5-1968

The Effects of a Programed Text of Contingency Management Procedures on the Ability of Teachers to Write Behavioral Prescriptions

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THE EFFECTS OF A PROGRAMED TEXT OF CONTINGENCY MANAGEMENT PROCEDURES ON THE ABILITY OF TEACHERS TO WRITE BEHAVIORAL PRESCRIPTIONS

by

Lanny E. Morreau

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

1968

ACKNOWLEDGMENTS

I would like to express my appreciation to the many individuals who assisted in this research. Specifically, I would like to thank:

Dr. Marvin Daley for his assistance in the development of the research project and for his willingness to assume the time consuming role of the subject-matter expert.

Dr. Heber Sharp and Dr. Glendon Casto, of my Graduate Committee, for their helpful suggestions during the formulation of the research design and for their critical review of the completed research.

Mr. Harry Rosenberg, Coordinator of Special Education for the Visalia Unified School District, for offering an ideal setting for the initial evaluation of the efficacy of the programed text.

Mrs. Julia Collins for serving as the "model teacher" in the video-taped presentations and for offering the opportunity to examine several of these principles in an applied setting.

Mr. Mark Dimirsky for lending his technical assistance in the preparation of the video-tapes.

Lance and Liesa, my children, for acting in the roles of "model students" for the video-taped presentations.

My wife, Linda, for her patience and support during the fulfilling of this research.

Lanny E. Morreau

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ABSTRACT

The Effects of a Programed Text of Contingency Management Procedures on the Ability of Teachers to Write Behavioral Prescriptions

by

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Utah State University, 1968

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Department: Psychology

An informational source where teachers and teacher-candidates could gain a functional knowledge of contingency management techniques had not been developed. A programed text was written to provide this source. Five teachers and teacher-candidates were exposed to the text for a period of three days. As a result of this exposure, learning gains, significant at the 0.01 level, were found in the students' abilities (a) to write behavioral prescriptions and (b) to write the principles of contingency management when presented with open-ended questions pertaining to these principles.

(86 pages)

PROBLEM

Nature of the Problem

Techniques and principles applicable to the modification and control of behavior in lower organisms are rapidly being extended into specific areas of human behavior. One such principle is the differential probability principle which states, "...for any pair of responses the more probable one will reinforce the less probable one (Premack, 1965, p.132)." A major corollary, the indifference principle, states that the reinforcement value of a behavioral event is independent of the factors producing the specific probabilities of that behavior. The conclusion to be drawn from these statements is that any behavior, at the point in time that it is of higher probability, can be used to reinforce any lower probability behavior.

The systematic application of these principles to the modification of human behavior is particularly significant in the area of education. A teacher can control the classroom environment in such a manner as to make the student's access to high probability activities (reinforcing events) contingent upon the completion of low probability activities (task behavior). Through this management of contingencies, the teacher can increase the emission of selected task behaviors.

Homme, DeBaca, Devine, Steinhorst, & Rickert (1963) demonstrated the effectiveness of this technique by teaching a large segment of the first grade repertoire to a group of pre-school children in a period

of one month. Of equal significance was the fact that the condition of "bedlam" within the classroom was changed to a highly controlled situation. Further indications of the effectiveness of contingency management techniques were found in the teaching of English literacy to Indian children (Homme, 1965), and in the teaching of arithmetic and reading to mentally retarded children (Daley, Holt, & Vajanasoontorn, 1966).

One would expect that a teaching technique which has shown these types of successes and offers both versatility and efficiency would have been introduced to teachers for use in the modification of academic and social behaviors. In reviewing current texts in the area of teaching methods, however, one finds only incidental references to contingency management techniques. An example of the limited coverage given to these techniques is to be found in a recent text (Haring and Schiefelbusch, 1967) covering teaching methods in special education where two pages are allotted to a description of the successes of the method and a generalized method of applying it. At present there is no single source where teachers or teacher-candidates can gain a functional knowledge of the principles and techniques involved in the management of contingencies. This lack of an informational source is the problem which forms the basis of the proposed research.

Review of Related Research

Two questions must be answered prior to initiating the research into this problem: (a) What are the basic principles involved in contingency management? and (b) What method can be used to present

these principles to a large group of teachers?

Contingency Management

As previously noted, there is no single source of information which deals with all of the principles and techniques involved in contingency management. Therefore, it becomes necessary to pool the findings reported by the various experimenters in this area.

Contingency management is based upon the analysis of response probabilities, the differentiation of high probability behaviors (HPBs) and of low probability behaviors (LPBs) and the arrangement of the response contingencies (Premack, 1959). Addison and Homme (1966) converted this concept into a "classroom" concept: LPBs which are selected to be increased are referred to as task behaviors and access to a high probability activity, the reinforcing event (RE), is made contingent upon their emission. It was further noted that greater control over contingency management could be obtained through the use of an RE menu, a program of high probability activities.

Homme and Tosti (1965), in their description of contingency management techniques, noted that probabilities change over time--i.e., what is a HPB at one moment may be subsequently reduced to a LPB. Homme (1966) further noted that the physical environment should be divided into two distinct areas, an RE area and a task area. This division increases the probability that the stimuli associated with each area will acquire control of the type of responding required in that area.

These factors and the associated measurement operations comprise the basis of contingency management (CM). The application and operation of these factors are evident in successful experiments in which

they have been incorporated (Daley et al., 1966; Homme, 1965; Homme et al., 1963).

Programed Instruction

In attempting to present these principles to large numbers of teachers and teacher-candidates, it would be advantageous if the method of presentation allowed for self-instruction and individualized pacing, maintained a high level of motivation, and was as concise as possible. Programed instruction (PI) meets all of these criteria (Foltz, 1961; Leib, Cusack, Hughes, Pilette, Werther, & Kintz, 1967).

Definition of programed instruction. Holland (1965) has defined programing as, "...the construction of carefully arranged contingencies leading to terminal performances which are the object of education [p. 67]."

Taber, Glaser, and Schaefer (1965) describe a course of instruction as being "...an arrangement for a student to acquire the numerous discriminative responses that characterize expertise or knowledge in the subject matter; the student must come to display appropriate behaviors to the subject matter environment [p. 35]."

Types of programs. In 1924, S. L. Pressey exhibited one of the first "teaching machines". Although it is often referred to as a device for programed instruction, it is actually a device for testing terminal behaviors. The student is presented with a fixed sequence of multiple choice questions based on information acquired from other sources, to which he can respond for "review" and "consolidation" of learning.

N. A. Crowder has been responsible for the development of intrinsic programing (Hughes, 1962). This type of programing allows

for student determination of frame sequence. If a student responds correctly to a set number of questions in a given sequence, he need not complete the sequence and is rerouted to more advanced material. If an error occurs, the student is returned to earlier questions for review.

Skinner is largely responsible for linear programs utilizing pupil constructed responses--i.e., students fill in the blanks. The mode of responding which he has adopted is based on reinforcement principles: each correct response is immediately reinforced (Skinner, 1954). The program is designed with the intent of eliminating errors. Therefore, each student completes all of the questions in the ordered sequence.

One unique programing technique, conversational chaining, was developed by J. A. Barlow (1960). As implied by the title, Barlow utilizes the steady flow of conversation for the sequential presentation of information and for the presentation of reinforcers.

The RULEG method (Evans, Homme, & Glaser, 1962) involves the sequential presentation of a series of rules and their accompanying examples, e.g.,

RULE $a + b = b + a$
EXAMPLE $1 + 4 = 4 + 1$

A component of a rule or an example is omitted, and the student is required to complete the statement by writing the correct response.

Problems in research. Eigen (1965) has suggested that experimenters have failed to adequately identify the conditions under which one method is superior to another. He further states that programing is far beyond its research foundation. This feeling is also reflected in the following statement from a review article (Leib et al.,

1967, p. 12): "Much of the application of PI has proceeded in the face of an insufficient amount of scientific, controlled research."

One problem with which one is immediately confronted in the area of programed instruction is the problem of variability. The interrelationship of research findings is confounded with variations in the subject matter presented, the ages of the subjects, the method of presentation, the type of reinforcement used, the type of response, and the sequence of presentation.

Programed instruction vs. conventional instruction. It is significant to note that under many combinations of the preceding programing variables, students' performance is equal to and often superior to their performance with conventional classroom techniques. Schramm (1964) tabulated 36 studies comparing programed instruction with conventional classroom instruction. Of these 36 comparisons, 18 showed no significant difference between the two groups, 17 showed a significant superiority for the students who worked with the program, and 1 showed superiority for the classroom students.

Several studies have also indicated that programed instruction is more efficient than conventional instruction in terms of the amount of time needed to complete the specified material (Hughes & McNamara, 1961; Stone, 1965).

Immediate knowledge of results. The majority of studies pertaining to the immediate knowledge of results indicate that this factor contributes to learning. Several studies further indicate that this contribution is in part determined by the method and the context in which the knowledge is presented. Bryan and Rigney (1956) found that the group which received immediate knowledge of results with an

accompanying explanation showed greater delayed recall (1 week) than did groups receiving no knowledge of results or knowledge of results with no explanation. Krumboltz and Bonawitz (1962) found that the presentation of results in complete sentences led to greater ability to apply the material learned than did the presentation of only the correct responses.

Mode of response. The type of response required from the learner, student-constructed or multiple-choice responses, is one of the differentiating factors between programs. As such, a great deal of research has been conducted in this area.

Evans, Glaser, and Homme (1960) found that no significant difference exists between the results obtained using overt and covert responding. Crist (1966) found that a difference favoring covert responding existed on immediate recall, but that this difference was lost when delayed posttests were administered. It is also significant to note that the time data clearly favored the covert-response group. The great majority of studies support these findings (cf. Schramm, 1964).

Programed instruction in teacher education. Well-controlled research has been conducted in the use of programed instruction for preparing teachers in several fields. Swack (1967) reports the successful teaching of certain physical therapy techniques by means of programed demonstrations, and Barnes (1964) found that music fundamentals could be taught to future elementary teachers by means of programed instruction. Schutz and Baker (1963) report the use of programs in three psychology courses in a curriculum for future teachers.

Hunter (1967a) has compared learning gains of teachers taught

by programed and live instruction in two areas of educational psychology. This study indicated that programed material produced as high a performance on a criterion measure as direct teaching by university instructors. The subjects, as well as the subject matter, in Hunter's study are roughly comparable to those which are utilized in the present research.

Objectives

The general purpose of this investigation is to determine if a programed text on contingency management techniques can be developed which will lead to a student's accurate writing of behavioral prescriptions.

In specific, the objectives are:

1. To determine if the basic principles of contingency management can be isolated.
2. To determine if these principles can be taught through a programed text.
3. To determine if a three-day exposure to this programed text will lead to the writing of accurate behavioral prescriptions.

The specific hypothesis to be tested is as follows:

A three-day exposure to a programed text of contingency management procedures will lead to a significant increase in the judged accuracy of the writing of behavioral prescriptions by a selected group of teachers and/or teacher-candidates.

METHOD

Scriven (1967) has defined two types of evaluation which can be made of educational instruments--i.e., curricula, programed texts. Formative evaluations are directed towards the discovery of deficiencies and adequacies during the development of the teaching instrument; summative evaluations deal with the effects of a completed instrument on a selected behavior. This dichotomy is particularly applicable to the present research involving the development and field testing of a programed text of contingency management procedures.

Text Development

Design

The following design was adopted for use in programing the principles of contingency management:

1. Presentation of a principle.
2. Presentation of an example of the principle.
3. Presentation of a question pertaining to the principle with several alternative responses.
4. Presentation of the correct answers to the question with a brief discussion.
5. Presentation of a problem related to the principle.
6. Presentation of criteria with which to evaluate the response to the problem.

Construction

The steps followed in the construction of the program were adapted from the Ruleg System for the construction of programed

verbal learning sequences (Evans et al., 1962).

Specification of criterion behavior. The desired terminal behavior was specified as follows:

1. The student will be able to write the basic principles of contingency management when presented with open-ended questions pertaining to these principles.
2. The student will be able to write a behavioral prescription based upon a video-taped sample of behavior.

Specification of the principles of contingency management. The programer identified and recorded the principles of contingency management based upon his knowledge of the area. This procedure was followed by a review of the literature and the recording of additional principles. The 16 basic principles identified in this manner were then evaluated by a subject-matter expert (SME), a psychologist having a thorough knowledge of contingency management techniques.

Ordering of the principles. A logical sequence was arranged so that principles upon which other principles are dependent would be presented first. The program was then reviewed to assure a sequential progression with no omitted steps.

Construction of examples, questions, and practice problems. An example illustrating the application of each principle in an educational environment was constructed. The initial text development was concluded with the addition of questions and practice problems relating to each principle and its associated example.

Formative Evaluation

"One of the chief strengths of the programming technique is its provision for analyzing and revising material on a detailed empirical basis--i.e., the responses of the learner (Evans et al., 1962, p.517)." As suggested in this statement, the effectiveness of the programed text of contingency management procedures was assessed by means of a frame-by-frame analysis of student responses.

Subjects

The evaluation group was composed of 22 teachers enrolled in a one semester-hour section of a teaching-methods course offered by Fresno State College, Fresno, California. The course was divided into three one-week sections, of which any section could be attended for one hour of credit.

Procedures

The programed text was divided into four sections: frames 1-4, frames 5-8, frames 9-12, and frames 13-16. These sections were introduced sequentially (1 section/day) on four consecutive days. A 30-minute time allotment was established for completion of the reading, responding to the questions, and the development of the practice problems.

The subjects were further instructed not to correct errors. In order to control for corrections, ink was used for the recording of responses.

Results

In order to determine the sources of error, each incorrect response was analyzed. Particular attention was given to those responses answered incorrectly by greater than 10 percent of the subjects.

The following sources of error were identified:

1. Answer open to interpretation (frame 1).
2. Insufficient preceding information (frame 2).
3. Difficult discrimination between available responses (frame 4; revised program- frame 6).
4. Ambiguous answer (frame 6; revised program- frame 8).
5. Inconsistency between the example and the "correct" response (frame 10; revised program- frame 12).
6. Insufficient information pertaining to answering procedures.

Based upon the subjects' comments and the analysis of errors, the program was revised. Frames 3 through 16 were redistributed, ambiguous items were eliminated or rewritten, and greater information was incorporated into selected frames.

Summative Evaluation

After the programed text was systematically evaluated and revised, a limited "field-test" was run.

Subjects

Four teacher-candidates were selected from the students enrolled for the Summer Quarter in the class, Student Teaching in Special Education (191), at Utah State University. An additional subject was selected from the summer staff in the Special Education Department. Table 1 indicates the academic history and teaching experience for each subject.

TABLE 1

Subjects' Academic Histories and Teaching Experiences

Subject	Present position	Academic background	Teaching Experience
1	Student teacher	B. S., Industrial Technology	3 years
2	Student teacher	B. S., Elementary Education	1 year
3	Supervisor of student teachers	M. S., Special Education	6 years
4	Student teacher	B. S., Economics	14 years
5	Student teacher	B. S., Psychology	2 years

Apparatus

Video-tapes. Two samples of classroom behavior were video-taped for use in evaluating behavioral prescription writing. Each seven-minute sample included a full view of a classroom with a child engaging in a variety of activities. Formal scripts were prepared which incorporated specific sequences of behaviors having specific durations

and frequencies.

Tests. Two tests were developed to measure the terminal behavior of the subjects. The Test on Behavioral Prescription Writing was designed to measure the subject's ability to write a behavioral prescription when presented with a sample of task behaviors and a sample of high probability behaviors. The Test on Contingency Management Principles was designed to measure the subject's ability to write the basic principles of contingency management when presented with open-ended questions pertaining to those principles.

Design.

A number was assigned to each subject. These numbers were affixed on the back of individual test booklets with a coded indication of pretest or posttest conditions.

Pretest. Using the pretest booklets, each subject wrote a behavioral prescription based on the preselected sample of classroom behavior presented in Video-tape I. The test booklet for the Test on Behavioral Prescription Writing included a hypothetical sample of the child's task behavior. Upon completion of this test, the Test on Contingency Management Principles was administered. After both tests were completed, the subjects were given a numerically identified copy of the revised programed text. The subjects were instructed to record their answers in ink and not to correct errors. A date and time were set for a second sixty-minute session. Three days were allotted for completion of the program.

Posttest. Using the posttest booklets, each subject wrote a behavioral prescription based on the preselected sample of classroom behavior presented in Video-tape II. The Test on Behavioral Prescrip-

tion Writing was readministered. Upon completion of this test, the Test On Contingency Management Principles was readministered. After both tests were completed, the session was terminated.

Analysis

Scoring procedures. The pretest and posttest booklets for the Test on Contingency Management Principles were pooled in order to control for scorer bias. The tests were then scored by the experimenter (E) using the predetermined response criteria.

The pretest and posttest booklets for the Test on Behavioral Prescription Writing were also pooled. The prescriptions were then independently scored by the SME and the experimenter. The scores for each subject under pretest and posttest conditions are presented in Table 2.

TABLE 2

Scores on Behavioral Prescriptions

Subject	Scorer	Pretest	Posttest
1	E	0	10
	SME	0	10
2	E	0	11
	SME	0	12
3	E	10	11
	SME	6	11
4	E	0	11
	SME	0	11
5	E	4	12
	SME	4	12

The intercorrelation between the SME's and the experimenter's

scores was computed using the Pearson Product-Moment formula. An interscorer correlation of .96 was found between the two scorers.

Statistical treatment. Data was collected for each individual subject on two measures under both pretest and posttest conditions. It was assumed that each subject remained consistent in himself and that a correlation existed between the pretest sample and the posttest sample. Under these assumptions, each pair of criterion scores for each test were treated using the t-ratio for correlated samples. In the two cases where differences were noted between the SME - E scores, a mean score, $\frac{\text{SME's score + E's score}}{2}$, was computed.

RESULTS

Programed Text

The amount of time spent in completing the programed text ranged from 1 hour and 10 minutes to 1 hour and 50 minutes. The mean amount of time for the group was 1 hour and 35 minutes (Table 3).

TABLE 3

Time Spent in Completing Program

Subject	Time
1	1 hour 50 minutes
2	1 hour 45 minutes
3	1 hour 30 minutes
4	1 hour 10 minutes
5	1 hour 40 minutes

Although the revised program corrected for many of the errors found in the formative evaluation, a total of 12 response errors were found in the five texts. With the exception of two incorrect responses to question 2, the errors were distributed through the program.

Test on Behavioral Prescription Writing

One of the basic objectives of this investigation was met with the isolation of the basic principles of contingency management and the subsequent development of the programed text.

These steps were followed by the testing of the specific

hypothesis:

A three-day exposure to a programed text of contingency management procedures will lead to a significant increase in the judged accuracy of the writing of behavioral prescriptions by a selected group of teachers and/or teacher-candidates.

Using the t-ratio for correlated samples, this hypothesis was tested through the analysis of the scores obtained on the Test on Behavioral Prescription Writing (TBPW) under pretest and posttest conditions. The testing procedure consisted of computing the differences between the scores obtained by each pair of matched subjects (scores of a single individual under pretest and posttest conditions) and treating these differences as if they were raw scores. The significance level was set at 0.01, and the critical region was defined as $t_{0.01} \geq 3.747$. Table 4 presents the results of this experiment.

TABLE 4

Scores on TBPW

Subject	Pretest	Posttest	Difference	
	X_1	X_2	D	D^2
1	0	10	-10	100
2	0	11.5	-11.5	132.25
3	8	11	- 3	9
4	0	11	-11	121
5	4	12	- 8	64
	12	55.5	-43.5	426.25

Since the obtained t for this data, -5.649, fell within the critical region, $t_{0.01} > -3.747$, H_o was rejected.

Test on Contingency Management Procedures

Additional information pertaining to the effectiveness of the programed text was obtained through the testing of an adjunct hypothesis:

A three-day exposure to a programed text of contingency management procedures will lead to a significant increase in the abilities of a selected group of teachers and/or teacher-candidates to write the basic principles of contingency management when presented with open-ended questions pertaining to these principles.

Using the t-ratio for correlated samples, this hypothesis was tested through the analysis of the scores obtained on the Test on Contingency Management Principles (TCMP) under pretest and posttest conditions. The significance level was set at 0.01 and the critical region was defined as $t_{0.01} \geq -3.747$. Table 5 presents the results of this experiment.

TABLE 5

Scores on TCMP

Subject	Pretest	Posttest	Difference	
	X_1	X_2	D	D^2
1	4	22	-18	324
2	2	16	-14	196
3	4	23	-19	361
4	1	20	-19	361
5	6	23	-17	289
	17	104	-87	1531

Since the obtained t for this data, -18.831, fell within the critical region, $t_{0.01} > -3.747$, H_o was rejected.

DISCUSSION

Comparison of the pretest and posttest scores on the Test on Behavioral Prescription Writing revealed a significant difference at the .01 level favoring the posttest. This difference indicates that the three-day exposure to the programed text led to significant gains in the area of behavioral prescription writing.

Comparison of the pretest and posttest scores on the Test on Contingency Management Principles revealed a significant difference at the .01 level, again favoring the posttest. This difference indicates that the three-day exposure to the programed text led to significant gains in this area.

These results are consistent with the findings of other investigations in the area of programed instruction (cf. Schramm, 1964). The programed text of contingency management procedures proved to be an efficient method of increasing a specific subject-matter repertoire in a selected group of teachers. The success of the programed text could likely be attributed to the inclusion of significant programing variables in its design--i.e., immediate knowledge of results with explanations presented in complete sentences, a combination of overt and covert response modes, and the logical sequencing of frame presentations.

It should be noted that (a) this investigation was a limited "field-test" utilizing a small sample and (b) a knowledge of the principles of contingency management does not guarantee that these principles will be applied in the classroom. Therefore, it is

recommended:

1. That the programed text be revised to correct for the responding errors found in this investigation.
2. That frames be added to deal with pupil selection of reinforcing events, teacher evaluation of microtasks prior to the RE delivery, teacher selection of criteria for increasing microtask size, and teacher structuring of environments to determine high probability behaviors.
3. That the programed text be tested on a larger sample--i.e., 300 teachers and 300 teacher-candidates, divided into control and experimental groups to determine the generality of the present findings.
4. That the ability to apply the principles of contingency management be measured through an analysis of the behavior of pupils from classrooms having teachers exposed to the programed text.
5. That instruction using the programed text be compared with other instructional methods in terms of learning gains made by teachers in the area of contingency management procedures.

If the results of the expanded investigations are consistent with the present findings, the programed text of contingency management procedures offers a systematic method for instructing teachers in the use of classroom management techniques having an empirically determined base and demonstrated effectiveness.

CONCLUSIONS

It was concluded from the results of this study that a three-day exposure to the programed text led to significant gains in the ability of a selected group of teachers and teacher-candidates (a) to write behavioral prescriptions and (b) to write the basic principles of contingency management when presented with open-ended questions pertaining to these principles. Thus, these findings indicate that significant learning gains in the area of contingency management resulted from a short instructional period utilizing a programed text of contingency management principles.

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APPENDIXES

Appendix A

Programed Text of Contingency Management Procedures

CONTINGENCY MANAGEMENT
IN
YOUR CLASSROOM

A PROGRAMED TEXT

LANNY MORREAU

BEHAVIOR

There are essentially two kinds of behavior:

1. Behavior which is learned and can be changed.
2. Behavior which is unlearned and rarely changes.

As teachers, our job is to manage behavior. After an entire day has been spent in dealing with a "discipline problem" or an "underachiever," we might respond to this statement by saying, "Brother, you've guessed it!"

What we have actually dealt with, however, are not "discipline problems" or "underachievers." We've been trying to keep John from hitting Bob or we've been trying to help Jimmy answer more arithmetic problems correctly. In other words, we've been dealing with specific behaviors which a child emits. These behaviors are learned, and we are attempting to change the number of times they occur.

1. Which of the following behaviors are learned and can be changed? (Select from a - d and record your answers.)

   a._____A heart beating.
   b._____Writing an answer to an arithmetic problem.
   c._____Raising a hand to answer a question.
   d._____Throwing a pencil.

CHECK YOUR ANSWERS.

b, c, and d.

Writing an answer to a problem (b), raising a hand (c), and throwing a pencil (d) are learned behaviors, and we might be very interested in changing the frequency with which they occur, for it is the successful management of such learned behavior which determines our success as teachers.

PRACTICE

List at least 4 additional behaviors which a child learns.

_____

_____

_____

_____

_____

CHECK YOUR ANSWERS ON THE PRECEDING PRACTICE WITH THESE CRITERIA.

Is the behavior learned? _____
Can the frequency of the behavior be changed? _____

MEASURING BEHAVIOR

In order to increase or decrease the frequency with which a behavior occurs, we must 1) define a specific behavior and 2) determine how frequently it is occurring.

To say that Jimmy is doing poorly in arithmetic does not tell us what Jimmy is actually doing. But, stating that he answers 4 problems correctly in 40 minutes defines a specific behavior (writing correct answers to arithmetic problems) and gives us the current frequency of this behavior (4 times in a 40-minute period). Now we can also state that we want to increase the number of arithmetic problems which Jimmy answers correctly from 4 per 40-minute period to 10 per 40-minute period.

In order to manage a learned behavior then, we must be able to define the behavior and count the number of times that it occurs.

2. Which of the following behaviors are described adequately? (Select from a - d and record your answers.)

   a._____Jimmy writes 4 correct answers to arithmetic problems in 40 minutes.
   b._____John disturbs the class on 3 occasions in 40 minutes.
   c._____May raises her hand 6 times per hour.
   d._____Jane plays during most of the period.

CHECK YOUR ANSWERS.

a and c.

Writing 4 correct answers to arithmetic problems (a) and raising a hand 6 times (c) are specific behaviors which occurred on a specific number of occasions.

As much as we'd like to change their frequency of occurrence, disturbing the class (b) and playing (d) incorporate many different behaviors and cannot be dealt with as stated. We could, however, isolate behaviors from these groups -- i.e., hitting a student, walking to the wastebasket, tapping a pencil, count the number of occasions upon which they are occurring, and then take steps to increase or decrease the frequency with which they occur.

PRACTICE

List at least 4 specific learned behaviors from your classroom.

_____

_____

_____

_____

_____

CHECK YOUR ANSWERS ON THE PRECEDING PRACTICE WITH THESE CRITERIA.

Is the behavior learned? _____
Can the frequency of the behavior be changed? _____
Can the behavior be counted? _____
Would several of us agree that there is only one behavior rather than several? _____

RECORDING BEHAVIOR

In order to manage a behavior, we must 1.) define the behavior, 2.) measure the behavior, 3.) RECORD the frequency of the behavior.

The definition of the behavior tells us which behavior we are going to count,

e.g., writing correct answers to arithmetic problems.

A measure of the behavior tells us 1.) how frequently or 2.) for how long the behavior is occurring,

e.g., 4 answers per 40-minute period.

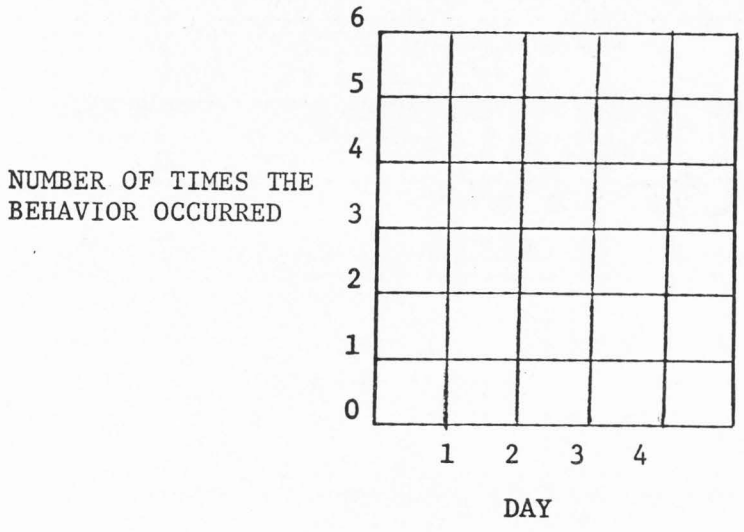
A record of behavior indicates the changes in the frequency or the duration with which the behavior is occurring,

	Period 1	Period 2	Period 3
e.g.,	4 answers/40 min.	6 answers/40 min.	8 answers/40 min.

How can we prepare a record that will indicate changes in the frequency of a behavior? One method is to prepare a graph.

PREPARING A GRAPH

The number of times that a behavior occurs can be placed on the side of the graph and the period or the day can be noted on the bottom.



3. We have elected to increase the behavior of writing correct answers to arithmetic problems for Mary. The period of time during which the behavior occurs is the 40-minute arithmetic period. How would you label her graph? (Select a - b and 1 - 2 and record your answers.)

On the side of the graph we will write _____.

a._____NUMBER OF ARITHMETIC PROBLEMS CORRECTLY ANSWERED.
b._____PROBLEMS ATTEMPTED.

On the bottom of the graph we will write _____.

1._____DAYS.
2._____ARITHMETIC PERIOD.

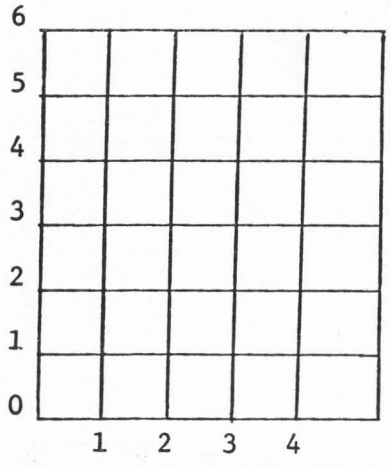
CHECK YOUR ANSWERS.

a and 2.

We are interested in the number of arithmetic problems answered correctly (a). We will place this label on the side of our graph. We are also interested in how frequently this behavior occurs during each arithmetic period (2). At the base of the graph, then, we will write ARITHMETIC PERIOD.

PRACTICE

Describe a behavior which you might elect to increase and label a graph.



CHECK YOUR ANSWER ON THE PRECEDING PRACTICE WITH THESE CRITERIA.

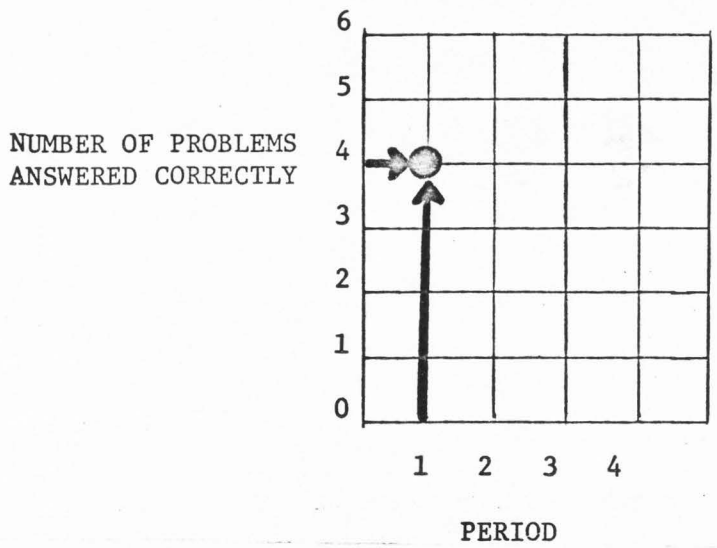
Have you placed the FREQUENCY of the behavior on the side of the graph? _____
Have you placed the PERIODS or DAYS on the base of the graph? _____

RECORDING

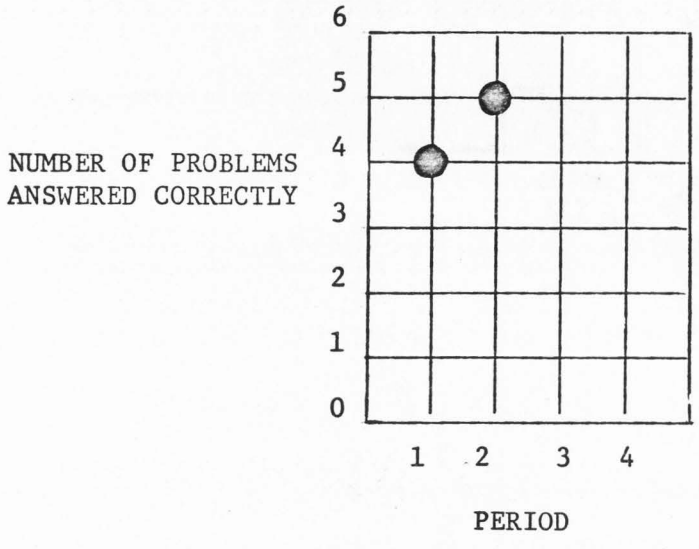
A point can be marked on the graph which will indicate the frequency with which a behavior occurred during each period or day.

We have counted the number of times that Mary answers arithmetic problems correctly during our 1st arithmetic period and have found that she answers 4.

We can record this on our graph by locating the 1st period, following this line up to the number 4, and placing a mark at this point.

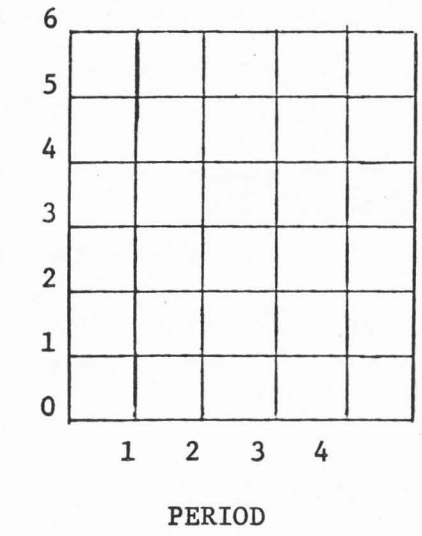


During the 2nd period, she completed 5 problems correctly. Our graph would appear as follows:

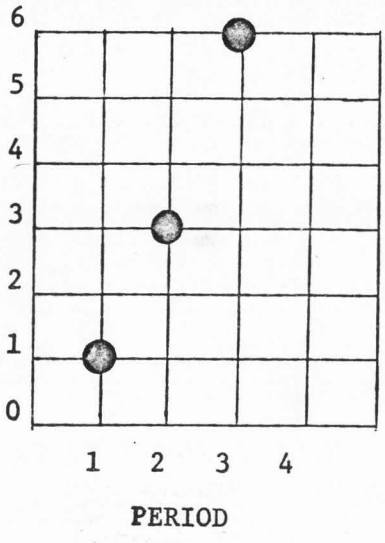


4. How would you record the following behavior? (Record your answer on the graph.)

PERIOD	NUMBER OF READING QUESTIONS ANSWERED
1st	1
2nd	3
3rd	6



CHECK YOUR ANSWER.

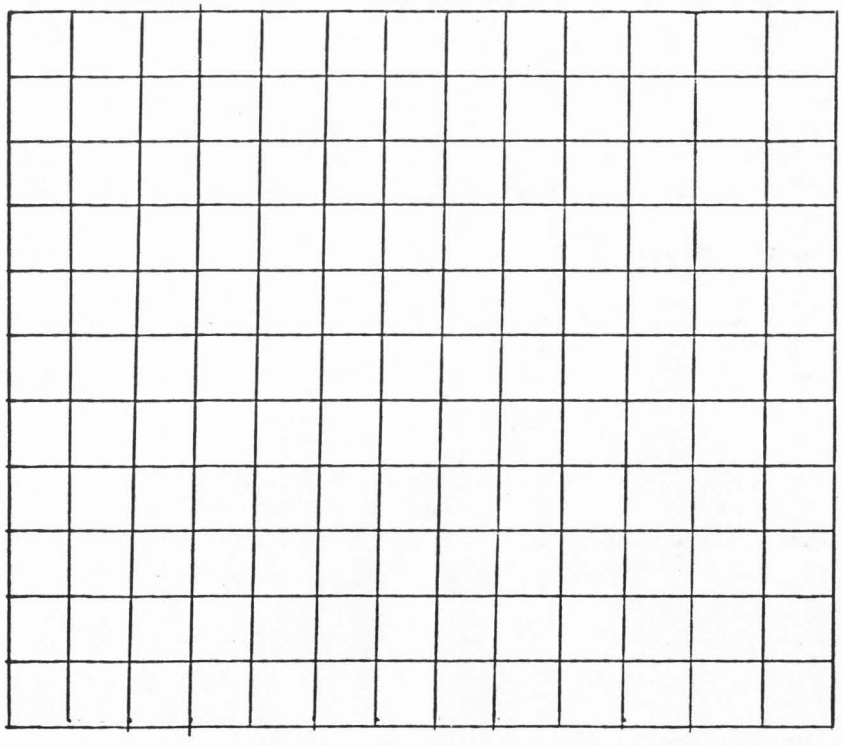


If you are right, connect the dots with a dotted line, e.g.,●---------●

PRACTICE

Select a hypothetical behavior and list the frequency with which it occurs during each of the 6 periods. Record this information on the graph.

PERIOD	FREQUENCY OF BEHAVIOR
1.	_____
2.	_____
3.	_____
4.	_____
5.	_____
6.	_____



CHECK YOUR ANSWERS TO THE PRECEDING PRACTICE WITH THESE CRITERIA.

Have you placed the frequency of the behavior on the side of the graph? _____
Have you placed the periods or days on the bottom of the graph? _____
Can you determine the frequency of the behavior for each period by looking at the graph? _____

HIGH AND LOW PROBABILITY BEHAVIOR

If we can measure a behavior, we can determine how often the behavior occurs.

FREQUENCY

A behavior which is found to be occurring frequently at one time will probably be found to be occurring frequently at other times in the future. We call this behavior high probability behavior.

A behavior which occurs infrequently and is not likely to reoccur is called a low probability behavior.

DURATION

A behavior may not occur frequently, but when it does occur, it is engaged in for a long period of time. It will probably be engaged in for long periods at other times in the future. We call this behavior high probability behavior. A behavior which is engaged in for short periods of time and is not likely to be engaged in for long periods of time in the future is called a low probability behavior.

When we say that Jimmy will not complete the 10 problems which we have assigned or that Jane will never stop talking during class, we are stating the behavior which we expect from Jane and Jimmy. Certain behaviors are expected to occur frequently or infrequently.

Based upon his past performances, we know that Jimmy has been completing only 4 problems in a 40-minute period. Writing answers to arithmetic problems, then, is a low probability behavior. On the other hand, we know that Jane frequently talks in class and for long periods of time. For Jane, talking in class is a high probability behavior.

5. Using the abbreviation LPB to denote a Low Probability Behavior, identify one low probability behavior which you would like to increase in this 40-minute sample from Jimmy's arithmetic period. (Write LPB on the line bordering on the behavior which you have selected.)

	BEHAVIOR	DURATION	FREQUENCY
a._____	Talked with Bob.		11111
b._____	Drew a picture.	10 min.	1
c._____	Completed an arithmetic problem.	3 min.	11
d._____	Played with his pencil.		11
e._____	Raised his hand.		11
f._____	Talked to the teacher.		1
g._____	Read in a comic book.	6 min.	1

CHECK YOUR ANSWER.

c.

Right you are! We'd sure like to increase the number of problems that Jimmy completes, but he doesn't have much time with all of his other activities. Actually, for Jimmy there are many behaviors which occur more frequently or for longer periods of time than writing answers to arithmetic problems.

6. Using the abbreviation HPB to denote a High Probability Behavior, identify three behaviors which, by your count, are high probability behaviors for Jimmy. (Write HPB on the line bordering on the behaviors which you have selected.)

	BEHAVIOR	DURATION	FREQUENCY
a._____	Talked with Bob.		11111
b._____	Drew a picture.	10 min.	1
c._____	Completed an arithmetic problem.		11
d._____	Played with his pencil.		11
e._____	Raised his hand.		11
f._____	Talked to the teacher.	1 min.	1
g._____	Read in a comic book.	6 min.	1

CHECK YOUR ANSWERS.

a, b, and g.

Jimmy certainly is versatile! Talking with Bob (a), drawing a picture (b), and reading a comic book (g) occupy him for a large part of the period. But how can we increase the number of problems that he completes when he seems to enjoy these other activities so much more?

PRACTICE

Design a hypothetical sample of behavior. Identify three high probability behaviors and two low probability behaviors. Remember, HPBs are behaviors which occur 1.) frequently, 2.) for long periods of time, or 3.) both frequently and for long periods of time.

BEHAVIOR	DURATION	FREQUENCY

CHECK YOUR ANSWERS ON THE PRECEDING PRACTICE WITH THESE CRITERIA.

Do the high probability behaviors occur more frequently or for longer periods of time than the other behaviors in the samples? _____

Do the low probability behaviors occur less frequently or for shorter periods of time than the other behaviors in the sample? _____

ARRANGING A CONTRACT (I)

The frequency of <u>any</u> low probability behavior can be increased if, after its completion, and only after its completion, a child is allowed to participate in a high probability behavior.

Jimmy is in luck! We no longer have to tell him to "get busy" or threaten him with failure. Instead, we're going to arrange a <u>contract</u> with him. He can now improve his skills and, at the same time, participate in the activities which <u>he</u> <u>enjoys</u>. Each time that he completes a set number of arithmetic problems, he will be allowed to go to the back of the room and read one of several available comic books, use the paint set, or talk to the other children who are there. In other words, after he performs a low probability behavior (answering arithmetic problems correctly) he can engage in the high probability behavior, (e.g. drawing) which we will no longer allow him to do at his desk.

One of our students, Jean, has been completing 10 questions in her reading workbook in thirty minutes. We would like to increase the number of questions which she completes.

We have recorded her behavior during a 40-minute free period in the room. This was a period during which the children were instructed to do what they wished.

BEHAVIOR	DURATION	FREQUENCY
Sat at her desk.	3 minutes	
Talked with Sally.	1 minute	1
Walked over to record player.		1
Played a record.	3 minutes	1
Talked to Sally.	4 minutes	1
Played two records.	8 minutes	11
Snapped her fingers.		1111 111
Talked to Sally	2 minutes	1
Shut off the record player.		1
Walked with Sally to window.		1
Looked out window.	1 minute	1
Talked to Sally.	2 minutes	1

How would you arrange a contract with Jean based on this sample of her behavior? (Select from a - c, from 1 - 3, and record your answers.)

If Jean completes _____,

a._____a set number of arithmetic problems.
b._____a set number of questions in her reading workbook.
c._____a set number of pages in her writing assignment.

she will be allowed to _____.

1._____play 2 records.
2._____look out the window.
3._____snap her fingers.

CHECK YOUR ANSWERS.

b and 1.

It would be very difficult to control Jean's finger-snapping behavior (3) and looking out the window (2) is actually a low probability behavior, but we'd be glad to allow Jean to play 2 records (1) if she'd correctly complete a set number of questions in her reading workbook (b).

PRACTICE

Arrange two contracts based on the answer to the practice question on page 43.

CHECK THE ANSWERS ON THE PRECEDING PRACTICE WITH THIS CRITERION.

Does the child have to complete a low probability behavior before he can engage in a high probability behavior? _____

TASKS

The low probability behavior which we have decided to increase is called a task. The task must be measurable.

When Jean is working in her reading workbook, she always seems to be totally involved. But, involved with what ..., her upcoming birthday party, a boy across the aisle? We certainly can't count on her involvement with reading! We can, however, present a number of questions which pertain to her reading, and we can count the number of questions which are answered correctly. A number of questions, then, can be a task.

Remember, we can measure only specific behaviors. Not doing something cannot be measured or used as a task.

8. Which of the following activities would you select for use as tasks? (Select from a - e and record your answers.)

    a._____Amount of time spent listening to the teacher.
    b._____A number of arithmetic problems.
    c._____A number of questions about a reading lesson.
    d._____Amount of time sitting in a desk.
    e._____Amount of time spent not hitting Bob.

CHECK YOUR ANSWERS.

b, c, and d.

We can measure the time spent sitting at a desk (d) and the number of reading questions or arithmetic problems correctly answered (b and c).

But, even though a child is looking directly at us, we cannot determine whether or not he is listening (a). We could, however, write a number of questions pertaining to our discussion and these questions would represent a task.

We also have no method of measurement for a <u>not behavior</u> (e). We must have a behavior to measure.

PRACTICE

List at least four additional examples of behaviors which could be used as tasks.

_____

_____

_____

_____

_____

_____

CHECK THE ANSWERS ON THE PRECEDING PRACTICE WITH THESE CRITERIA.

Is the behavior learned? _____
Can the behavior be counted? _____
Can the frequency of the behavior be changed? _____
Would several of us agree that there is only one behavior rather than several? _____

MICROTASK SIZE

The task should be divided into microtasks, units of a task behavior which will be required for access to a high probability behavior. The number initially required should be slightly smaller than the number of correct responses that the child is presently producing.

We have observed Jean during her 40-minute reading period for three days. During these periods we have counted the number of correct answers which she has written in her workbook during each 10 minutes of the periods. She is presently answering 5 questions correctly in 10 minutes.

Now, we can divide a page of her reading workbook into microtasks each of which consists of 4 questions: When she answers these 4 questions correctly (1 microtask) she will be allowed to listen to 2 records. Now she can complete our task and enjoy several units of time engaging in a high probability behavior.

If the size of the microtask is too large, the child will have fewer opportunities to engage in high probability behaviors. It is the engaging in these activities which is going to increase the amount of task behavior that is completed. So, be liberal!

9. Based on the sample below, how large would you make the microtasks for Jimmy? (Select from a - c and record your answer.)

Period	Problems correctly completed in 10 minutes
1	7
2	6
3	8

When Jimmy completes _____ problems correctly he will be allowed to engage in a high probability behavior.

a._____ 5
b._____ 8
c._____10

CHECK YOUR ANSWER.

a.

Five problems per microtask (a) is slightly smaller than the number of correct responses that Jimmy is presently producing. 8-10 problems (b and c) are too large.

If the contract is not effective (the amount of task behavior completed does not increase) we may want to reduce the size of the task in order to allow a greater number of occasions spent engaging in high probability behaviors.

PRACTICE

Design a hypothetical example of task performance and establish the microtask size which would be used.

PERIOD TASK

MICROTASK SIZE

CHECK THE ANSWERS TO THE PRECEDING PRACTICE WITH THIS CRITERION.

Is the size of the microtask equal to or slightly smaller than the child's present performance? _____

INCREASING MICROTASK SIZE

The size of the microtask should be increased by small steps.

Jimmy is going to enjoy this new system and soon he'll be completing several microtasks during each period. The number of problems which we include in each microtask can now be increased.

Imagine how Jimmy will react if we suddenly confront him with a sheet of 10 problems instead of 5. He may complete them, but then again, he may begin to dawdle or find more interesting activities at his desk, for we've radically decreased the number of opportunities that he will have to engage in high probability behaviors.

A better approach would be to add 2 problems to each microtask and tell Jimmy how well he is doing. Remember, a little praise for better performance can only increase the effectiveness of our system.

10. Arrange a sequence of increases for the following microtask. (Select from a - c and from 1 - 3 and record your answers.)

PRESENT PERFORMANCE . . . . . 15 questions per microtask

Increase 1 . . . . . a._____17
b._____20
c._____22

Increase 2 . . . . . 1._____22
2._____19
3._____18

CHECK YOUR ANSWERS.
a and 2.

Increase by small steps! If we had increased the size of the first microtask to 20 or 22 (b and c) we would have increased it by 25% or more.

On the second increase, we again used a small unit. To increase the microtask by only 1 (3) would be almost too small to increase it by 5 (1) would be too large.

A point to remember when increasing the microtask size is that the task material may become more difficult. If it is more difficult or requires a great deal of time, we may want to reduce the microtask size.

PRACTICE

Set three hypothetical microtasks and sequentially increase them on two occasions.

MICROTASK	PRESENT SIZE	INCREASE 1	INCREASE 2

CHECK THE ANSWERS TO THE PRECEDING PRACTICE WITH THIS CRITERION.

Are the microtasks increased by small steps? _____

REINFORCING EVENTS

The high probability behavior to which the child will be given access is called a reinforcing event. The duration of the reinforcing event should be from 3 to 6 minutes or long enough to allow the child to complete an activity.

We know that it is important to offer a child many opportunities to engage in high probability behaviors (reinforcing events). It is also important to give the child enough time to enjoy the activity.

It wouldn't be very enjoyable if we interrupted Jimmy after he had completed only four pages of his exciting comic book or if we allowed Jean to play only one record. We should make it as enjoyable as possible, for the 5 minutes that we allow Jim to read in the comic book and the time that it takes for Jean to play 2 records is not wasted time.

Remember, time spent in the reinforcing event pays off in more successful behavior!

11. Establish the duration of the reinforcing event for Bob. (Select from a - c and record your answer.)

    If Bob answers 10 problems correctly (1 microtask) he will be allowed to draw a picture for _____.

    a._____2 minutes
    b._____5 minutes
    c._____8 minutes

CHECK YOUR ANSWER.

b.

Right you are! As long as we remember the "3 to 6 minute model," we will have no problems in establishing the duration of the reinforcing event. The child will have enough time to complete an activity or to participate in it for an enjoyable period of time.

PRACTICE

Describe three hypothetical reinforcing events based on children's behavior which you have observed and establish the unit of time for which a child would be allowed to engage in it.

RE	PERIOD OF TIME

CHECK THE ANSWERS TO THE PRECEDING PRACTICE WITH THIS CRITERION.

Have you allowed from 3 to 6 minutes or enough time for the child to complete the activity? _____

ARRANGING A CONTRACT (II)

The frequency of <u>any</u> task behavior can be increased if, after its completion and only after its completion, a child is given access to a reinforcing event.

If we know that a child is correctly completing approximately 7 problems during each 10 minutes of his arithmetic period, and, if we also know that when given "free" time, the child participates in drawing, reading, and puzzle building more frequently or for longer periods of time than any other activities, we are prepared to arrange a contract.

Each time that the student completes a microtask composed of 7 problems we will allow him to draw, read, or build puzzles for a period of time ranging from 3 to 6 minutes.

12. How would you arrange a contract with Bob based on the following samples of behavior? (Select from a - c and from 1 - 3. Record your answers.)

TASK SAMPLE

Period	Number of problems correctly completed in 10 minutes
1	22
2	20
3	24

BEHAVIOR	DURATION	FREQUENCY
Watch fish at aquarium	4 minutes	11
Talked to Bill	1 minute	11
Walked to table		1
Constructed model airplane	12 minutes	1
Played checker game	5 minutes	1

When Bob completes _____ problems correctly, he will be

a._____20
b._____26
c._____32

allowed to engage in _____.

1._____building an airplane.
2._____answering arithmetic problems.
3._____walking around the classroom.

CHECK YOUR ANSWERS.

a and 1.

We were looking for a microtask which was equal to or slightly smaller than Bob's general performance. The only microtask which meets our criterion is 20 (a).

After these problems are correctly answered, we will not ask Bob to complete more problems (2), and walking around the room (3) may be disruptive. But we will arrange a 6-minute period during which he can build on a model airplane (1), the behavior which he engaged in for the longest period of time.

PRACTICE

Design a sample of task behavior and a sample of free time similar to those for Bob. Arrange a contract based on these samples.

TASK SAMPLE	SAMPLES OF FREE TIME		
PERIOD	BEHAVIOR	DURATION	FREQUENCY

CONTRACT

CHECK YOUR ANSWERS TO THE PRECEDING PRACTICE WITH THESE CRITERIA.

Is the size of the microtask equal to or slightly smaller than the child's present performance? _____
Is the reinforcing event which you have selected a behavior in which the child participates either frequently or for long periods of time? _____
Does the reinforcing event last for 3 to 6 minutes or long enough to allow the child to complete the activity? _____

TERMINATION OF THE RE

A distinct signal should be presented to terminate the reinforcing event.

Are we going to expect John to watch the clock while he's engaging in a reinforcing activity such as model airplane building? Probably not! It is necessary, however, to establish a "time's up" signal. When he has completed the contracted time in the RE area, we can say, "Johnnie, it is time to return to your desk," (or other task area). An alternative method would be to set a timer to ring after 3 to 6 minutes have past. We could then say to Johnnie, "You can build on the airplane model until the bell rings. Then, you must return to your desk."

The statement of the teacher and/or the ringing of the bell are distinct signals for "time's up" and "return to the task area."

13. A signal for the termination of the reinforcing event should be one which _____. (Select from a - d and record your answers.)

    a._____the child will immediately notice.
    b._____the child can delay.
    c._____informs the child that the RE time is over.
    d._____instructs the child to return to the task area.

CHECK YOUR ANSWERS.

a, c, and d.

Right again! We want the child to notice the signal (a), stop engaging in the reinforcing activity (c), and return to the task area (d). We do not want the child to extend his time in the RE area beyond the contracted time (b).

PRACTICE

Describe at least four additional signals which could be used to terminate a reinforcing event.

_____

_____

_____

_____

_____

CHECK YOUR ANSWER TO THE PRECEDING PRACTICE WITH THESE CRITERIA.

Is the signal one which the child will notice? _____
Is the signal one which does not occur under other circumstances? _____

RE AND TASK AREAS

It would be advisable to establish separate areas for task and reinforcing events.
A reinforcing event (RE) should occur in one area, the RE area.
A task should occur in one area, the task area.

The RE area, where a child can draw pictures, read comics, talk, play records, or engage in other reinforcing activities should be located in a distinct section of the room, or, in a small room separated from the classroom. A room divider could do wonders!

One task area will probably be the students' desks somewhere in the classroom.

Sheets of arithmetic problems, reading workbooks, and other task units will not be present in the RE area, and the record player, comic books or other items associated with the RE will be removed from around the task areas.

14. Based on the previous sample of Bob's behavior (Question 12), which of the following items would you find in the RE area? (Select from a - d and record your answers.)

a._____an airplane model.
b._____arithmetic problems.
c._____reading questions.
d._____checkers.

CHECK YOUR ANSWERS.

a and d.

You've divided it well! We want the reinforcing activities to remain in the RE area, and, should a child bring them to the task area, they will be very calmly returned to the RE area. This is very important, because, for some children, the behaviors which are the highest probability behaviors are those which agitate us.

PRACTICE

Design a hypothetical sample of "free-time" behavior. List the items which would be present in the RE area.

BEHAVIOR	DURATION	FREQUENCY

ITEMS PRESENT

CHECK THE ANSWERS TO THE PRECEDING PRACTICE WITH THIS CRITERION.

Have you included all of the items which are associated with high probability behaviors? _____

THE RE MENU

A menu is a pictorial listing of a child's reinforcing events from which a child can select an activity. A menu is constructed by noting a child's high probability behaviors and reproducing them on paper.

We have observed Dick during a 40-minute "free period," and the following count has been made of his behavior.

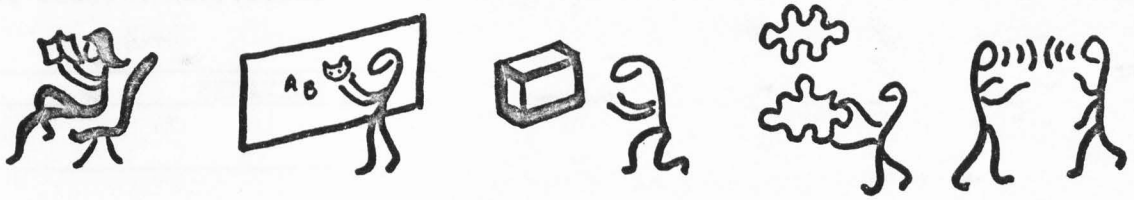
BEHAVIOR	DURATION	FREQUENCY
Played checker game	10 minutes	1
Played a record		11111
Hand in aquarium		1
Read comic	4 minutes	1
Turned globe		11111
Talked to Bob	1 minute	1

Dick's high probability behaviors (those activities in which he participates most frequently or for the longest periods of time) can be reproduced in picture form or with real child-activity photographs as follows:

Dick now has the opportunity to engage in a reinforcing event which he himself has selected. Upon completion of each microtask, the menu will be presented to Dick; he will select an activity and <u>immediately</u> engage in it.

15. Based upon the following sample of behavior which activities would you include on a RE menu? (Turn the page, select from a - e, and record your answers.)

BEHAVIOR	DURATION	FREQUENCY
Wrote on board	5 minutes	11
Talked to Sue	2 minutes	1
Built on giant puzzle	10 minutes	1
Looked at fish		1
Sat in chair	6 minutes	1
Glanced at book		11



a._____ READ A BOOK

b._____ WRITE ON BOARD

c._____ LOOK AT FISH

d._____ BUILD PUZZLE

e._____ TALK

CHECK YOUR ANSWERS.

b and d.

Yes, we would definitely include writing on the board (b) and building the puzzle (d) since these behaviors occur most frequently or for longer periods of time.

In order to add variety to the menu we can hold a high probability behavior -- i.e., sitting in the big chairs, in reserve for presentation on limited occasions. Or, we could have certain activities which are available only on certain days. It is also important to re-evaluate the child's behavior at regular intervals in order to determine which activities are reinforcing. Remember, children can change from one day to the next!

PRACTICE

Based on a hypothetical sample of behavior, construct an RE menu with at least 4 activities presented on it.

BEHAVIOR	DURATION	FREQUENCY

RE MENU

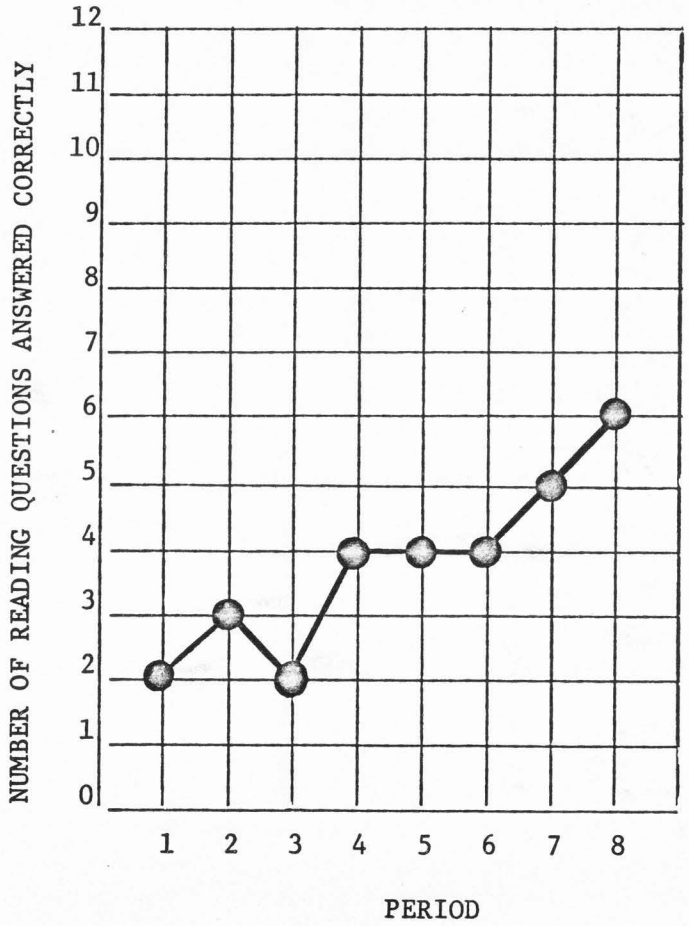
CHECK YOUR ANSWERS TO THE PRECEDING PRACTICE WITH THIS CRITERION.

Do the pictures on the menu represent only activities in which the child engaged frequently or for long periods of time? _____

PROGRAM EVALUATION

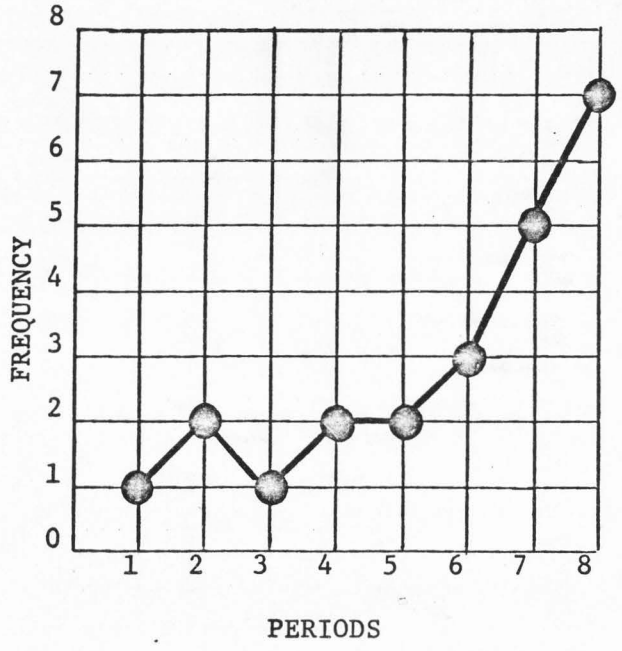
The success of our program can be determined by noting the changes in the frequency with which the task behavior is occurring. An examination of our students' graphs will provide this information.

We have recorded the frequency with which Sue correctly answers questions in her reading workbook. Her graph appears as follows:

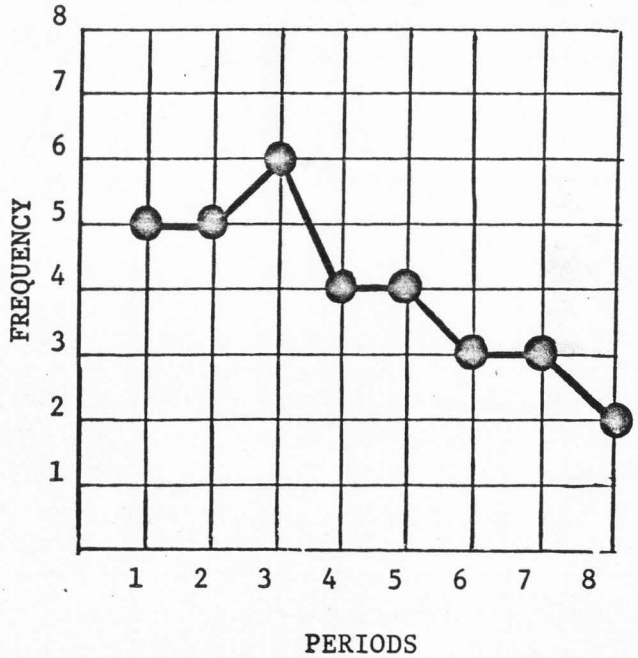


It is easily noted that over the course of 8 reading periods, the number of questions which she answers correctly has increased from 1 to 6.

If we are attempting to increase the frequency with which a behavior occurs, success is evident if the line on our graph moves toward the upper, right corner.

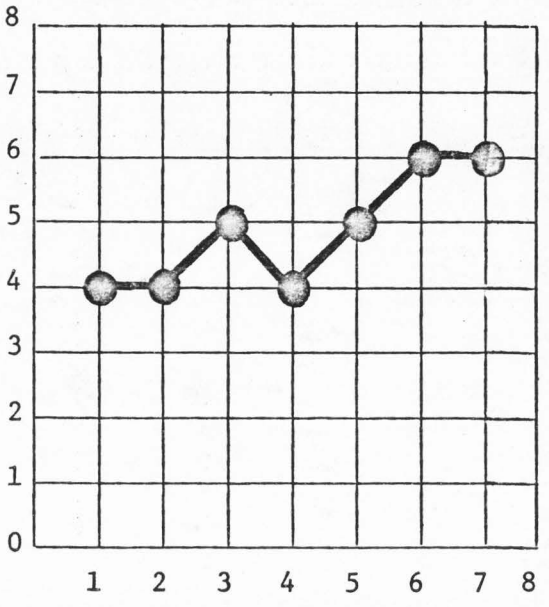


By the same token, if the line on the graph tends to move toward the lower, right corner, the frequency of the behavior is decreasing, and we must re-evaluate our program.

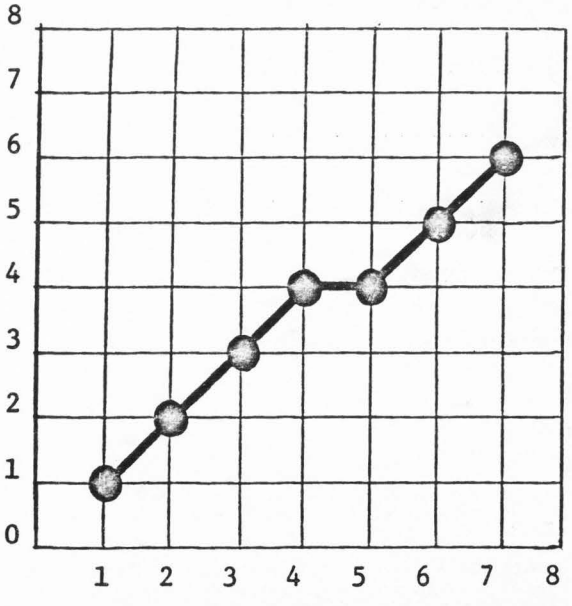


16. We have elected to increase the frequency of several task behaviors. Which of the following graphs indicate that the program is successful? (Select from a - d and record your answers.)

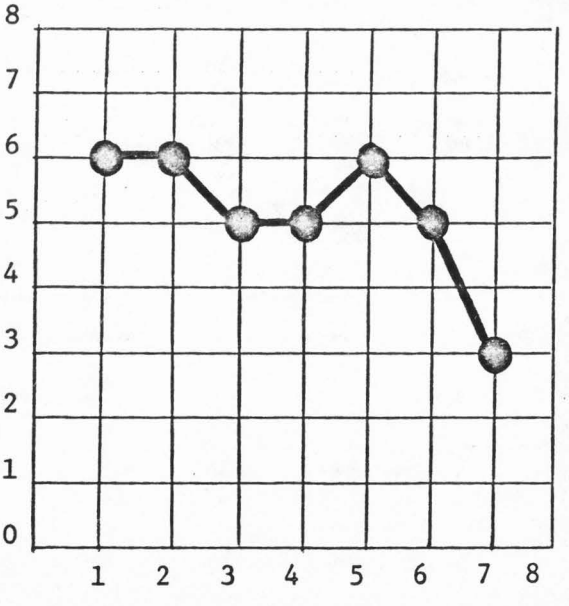
a._____



b._____



c._____

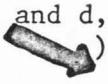


d._____

CHECK YOUR ANSWERS.

b and c.

On graphs b and c, the lines tend to move toward the upper, right corner (). SUCCESS!

On graphs a and d, the lines tend to move toward the lower, right corner (). RE-EVALUATE!

RE-EVALUATION

If the frequency of the behavior is decreasing, we can re-evaluate our program by answering the following questions:

1. Have you defined a specific, learned behavior?
2. Have you counted 1.) the frequency and/or 2.) the duration with which the behavior is occurring?
3. Have you recorded 1.) the frequency and/or 2.) the duration with which the behavior is occurring?
4. Have you selected high probability behaviors to be used as reinforcing events by observing and recording the child's behavior in a "free" environment?
5. Was the initial microtask size slightly smaller than the child's present performance?
6. Have you allowed the child to participate in the reinforcing event for 3 to 6 minutes or long enough to complete an activity?
7. Have you terminated the reinforcing event promptly upon completion of the contracted time?
8. Have you arranged the contract with the child?

TIME SAMPLE SHEET

PERIOD _____

TIME _____

STUDENT _____

BEHAVIOR	DURATION	FREQUENCY

Appendix B

Test on Behavioral Prescription Writing

We are going to observe a boy in a classroom setting during a free period (a period during which he can do anything he wishes). This student has been performing at the following levels during each 40-minute class period:

ARITHMETIC	SPELLING	READING
20 problems	7 words	8 questions
18 problems	9 words	8 questions
19 problems	7 words	7 questions

HOW WOULD YOU INCREASE THE CHILD'S PERFORMANCE IN THESE AREAS?

RESPONSE CRITERIA

POINTS	DESCRIPTION
0	Prescription lacks reference to reinforcement.
2	Prescription incorporates the use of reinforcers to increase general task performance. ...reinforcement will be given to the child when he completes his work.
4	Prescription incorporates the use of HPBs to increase general task performance. ...the child will be allowed to play in the box when he completes his work.
6	Prescription incorporates the use of HPBs to increase specific tasks. ...the child will be allowed to blow bubbles when he completes his arithmetic problems.
8	Prescription incorporates the use of HPBs of specific duration to increase specific tasks. ...the child will be allowed to play with the guinea pig for 3 minutes when he completes his arithmetic problems.
8	Prescription incorporates the use of HPBs to increase specified units of task behavior. ...the child will be allowed to play with the guinea pig when he completes 8 problems.
10	Prescription incorporates the use of HPBs of specific duration to increase specified units of task behavior. ...the child will be allowed to play with the guinea pig for 4 minutes when he completes 10 arithmetic problems.

ADDITIONAL POINTS

1	Specific procedures for developing an RE menu.
1	Specific procedures for recording or measuring behavior.
1	Specific procedures for terminating the RE.
1	Specific procedures for increasing microtask units.

Appendix C

Test on Contingency Management Principles

1. The components of a behavioral contract are_____

_____

2. A reinforcing event is any_____

_____

3. We can measure behavior by_____

_____

4. We can increase the frequency with which a behavior occurs by___

_____

_____

5. A task behavior is any_____

_____

6. The task area is comprised of_____

_____

7. The RE area would be comprised of_____

_____

8. The duration of the RE would be_____

_____

9. The behaviors with which we deal could be described as_____

_____

10. Return to the task area can be assured by_____

_____

11. An RE menu is_____

_____

12. To determine the success of our program, we must_____

_____

13. Success will be indicated by_____

_____

14. Tasks are constructed by_____

_____

15. Microtasks are increased by_____

_____

16. The sequence of events in a contingency management system is

_____

17. We terminate the RE by_____

_____

Acceptable Responses and Weights

TOTAL POINTS PER QUESTION	QUESTION	SAMPLE ANSWERS
3	1.	...a task or LPB (1), a contingency (1), and a reinforcing event or HPB (1).
2	2.	...HPB (2). ...behavior in which the child participates frequently (2). ...event which increases the probability that a behavior will occur again (2). ...behavior which the child enjoys (1).
1	3.	...counting its frequency and/or timing its duration (1).
2	4.	...following the emission of the behavior with a reinforcer or RE (2). ...reinforcement (1).
1	5.	...LPB which we have selected to increase in frequency or duration (1).
1	6.	...a specific area for the occurrence of task behaviors and the materials associated with the task (1).
1	7.	...materials or activities associated with the child's HPBs (1).
1	8.	...from 3-6 minutes or long enough for the child to complete an activity (1). ...long enough to be shown to be reinforcing (1).
1	9.	...HPBs and LPBs (1). ...learned or modifiable behaviors (1).
1	10.	...following each completed microtask with reinforcement (1). ...presenting an RE contingent upon the child's readily returning to the task area (1).
1	11.	...a pictorial listing of a child's HPBs (1).
2	12.	...measure the behavior (1). ...note the change in the frequency of the LPB (2). ...measure and record the frequency of the LPB (2).

TOTAL POINTS PER QUESTION	QUESTION	SAMPLE ANSWERS
1	13.	...an increase in the frequency of the task behavior or LPB (1).
1	14.	...determining the child's basal level of performance (1). ...noting the frequency with which an LPB is occurring (1).
1	15.	...small units (1).
2	16.	...a task, evaluation, and RE (2).
1	17.	...presenting a distinct signal for the return to the task area (1).

Appendix D

Content of Video-tape I

Duration	Camera	Action
1.0 min.	BOY AT GLOBE.	LOOK AT GLOBE; LOCATE... TURN GLOBE.
	FOLLOW BOY TO BOXES.	WALK TO BOXES.
1.5 min.	BOY AT BOXES.	CRAWL INTO BOXES.
.5 min.	ON BOY - GIRL.	TALK TO GIRL.
1.0 min.	BOY - IN-OUT OF BOXES.	CRAWL IN AND OUT OF BOXES.
	FOLLOW BOY TO BOOKS.	WALK TO BOOKS.
.5 min.	ON BOY.	SCAN BOOKS.
2.0 min.	BOY READING COMIC. CLOSE-UP TITLE.	READ COMIC BOOK.
	FOLLOW BOY TO PIG.	WALK TO PIG.
.5 min.	BOY WITH PIG. CLOSE-UP PIG.	HOLD PIG. REPLACE.

Content of Video-tape II

Duration	Camera	Action
.5 min.	BOY AT GLOBE.	LOOK AT GLOBE; LOCATE...
	FOLLOW BOY TO BOXES.	WALK TO BOXES.
.5 min.	BOY AT BOXES.	CRAWL INTO BOXES.
	BOY - GIRL.	BOY TO GIRL; TALK TO GIRL.
.5 min.	BOY - GIRL IN BOXES.	CRAWL INTO BOXES.
1.5 min.	BOY WITH BEAN BAG.	PICK UP BEAN BAG. TOSS INTO AIR.
	FOLLOW BOY TO PIG.	WALK TO PIG.
.5 min.	BOY WITH PIG.	HOLD PIG. REPLACE.
	FOLLOW BOY TO GAME.	WALK TO GAME.
.5 min.	BOY AT GAME.	PICK UP CHECKERS. CARDS.
	FOLLOW BOY TO PIG.	WALK TO PIG. HAND IN; PET.
	FOLLOW BOY TO BOXES.	WALK TO BOXES. GIRL AT BOXES.
.5 min.	BOY - GIRL.	TALK TO GIRL.
1.0 min.	BOY - GIRL IN BOXES.	CRAWL INTO BOXES.

VITA

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MASTER OF SCIENCE

Thesis: The Effects of a Programed Text of Contingency Management Procedures on the Ability of Teachers to Write Behavioral Prescriptions

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3 Children - Lance,
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Educational History

Illinois State University, B. S. (Education: Educable Mentally Handicapped and Elementary), 1961.

Utah State University: Completed requirements for M. S. (Psychology), 1968.

Professional Experience

Research assistant: Behavioral Research Project, Department of Psychology, Utah State University, 1967-1968.

Demonstration teacher: Educable Mentally Handicapped, Department of Special Education, Utah State University, Summer, 1968.

Graduate assistant: Screening of teacher candidates, Department of Secondary Education, Utah State University, 1968.

Teacher and Vocational Coordinator: Senior High Level, Educable Mentally Handicapped, Illinois School District #113, Highland Park, Illinois, 1964-1967.

Supervisor: Junior High and Primary programs for the Educable Mentally Handicapped, Illinois School District #39, Wilmette, Illinois,

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Unpublished Materials

Morreau, L. The social studies unit with prevocational emphasis. Paper presented at the meeting of the Illinois Council for Exceptional Children, Chicago, October, 1964.

Morreau, L. A vocational program for the educable mentally handicapped. Technical Report, October, 1964, Illinois School District #113.