer and trainee (Gardner, 1972) and thus are quite expensive.

Programmed instruction is a promising alternative to this costly use of professional time. Programmed manuals and kits are available; however, there is a lack of research on the effectiveness of these methods in teaching certain behavior modification principles and skills. The present study was designed to provide some of this information.

#### A Systems Approach

Valentine (1971) pointed out that regardless of the instructional techniques employed, teaching would be ineffective and the total learning system would be inadequate if the objectives were not transferable to the real world. Valentine advocated the use of a total process in a learning-system design in order to ensure adequacy of transfer. The President's Commission on instructional technology reflected this comprehensive approach to systems design when it defined instructional



technology or the overall concept of programmed instruction as:

A systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on findings from research in human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction. (Commission on Instructional Technology, 1970, p. 5).

Lindvall and Bolvin (1967) listed the principles that make up the important aspects of a learning-systems design process:

1. There needs to be a clear and specific definition of the objectives or terminal behaviors pupils are expected to achieve.
2. The behaviors should be analyzed and sequenced in a hierarchical order.
3. The instructional content of the program or learning tasks needs to be sequenced in a series of small increments so that the student can proceed on an individualized basis with little outside help.
4. The student is to be started at the level at which his present ability and achievement indicate he is functioning and allowed to move on from that point.
5. The student is permitted to move independently and learn at a rate best suited to his abilities and interests.
6. Each step in the learning sequence requires active involvement and response on the part of the pupil.
7. The program provides for rather immediate feedback to the student concerning the adequacy of this performance. This feedback provides a monitoring function for the learner and the teacher and may serve as a reinforcement for correct responses.



8. The program is subject to continuous study and can be regularly modified from available evidence concerning student performance. (Lindvall and Bolvin, 1967, pp. 230-232).

These principles of programmed instruction and/or systems design allow reproducibility of the instructional environment. This makes possible re-examination and possible remodification of the program in order to improve instruction. Gerlach (1967) pointed out that because programmed material is designed and presented in a way which will lead to intended outcomes via behavioral objectives, a specified learner behavior is produced. If the outcomes are not attained, then instruction can be revised on the basis of learner feedback (Morgan, 1970). Hawk (1971) suggested that instructional technology has demonstrated that information for individualized instruction can be mediated. However, in reviewing the literature and materials presently available, it can be seen that programmed learning as a means of individualizing instruction in behavior modification is still being presented almost exclusively in textbook form, with the potential for audio-visual aids remaining essentially untapped.

#### Multimedia Approach

It is possible to present information via several media within a flexible system such as an audio-tutorial systems approach. Torkelson (1968) stated that media should serve a particular function in the learning



process and be chosen with the following criteria in mind.

1. A wide knowledge of what is available in media to assist learners.
2. A thorough understanding of the qualities of the particular medium as it contributes to the learning experience. (Torkelson, 1968, pp. 4-5).

Wells, Mondfrans, Postlethwait and Butler (1973)

investigated the effectiveness of various media and conditions in presenting specific concepts. They tested the rate of learning visual and temporal concepts through three different visual media: movies, slides and sequential still pictures. They found that movies and slides were more effective than still pictures in printed format for presenting concepts of motion. The authors stated that concepts involving time were best presented with a medium which allowed continuous presentation. Further testing was recommended using other media such as tape recordings (video and audio) that also provided continuous presentation.

Since films offer ways of presenting information such as concepts of motion and time which are not possible in a programmed textbook, their use could aid in producing a superior program. According to Gagné (1965) the superiority of moving pictures lies in the fact that they greatly extend the range of stimulus situations that can be brought to the learner. They can also be effective in communicating to the learner the kind of terminal performance expected.



Maccoby and Wilson (1957) stated that a viewer enhances his learning of actions on film by reproducing these actions during the showing of the film. This is supported by Bandura (1962) who found that once a modeled response has been learned it can be effectively stabilized and strengthened through practice or overt rehearsal of the response. Overt responses to a film could be made on a separate sheet of paper, following the information and directions in the film (Gerlach, 1967).

Many characteristics of self-instruction, such as task analysis, overt responses in successive approximations to meet criterion, and immediate feedback are highly amenable to the motion picture format. Gerlach (1967) suggested that the motion picture has tremendous potential for individualized instruction; however, in spite of these possibilities there are few films available which require an overt response which must meet a performance criterion.

In summary, the primary skills of observing, defining and recording behavior are important. Traditionally these skills have been taught through courses that emphasize either theory or practice. Teaching of theory and practice together is the most advantageous approach; however, this requires a great deal of professional time. One method that would require less professional time in teaching the combination of theory and practice is a multimedia instructional systems approach. Evidence is



lacking on the effectiveness of multimedia programmed materials that teach measurement skills, although there are several practical advantages to this method or approach. Concerning the saving of the professional's time, Dick and Gallagher (1972) found that by systematically following each step and using continuous feedback for adaptations in designing a graduate level course there was considerable savings in time spent interacting with students, while the course indicated excellent student performance. Secondly, the initial cost of developing, validating and disseminating such a designed program constitutes the largest expenditure of money that has to be made. Since less man hours are used to teach in the conventional way, as the number of students that use this program increases, therefore, the cost of training per course or per student decreases (Dick and Gallagher, 1972). Finally, careful design and planning utilizing a systems approach can result in the merging of theory and practice in a more effective program. Thus, the use of systems techniques can help to cut costs, avoid time losses, facilitate communication and increase operating efficiency (Ryan, 1972). In addition, feedback into the system can serve to bring about adjustments before errors or losses are sustained.

Using a systems approach for multimedia programming also allows for reproducibility of the instructional environment. Multimedia, specifically film, is more



effective than the printed format in presenting skills which involve the concept of motion (Wells, et.al. 1973). By using film or motion pictures, situations which could only be depicted through motion can be simulated; then students could be required to use the recording skills being taught. Because intended outcomes or goals in multimedia programming are stated as behavioral objectives, specified learner behavior is produced.

The final test of learning recording skills is the efficiency with which the student can actually record behavior. The degree to which this can be accomplished depends upon skills developed through both theory and practice. The systems design has been suggested as a potentially effective method for developing and validating the programming of a multimedia instructional package for teaching students the primary skills of observing, defining and recording behaviors. Although the reasons for or advantages of this approach are numerous, evidence was lacking on the effectiveness of such multimedia programmed materials that teach these skills in behavior management.

#### Purpose

A careful review of the behavior management literature confirmed the absence of validated multimedia training packages to teach students measurement skills. Thus, the purpose of this study was to develop and assess



the effectiveness of an instructional package on observational and recording skills for behavior management.

### Objectives

Given this general purpose, then, the specific objectives of this study were:

1. To develop and test a slide-sound unit on observing and defining behavior plus four techniques to record behavior.

2. To have students who complete the slide-sound unit be able to answer correctly at least 80% of the items on a written posttest.

3. To develop and test a film unit which would demonstrate recording techniques and would include a posttest via film requiring the student to collect data from the film.

4. To have students complete the posttest films and collect data with 80% accuracy or better.

### Experimental Hypotheses

In light of these objectives, the following were hypothesized:

1. Students in the experimental group using an instructional package on observation and recording skills for behavior management will have significantly higher mean posttest scores than students in the control group as determined by a written post-criterion measure of

observing, defining, and recording skills and concepts.

2. Students in the experimental group using an instructional package on observation and recording skills for behavior management will have significantly higher mean posttest scores than students in the control group as determined by a film-presented, post-criterion measure of recording skills.

### Affective Goals

In addition to the stated experimental hypotheses, the affective goals of this study were:

1. The instructional slide package on observational and recording skills for behavior management will be rated as an effective means of presenting measurement skills as assessed by students' responses on the Feedback Form.

2. The Simulated Practical Experience via film will be rated as an effective means of presenting recording skills as assessed by students' responses on the Feedback Form.



## CHAPTER III

### Procedures

The sequence of steps used in the development and field testing of the multimedia program followed an instructional development systems model, adapting the basic models presented by Briggs (1970), Baker and Schutz (1971), White (1972), Gagne and Briggs (1974), and Thiagarjan, Semmel and Semmel (1974). Briggs (1970) describes the systems model as follows:

Systems models deal largely with "pre-designed" instructional-instruction prepared and packaged in advance of classroom use. This, in itself, implies that the objectives of instruction are determined in advance, and that methods, media and materials are selected and designed to meet these objectives. (p. 1)

The stages and sequence of this adapted model which were followed in the present study are presented in Figure 1. A two-phase approach was followed in employing research and development (systems) model. Phase I was concerned with the development and formative evaluation of program materials and procedures. In Phase II the program was validated under field conditions. Normally, a research and development model follows the steps through the final field or validation test. Due to the resources available for this study, however, it was delimited to the conducting of the first major validation test.

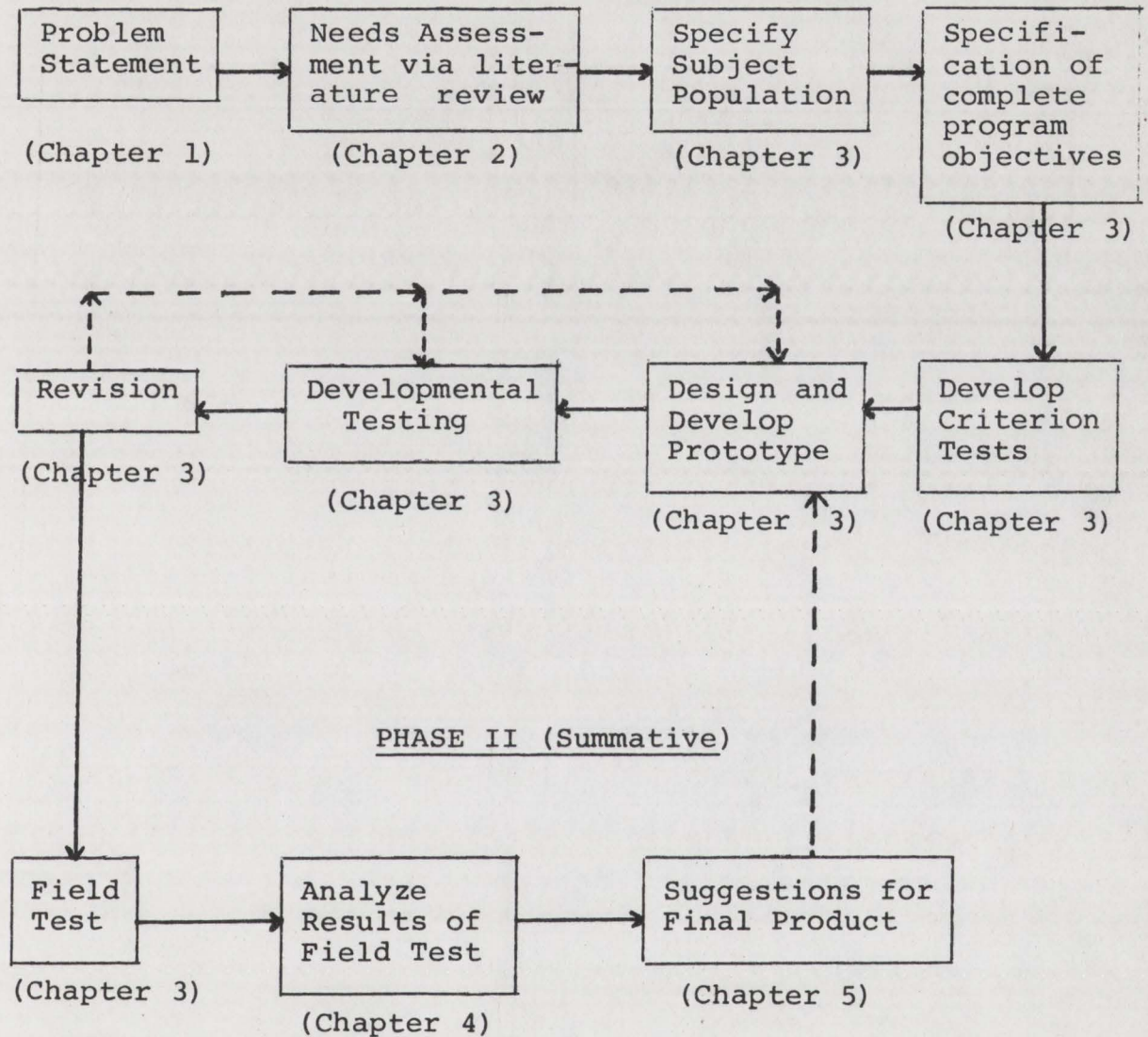
PHASE I (Formative)

Figure 1. Development and validation model



The first stage in this model began in Chapter I with a statement of the problem. Chapter II included a needs assessment through a review of literature. This section also provided a source of concepts and materials to be incorporated in the new product. Chapter II concluded with a statement of the purpose and objectives of this study. The remaining stages, as shown by the model, are presented in Chapters III, IV, and V.

Chapter III, Procedures, consists of a detailed description of the procedures followed in both the formative and summative phases of this study. The results of the validation test are presented in Chapter IV. Also included in this chapter is a section on the attainment of the affective goals as shown by the subjects' Feedback Form. Finally, Chapter IV shows the results of the ten subjects who completed the program to control for experimenter bias. All of the results are discussed in this chapter, including the relevance of this study to other experimental studies.

Chapter V consists of a brief summary of the study, conclusions and a listing and discussion of recommended revisions for the program.

#### Phase I

After stating the problem and reviewing relevant literature concerning this problem, Phase I required specifying the population, specifying program objectives,



developing criterion measures, designing and developing the prototype, developmental testing, and revision in order to prepare the program for validation testing.

Population. The subjects selected for the program development and preliminary field testing possessed varying degrees of sophistication in behavior modification and varying levels of education. The population description is as follows:

1. Two specialists in behavior management who had taught this subject for at least one year and had had at least four years experience in applying behavioral principles in the clinical setting.

2. Three graduate students in Child Psychology who were in at least their third year of graduate work and who had had at least one year's clinical experience in applying behavior management principles.

3. One graduate in his second year of training in Communicative Disorders who had taken courses in the application of behavior management skills.

4. Two Special Education majors who had completed at least one practicum where they were required to work with children using observing, defining and recording techniques, as well as other behavior management skills.

5. A professor in Instructional Technology who had had extensive experience in programmed instruction, as well as teaching experience in behavior management principles and skills.



6. Four undergraduates with varying majors who had had little or no experience in either programming or behavior management skills.

Objectives. The terminal program objectives for the subject were:

1. To be able to formulate in writing a precise behavioral description.

2. To be able to state precisely in writing the rules of observation which have been broken.

3. To be able to select the appropriate data recording technique.

4. To be able to collect data using the appropriately selected data recording technique.

These objectives were considered met when 80% of the subjects reached the criterion of 80% correct on the posttest.

Developing Posttest Measures. The post-criterion test consisted of two parts: a written test covering the slide-sound unit and a second part presented via film, in which the student had to choose the appropriate recording technique and record data using this technique. Once the objectives were written, they were subjected to objective analysis. Subject matter experts, including instructors in recording skills and advanced graduate students teaching these skills were consulted in order to establish the number and kind of items in terms of objectives for each topic. Content validity was built



into the posttest from the onset through this method of choosing appropriate items.

Sixty test items were devised from the program objectives and concepts. These were submitted to the experts in behavior management skills to check for clarity and ambiguity; suggestions for rewording and additional alternatives were requested. From the pool of items 30 were selected by the experts and the experimenters to be the posttest items and the written test was constructed.

This test was then given formally to the students in the formative phase before they completed the program and was revised according to the results and their comments and feedback. Only two of these subjects passed the test at the 80% correct criterion level which indicated it did discriminate to some degree, overall; however, the subjects' comments showed that the test required some revisions.

One criterion for item analysis was that if 75% of the subjects were able to answer an item before they completed the program, it was eliminated (Borg and Gall, 1971); three items met this criterion and were eliminated. Two other items were eliminated because they were not thought by the subjects to be representative of the objectives. One item in the observing section was changed to incorporate the rules of observing by having the subjects list rather than identify these rules. The



wording of several items were altered slightly for clarity. After the subjects completed the program and took the revised form of the posttest, at least 80% of them reached the criterion of being 80% correct.

The types of items chosen were deliberately constructed so that the test would only take 10-15 minutes to complete. Because of this time factor longer problem-solving and higher level concepts were difficult to construct. However, an attempt was made to follow Gagne's (1965) hierarchy of learning in constructing the items and a diversity of different types of items were used (see Appendix D).

The number of items per unit was representative of the stress given to and/or length of the material presented on this area in the slide-sound program. For instance, the Time Sample Method of recording was given less stress than the Interval recording method which is much more complex. As a result of these analyses, appropriate objectives and their referent criterion items emerged for the program. The final written posttest consisted of 24 items which were administered to the field test subjects in the summative phase of the program.

According to Popham and Husek (1971) the general procedure for validating criterion-referenced measures is a judgment based on the test's relevance to the objectives as defined by the criterion. Concurring with



this validation approach to criterion referenced measures, Cox (1971) added that validity depended upon the correspondence of the test items with the objectives to which the test referenced. The validity and reliability of a criterion-referenced mastery test can be best assured, then, by careful test preparation. That is, by following the above outlined steps to obtain content validity (Gronlund, 1973).

The film portion of the posttest consisting of four, three-minute 8 mm film sequences was developed along with an accompanying student manual to assess the recording and observing competencies of the student. A monitor showed the film on a Sound-Super 8 mm projector.

A subject feedback form was also prepared in order to obtain the subject's opinion on the effectiveness of the program. This form included six items to be rated on a five-point scale and two open-ended questions asking for suggestions on how to improve the program (see Appendix C). Suggestions gathered from this form during the preliminary or developmental testing were incorporated into the product prior to the field testing.

The Prototype. Once the objectives were written and the criterion items prepared, work was begun on the design and development of the prototype (i.e., the sequence of steps in development). Preparation of the instructional program included the following:



1. Writing the scripts for the slide-sound presentation.
2. Recording the sound-tape of the scripts.
3. Selecting and developing the appropriate slides to accompany the sound tape (192 slides).
4. Developing the subject workbook with specific section objectives, summary pages, exercises and data sheets for the slide-sound unit.
5. Developing the written posttest and subject feedback form.
6. Shooting and editing the 12 three-minute films for the Simulated Practicum Experience.
7. Developing the subject manual for the films with specific objectives, instructions and accompanying data sheets.
8. Developing the Monitor's Guide for presentation of the film unit.

The curriculum of the entire program consisted of two units: the Slide-Sound Unit with workbook, and the Simuated Practicum Experience with accompanying manual.

A. Slide-Sound Unit. The sound portion of this unit was divided into four sections: Defining the Behavior, Rules for Observing, Recording Data and Four Techniques to Record Data. The entire sound portion was recorded on cassette tape and was 43 minutes long. Including the accompanying exercises and slides the average time to complete this unit was 100 minutes. The



student was instructed on the tape to periodically stop the tape and complete the workbook exercises. Music, which faded in and out, signaled the beginning and end of each section.

The slides complemented the sound-tape by presenting portions of the content as well as providing visual illustrations and models of the program content. One hundred ninety-two slides were presented on a Kodak carousel which was manually operated. This system was designed to be self-instructional but for the purposes of this study the carousel was operated by a monitor.

The workbook accompanying this unit was composed of specific unit objectives and exercises designed to meet the objectives.

B. Simulated Practicum Experience. Unit 2 consisted of 12 three-minute super 8 mm films and an accompanying student manual. The films were taken at the Exceptional Child Center and the Edith Bowen Laboratory School. In each of the first four films the data collector was shown recording data using each of the recording techniques presented in the slide-sound unit. The behavior to be recorded was defined on the film and in the workbook.

In the second set of four films the subject was given a predefined behavior for each film participant and the appropriate recording method to use. The subject was then required to record data using each of the four methods.



In the post-criterion set, the third set of four films, the subject was given a predefined behavior in the manual and four, 15-second film clips demonstrating these behaviors. The subject was required to indicate the most appropriate data collecting technique for each of these behaviors and collect data using these techniques.

The manual for this unit listed objectives, behavioral definitions and the appropriate recording method to use for the first eight films and the behavioral definition for the last four films. It also included all necessary data sheets for use in this unit. Stopwatches and pencils were given to the subjects to use in recording.

Developmental Testing. Preliminary field testing was conducted at the Exceptional Child Center, Utah State University, where the program would eventually be used. In order to obtain as much student feedback and observational data as possible, the two experimenters worked closely with the students throughout this testing. Each student was interviewed individually during the field test. These interviews focused upon specific problems and program deficiencies as well as suggestions for improvement. At the end of the program and posttesting the students completed a Subject Feedback Form regarding the program. As Borg and Gall (1971) recommended, the specific criticisms and suggestions obtained during this preliminary field test led directly to changes and improvements in the program.



Besides observational and test data, the following questions were focused on specifically:

1. Which objectives of the training were not accomplished?
2. Which items gave the students undue difficulty?
3. What problems were there with the media and administration of the program?

Revisions. After the preliminary testing, all data were compiled and analyzed by the experimenters who then used these results to make revisions in the program. The following revisions were made in the slide-sound portion of the program.

1. The number and frequency of the exercises were substantially reduced, as it was apparent that the exercises came too frequently and many were redundant. The final exercise in the program was eliminated due to its length.

2. Some of the exercises were consolidated into larger groupings in order to eliminate the continual starting and stopping of the audio tape.

3. Additional pictorial slides were added to replace word slides to increase visual interest.

4. Music was added which functioned as a stimulus signaling the beginning and ending of each section.

The Simulated Practicum Experience required the greatest number of revisions. These revisions, which were based on the verbal feedback and data taken from



the feedback form during the Developmental Testing phase, were primarily in terms of simplification and clarification. The following revisions were made:

1. The post-criterion set of films originally had the subjects define the behavior they were going to record, as well as choose the most appropriate recording technique to use. This proved to be too large a task for the subjects. This was revised so that the behavior was specified and the subjects had to choose only the correct data recording method and record data using that method.

2. It was found that the film test needed more explicit instructions to the subjects both in the manual and on the film. The film was edited and a new sound portion was added to include the instructions. The manual was also revised completely with the data sheets for the final test being paper-clipped to the manual so that they were not in a predetermined order and could be more easily handled. A stopwatch was supplied to the subjects for data collection.

3. Explicit directions were given on the film as well as in the workbook for all three film levels.

4. All pertinent information for level 2 films were filled in for the subjects as this required an unduly long period of time and was irrelevant to the task of data collecting.



5. The film was stopped prior to each new section to allow the subjects time to fill in their sheets appropriately.

6. Additional time was allotted to allow the subjects to familiarize themselves with their stopwatches.

## Phase II

This phase included the validation field test, results of the field test and suggestions for the final product.

Population. The accessible population for the main field test consisted of students enrolled in four classes in Special Education and one class in Psychology at Utah State University, as follows:

### Special Education:

- 301 Education of Exceptional Children
- 621 Assessment of Complex Learning Disorders
- 622 Education of the Emotionally Disturbed Child
- 623 Education of the Socially Maladjusted Child

### Psychology:

- 110 Human Development - General

The Psychology class and the 301 Special Education class were comprised of mostly undergraduates while the students in Special Education 621, 622, and 623 were approximately 87% graduates and 13% seniors and sophomores. Several of the students in the study were in two or more of the 600 series Special Education classes.

The sample population for the validation phase was randomly selected by a table of random numbers from the



class roll list of the accessible population. It consisted of 40 subjects: 20 were assigned to the experimental group and 20 to the control group. The demographic data for the sample population are presented in Appendix F. The mean age for the experimental group and the control group was 28.0 years and 27.6 years respectively. The class standing for the control group was 60% graduates and 40% undergraduates while for the experimental group it was 85% graduates and 15% undergraduates. Each group consisted of 13 females and seven males. Special Education was the major field of most students (experimental = 10, control = 13), with Psychology, Elementary Education and Communicative Disorders each having one to three majors included in each group. The remainder of majors listed only once were in various fields, such as Social Work, Health Physical Therapy, English, etc.

For the validation testing, evaluation of the program was conducted under field conditions. The complete program was eventually presented to all 40 subjects at the Exceptional Child Center, Utah State University, Logan, Utah. Each subject completed the posttest and feedback form after individually completing the program.

Experimental Design. The Posttest Only Control Group Design as presented in Campbell and Stanley (1963)



was used and is diagrammed in Figure 2. The additional  $X_2$  and  $O_3$  designate the administration of the program and posttest to the control group after the Posttest Only Control Group Design was completed.

Each subject within each of the four classrooms was randomly assigned to either the experimental or control groups using a table of random numbers. The experimental group then completed the instructional program and films and were administered the posttest. The control group also took the posttest as specified by the Posttest Only Control Group Design described in Campbell and Stanley (1963).

Since the program was part of the class assignment for both the experimental and control groups, the control group completed it and then took the posttest again after the experimental design procedures were finished. The data on the second posttest for this group were not used in analysis of the data although data from the control group's two posttests are reported in terms of gain scores and standard deviations.

Each subject was assigned to two sessions in order to complete the program, each being approximately  $1\frac{1}{2}$  hours in length. These sessions were a maximum of four days apart, and for the majority of students were completed on the same or the following day. In the first session the subjects were given a workbook and asked to read the general introduction and objectives presented



Experimental Group

R	X <sub>1</sub>	O <sub>1</sub>
---	----------------	----------------

Control Group

R		O <sub>2</sub>	X <sub>2</sub>	O <sub>3</sub>
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Where R = Random Assignment  
of Subjects

O = Posttest

X = Instructional  
Program

Figure 2. Experimental design

in the workbook. They were then shown the slide-sound unit and completed the workbook exercises as instructed on the tape. The written posttest, which was a measure of the subjects' mastery of principles and concepts taught in the unit, was administered immediately after the end of this unit. The subjects then viewed the film series and completed the film posttest. The scores from the written and the film-presented tests comprised the total posttest.



## CHAPTER IV

### Results and Discussion

#### Results

Introduction. The experimental design used for the summative phase of this study was the Posttest Only Control Group Design (cf. Campbell & Stanley, 1963). In this design the experimental subjects were presented with the treatment or program and were then posttested on this material. The control group received only the posttest. By randomly assigning students to both groups and then posttesting the control group who did not receive the treatment (program) and the experimental group who did receive it, internal validity was ensured. The posttest data were then statistically analyzed using a one-way analysis of variance. These posttests' data were also broken down into subsections so that the effectiveness of each different part of the program could be analyzed. The means and standard deviations for each of these dependent measures were also determined.

Further data were collected in this study by an addition to the design in that the control group also completed the program, after first taking the posttest. This group then retook the posttest and the data from these two posttest are reported as gain scores. Data were also gathered from the Student Feedback Form



regarding interest, value of the program and its efficiency using a rating scale of one to five (five being the most positive).

Means and Standard Deviations. Table 1 shows the means and standard deviations of the experimental and control group for each of the following dependent measures which together make up the total posttest score or sum of all three dependent measures: (1) Written test; (2) Choosing the Correct Data Collecting Technique; and (3) Scoring the Data Correctly. It can be seen that mean scores for the experimental group on both the Written Test and on Choosing the Correct Data Collecting Technique were approximately double the mean scores of the control group. The experimental group's mean score for Scoring the Data Correctly was over four-fold greater than the control group's and nearly three times as great on the total posttest score. That the experimental group scored proportionally much higher than the control group can also be seen by comparing the percent correct for the experimental and control groups. These data show the mean total posttest score for the experimental group (97% correct) is 262% greater than that of the control group (37% correct).

Posttest Data. The posttest data were analyzed using a one-way analysis of variance between the experimental and control groups for each of the same dependent measures



Table 1

Means, Standard Deviations, and Percent Correct of the Experimental & Control Groups for Each of the Following Dependent Measures: Written Test (25 points possible), Choosing the Correct Data Collection Technique (100 points possible), Scoring the Data Correctly (100 points possible), and Total Score (225 points possible).

Dependent Measure	Group	Mean Raw Score	Standard Deviation	Percent
Written Test	Experimental	22.9000	1.6512	88
	Control	12.0500	3.6343	48
Data Collecting Technique	Experimental	100.0000	0.0000	100
	Control	51.2500	30.8594	49
Scoring the Data Correctly	Experimental	95.0000	10.2598	95
	Control	21.2500	23.3326	21
Total Score	Experimental	218.1500	10.9847	97
	Control	84.5500	51.3661	37

shown in Table 1: Written Test, Choosing the Correct Data Collecting Technique, Scoring the Data Correctly and the Total Score which is the sum of these three dependent measures. It can be seen from Table 2 that the results of all three subsections of the posttest and the total posttest scores are significant at the .001 level.

In summary, the data show that the Instructional Slide Unit of the program as well as the Simulated Practicum Experience were effective in teaching students both concepts and skills in observing, defining, and recording behavior in behavior management.



Table 2

One-Way Analysis of Variance Between the Experimental and Control Groups for Each of the Following Dependent Measures: Written Test, Choosing the Correct Data Collecting Technique, Scoring the Data Correctly, and Total Score

Dependent Measure	Source of Variance	df	SS	MF	F
Written Test	Between	1	1177.23	1177.23	147.76*
	Within	38	302.75	7.97	
Data Collecting Technique	Between	1	23765.70	23765.70	49.91*
	Within	38	18093.80	476.15	
Scoring Data Correctly	Between	1	54390.60	54390.60	167.44*
	Within	38	12343.80	324.84	
Total Score	Between	1	178490.00	178490.00	129.38*
	Within	38	52423.80	1379.57	

\* At 1 and 38 degrees of freedom, an F value of 13.29 is required for significance at the .001 level, N = 20.

Gain Scores. Since completion of the program was part of the class assignment for all subjects in the experiment, the control group completed it also. It was possible, therefore, to compute the mean gain scores from the first administration of the posttest given to the control group before the program and the second administration given when they completed the program. The mean raw scores on each of the two posttest administrations for the control group are shown in Table 3. The highest score possible on the total posttest was 225 points. It can be seen that the mean of the first administration was 84.55 and the mean of the second administration was 215.35. Thus, the mean gain score for the control group on the posttest was 130.80 points, which is a 58.13% gain. In addition, the control group's posttest mean of 215.35 after completing the program (Table 3) was equal to the experimental group's mean of 218.15 (Table 1).

Feedback Form. It was felt that in addition to the objective data obtained, subjective responses to various aspects of the program would be valuable and were requested from the subjects on the Subject Feedback Form. This form requested that the subject rate the program regarding the effectiveness of the slide-sound unit, the workbook exercises, the movies, the multimedia approach and the potential application of the program in a practical situation.



Table 3

Mean Raw Scores and Total Percent Gain of the Control Group on the First and Second Administration of the Posttest, Including All of the Dependent Measures. Points Possible are 225

<u>Subject</u>	<u>Mean Raw Score Before Program</u>	<u>Mean Raw Score After Program</u>
1	86	223
2	65	224
3	136	225
4	38	222
5	91	224
6	91	224
7	57	193
8	35	225
9	59	222
10	84	222
11	31	221
12	115	222
13	162	221
14	162	224
15	6	224
16	195	225
17	63	197
18	89	223
19	115	123
20	<u>11</u>	<u>223</u>
Total Mean Scores	84.55	215.35

Total Raw Mean Score after program = 215.35

Total Raw Mean Score before program = 84.55

Total mean points gained 130.80

Total Percent gain = 58.13%

The Feedback Form statements were rated on a five-point scale (1 being the lowest and 5 being the highest) from No to Yes and Low to High. An arbitrary minimally acceptable standard was set which required that 80% of the responses fall at 4.0 or above. Since all subjects in both the experimental and control groups actually did complete the program, the results of the rating scale for all 40 subjects are reported. The responses to the statements are summarized in Table 4 which lists separately (a) the experimental and control groups' mean responses, as well as (b) the combined groups' average response for each of the questions.

It can be seen from this table that for each question both the experimental and control group met the 80-80 criterion for all of the questions. No rating by either group was less than 4.50, with the highest combined rating by both groups being 4.93 on the question which rated the instructional value of the program.

In addition to the mean score for each question on the Feedback Form, the overall group means for the experimental and control groups separately and the total groups' means are summarized in Table 5. Five points were arbitrarily assigned to each question, thus making a high rating score of 30 points possible. With the criterion for acceptability set at 80%, an overall mean



Table 4

Mean Responses for the Experimental and  
Control Group for Each of the Six Statements  
From the Subject Feedback Form

Statement	Means		
	Experi- mental	Control	Average
1. Slide-sound unit clear and informative	4.80	4.90	4.85
2. Workbook exercises relevant to slide-sound materials	4.95	4.95	4.95
3. Movies a good way to present behaviors so that they could be defined, observed, and recorded	4.80	4.95	4.88
4. Effectiveness of multimedia approach vs. lecture method	4.60	4.85	4.73
5. Potential for application of skills learned in a prac- tical situation	4.50	4.70	4.60
6. Rating of the instructional value of the program	4.85	5.00	4.93

Table 5

Mean Responses for the Experimental and "Control Group" After Treatment for all Six Statements From the Subject Feedback Form Combined. Thirty Points are Possible

Group	Number	Mean
Experimental	20	28.5
"Control" after treatment	20	29.3
Both groups together	40	28.9



rating of 24 or better indicated that the students rated the program positively. Table 5 shows that each group separately and both together met the criterion of 80% or a mean of 24 points or better on all six Subject Feedback Form statements combined.

The 40 subjects also wrote comments on the points that were valuable to them as well as suggesting changes to improve the program. The points or topics most frequently commented about by the subjects which were valuable to them are listed in rank order below:

1. The new ways or methods to collect data.
2. The explanation and differences of the various recording methods.
3. Practice choosing appropriate methods.
4. Practice in actually collecting data using the realistic practicum situation.
5. Learning to be specific and giving them clearer understanding of data collecting methods.

Experimental Bias. Besides the forty subjects who were in the field test, ten additional subjects completed the program under the same field conditions, but with a monitor other than one of the experimenters running the equipment. These subjects were randomly chosen from the class list of Special Education 301, Educational

Characteristics of the Mentally Retarded Child, in the Winter of 1975. The class was taught by the same instructor as in the Summer, 1974 and the demographic characteristics of the students were essentially the same as the summer students from this class who were in the field test. These demographic data are presented in Appendix G.

The ten subjects who completed the program with a different monitor also completed the total posttest. The criterion level for competency on the written part and on the film-presented part of the posttest was 80-80, the same as for the field test subjects. Table 6 shows the subjects' raw scores and the percent correct on these two parts which comprise the posttest. It can be seen that the criterion of at least 80% of these subjects attaining a score of at least 80% correct was met on both the written part and on the film-presented part of the posttest. A breakdown of the posttest in the form of Mean Raw Scores, Standard Deviations and Mean Percent Correct is given in Table 7.



Table 6

Raw Scores and Percent Correct for Ten  
 Subjects Who Completed the Program Independent  
 of the Experimenters for the Written and  
 Film-Presented Parts of the Posttest, and  
 the Total Posttest. Points Possible:  
 Written - 25, Film-presented - 200,  
 Total - 225, Criterion Level is 80-80

<u>Subject</u>	<u>Written Test</u>		<u>Film-presented Test</u>		<u>Total Test</u>	
	<u>Pts.</u>	<u>Percent</u>	<u>Pts.</u>	<u>Percent</u>	<u>Pts.</u>	<u>Percent</u>
1	22	88.00	175	87.50	197	87.56
2	25	100.00	200	100.00	225	100.00
3	21	84.00	200	100.00	221	98.22
4	24	95.00	100	50.00	124	55.11
5	25	100.00	175	87.50	200	88.89
6	22	88.00	200	100.00	222	98.67
7	24	95.00	200	100.00	224	99.56
8	24	95.00	200	100.00	224	99.56
9	20	80.00	200	100.00	220	97.78
10	24	95.00	100	50.00	124	55.11

Table 7

Mean Raw Scores, Standard Deviations and Mean Percent Correct for the Ten Subjects Who Completed the Program Independent of the Experimenters for the Written and Film-Presented Parts of the Posttest, and the Total Posttest. Points Possible: Written - 25, Film-presented - 200, Total - 225

Dependent Measures	Mean Raw Score	Standard Deviation	Percent Correct
Written test	23.10	1.73	92.40
Film-presented test	87.50	21.03	87.50
Total posttest score	198.10	40.31	88.05



## Discussion

Post-Criterion Test Results. The program was designed to teach the principles and concepts of defining, observing and recording skills, as well as the practical application of these concepts. The two hypotheses stated that the experimental group would have significantly greater posttest mean scores than the control group on both the written part of the posttest and the film-presented post-criterion measure. These hypotheses were supported and show that the program was successful in accomplishing its goals of (a) teaching measurement skills in behavior management, (b) using as little professional time as possible, and (c) reaching a broad audience. Since this program was self-instructional and used slide-sound, film and workbooks as its media, students could work individually at their own speed.

The simulated practicum experience allowed the students to use the skills learned in simulated practical situations where "live" subjects were depicted with motion and sound. Thus, one of the drawbacks of traditional teaching, that of little, if any, on-the-spot application of skills learned was overcome by this program.

Attitude Toward the Program. The two affective goals were concerned with the instructional slide portion and the simulated practicum experience of the program and stated that the students would rate these as effective



means of presenting measurement skills. Student responses were assessed by their responses on the Subject Feedback Form. The feedback obtained from the subjects via the Feedback Form indicated that they had a highly positive attitude toward the program overall. The fact that the subjects' attitude or opinion of the program was so positive is vitally important when the actual potential use by both instructors and students is considered. That is, if the program successfully taught the necessary behavioral skills but failed to be interesting and liked by those using it, it is unlikely that it would be incorporated by the instructors into their courses or used by the students in the most effective way.

The subjects rated the slide-sound unit as valuable and the material included in the workbook exercises as helpful in giving them practice in the basic concepts of defining, observing, and recording behavior. This rating was reported by the subjects to be due in part to the media selection which included a large number of silent movie era slides, as well as background music. The subject feedback also indicated that this was a novel and interesting way of presenting material.

The inclusion of Sound-Super 8 mm movies in a guided simulated practicum experience proved to be a successful way of providing relevant practice in the



direct application of principles and concepts presented in the slide-sound, workbook portion of the program. Since in the second set of films the subjects practiced obtaining data using the four data collecting techniques, they received the needed practice for the final set of films which was the criterion test.

Although the Super 8 mm projector was managed by a monitor for the purposes of this study, the simplicity of the machine and its film-contained cartridges lends itself to use by the students themselves. Close supervision should be kept on the Super 8 projector maintenance, however, since some breakage of film did occur during the completion of the program for the final subject. A second machine also displayed small malfunctioning problems during the splicing and repair of this film for the administration to the ten subjects who completed the program without the experimenters present.

The subjects felt that the instructional value of the program was high and that the principles and concepts presented in the program would be useful in applying these skills to practical situations. Many of the students asked whether they could keep their workbooks for future reference and use. They were informed that these would be mailed to them after the data were analyzed, but several students contacted the experimenters prior to mailing, saying they were now in a practical situation, i.e., student teaching, and wanted the data sheets and information



given them in the program. Since not only teaching the principles and concepts but also having the students use the skills in a practical situation was a prime goal of this program, it appears that the students were satisfied and this goals was reached.

Relationship to Previous Studies and Programs. As Valentine (1971) pointed out, a total learning system would be inadequate if its objectives were not transferable to the real world. He advocated the use of a total process in a learning systems design in order to ensure adequacy of transfer. The results of the present program indicate that there was adequate transfer from the principles and concepts to real-life situations in the form of the simulated practical experience.

This practicum experience also supports Bandura's (1962) findings that once a modeled response has been learned it can be strengthened through overt rehearsal of the response. In the present study the responses desired were modeled in the first series of four movies; in the second series of movies the students practiced these responses, and in the last series they were tested to determine if they had learned the responses. The data show that 100% of the experimental students chose the correct data collecting technique and 95% of them scored the data correctly in the practicum situation.



The entire program was comprised of films, which constituted the simulated practicum or the laboratory experience, as well as a written manual or workbook to accompany the slide sequence. Since the results of the two parts of the posttest, both the written and films, are highly significant, they support McKoewn's (1973) findings that a laboratory experience plus a manual is a superior method to teach behavior management.

In addition, the use of the multimedia approach to programming in behavior management, as suggested by Latham (1972), was rated by the participants as an effective means of presenting the program. By directing the program toward a more broad audience in several fields of the behavioral sciences, this study provided a needed addition to studies being done in these fields.

Finally, the extent of experimenter bias was considered to be minimal or nonexistent since at least 80% of the ten subjects who went through the program completely independent of the experimenters reached the 80% correct criterion level on the posttest. Although the 80-80 criterion was arbitrarily chosen, it is widely used and has been suggested as an adequate criterion level for evaluating treatment effectiveness (Briggs, 1970).

In summary, the data indicated that by completing the program, the subjects achieved the established competency levels in the specific skills established by the program. The data suggest that the program is an

effective method of training students in the behavioral sciences in skills of defining, observing, and recording in behavior management techniques. This study's findings are related to and support the data from several previous studies and programs. Also, the students' feedback show that they felt the program was interesting and would be useful to them in a practical situation.



## CHAPTER V

### Summary, Conclusions, and Recommendations

#### Summary and Conclusions

Introduction. Programs in observing, defining, and recording in behavior management are often inadequately designed so that they: (a) do not include a combination of theory with sufficient and applicable practice, (b) take an inordinate amount of the professional's time, and (c) are not applicable to a broad audience of participants. The program to train university students in the behavioral science fields in the skills of observing, defining and recording was developed and validated to remedy these inadequacies. The purpose of the field test of this program was to determine whether the program produced criterion level test performance and positive attitudes in those who completed it.

Review of Literature. A review of literature showed that by learning the important initial skills of observing, precisely defining and recording behavior, the behavior therapist is able to describe and quantify events as well as measure the effects of any variable introduced. In learning to do this, it has been found that instructions alone are not sufficient to train behavior managers; a combination of theory and practical application was the most effective way. Effective methods to accomplish



this include a laboratory experience and written manual and film or live modeling. However, these methods involved a costly use of the professional's time. An alternative was the use of programmed instruction; however, there was a lack of research on the effectiveness of teaching behavior modification through programmed instruction. The practical advantages to a careful design and systems planning approach can results in the merging of theory and practice in a more effective program. The use of programmed or systems techniques can help to cut costs, avoid time losses, increase operating efficiency, and provide feedback into the system which allows adjustment to be made before errors are sustained.

Procedures. The systems model for developing materials for training was used in Phase I of the study. This included the development of all materials and procedures required to train both the personnel who have direct contact with the learner and anyone else who has a specified responsibility for instruction or the support of instruction. The learner outcomes were specified in advance and everything needed by the user to accomplish these specified outcomes under natural conditions was prepared. The outcomes were tied operationally to these student materials.

The development effort followed a cyclic trial-revision pattern. That continued until defined performance



criteria were attained. Learner achievement of pre-determined objectives was guaranteed by tryout-evaluation and revision of the program. Thus, this instruction materials production model was user-oriented. This model was utilized by the experimenters through a two-phase approach. In the formative phase, the program was developed through an evaluation, revision cycle and in the summative phase it was field tested to determine its effectiveness. The program consisted of a slide-sound unit and workbook and Sound-Super 8 mm films and manual, plus a Monitor's Guide and was self-contained.

The subjects used in field testing in this study were graduates and undergraduates enrolled in Special Education and Psychology courses at Utah State University. They were randomly selected to be in either the experimental or the control group.

Results and Discussion. The results of this study showed that the developed program in observing, defining and recording skills was effective in that the experimental subjects achieved the established competency levels in the specific skills set by the program. The subjects' attitude toward the program was positive, exceeding the established criterion. These results support the findings of Bandura (1962) who found that once a modeled response has been learned it can be effectively stabilized and strengthened

through practice or overt rehearsal of the response. In addition, these findings provide needed evidence as suggested by Gardner (1972), of the efficiency and effectiveness of teaching behavior modification skills through programmed instruction.

The results indicate that the use of the multi-media approach makes a program such as this one continuously available for use by the individual or in a group setting. The individual can complete the program at his convenience and at his own pace. Use of this media and the programmed instruction format also assures consistency and quality in content across students and time. Thus, the instructor knows exactly what is being taught to every student each quarter and can plan his course accordingly.

In addition, the closed-loop system used in developing and testing this program allows for revisions and further modifications whenever appropriate. Finally, through the particular media used and the feedback built into the entire program, a positive attitude toward learning the task was fostered. A positive attitude is especially essential to the effectiveness of this program when a student is required to complete it on his own and can do this in either a haphazard, non-caring manner or in a concerted, interested and enjoyable way.



## Recommendations

1. The program should be revised according to the following suggestions.

A. The film sequence should be re-shot, leaving a greater space between the film segments in order to allow more time to complete the data sheets.

B. An additional film series depicting each of the four recording methods should be added after the second series of films to give the students more practice in actually using these methods.

C. Since there were malfunctions in both of the Super 8 mm projectors used in this study, the possibility of duplicating the film sequences in some other form, such as video tape, should be investigated. Also, the relative cost of duplication of the Super 8 vs. other forms should be investigated and considered when this product is disseminated.

D. The data sheets should be printed in as complete a manner as possible to save time, e.g., names, date, etc.

E. The explanation of the answers to the exercises presented in the slide-sound unit on the tape should be eliminated.

F. More pictorial slides should be included where possible to maintain subject interest.

G. Additional explicit instructions in the workbook as to when to go on to the next page and when to stop should be included.

H. Specific instructions should be included in the Monitor's Guide to allow the students time to read the information and to become familiar with the stopwatches. Stopwatches should be uniform, when two or more people complete the program.

2. Suggested additional research is as follows:

A. When needed revisions are completed, the program should be field tested with students other than those from the specific classes which participated from Utah State University.

B. Since data collected by this study were limited to posttesting immediately following the program completion, posttest data should also be gathered after additional time has passed, e.g., four to eight weeks.

C. The program's effectiveness should be further substantiated by studies comparing it with similar programs with the same content.

D. The efficacy and efficiency of the multimedia presentation mode could be determined by comparing it with other presentation methods of the same material, such as the lecture method.

E. The program could be the beginning one in a core or series of programs teaching behavior modification skills. Programs which logically follow, such as graphing and interpretation of data, treatment strategies, reinforcement and punishment, etc. should be developed and designed to be used separately or as part of a series.



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APPENDICES



APPENDIX A

PARTICIPANT'S WORKBOOK

Defining, Observing, Recording Behavior

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This workbook is one component of a three part program containing pre-recorded tapes, 35 mm color slides and sound super 8 mm movies.



## INTRODUCTION

### Defining, Observing, and Recording Techniques

The purpose of this program is to train you in the basic skills of defining, observing, and recording behavior. These skills are prerequisite to a successful behavior management program, whether it be in the home or school setting.

This program is not intended to prepare you to carry out a complete behavioral program. Its purpose is to provide you with the skills which are the foundation of all behavior modification programs. The areas which are covered include: how to define and observe a behavior, and four techniques to record it. These techniques are the duration, tally, interval and time sample methods.

A self-paced, slide-sound presentation and accompanying exercises make up the first part of the program. This section will introduce you to the necessary concepts and will give you practice in applying this information in hypothetical situations.

The second part of this program is a simulated practicum experience which is comprised of a series of films. These films represent common behaviors which you will encounter in behavioral programs and will provide an

opportunity to apply the concepts and skills learned in part 1 to real life situations.

Before beginning the slide-sound portion of this program, take a few moments to go through the workbook. You will notice that each section begins with a statement of the objectives for that section. These objectives are the competencies you will have at the completion of the unit. Study these objectives carefully and review them at the beginning of each slide-sound section covering that section.

During the course of the slide-sound presentation you will be asked to complete facilitating exercises for each unit. Please complete them when instructed to do so. They are designed solely for your benefit as a self checking device. The correct answers always follow the exercises.

Upon completion of the slide-sound portion of the program, you will begin the simulated practicum section. This section comprised of twelve sound super-8 mm films give you practice in the use of the four data collecting methods presented. The first four films of the twelve film series are designed to be observational films only, requiring no active participation on your part. The second series of films requires you to collect data after being given the defined behavior and the correct method to use. The final four films, which are criterion test films, require you to define the behavior and collect data using each of the four data collecting



methods presented.

This workbook has been designed to facilitate and supplement the slide-tape presentation on the basic components of defining, observing, and recording behavior. It includes the objectives for each section, summary statements of the major content areas of the program, as well as supplementary exercises to be completed during the course of the presentation. If you are unclear about any of the major concept areas, please refer back to the summary pages or review the slide-sound section concerning the entire content area. Also included are sections on how to use a stopwatch, and a decision making flowchart which will help you in your choice of the most appropriate recording method.

## DEFINING THE BEHAVIOR

## OBJECTIVES:

1. GIVEN TEN EXAMPLES, YOU WILL BE ABLE TO CHOOSE THOSE THAT ARE OBSERVABLE AND THOSE THAT ARE NONOBSERVABLE BEHAVIORS.
2. GIVEN TEN EXAMPLES, YOU WILL BE ABLE TO CHOOSE THOSE THAT ARE BOTH SPECIFIC AND OBSERVABLE.
3. GIVEN THREE EXAMPLES OF NONOBSERVABLE AND NONSPECIFIC BEHAVIOR, YOU WILL BE ABLE TO REWRITE THEM SO THAT THEY ARE RECORDABLE.
4. GIVEN TWO PROBLEM SITUATIONS, YOU WILL BE ABLE TO WRITE A PRECISE AND OBSERVABLE DEFINITION FOR EACH ONE.



## DEFINING THE BEHAVIOR

Avoid labels that categorize behavior. Instead, describe behavior in a specific and precise manner.

1. The first step in defining a behavior is to determine the target behavior, which is a public and observable behavior, as opposed to private unobservable behavior.
2. The target behavior is the behavior that you decide upon to observe and record. This decision is most often made as a result of discussions with parents and teachers.
3. Use clear and simple language, being as precise and specific as possible when defining the behavior.
4. Use terms which define the behavior so that it is recordable, avoiding labels and non-specific terms.
5. Specify what the child does, so you can record the behavior.

## DEFINING THE BEHAVIOR EXERCISES

Exercise 1. Put a check mark in the blank beside the observable behaviors.

1.    \_\_\_ hitting your neighbor
2.    \_\_\_ playing in the sandbox
3.    \_\_\_ liking to read
4.    \_\_\_ daydreaming about motorcycles
5.    \_\_\_ complimenting a friend
6.    \_\_\_ hating algebra because it's so hard
7.    \_\_\_ chopping wood after school
8.    \_\_\_ running in the hall
9.    \_\_\_ logically thinking through a problem
10.   \_\_\_ feeling good about school

Turn to the next page to check your answers.



## ANSWERS TO EXERCISE 1

The observable behaviors that you should have checked in Exercise 1 are:

1. hitting
2. playing in the sandbox
5. complementing
7. chopping wood
8. running

If you did not choose the above answers as being correct for observable behaviors, turn back to the examples and re-read them. You should note that liking, daydreaming, hating, logically thinking and feeling good are not directly observable behaviors. Some examples such as daydreaming could be thought by some to be observable, however, you will note that the example reads daydreaming about motorcycles and this is definitely not an observable behavior. It also is somewhat difficult to tell when a person is daydreaming unless they report this themselves.

Please turn the cassette back on.

## DEFINING THE BEHAVIOR

Exercise 2. Put a check mark beside the behaviors that are both precise (specific) and observable.

1.    \_\_\_ Johnny leaves at least four toys not put away every night.
2.    \_\_\_ Not a day passes that Jack doesn't bully someone.
3.    \_\_\_ When given a direction or command Sam responds by asking a question or commenting negatively such as "I wasn't doing anything", "that's dumb", etc.
4.    \_\_\_ The teacher referral stated that Brian was very withdrawn and often did not talk to the other children.
5.    \_\_\_ John's teacher knew that he had changed his attitude about algebra since last week because he seemed much happier in class.
6.    \_\_\_ The teacher noted that Mark talked out only twice that day when it wasn't his turn.
7.    \_\_\_ You can always tell when Jack is bored because he gets this complete blank look on his face.
8.    \_\_\_ Mrs. Jones said that Jim was by far the most tidy of her children.
9.    \_\_\_ It was reported by Mrs. Smith that her daughter had had her feelings hurt four times today and five times yesterday.
10.   \_\_\_ If Carl weren't so neurotic, he wouldn't be such an unhappy child.



## ANSWERS TO EXERCISE 2

The answers that should have been checked for Exercise 2 are numbers 1, 3, and 6.

You will notice in these three examples that the behavior is observable and therefore recordable and that they are precisely specified so that the behavior can be counted.

If you checked number 9 because it tells precisely how many times Mrs. Smith's daughter's feelings have been hurt, that is, four times today and five times yesterday, you are partially correct. However, getting feelings hurt is not a directly observable behavior. For instance, you would have to know whether the girl cried when she got her feelings hurt, went to her bedroom and closed the door, stomped her feet, or just what behavior she did exhibit. If this were defined and these behaviors were listed specifically, then they would be recordable. However, the statement as it stands where just getting her feelings hurt is mentioned is not a directly observable behavior.

## DEFINING THE BEHAVIOR

Exercise 3. To give you practice in actually writing specific and precise behavioral definitions, please take examples number 2, 4, and 8 from exercise two and convert them into definitions which are recordable.

2. Not a day passes that Jack doesn't bully someone.

4. The teacher referral stated that Brian was very withdrawn and often did not talk to the other children.

8. Mrs. Jones said that Jim was by far the most tidy of her children.

Please turn to the next page for examples of ways that you could have written the above definitions.



## ANSWERS TO EXERCISE 3

You could define Jack's bullying behavior as:

1. shoving, kicking or hitting a child smaller than himself.
2. making verbal threats to children younger and/or smaller than himself.
3. interrupts others.
4. yells or talks loudly.

You may have thought of other examples from your own experience which would be equally correct. There are certainly several ways that it could be defined, depending on the situation.

Withdrawn is also a very widely used term and can be interpreted in different ways by different people. Possibilities in the precise description for withdrawn are:

1. does not initiate contact with others.
2. speaks too low to be heard.
3. does not answer at all when asked a question.
4. does not interact with others, but sits or plays alone.

As with the other examples mentioned above, withdrawn would have to be defined according to a certain situation and may not include some of the definitions just given or may include others that are specific to a particular environment.

For number 8, being tidy could be described as:

1. makes his bed every morning.
2. keeps shoes in the closet and clothes hung up.
3. puts away all toys before bedtime.

Turn the page to Exercise 4.



## DEFINING THE BEHAVIOR

Exercise 4. Please read the two examples and write your own behavioral description from the information given. Remember that the behaviors must be defined so that they are both precise and observable and so that they can be recorded.

Mary, a second grader, was referred because she had terrible work habits during seat work time. Describe below Mary's terrible work habits so that this behavior could be observed and recorded.

Mrs. Jackson is worried about her son, Allen, because he seems so immature and afraid for a five year old. She is concerned that he won't be able to go to first grade next year. Describe below Allen's immaturity so that this behavior could be observed and recorded.

## ANSWERS TO EXERCISE 4

Terrible work habits during seat work time could be defined as:

1. out of seat
2. talking to a neighbor
3. working on something other than the given assignment
4. doodling, drawing or sketching
5. reading when this is not the behavior that is required during this time
6. gazing around the room
7. not completing the assignment.

A description of immaturity might include:

1. talking baby talk even though he can talk at a five year old level.
2. asking for help in dressing and undressing, although he has demonstrated that he can perform these tasks.
3. stays in the same room with his mother, and moves from room to room when she moves.
4. refuses to play with children his own age.
5. cries for longer than 5 minutes when his mother leaves him at home with a sitter.
6. plays with games and toys which are for a much younger child.

This is the end of Unit 1. Please turn the cassette back on to begin Unit 2, which is general rules for observing behavior.



## RULES FOR OBSERVING

## OBJECTIVE:

GIVEN A WRITTEN PARAGRAPH, YOU WILL BE ABLE TO IDENTIFY  
THE RULES WHICH HAVE BEEN BROKEN.

## GENERAL RULES FOR OBSERVING BEHAVIOR

1. Make an initial observation in order to formulate a behavioral definition.
2. The problem category is generally predetermined by parents and teachers.
3. From the initial observation, a precise behavioral definition can be formed for recording purposes.
4. Rank order the problem behaviors in order of importance.
5. Observe and record a maximum of three behaviors at any one time.
6. Make arrangements for the appropriate time and place for the observation.
7. Be well groomed.
8. Bring all necessary supplies.
9. Discuss the problem with the school principal when applicable.
10. Carefully select your observation area.
11. Don't interact with the subject.
12. Leave at a logical breaking point, remembering to thank all personnel for their cooperation.



## RULES FOR OBSERVING

Exercise 5. List the Rules of Observation which have been broken.

Jane is a behavioral management technician who was told by her supervisor to observe a child in Mrs. Nelson's 3rd grade classroom. Since one of her courses did not meet one day, she decided to observe that afternoon. She went to the school and went directly to the classroom and introduced herself to the teacher. She indicated that she would be observing Gerry D.'s on-task and cooperative behaviors with other students. She borrowed a pencil and pad from Mrs. Nelson so that she could record the pertinent data. She then proceeded to join a reading group in which the target child was participating. So that the children would relax with her and so she would be accepted, she initiated conversation with several of the children sitting by her in the group. Jane was there for 15 minutes and then left the classroom before the reading session ended. She left the group thinking to herself that she would contact the teacher later during the week to talk about Gerry.

Rules broken:

Please turn the page for the correct answers.

## ANSWERS TO EXERCISE 5

The rules of observing that Jane did not follow are:

1. did not make arrangements ahead of time.
2. did not check with the principal at all.
3. did not bring the necessary supplies for observing and recording.
4. interacted with the children including the child she was observing.
5. left in the middle of the reading session rather than at a logical breaking point.
6. did not talk with the teacher or thank the teacher and principal.

This completes Unit 2. Please turn the cassette back on to begin Unit 3, which is the recording data.



## RECORDING DATA

## OBJECTIVE:

GIVEN FIVE EXAMPLES, YOU WILL BE ABLE TO IDENTIFY  
THOSE WHERE EITHER DURATION OR FREQUENCY RECORDING  
SHOULD BE USED.

## RECORDING DATA

The methods presented in this program focus on:

1. specific behaviors
2. the duration of a behavior
3. the frequency of a behavior

Duration=time, or how long a behavior lasts.

Frequency = number, or how many times a behavior occurs within a specified period of time.

1. The behavioral techniques presented in this program deal with specific behaviors that are observed and recorded directly.
2. The methods presented focus on specific behaviors and are concerned with the length of time a behavior takes to occur, or the number of times it occurs.
3. By defining behavior specifically then observing and recording it during the time when it is likely to occur, precise data can be obtained.
4. If you are concerned with the length of time a behavior takes, use the DURATION method.
5. If you are concerned with the number of times a behavior occurs, use the FREQUENCY method.



## RECORDING DATA

Exercise 6. Listed below are 5 situations. In the blank beside each sentence place either a "d" for duration, or "f" for frequency.

- \_\_\_\_\_ 1. The principal wants to know how many positive comments a teacher makes in an hour period.
- \_\_\_\_\_ 2. A teacher is interested in the amount of time Johnny spends talking every day in the half hour before recess.
- \_\_\_\_\_ 3. Mrs. Johnson is very busy during math period but she would like a record of the time that David actually spends working on his problems.
- \_\_\_\_\_ 4. The school counselor wants to know how often Jack hits other students during recess.
- \_\_\_\_\_ 5. Mrs. Smith is concerned about the time it takes her six-year old to get ready for school each morning.

Please turn on the cassette and check your answers.

## ANSWERS TO EXERCISE 6

1. frequency
2. duration
3. duration
4. frequency
5. duration

This completes Unit 3. Please turn the cassette back on to begin Unit 4, which will cover the 4 data collecting methods.



## DURATION METHOD

## OBJECTIVES:

1. GIVEN INCOMPLETE INFORMATION, YOU WILL BE ABLE TO FILL IN THE COMPONENTS OF THE DEFINITION OF DURATION RECORDING.
2. YOU WILL BE ABLE TO WRITE AN EXAMPLE OF WHEN TO USE THE DURATION METHOD.
3. GIVEN A PROBLEM SITUATION, YOU WILL FILL IN A DATA SHEET WITH THE CORRECT INFORMATION.

## DURATION METHOD OF RECORDING

Duration refers to the length of time that a behavior lasts within an observation period.

1. Use the duration method if it is important to know how long a particular behavior lasts.
2. To use the duration method, begin timing at the onset of the behavior, by starting the stopwatch and continue timing until the behavior stops, which gives the duration of that behavior.
3. The total time accumulated is the duration of that behavior.



## DURATION RECORDING

## Exercise 7.

1. Fill in the appropriate missing word or words in the statements below:

A. Duration refers to the \_\_\_\_\_ that a behavior lasts.

B. The duration method is used when the behavior is a problem because of its \_\_\_\_\_.

C. A \_\_\_\_\_ or \_\_\_\_\_ must be used when collecting data using the duration method.

2. Give an example of when to use the duration method.

3. Fill in the data sheet in your workbook with the appropriate information given in the paragraph below.

Billy Jones, age 3 years, 8 months, tantrums terribly at bedtime. The tantrums begin with his refusal to go to bed, and once there he cries and yells until he drops off to sleep. The observer is scheduled to go into the home and observe from 8:00 p.m. until Billy falls asleep. This is the 2nd time that the observer has gone into the home. Billy was observed from 8:00 p.m. until 9:15 p.m. Billy refused to go to bed at 8:05 p.m. and cried and yelled until 9:15 p.m. at which time he fell asleep.

When you have completed the exercises, turn the cassette recorder back on and check your answers.

## DURATION RECORDING DATA SHEET

Name: \_\_\_\_\_ Session #: \_\_\_\_\_

Date: \_\_\_\_\_

Time Observed: \_\_\_\_\_

From: \_\_\_\_\_ To: \_\_\_\_\_

Observer: \_\_\_\_\_

Place where observation occurred: \_\_\_\_\_

Target behavior defined (described): \_\_\_\_\_

Total time (Duration) of the behavior: \_\_\_\_\_



## ANSWERS TO EXERCISE 7

1. The correct answer to number 1A is length of time.

Duration refers to the length of time that a behavior lasts.

The correct work for 1B is either length or duration.

The duration method is used when the behavior is a problem because of its length or duration.

The correct words for 1C are stopwatch or clock.

2. The example you chose is correct if it made reference to the length of time of the behavior, such as the length of time that a child cried or was off-task.

3. The correct answer to number 3 is as follows:

## DURATION RECORDING DATA SHEET

Name: \_\_\_\_\_ Session#: \_\_\_\_\_

Date: \_\_\_\_\_

Time Observed:

From: \_\_\_\_\_ To: \_\_\_\_\_

Observer: \_\_\_\_\_

Place where observation occurred: \_\_\_\_\_

Target behavior defined (described): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Total time (duration) of the behavior: \_\_\_\_\_

This completes the duration recording section. Please turn the cassette back on to begin the section on tally recording.

## TALLY METHOD

## OBJECTIVES:

1. GIVEN A SITUATION, YOU WILL BE ABLE TO IDENTIFY THE COMPONENTS OF THE TALLY METHOD.
2. GIVEN EIGHT EXAMPLES, YOU WILL BE ABLE TO IDENTIFY EASILY AND READILY OBSERVABLE BEHAVIORS.
3. GIVEN EIGHT EXAMPLES, YOU WILL BE ABLE TO IDENTIFY THOSE BEHAVIORS THAT ARE OF SHORT DURATION.



## TALLY METHOD OF RECORDING

The tally method is also known as the frequency method.

1. The tally method records each separate occurrence of a behavior within a given period of time.
2. The tally method is used when the behavior is conspicuous and/or of relatively short duration.

## TALLY RECORDING

Read the example given below and circle: 1) the number of times the response occurred, and 2) the period of time over which the response was made.

## EXAMPLE

1. Johnny is a student in Ms. Smith's third grade class. Ms. Smith has observed that Johnny wads up pieces of paper and throws them across the room about two or three times every thirty minutes.
2. In the space provided below, write the two components necessary for tally recording.
  - A.
  - B.
3. Complete the following definition of tally recording:  
Tally recording is a measurement technique which involves recording \_\_\_\_\_ time a specific response occurs within a specific period of \_\_\_\_\_.

Please go on to the next page.



Tally recording is most appropriately used under the following three conditions:

1. The behavior occurs infrequently
  2. the behavior is easily and readily observed
  3. the occurrence of the behavior is of relatively short duration
4. Which of the following behaviors are easily and readily observed:
- A. tying a shoe
  - B. whispering
  - C. blinking your eyes
  - D. getting out of your seat
  - E. gazing around the room
  - F. hitting someone
  - G. looking at a book
  - H. cheating
5. Which of the following behaviors are of relatively short duration:
- A. head banging
  - B. kissing your mother
  - C. watching a baseball game
  - D. reading Gone With The Wind at one sitting
  - E. turning on a light
  - F. hitting your neighbor

Please turn the cassette back on and check your answers.

## ANSWERS TO EXERCISE 8

1. You should have circled: 2 or 3 times every 30 minutes
2. a) number of times a response occurs  
b) period of time
3. each, time
4. A, D, E, F, G
5. A, B, E, F

This completes the tally recording section. Please turn the cassette back on to begin the section on interval recording.



## INTERVAL METHOD

## OBJECTIVES:

1. GIVEN FOUR TRUE-FALSE QUESTIONS, YOU WILL BE ABLE TO CORRECTLY CHOOSE THOSE STATEMENTS WHICH ARE TRUE REGARDING INTERVAL RECORDING FROM THOSE WHICH ARE FALSE STATEMENTS.
2. GIVEN FIVE SHORT-ANSWER QUESTIONS, YOU WILL BE ABLE TO EXPLAIN WHEN TO USE THE INTERVAL METHOD.
3. GIVEN SAMPLE DATA, YOU WILL BE ABLE TO FILL OUT A DATA SHEET WITH ALL OF THE NECESSARY INFORMATION.
4. YOU WILL BE ABLE TO EXPLAIN IN WRITING HOW TO ESTABLISH AN INTERVAL SIZE.

## THE INTERVAL METHOD

The interval method records whether or not a behavior occurs during a specified interval within an observation period.

1. To use the interval method, break the observation period into the appropriate interval size.
2. Determine the interval size by the average rate of the behavior. The most common interval size ranges from five seconds to one minute.
3. The behavior is recorded only once during an interval. Therefore, you are not concerned with the number of occurrences per interval.
4. The concern is not the number of occurrences per interval, but rather, the occurrence or non-occurrence of the behavior.
5. More than one behavior can be recorded at a time by using a coding method. Remember to only record a maximum of three behaviors at any given time.



## INTERVAL RECORDING

Exercise 9. Fill in the missing word or words.

1. a. In order to use the interval method the entire observation must be broken into small \_\_\_\_\_.

b. The interval method records whether or not a behavior occurs during an \_\_\_\_\_.

2. TRUE - FALSE

T or F If a behavior begins prior to the interval and continues into the interval, it is not counted for that interval.

T or F The interval method is concerned with the number of separate occurrences of the target behavior during each interval.

T or F If a behavior stops occurring halfway through the interval, it is still counted as having occurred.

T or F It is best to leave an interval space blank if no behaviors are observed to have occurred during the interval.

Turn the page for the correct answers.

## ANSWERS TO EXERCISE 9

1. a. intervals

b. interval

2. false

false

true

false

Please turn the cassette back on.



Exercise 10. Complete the following:

1. What determines the size of the interval? \_\_\_\_\_  
\_\_\_\_\_
2. If the behavior occurs more than once consistently in each interval, that is an indication of what?  
\_\_\_\_\_  
\_\_\_\_\_
3. What should you do about it? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. If a behavior rarely occurs in a fairly large interval what should be done? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. The more frequently a behavior occurs, the \_\_\_\_\_  
the interval should be.

Turn the page for the correct answers.

## ANSWERS TO EXERCISE 10

1. How often the behavior occurs.
2. the interval is too large
3. decrease the interval size
4. switch to tally method
5. smaller

Please turn the cassette back on.





## Interval Method - Exercise 11

Joan is a problem in her 3rd grade class because of her "short attention span" especially during the group discussion period which runs from 9:00 a.m. to 9:30 a.m. daily. You, the observer, have been asked to ascertain the time she spends attending the class discussion. Attending in this case means that Joan looks at the teacher, responding to questions when asked. When Joan is not attending she is usually either annoying a neighbor or staring out of the window. You are concerned with ONLY the two categories of attending and not attending.

Since the behavior occurs at the rate of 3 to 4 times per minute, 15 second intervals are used.

You observe her for the first 15 minutes beginning at 9:00 a.m. During the first 5 minutes, she exhibits the following behaviors:

Interval 1	staring out the window
Interval 2	looking at teacher
Interval 3	looking at teacher
Interval 4	annoying her neighbor
Interval 5	annoying her neighbor
Interval 6	annoying her neighbor
Interval 7	annoying her neighbor
Interval 8	looking at teacher
Interval 9	looking at teacher
Interval 10	answering a question



Interval 11	staring out the window
Interval 12	staring out the window
Interval 13	staring out the window
Interval 14	staring out the window
Interval 15	staring out the window
Interval 16	annoying her neighbor
Interval 17	looking at the teacher
Interval 18	looking at the teacher
Interval 19	staring out the window
Interval 20	staring out the window

Fill out the data sheet on the next page of your workbook with the information supplied. When you have completed the exercise check your answers on the following page.





## Exercise 12

As you have learned in this section, more than one behavior can be recorded simultaneously using the interval method. In the exercise below, you will record data on two behaviors: out of seat, and touching. Out of seat means any time the buttocks is off of the seat and/or body is turned away from teacher. Touching is defined as any physical contact made by the subject with another person.

Remember to use the first letter of each behavior for the code.

David has difficulty remaining seated and not touching other students. Consequently, he has been labeled "hyperactive". In order to ascertain how often David is either out of his seat and/or touching other students you, the observer, observe him for two 30 minute periods each day in 15 second intervals. The data presented below represents David's behavior for the first 5 minutes of session, one which begins at 10:00 a.m. and continues until 10:30 a.m.

Interval 1	turns around
Interval 2	turns back and faces teacher
Interval 3	turns again and gets out of seat
Interval 4	walks over near another student
Interval 5	pokes student while out of seat

Interval 6	walks back to seat and sits down
Interval 7	leans over and touches person next to him
Interval 8	talks out of turn
Interval 9	gets out of seat
Interval 10	walks around room
Interval 11	walks around room
Interval 12	looks out window while standing up
Interval 13	looks out window while standing up
Interval 14	talks to another student
Interval 15	hits student
Interval 16	hits student
Interval 17	sits down in seat
Interval 18	turns around in seat
Interval 19	turns back around and faces forward
Interval 20	sits quietly reading

Fill out the data sheet on the next page of your workbook with the information supplied. When you have completed the exercise, check your answers on the following page.









## TIME SAMPLE METHOD

## OBJECTIVES:

1. GIVEN FIVE SITUATIONS, YOU WILL BE ABLE TO IDENTIFY WHEN TO USE THE TIME SAMPLE METHOD.
2. GIVEN A DATA SHEET AND A PROBLEM SITUATION, YOU WILL BE ABLE TO RECORD THE INFORMATION.

## THE TIME SAMPLE METHOD

The time sample method, which is a variation of the interval method, should be used when continuous observation of a single child is inconvenient or difficult.

1. Time sampling involves briefly observing and recording a behavior each time a fixed period of time elapses.
2. Time sampling does not record each and every occurrence of a behavior, but rather, records a relevant sample of occurrences of the behavior.
3. Time sampling should be used when observations can only be made infrequently, such as every ten or fifteen minutes.



## TIME SAMPLE

## Exercise 13

1. Complete the following statements.

- A. Time sample recording is a variation of the \_\_\_\_\_ method.
- B. A fixed \_\_\_\_\_ elapses between observations in the time sample method.
- C. Time sampling does not record \_\_\_\_\_ occurrences of behavior and therefore, provides only a sample of the behaviors being observed.
- D. Time sampling is used when \_\_\_\_\_ of a single child is inconvenient or difficult.
- E. When using the time sample method, the subject is observed at the \_\_\_\_\_ of each time interval only.

Turn the page for the correct answers.

## ANSWERS TO EXERCISE 13

1.
  - a. interval
  - b. period of time
  - c. each or every
  - d. continuous observation
  - e. end



## Exercise 14

Ms. Jenkins, a 4th grade teacher, is concerned with the progress of Frank, one of her students. Frank does not disrupt the class but he rarely is doing what he is supposed to do whether it be science, spelling, reading, etc. Ms. Jenkins decided to observe Frank's classroom behavior using the time sample method in 15 minute intervals. She sets a kitchen timer for 15 minutes and goes about her work. When the bell rings, she looks up and notes whether Frank is on-task or off-task, which is defined as working or not on the current assigned task. She begins at 9:00 a.m. and continues until the end of the day, which is 3:00 p.m. She has decided that a "+" will be the code for on-task and a "-" will be for off-task behavior. She observes the following: (Do not collect data during lunch or P.E. - put a large X for these intervals.)

9:15 a.m.	getting drink of water
9:30	reading in his group
9:45	reading in his group
10:00	walking around room
10:15	scribbling on desk
10:30	attending to teacher instruction
10:45	working on programmed math
11:00	working on programmed math
11:15	making paper airplane
11:30	staring into space

11:45	working on spelling
12:00	lunch
1:00	lunch
1:15	head on desk
1:30	P.E. - data not collected during this period
1:45	P.E. - data not collected during this period
2:00	P.E. - data not collected during this period
2:15	fiddling with pencils
2:30	fiddling with pencils
2:45	packing up books
3:00	leaves for home on bus

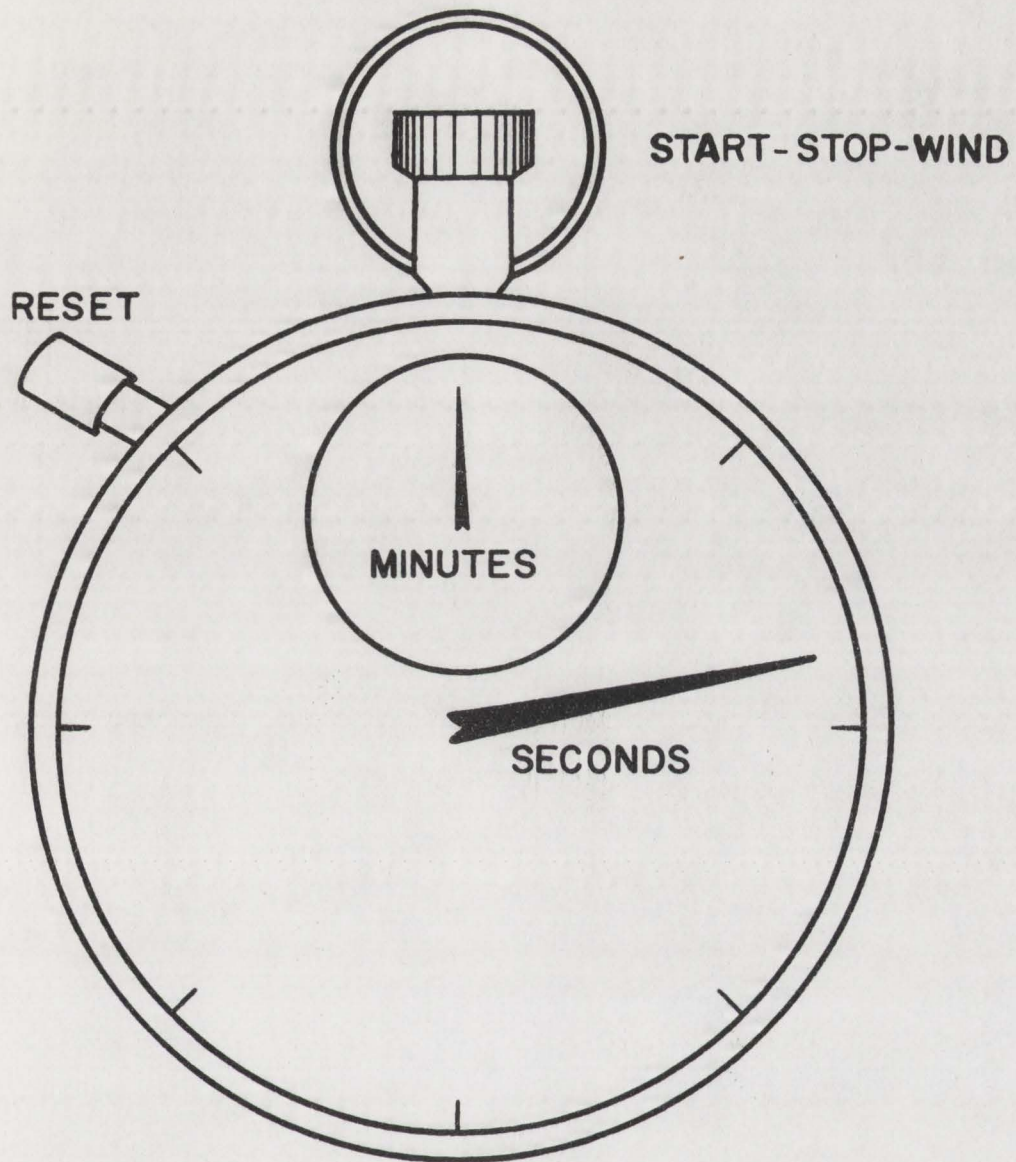
Fill out the data sheet in the next page of your workbook with the information supplied. When you have completed the exercise, check your answers on the following page.











# STOP WATCH

Figure 3. Stopwatch

HOW TO USE A STOPWATCH

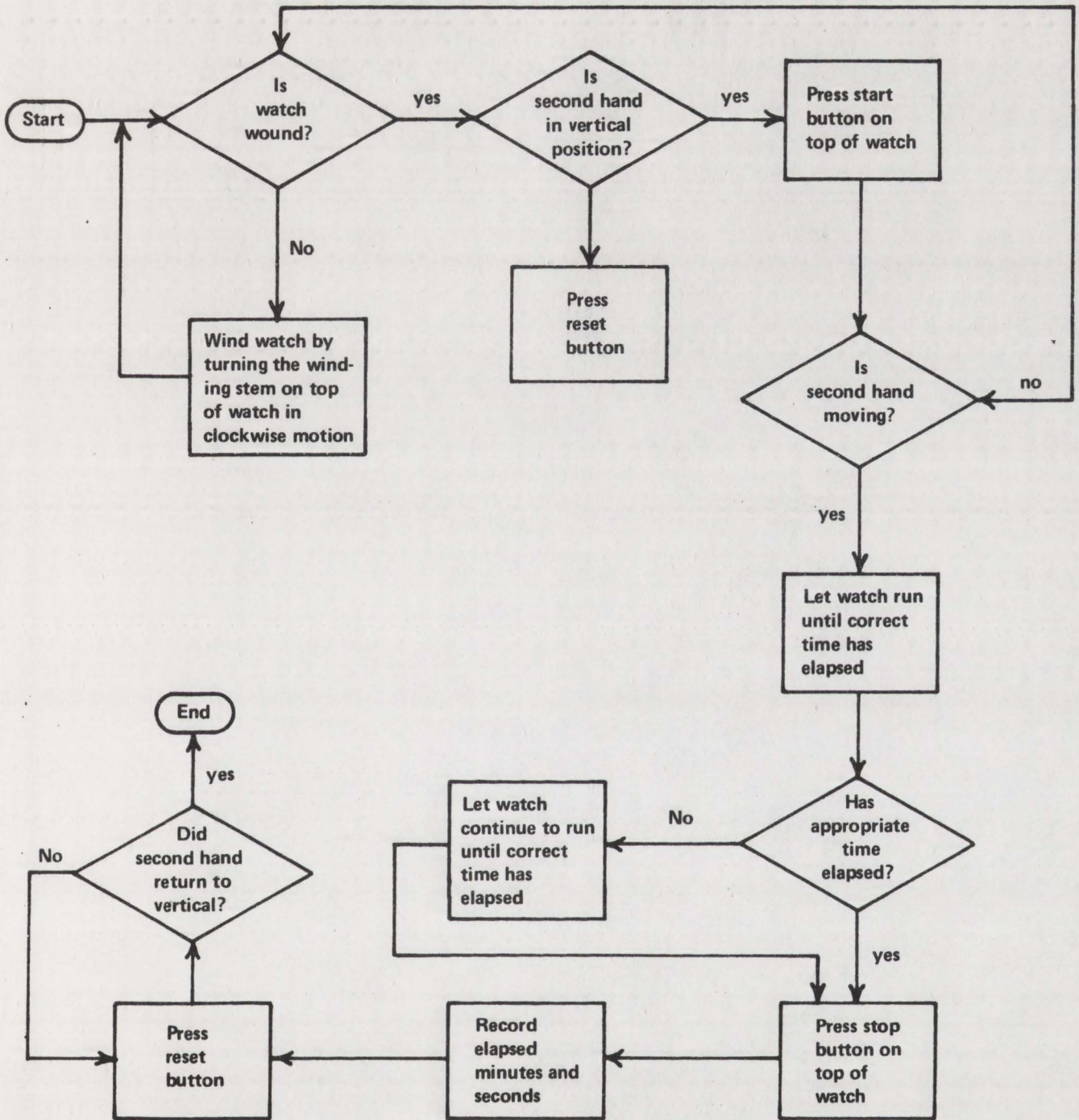


Figure 4. How To Use a Stopwatch



## DECISION MAKING FLOWCHART QUESTIONS

Listed below are a series of questions which exactly parallel the flowchart which follows. After defining and observing the behavior, these questions must be asked of yourself in order to determine which of the four data collecting techniques is the most appropriate one to use.

1. Is it easy to tell when the behavior starts and when it stops?

If the answer is YES, go on to question 2.

If the answer is NO, you cannot use the tally or duration recording method, so you must use the interval recording or time sample method.

2. Are you observing only one behavior at a time?

If YES, go on to question 3.

If NO, you cannot use the tally or duration recording method, so you must use the interval recording or time sample method.

3. Are you observing only one subject at a time?

If YES, go on to question 4.

If NO, you cannot use the tally or duration recording method, so you must use the interval recording or time sample method.

4. Does the behavior occur at a rate low enough to count reliably?

If YES, go on to question 5.

If NO, is each occurrence of the behavior usually more than two seconds long?

If YES, you use the duration method.

If NO, use the interval recording or time sample method.

5. Is each occurrence of the behavior similar in length?

If YES, go on to question 6.

If NO, is each occurrence of the behavior usually more than two seconds long?

If YES, you use the duration method.

If NO, use the interval recording or time sample method.

6. Is each occurrence of the behavior usually more than two seconds long?

If YES, use the tally, or interval recording method, if you are interested in the number of occurrences of the behavior, and use the duration method if you're interested in the total time spent at the behavior.

If NO, use the tally, interval recording or time sample method.



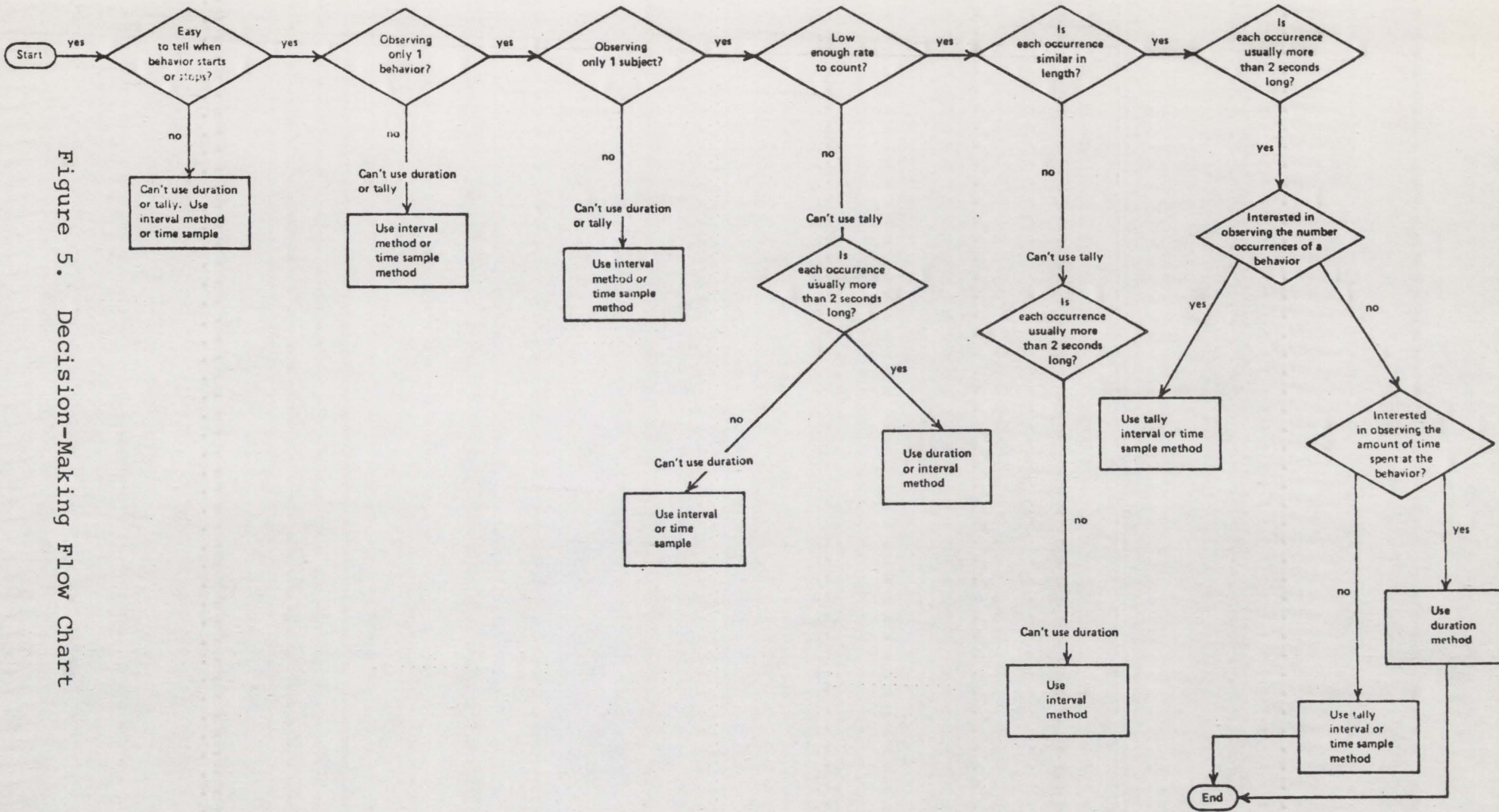


Figure 5. Decision-Making Flow Chart

## SELECTED BIBLIOGRAPHY

For those of you who are interested in the ideas and principles presented in this program, and who would like to pursue the area further, the authors provide the following list of books which might prove helpful. This list is by no means exhaustive, but rather it represents a relevant sample from which much of our material was drawn.

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Patterson, G.R. and Gullion, M.E. Living With Children.  
Champaign, Illinois: Research Press, 1971

Sulzer, B. and Mayer, R.G. Behavior Modification  
Procedures for School Personnel. Hinsdale,  
Illinois: The Dryden Press, 1972.

Tharp, R.G. and Wetzel, R.J. Behavior Modification in  
the Natural Environment. New York: Academic  
Press, 1969.

This completes Part 1, the slide-sound portion of the program. Please go to Part 2, which is the Simulated Practicum Experience portion. An instructor will aid you in the proper use of the equipment.

Thank you.



APPENDIX B

Participant's Manual

Part 2

How to Define, Observe, and  
Record Behavior

Simulated Practicum Experience

Gerald D. Hecker and Darlene L. Adams

Exceptional Child Center

1974



## PART 2

## General Instructions

1. Read through this manual completely prior to viewing the movies.
2. After you have read through the manual, the monitor will begin the films.
3. Complete section 3 and turn your data sheets in to the monitor. This is the criterion test for part 2 of the program. This information is necessary for the experimental aspects of the program.

## Necessary Equipment

1. All necessary equipment will be supplied to you. The equipment includes a stopwatch, pencils and data sheets.

## PART 2

## OBJECTIVES:

1. UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO OBSERVE A BEHAVIOR AND DECIDE UPON THE MOST APPROPRIATE DATA COLLECTING METHOD FOR THAT BEHAVIOR.
  
2. UPON COMPLETION OF THIS SECTION, YOU WILL BE ABLE TO COLLECT DATA USING A PREVIOUSLY CHOSEN DATA COLLECTING TECHNIQUE.



## SECTION 1

## INSTRUCTIONS:

This section requires no active participation on your part. Listed below is a description of each film. Read each description carefully and then view the film sequence.

	<u>SUBJECT</u>	<u>DATA COLLECTING METHOD</u>
Film 1.	Ball Catching Scotty has learned to catch a large ball. Data on the <u>number of times</u> he catches the ball is being collected using the <u>tally</u> recording method.	Tally
Film 2.	Distar Lesson/Tantrum During Nate's Distar lesson he has a "passive" tantrum. That is, he refuses to cooperate in any manner. He won't respond or make eye contact. <u>The length of</u> his tantrum is being recorded using the <u>duration</u> recording method.	Duration

## Film 3. Out-of-Seat Behavior

Interval

Rob has a difficult time remaining seated during individual seatwork time in school. Data is being collected on this behavior using the interval recording method.

## Film 4. Play Behavior

Time Sample

The teacher is interested in Robbie's play behavior. Data is being collected on this behavior using the time sample recording method.



## SECTION 2

In this section, you are required to collect data given the behavior to record, and the most appropriate recording method to use. A brief description of each film, the target behavior and the recording method to use are listed below.

<u>Description</u>	<u>Target Behavior</u>	<u>Recording Method</u>
--------------------	------------------------	-------------------------

Film 1.

Name: Nate

Tantrum

Duration

Observer: Your name

Session #: 1

Place: Nate's home

Nate is having a tantrum. This tantrum consists of hitting, kicking, biting, scratching, yelling, and non-compliance. Collect data on the length of this behavior using the duration recording method.

## Film 2.

Subject: Ms. Blaser                      Teacher                      Tally

Observer: Your name                      reprimands

Session #: 1

Ms. Blaser is interested in the number of times she reprimands her class. Collect data on this behavior using the tally method.

## Film 3.

Subject: Darrin                      Bizarre                      Interval

Observer: Your name                      hand movements

Session #: 1

Size of Intervals: 10 sec.

Darrin's bizarre hand movements consist of twisting, one or both hands, rapid clasping, pointing, waving and intertwining fingers. Hands at or near his side are not considered bizarre. Collect data on his behavior using the interval method in 10 second intervals.





## DURATION RECORDING DATA SHEET

Name: Nate Session #: 1

Date: \_\_\_\_\_

Time Observed: \_\_\_\_\_

From: \_\_\_\_\_ To: \_\_\_\_\_

Observer: \_\_\_\_\_

Place where observation occurred: \_\_\_\_\_

Target behavior defined (described) Tantrum

Total time (Duration) of the behavior: \_\_\_\_\_



Subject: Ms. Bläser

Session #: \_\_\_\_\_

Date: \_\_\_\_\_

Observer: \_\_\_\_\_

Time Started: \_\_\_\_\_

Time Finished: \_\_\_\_\_

Behavior recorded: Teacher Reprimands

TALLY BELOW







## SECTION 3

In this section you must decide on the most appropriate data recording technique, given a predefined behavior. Each recording technique should be used only once. Remember to reset your stopwatch.

The behavior is defined below for each film. Please review the definition of this behavior and once you have decided on the recording technique for that film, find the appropriate data sheet and prepare to start. The film sequence will stop between each film to make sure you have reset your stopwatch and are ready to begin.

After you have completed all four data sheets, please turn them in to the monitor. Remember to put your name on each one.

DescriptionTarget Behavior

Film 1.

Subject: Alysia

COLORING

Observer: Your name

Session #: 1

Place: ECC

Alysia is coloring  
in school.



DescriptionTarget Behavior

## Film 2.

Subject: Karen

INTERRUPTING

Observer: Your name

Session #: 1

Place: ECC

Karen is interrupting  
her mother and a friend talking

## Film 3.

Subject: Krissy

TAPPING

Observer: Your name

Session #: 1

Place: ECC

Krissy is tapping  
pictures.

## Film 4.

Subject: Karen

OFF-TASK/NON-WORKING

Observer: Your name

Session #: 1

Place: ECC

Karen is not attending  
to her assigned task in the  
classroom.

Subject: \_\_\_\_\_

Session #: \_\_\_\_\_

Date: \_\_\_\_\_

Observer: \_\_\_\_\_

Time Started: \_\_\_\_\_

Time Finished: \_\_\_\_\_

Behavior recorded: \_\_\_\_\_

TALLY BELOW



## DURATION RECORDING DATA SHEET

Name: \_\_\_\_\_ Session #: \_\_\_\_\_

Date: \_\_\_\_\_

Time Observed: \_\_\_\_\_

From: \_\_\_\_\_ To: \_\_\_\_\_

Observer: \_\_\_\_\_

Place where observation occurred: \_\_\_\_\_

\_\_\_\_\_

Target behavior defined (described): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Total time (Duration) of the behavior: \_\_\_\_\_

## DURATION RECORDING DATA SHEET

Name: \_\_\_\_\_ Session #: \_\_\_\_\_

Date: \_\_\_\_\_

Time Observed: \_\_\_\_\_

From: \_\_\_\_\_ To: \_\_\_\_\_

Observer: \_\_\_\_\_

Place where observation occurred: \_\_\_\_\_

\_\_\_\_\_

Target behavior defined (described): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Total time (Duration) of the behavior: \_\_\_\_\_







APPENDIX C



## MONITOR'S GUIDE

## Simulated Practicum Experience

SAY:

PLEASE LOOK THROUGH YOUR MANUAL. BE SURE TO READ THE INTRODUCTION, THE OBJECTIVES AND THE GENERAL INSTRUCTIONS. ONCE YOU HAVE READ THROUGH THE MANUAL PLEASE TURN TO PAGE 4 WHICH BEGINS SECTION 1. THIS SECTION REQUIRES NO ACTIVE PARTICIPATION ON YOUR PART, HOWEVER, PLEASE READ THE DESCRIPTION OF EACH FILM CAREFULLY PRIOR TO VIEWING THE FILM SEQUENCE.

DO:

Run film sequence 1

Upon completion of film sequence 1, place film sequence 2 on the projector.

SAY:

PLEASE TURN TO PAGE 5 WHICH BEGINS SECTION 2. IN THIS SECTION YOU ARE REQUIRED TO COLLECT DATA GIVEN THE BEHAVIOR TO RECORD, AND THE MOST APPROPRIATE RECORDING METHOD TO USE. A BRIEF DESCRIPTION OF EACH FILM, THE TARGET BEHAVIOR AND THE RECORDING METHOD TO USE ARE PRESENTED. PLEASE NOTE THAT THROUGHOUT THE MOVIES THE INTERVAL SIZE FOR THE INTERVAL METHOD IS 10" AND FOR THE TIME SAMPLE METHOD IT IS 15". REMEMBER TO RESET YOUR STOPWATCH AFTER EACH FILM.

DO:

Run film sequence 2 HOWEVER ---- After each film stop the projector and tell the students which data sheet they should be using for the next film segment.

SAY:

YOU SHOULD ALL HAVE YOUR DURATION DATA SHEET OUT. (Sequence is duration, tally, interval and time sample).

At the end of Section 2 say:  
THIS COMPLETES SECTION 2. PLEASE  
REREAD THE INSTRUCTIONS FOR SECTION 3  
ON PAGE 11.

DO:

Upon completion of film sequence 2, place film sequence 3 on the projector.

SAY:

IN THIS SECTION YOU WILL BE PRESENTED WITH FOUR 15" FILM CLIPS WHICH ARE SAMPLES TAKEN FROM THE MOVIES WHICH FOLLOW. DO NOT RECORD DURING THESE 15" SAMPLES. ONLY RECORD WHEN YOU ARE INSTRUCTED TO DO SO FOR THE FILMS THAT FOLLOW. THE BEHAVIOR ON WHICH YOU ARE TO RECORD DATA IS DESCRIBED ON PAGE 11 IN YOUR MANUAL. A ONE OR TWO WORD DESCRIPTION OF THE BEHAVIOR YOU ARE RECORDING IS GIVEN FOR YOU. FOR EXAMPLE, IN FILM 1 THE BEHAVIOR ON WHICH YOU WILL BE RECORDING DATA IS COLORING. YOU WILL BE INSTRUCTED ON THE FILM WHEN TO BEGIN RECORDING. WAIT UNTIL THE NARRATOR SAYS BEGIN RECORDING NOW AND RECORD UNTIL THE END OF THE FILM SEGMENT.

DO:

Run film through the four 15" clips. HOWEVER

As soon as each separate clip starts, stop the film and give the film subject's name and the behavior.



SAY:

THIS IS ALYSIA COLORING

THIS IS KAREN INTERRUPTING

THIS IS KRISSY TAPPING

THIS IS KAREN OFF-TASK

DO:

Stop the film after the four 15" segments or clips and give instructions.

SAY:

ARE YOU READY TO BEGIN?

DO:

Run Film 1 until the narrator says "When told to do so begin recording," THEN STOP AND WAIT. Start film when all are ready.

Repeat for each film segment.

Collect all data sheets and manuals from the participants.

APPENDIX D



## FEEDBACK FORM

NAME \_\_\_\_\_

Instructions: Please rate the program and its various components. Circle the number on the following scale that best represents your opinion.

1. The slide-sound portion was clear and informative.

No      1      2      3      4      5      Yes

2. The workbook exercises were relevant to the materials presented by slide-sound.

No      1      2      3      4      5      Yes

3. The movies were a good way of presenting behaviors so that you could define, observe and record them.

No      1      2      3      4      5      Yes

4. Compared to the lecture method of teaching these skills, I rate the effectiveness of the multimedia approach as:

Low      1      2      3      4      5      High

5. I feel that I will be able to apply the skills learned in this program to a practical situation.

No      1      2      3      4      5      Yes

6. I rate the instructional value of this program as:

Low      1      2      3      4      5      High

7. Significant points that were valuable to me were:

8. I would suggest the following changes to improve the program.

APPENDIX E



NAME \_\_\_\_\_ SEX \_\_\_\_\_ AGE \_\_\_\_\_  
 MAJOR \_\_\_\_\_ YEAR IN SCHOOL \_\_\_\_\_

Put a check mark beside the behaviors that are both precise (specific) and observable.

- \_\_\_ 1. Johnny leaves at least four toys not put away every night.
- \_\_\_ 2. Mrs. Jones said that John was the most tidy of her children.
- \_\_\_ 3. When given a direction or command, Sam responds by asking a question or commenting negatively such as "I wasn't doing anything", "That's dumb", etc.
- \_\_\_ 4. Jenny had her feelings hurt five times today.

Convert this statement into a precise definition of behavior which is recordable:

5. Not a day passes that Jack doesn't bully someone.

6. List the rules of observation which have been broken.

Jane is a behavioral management technician who was told by her supervisor to observe a child in Mrs. Nelson's 3rd grade classroom. Since one of her courses did not meet one day, she decided to observe that afternoon. She went to the school and went directly to the classroom and introduced herself to the teacher. She indicated that she would be observing Gerry D.'s on-task and cooperative behaviors with other students. She borrowed a pencil and pad from Mrs. Nelson so that she could record the pertinent data. She then proceeded to join a reading group in which the target child was participating. So that the children would relax with her and so she would be accepted, she initiated conversation with several of the children sitting by her in the group. Jane was there for 15 minutes and then left the classroom before the reading session ended. She left the group thinking to herself that she would contact the teacher later during the week to talk about Gerry.

Rules broken:



- T F 7. It is appropriate to alter the recording time interval to suit the teacher's convenience each day.
8. Give an example of when to use the tally method.
9. Give an example of when to use the duration method.
- T F 10. You can add together separate occurrences of a behavior over an observation period to get the total duration of the behavior.
- T F 11. The duration method is the best method of recording a behavior when it is not easy to tell when it starts or stops.
12. Tally recording is a measurement technique which involves recording \_\_\_\_\_ times a specific response occurs within a specific period of time.
- T F 13. Tally recording is most appropriately used when the behavior occurs infrequently.
- T F 14. Unless the behavior is of a relatively short duration, the tally method should not be used.
- T F 15. The interval method is concerned with the number of separate occurrences of the target behavior during each interval.
- T F 16. If a behavior stops occurring halfway through the interval, it is still counted as having occurred.
- T F 17. It is best to leave an interval space blank if no behaviors are observed to occur during the interval.
- T F 18. If the subject is engaging in a behavior and the recording interval ends, the observer should lengthen the interval to accommodate the behavior.



19. What determines the size of the interval?
  
20. Time sample recording is a variation of the \_\_\_\_\_ method.
  
21. When using the time sample method, the subject is observed at the \_\_\_\_\_ of each time interval only.

APPENDIX F



Demographic Data for the Experimental Group  
Subjects Included in the Field Test in the  
Summative Phase of the Study

<u>Subject</u>	<u>Sex</u>	<u>Age</u>	<u>Year in School</u>	<u>Major</u>
1	M	29	Graduate	Special Education
2	M	22	Graduate	Journalism
3	F	25	Graduate	Special Education
4	F	37	Graduate	Special Education
5	F	39	Graduate	Elementary Education
6	M	29	Graduate	Special Education
7	F	32	Graduate	Communicative Dis.
8	F	21	Graduate	Special Education
9	F	31	Graduate	Communicative Dis.
10	F	21	Senior	English
11	F	22	Senior	Special Education
12	F	34	Graduate	Health
13	F	22	Graduate	Special Education
14	M	25	Graduate	Special Education
15	F	24	Graduate	Special Education
16	F	25	Graduate	Special Education
17	F	22	Graduate	Special Education
18	M	20	Junior	Social Work
19	M	36	Graduate	Special Education
20	M	43	Graduate	Special Education

Average Age: 28  
Females: 13  
Males: 7

School level:  
Graduate: 85%  
Undergrad: 15%

Major:  
Special Ed. 13  
Comm. Dis. 2  
One each of various  
other majors

Demographic Data for the Control Group  
Subjects Included in the Field Test in the  
Summative Phase of the Study

<u>Subject</u>	<u>Sex</u>	<u>Age</u>	<u>Year in School</u>	<u>Major</u>
1	M	26	Graduate	Psychology
2	F	20	Sophomore	Special Education
3	F	28	Graduate	Home Economics
4	M	23	Senior	Political Science
5	M	45	Graduate	Special Education
6	F	28	Graduate	Elementary Education
7	F	26	Graduate	Child Development
8	F	55	Graduate	Special Education
9	F	30	Graduate	Elementary Education
10	F	22	Sophomore	Special Education
11	F	23	Graduate	Special Education
12	F	20	Senior	Elementary Education
13	F	23	Graduate	Special Education
14	M	22	Senior	Special Education
15	M	25	Sophomore	Physical Therapy
16	F	30	Graduate	Ed. Psychology
17	F	23	Senior	Special Education
18	F	22	Senior	Special Education
19	F	26	Graduate	Special Education
20	M	35	Graduate	Trade & Industry

Average Age: 27.6  
Females: 13  
Males: 7

School level:  
Graduate: 60%  
Undergrad: 40%

Major:  
Special Ed. 10  
Elementary Ed. 3  
Psychology 2  
One each of various  
other majors



APPENDIX G

Demographic Data for the Ten Subjects  
Who Completed the Program Independent  
of the Experimenters

<u>Subject</u>	<u>Sex</u>	<u>Age</u>	<u>Year in School</u>	<u>Major</u>
1	M	24	Junior	Geography
2	F	21	Junior	History
3	F	19	Sophomore	Economics
4	F	18	Freshman	Special Education
5	F	20	Junior	Special Education
6	F	20	Sophomore	Business Education
7	M	20	Sophomore	Special Education
8	F	23	Senior	Art Education
9	M	21	Senior	Communicative Dis.
10	M	24	Junior	Mathematics

Average Age: 21  
Females: 6  
Males: 4

School level:  
Seniors: 2  
Juniors: 4  
Sophomores: 2  
Freshman: 1

Majors:  
Special Ed. 3  
One each of various  
other majors.



Vita

Gerald D. Hecker

Candidate for the Degree of

Doctor of Philosophy

Dissertation: Development and Validation of an Instructional Program to Teach Observational and Recording Skills in Behavior Modification

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Professional Experience: Counselor, Southern California Counseling Center, Los Angeles, California, 1967-1969; School Psychologist, Utah School for the Deaf, Ogden, Utah, 1971-1972; Psychologist, Utah State University Exceptional Child Center, Logan, Utah, 1972-1974.

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Professional Experience: Psychologist, New Mexico School for the Deaf, Santa Fe, New Mexico, 1968-69; Coordinator of Hearing Test and Child Study Center, New Mexico School for the Deaf, Santa Fe, New Mexico, 1969-70; Psychologist, Exceptional Child Center, Utah State University, Logan, Utah, 1972-75.