THE SEPARATE AND COMBINED EFFECTS OF MODELS, REINFORCEMENT, AND ATTENTIONAL VARIABLES ON ADOLESCENT VOCATIONAL BEHAVIORS

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
NEAL KENNETH LaFLEUR
1970

This is to certify that the

thesis entitled

THE SEPARATE AND COMBINED EFFECTS OF MODELS, REINFORCEMENT, AND ATTENTIONAL VARIABLES ON ADOLESCENT VOCATIONAL BEHAVIORS

presented by

Neal Kenneth LaFleur

has been accepted towards fulfillment of the requirements for

Ph.D. degree in Education

Date 4/17/70

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ABSTRACT

THE SEPARATE AND COMBINED EFFECTS OF MODELS, REINFORCEMENT, AND ATTENTIONAL VARIABLES ON ADOLESCENT VOCATIONAL BEHAVIORS

By

Neal Kenneth LaFleur

The purpose of this study was to investigate the combined and separate effects of models, reinforcement, and attentional factors on vocational behavior. The theoretical foundation for the investigation was Bandura's propositions regarding observational learning principles.

In order to test the effects of these three variables of interest, treatment booklets were constructed of the following four types: Model, Model-Attentional, Model-Reinforcement, and Model-Reinforcement-Attentional. A fifth active control booklet was constructed to be used as a control for the Hawthorne effect. All four of the experimental booklets presented a description of a student performing four vocational information-seeking behaviors. The description was accompanied by cartoon stick figures depicting the behaviors described. The Model booklet only presented the description and the cartoon figures.

The Model-Attentional booklet had an additional page of "pre-organizers" before the presentation of the description and cartoon figures. The Model-Reinforcement booklet had the description and the cartoon figures plus a page describing and depicting the student receiving valuable information as a result of his information-seeking behaviors. The Model-Reinforcement-Attentional booklet had the description and cartoons, the "pre-organizers," and the reinforcement material. All of the treatment booklets had the same cover page.

The subjects in the investigation were 140 students from the tenth and eleventh grades at Williamston High School, Williamston, Michigan. The subjects were grouped by sex and grade level and randomly assigned to one of the five treatment groups. The treatments were administered individually in group settings to permit subject independence. A 5 x 2 x 2 data matrix with treatments, sex, and grade level completely crossed with each other. The data matrix had equal cell frequencies of seven subjects.

Nine days following the administration of the treatments the criterion measures were collected. The criterion measures were of three types: Knowledge, Performance, and Interest. To measure the acquisition of the modeled behaviors, an open-ended questionnaire was completed by the subjects. To measure the performance of the modeled behaviors, tallies of the number of post cards mailed,

library requests deposited, counselor appointment requests deposited, and speaker request forms deposited were collected. To measure the level of interest in information-seeking behaviors, the subjects completed a 23-item scale constructed for the experiment.

Both a multivariate and univariate analysis procedure was completed using planned contrasts to test seven specified hypotheses. The results of the hypothesis testing are: (1) the treatment and subject variables did not interact in any first and higher order comparisons, (2) the presence of reinforcement did not produce a greater performance of the modeled behaviors compared to the absence of reinforcement, (3) the presence of attentional factors produced a greater performance of the modeled behaviors than the absence of attentional factors, and (4) the experimental treatments produced a greater performance and knowledge of the modeled behaviors as well as a greater interest level in information-seeking activities than did control procedures.

The implications of the results of this investigation indicate that the use of models and attentional factors provide a viable tool for the teaching of behaviors to individuals. For practicing counselors, the use of model procedures with attentional factors provides an effective means to aid students in the solving of their presenting problems.

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Counseling, Personnel Services
and Educational Psychology

1970

ACKNOWLEDGMENTS

The writer wishes to express his appreciation to the following individuals:

To Dr. Richard G. Johnson, committee chairman and major advisor, who exhibited an active interest in my doctoral program of study and this research project, stimulated an interest in experimental research in counseling, and was freely available for constructive advice and encouragement.

To Dr. Gregory A. Miller, committee member, who as major advisor during the beginning of my graduate study and member of my doctoral committee offered advice and guidance.

To Dr. Andrew C. Porter, committee member, who gave freely of his time and knowledge during the program development and research stages of my graduate study.

To Dr. Andrew M. Barclay, committee member, who offered support and guidance.

To Drs. Bob Winborn, Norman Stewart and William Farquhar, faculty members, who gave valuable instruction, provided opportunities for professional growth, and assumed an active interest in my training program.

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CHAPTER I

THE PROBLEM, RATIONALE, AND REVIEW OF RESEARCH

Problem

The "world of work" in contemporary American society is complex. Rapid and massive changes in the occupational structures of the social system demand that the employed individual of the future be knowledgeable about the "world of work" and skilled in the decision-making process involved with occupational choice. The emerging American technostructure and the ability of the individual to effectively operate within the technostructure have placed increased demands on educational systems to adequately prepare students for entry into the adult world (Gailbraith, 1967).

The responsibility for this preparation has been assumed by the existing educational institutions. Educational systems must meet the needs of the student to acquire the essential skills required in making individualized decisions (Grandstaff, 1969). The expanded needs for vocational-educational counseling has been the concern of educators. Tyler (1961), Brammer and Shostrom (1968),

Goldman (1961), and Shertzer and Stone (1968), among others, have suggested that vocational counseling presents one of the most necessary functions of an educational system. The intensity and amount of attention that educational systems are giving to occupational and educational guidance are evident from reviews of the methods of teaching and presenting of occupational and educational units in the schools (Sinick, Gorman, & Hoppock, 1967; Sinick & Hoppock, 1953a, 1953b, 1956, 1959, 1961, 1964; Hoppock, 1967).

It was the purpose of this study to explore procedures which presented methods of obtaining occupational and educational information that would be of use in vocational-educational counseling settings. It was assumed that if students were to learn effective methods of obtaining occupational and educational information, then their ability to make vital and continued decisions regarding vocational choice would be enhanced.

The research presented in this study is an investigation of various subject and treatment variables with the use of social modeling techniques to stimulate educational and vocational information-seeking behaviors. The subject variables were sex and grade level. The treatment variables were the presence of models, reinforcement, and attentional factors. The study attempted to answer the following several specific questions: Does the grade level or the sex of the subject have an effect on the learning of the

information-seeking behaviors taught via social modeling? Do the separate and combined presence of models, reinforcement, and variables of attention in the modeling presentation have an effect on the acquisition of the modeled behavior? On the performance of the modeled behavior? Theoretical propositions and some research have been presented concerning various aspects of the questions posited but they have not been investigated thoroughly.

The need for more experimental research in the area of counseling has been suggested by Krumboltz (1967), Samler (1968), Thoresen (1969a, 1969b), Whiteley (1967), and others. The demand is for controlled experimental studies to evaluate the cause-effect relationships of counseling procedures on specific behaviors of the clients. Studies of this nature require that the treatments be well-defined and criterion measures be actual client behaviors following the treatments.

In the area of vocational counseling or career exploration and planning Brayfield and Crites (1964), Borow (1961), Holland (1964), Sinick and Hoppock (1961), and Super, Tiedeman, and Borow (1961) have urged the conducting of experimental studies in the general area of vocational planning and the use of occupational information. The present study was formulated and executed to meet these stated needs.

Review of the Literature

Learning in Counseling

As a focal point, counseling should help clients learn skills to solve their presenting problems and can be utilized to formulate solutions for future problems (Krumboltz, 1965). The role of the counselor is to assist the client in making behavioral changes that effectively will solve the problem for which he seeks help. McGowan and Schmidt (1962) offer the following definition of counseling: "It is a social learning interaction between two people, the methods and purposes of which range between the extremes of simple advising and intense long-term psychological treatment" (p. 3). Thoresen (1969b) states that counseling

> . . . is a variety of procedures systematically undertaken by a counselor to promote specific changes in the behavior of clients. These changes are directly relevant to goals which have been mutually established between the client and counselor (p. 844).

Arbuckle (1967), in describing the process of counseling clients, comments that clients "need help in learning how to be different, in learning how to become the people they want to become" (p. 219). Patterson (1966), Bandura (1962), Bijou (1966), Michael and Meyerson (1962), Woody (1969), and Wrenn (1962) support the view that the central purpose of counseling is to assist in mutually accepted behavioral changes.

The leading proponent of "behavioral counseling" has been Krumboltz (1964, 1965, 1966a, 1966b, 1967). Krumboltz (1965) states:

> The central purpose of counseling, then, is to help the client resolve those problems for which he requests help. If a client terminates his contact with a counselor and is still bothered by the same problem that brought him to the counselor in the first palce, that counselor has failed. If, on the other hand, the client has either solved the problem he brought to the counselor or planned a course of action that will eventually lead to a resolution of his problem, then the counselor has succeeded. Within limits, it is each client's wishes that dictate the criteria of success for that client (p. 384).

Thoresen (1969b) posits the view that counselors should approach "counseling as an applied behavioral scientist" and that this approach will "permit us (counselors) to get on with the task of more effectively helping a wide variety of clients with their many different kinds of problems" (p. 847). The behavioral approach views counseling as a learning situation in which the counselor assists the client in learning specified behaviors which are necessary for the solution of the presenting problems. The purpose of this study was to explore methods by which information-seeking behaviors can be taught to a select population of high school students.

Decision-Making in Counseling

The importance of learning viable decision-making behaviors in the counseling process has been supported by a growing number of guidance and counseling personnel.

Boocock (1967), Gelatt (1962), Gelatt and Clarke (1967), Katz (1963, 1966), Wrenn (1962), and others have recognized the prominent position that the learning of effective decision-making behaviors holds in the guidance-counseling setting. Samler (1968) states that "counseling should be regarded as a learning experience, and exposure to decision-making in the context of the working world" (p. 238). Goldman (1961) writes that:

> An almost universal characteristic of counseling . . . is that it deals with decisions and plans . . . and is usually to give help in making decisions and plans for the future and in choosing among alternative courses of action in the world of reality (p. 25).

Krumboltz (1965) and Clarke et al. (1965) suggest that as its major emphasis counseling should assist clients in the learning of effective decision-making methods. Thoresen and Mehrens (1967) present the question: "What counseling procedures can be employed that will help clients learn how to become effective decision-makers" (p. 166)? As seen from a behavioral counseling approach, decision-making is a skill that is learned and one that can be later generalized to exacting the solutions for future problems.

Role of Information

The role of information in decision-making is an important factor. It has been proposed by Gelatt (1962), Gelatt and Clarke (1967), Krumboltz (1966b), and Slocum (1965) that the development of effective decision-making behaviors must include skills in the collection and

analysis of pertinent information. Clarke et al. (1965) suggest that the major decision theories that have been presented all stress the need for information-seeking skills and that sound decisions could not be made in the absence of relevant information. Thoresen and Mehrens (1967) argue for the need to explore different methods to teach the necessary information seeking skills for decision-making.

Guidance and counseling activities involved in assisting individuals solve problems concerning educational-vocational decisions make constant use of information. Baer and Roeber (1964), Calia (1966), Norris et al. (1966), Rusalem (1954), and others place the use of relevant and accurate occupational and educational information as an essential ingredient in meaningful counseling.

Super and Overstreet (1960), reporting on the vocational exploration of ninth-graders, report that more than one-half had not been involved in adequate information-seeking behaviors on which to establish their vocational plans. O'Hara (1968) suggests that vocational counseling must consist of the developing of a sense of vocational development with the individual as well as job facts. Jordaan (1963), writing from a "self-concept" framework, argues that exploratory behavior will lead to increased knowledge about the individual and his environment which will be of assistance in future decision-making.

A number of studies have been conducted in which subjects were given experience in simulated job exercises to aid their decision-making abilities in the general area of vocational choice (Baker, 1967; Hamilton & Krumboltz, 1969; Johnson, 1967; Jones, 1966; Sheppard, 1967). Youst (1969) presented vocational information to individuals via slides to stimulate information seeking behaviors and aid the vocational decision-making process. The present study examined methods of stimulating information-seeking behaviors and teaching viable strategies to obtain vocational and educational information.

Social Model Learning

Social model learning has been referred to in the social science literature as imitative learning, vicarious learning, indirect learning, observational learning, identification, and matched dependent behavior. Reports of recent research based on the tenets of social learning theory (Bandura, 1965a, 1969; Bandura & Walters, 1963) have shown that observers of social models imitate the behaviors of the models. The research reported indicates that the observation of models can facilitate the learning of specified behaviors. The basic assumption of social model learning is that behavior can be learned by exposing the individual (observer) to a social model. The present study explored the application of social model learning to increasing information-seeking behaviors.

Early studies in social model learning were reported as matched dependent behavior by Miller and Dollard (1941). The studies reported involved the use of social models and reinforcement of the observer for matching the modeled behaviors. These studies were not able to distinguish between the treatment effects of the social model and the reinforcement. The necessary conditions for social model learning theory as posited by Miller and Dollard (1941) included motivated observers and the application of positive reinforcement directly to the observer for correctly matched behaviors.

A "proprioceptive feedback concept" in imitative learning was proposed by Mowrer (1960). Mowrer argues that imitation occurs only when reward for himself for imitating the modeled behaviors is perceived by the observer. It is this proprioceptive concept that leads Mowrer to associate imitative learning with classical conditioning. The emotional or motivational rewarding feedback can be achieved by either directly rewarding the observer or by having the learner observe the model's behavior rewarded. According to Mowrer's theory of imitative learning, positive reinforcement associated with the desired behavior must be included for imitation to occur. The present study examined the combined and separate effects of modeling and reinforcement on increasing the information-seeking behaviors of observers. The use of reinforcement in this study

followed Mowrer's proprioceptive feedback concept and by being applied directly to the model was applied vicariously to the observer.

Bandura (1962, 1965b, 1969) criticizes the conceptual use of Miller and Dollard's (1941) need for observer reinforcement and Mowrer's (1960) proprioceptive feedback principle. Bandura separates the learning of behaviors through observation of social models into two categories: the acquisition of the behavior and the performance of the behavior. A contiguity theory of observational learning has been proposed by Bandura (1965, 1969). According to this theory, contiguity of sensory stimulation is the sole requirement for the acquisition of most forms of matching responses. This process is independent of motivation, reinforcement, and overt practice of the modeled behavior. It is suggested that the acquisition of imitative responses may depend solely upon observing the performance of a social model and does not necessarily entail the opportunity to perform the model's behavior or any reinforcement applied to either the model or the observer.

The contiguity theory of Bandura also suggests that the closer the approximation of the modeled behaviors to the behavior being taught, the more likely it will be that the sensory stimulation elicited by the model will aid the learning of the behavior by the observer. Bandura postulates that the performance of the behaviors should

be reinforced. Research evidence is offered (Bandura & Walters, 1963) that the acquisition of imitative learning is not dependent on reinforcement.

> Data from an experiment by Bandura . . . strongly suggests that the acquisition of imitative responses results primarily from the contiguity of sensory events whereas response consequences to the model or to the observer have a major influence on the performance of imitatively learned responses (Bandura & Walters, 1963, p. 57).

The main research study upon which the above statement rests was a study in which children observed agressive responses of a model. During the beginning stage of the experiment the children did not practice the model's behavior and were not directly reinforced. Any of the learning that took place during this beginning stage was solely on an observational or vicarious basis. Following this beginning stage, the children were rewarded for imitating the modeled behaviors and the imitation of the observers who viewed a non-consequence treatment procedure were equal to the imitation of observers who viewed model reinforcement treatment procedures. No research of this type has been conducted in counseling. It was the purpose of this study to examine the combined and separate effects of model learning with and without reinforcement on both the performance and acquisition of information-seeking behaviors.

Symbolic Models

Symbolic models are forms of physically present models that are presented on audio tapes, video tapes,

films, slides, cartoons, and other media. Reports (Bandura & Walters, 1963) of recent studies (Bandura, Ross & Ross, 1963; Lovaas, 1961; Walters et al., 1962) have provided evidence that symbolic models may be equally as effective as behavior influencing agents as physically present models.

Studies using models presented in cartoon form have demonstrated that this format is an effective method to present social models. Lovaas (1961), Munsen and Rutherford (1961), and Siegel (1956) concluded that the cartoon format of model presentation was effective in the increasing of aggressive behaviors by the observers. The present study used the cartoon format to present the models. The cartoon models used were stick figures in an attempt to control for age and sex variables of the model.

Attentional Variables (Coding)

The presentation of appropriate cues to the observer either prior to the model presentation or during the presentation of the model can facilitate the mental coding processes of the observer (Bandura, 1969). Permitting the observer to gain some cues or "pre-organizers" prior to the presentation of the model behaviors enhances the opportunity for the observer to learn the desired modeled behaviors and extend the generalizability of the modeled behaviors to multiple situations. The effect of these coding cues is to focus the attention of the observer on the exact behaviors

that are being taught. One of the purposes of this study to examine the separate effects of presenting coding cues prior to both modeling and model-reinforcement treatments on the information-seeking responses of high school students.

It is suggested by Bandura (1969) that the input of attention-directing variables into modeling situations may eliminate the need to attempt to match observer and model characteristics together. Some research has presented evidence that the characteristics of the model were important but it is proposed by both Bandura (1969) and Kagan (1967) that these variables of model characteristics may serve only as attention-getting devices. The models used in the present study were cartoon stick figures and were introduced to each of the observers as being "someone just like yourself." The only intended characteristics which the models in the present study had were those given to it by the observer.

Counseling Models

In the general area of learning via the observation of models much research has been completed. In summary, the evidence of the research findings indicates that observation of a social model is an effective method to teach desired behaviors. The use of symbolic models has been shown to be as effective as the presentation of physically present models. Bandura (1969) has presented a

comprehensive review of research that has been conducted which was based on the tenets of model learning in a variety of situations. Since the focus of the present study was in the field of counseling, the review of supportive research will be centered on the investigations conducted to date in counseling settings.

In recent years, new procedures based on the principles of social model learning theory have been developed for use in counseling. The use of social model learning techniques form a viable source for the development of new counseling procedures (Thoresen, 1969b). The majority of the research studies conducted to date has been directed by Dr. J. Krumboltz at Stanford University. These studies investigated the effect of symbolic social modeling procedures in conjunction with systematic verbal reinforcement on the promotion of information-seeking behaviors among high school students.

In the studies reported by Krumboltz and Schroeder (1965), Krumboltz and Thoresen (1964), Krumboltz, Varenhorst and Thoresen (1967), Thoresen and Krumboltz (1968), and Thoresen, Krumboltz, and Varenhorst (1967) the criterion measures were: (1) the frequency of information-seeking behaviors outside the experimental setting, and (2) the variety of information-seeking responses outside the experimental setting. Each study used reinforcement procedures in the form of rewarding the model, reinforcing

the experimental subject, or both conditions. In each study the criterion measures were taken either two or three weeks following the initial experimental counseling session and were based on the self-reports of the experimental subject. A random selection of the self-reports of the experimental subjects were investigated for validation purposes and in each case no serious invalidation of the self-reports was indicated. The model was presented by either video or audio tape and in each study the tape presented was a record of a counseling session in which the model student was reporting his information seeking behaviors to an experimental counselor.

Additional research has been conducted to evaluate the effectiveness of social model presentations to promote career planning. Stewart (1969) reports that group modeling procedures were effective in the promotion of vocational exploration. Krieger (1969) evaluated the effects of model-reinforcement counseling with a group of eleventh and twelth-graders classified as educable retarded individuals and found that the experimental model-reinforcement audio tape procedures produced a greater frequency and variety of information-seeking behaviors than were produced via a placebo control procedure. The model-reinforcement treatments in Krieger's study also produced a higher level of vocational interest than was produced in the placebo control treatments. The investigation reported in the

present study used a measure of interest in information-seeking as an attempt to obtain a measure of treatment effect that was more sensitive to small changes than the behavioral measures used.

The results of the studies cited above indicate the following: (1) symbolic social modeling either in individual or group form and either in audio or video taped presentation is more effective than active and inactive control procedures, and (2) the vicarious reinforcement (reinforcing the model) is an effective means of presenting reinforcement to the subject.

In the counseling studies conducted to date, the separate effects of modeling and reinforcement have not been investigated. The modeling procedures used have involved a model telling about the performance of an information-seeking behavior rather than actually performing the modeled behavior. The effect of attention variables on the acquisition and performance of modeled behaviors has not been investigated. The unique aspects of this study are: (1) investigation of the effect or presenting attentional variables with modeling and model-reinforcement procedures, (2) investigating the separate as well as the combined effects of modeling and reinforcement, (3) investigating the effects of modeling and modeling-reinforcement on both the acquisition and performance of the modeled behaviors, and (4) the presentation of models for counseling research in a form other than audio or video tape.

Summary

It has been indicated that the counseling setting is essentially a situation in which the counselor assists the client in the learning of desired behaviors. In educational-vocational counseling a central issue is the learning of decision-making behaviors of which the information seeking actions are a prerequisite. Recent literature has reported studies which demonstrate that the use of social models both actual and symbolic is effective methodology to teach observers behaviors. Bandura has postulated that the acquisition of a behavior via social models does not require the reinforcement actions on the model or the observer. He does state that the performance of the observed behavior via social model learning requires the presence of reinforcement.

Educational-vocational counseling procedures to promote information seeking behavior among high school students have been developed by a group at Standord University. The procedures that they have developed are based on the theory of social symbolic model learning and use only the performance aspect of Bandura's concept of contiguity. Studies have been directed by Dr. John Krumboltz to evaluate the effectiveness of the developed counseling procedures. In each study the dependent variables were the frequency and variety of information-seeking behaviors outside the counseling setting. The studies were experimental and the effects of counselor attentiveness,

counselor prestige, levels of athletic and academic success of the models, sex of the models and the experimental counselors, and the sex of the model and experimental students were evaluated for possible interaction effects with the major treatment groups.

It was the purpose of this study to conduct an experimental research investigation to study the combined and separate effects of models, reinforcement, and attentional variables. The criterion measures were the acquisition and performance of information-seeking behaviors and the information-seeking interest level of tenth and eleventh-graders. The models presented to the various treatment groups were in cartoon format and depicted a model actually performing the various information-seeking behaviors and were accompanied by a description of the behaviors of the model. The exact hypotheses stated in testable form, a description of the treatments, and the definitions of the terms utilized are provided in the next chapter.

CHAPTER II

EXPERIMENTAL DESIGN AND PROCEDURES

Overview

The major purpose of this study was to investigate effective methods to stimulate information-seeking behaviors. The three treatment variables: the presence of models, reinforcement, and attention factors were studied. Also, the two subject variables of sex of the subject and grade level of the subject were investigated.

The use of social modeling to stimulate information-seeking behaviors has been found to be effective in several counseling research studies. The majority of the work in this area has been performed by a group at Stanford University directed by Dr. J. Krumboltz. The previous research did not investigate the separate effects of models and reinforcement on the criterion measure of the frequency of the modeled information-seeking behaviors. Separate measures on the acquisition of the behaviors and the performance of the behaviors were not included in previous research investigations. The effect of the presence of attentional variables was similarly not included in the research studies conducted to date.

The separate and combined effects of the treatment variables on the acquisition and performance of modeled behaviors were the major areas investigated in the present study. The experimental treatment procedures were based on social model learning theory. Of particular interest in the formulation of the treatments used in the present study were the concepts of Mowrer's "proprioceptive feedback," Bandura's "contiquity of sensory stimulation," and Bandura's separation of observational learning into the two categories of the acquisition and the performance of the modeled behaviors.

This study was conducted with the tenth and eleventh-graders. The criterion measures were the frequency of modeled information-seeking behaviors, information-seeking interest, and the knowledge of the modeled vocational planning strategies.

Statement of the Hypotheses

One of the major purposes of the present study was to examine the effectiveness of particular treatments for specific students. For this reason, the interactions of treatment and subject variables are of particular interest. To examine these interactions, the following hypothesis was formulated:

I. The variable of treatments will not interact with the subject variables on each of the dependent variables.

All first and higher order interactions of treatments x sex, treatments x grade, grade x sex, and treatments x sex x grade were tested in the null form.

Bandura (1969) suggests that the presence of reinforcement will raise the performance of a behavior learned through observation. To test this proposition, the following directional hypothesis was formulated:

> II. Students who receive treatment procedures which include the presence of reinforcement will perform a greater frequency of modeled behaviors during a nine-day period following the administration of the treatment than students who receive treatment procedures that do not include the presence of reinforcement.

The presence of coding or attentional variables in observational learning procedures produces greater performance in terms of the acquisition and the performance of the modeled behavior (Bandura, 1969). To test this proposition, the following two directional hypotheses were formed:

> III. Students who receive model or model-reinforcement treatment procedures which include attentional variables will perform a greater frequency of modeled information-seeking behaviors during a nine-day period following the administration of the treatments than students who receive model or model-reinforcement treatment procedures which do not include attentional variables.
>
> IV. Students who receive model or model-reinforcement treatment procedures which include attentional variables will know more of the modeled vocational planning strategies at the end of a nine-day period following the administration of the treatments than

students who receive model or model-reinforcement treatment procedures which do not include attentional variables.

To investigate the effect of the four experimental treatments as opposed to another active control procedure the following hypotheses in directional form were formulated:

V. Students receiving either model or model-reinforcement treatment procedures both with and without the presence of attentional variables will indicate a higher level of information-seeking interest at the end of a nine-day period following the administration of the treatments than students who receive an active control treatment procedure.

VI. Students receiving either model or model-reinforcement treatment procedures both with and without the presence of attentional variables will perform a greater frequency of the modeled behaviors during a nine-day period following the administration of the treatments than students who receive an active control treatment procedure.

VII. Students receiving either model or model-reinforcement treatment procedures both with and without the presence of attentional variables will know more of the modeled vocational planning strategies at the end of a nine-day period following the administration of the treatments than students who receive an active control treatment procedure.

Subjects

The experiment was conducted at Williamston High School, Williamston, Michigan. This high school is located in a town fifteen miles southeast of Lansing, Michigan. The high school serves a district which is generally rural and suburban. The district includes homes of farmers and some business executives and faculty of Michigan

State University. The families in the school district come from each of the three major socio-economic classes. It was chosen because it was desirable to find a school that seemed representative of the general population.

The original subject pool for the experiment was all of the tenth and eleventh grade students in the school during the day of the administration of the various treatment procedures and during the day of the follow-up procedures nine days later. The entire student population of the tenth and eleventh grades (188) was divided into four groups based on sex and grade level of the subjects. On the morning of the administration of the treatment procedures, the students who were absent from school on that day were removed from the subject pool. The students who remained in the four sub-groups of the subject pool (167) were randomly assigned to one of five possible treatment groups. The treatments of model, model-reinforcement, model-attentional, model-reinforcement-attentional, and active control were then randomly assigned to one of the five randomly equivalent groups within each of the four sub-groups mentioned above. This assignment resulted in a twenty-cell matrix with the subject variables and treatment variables completely crossed.

On the day of the follow-up procedures, the subject pool was further reduced. This second reduction in the subject pool was completed by removing all of the subjects who were present during the administration of the treatment

procedures but absent during the day of the follow-up procedures. The reduced subject pool included 149 subjects. The subjects were distributed within the twenty-cell matrix as illustrated in Table 1.

Table 1.--Number of Subjects Present at Both Administration and Follow-Up Procedures.

	Grade 10		Grade 11	
	Male	Female	Male	Female
Model	8	7	8	7
Model-Attentional	9	9	7	7
Model-Reinforcement	7	7	7	7
Model-Reinforcement-Attentional	7	8	7	7
Active Control	8	8	7	7

The subject pool was further reduced by randomly withdrawing subjects from all of the cells that had a subject frequency greater than seven, the smallest cell frequency in the twenty-cell matrix. The resulting matrix had equal cell frequencies of seven. The 140 subject remaining in the twenty-cell matrix were considered the sample (Cornfield & Tukey, 1956).

A comparison was conducted of the tests of hypotheses for this study using matrices having unequal and equal cell frequencies. This comparison indicated that the results of the hypotheses testing were not significantly

altered using the matrix with equal cell frequencies. The statistical analyses reported in this paper used the data matrix with equal cell frequencies.

Experimental Treatments

To permit individualized treatment administration within a group setting thus facilitating subject independence, the treatment materials were constructed in booklet form. This format permitted each subject to receive a treatment individually while in a classroom setting. The five booklets that were constructed were based on social model learning theory and included the following content:

Model Booklet: This treatment booklet included a stick figure cartoon model performing the four information-seeking behaviors of requesting a library book, mailing a post card, requesting to hear a speaker talk about educational-vocational opportunities, and requesting to see a counselor. A verbal, written description of the behaviors accompanied the presentation of the cartoon figures. The cartoon figures depicted the performance of the actual behavior being modeled (Appendix A).

Model-Attentional Booklet: This treatment booklet was the same as the Model Booklet except that it included a page presenting "pre-organizers" to the subject. The "pre-organizers" constituted the attentional variable and were presented in an attempt to give the subject some

specific material on which to focus his attention while reading the booklet (Appendix B).

Model-Reinforcement Booklet: This treatment booklet was the same as the Model Booklet with the exception that included in this booklet was information that explained that the model was rewarded for his information-seeking behaviors by getting valuable information from the sources (Appendix C).

Model-Reinforcement-Attentional Booklet: This booklet was the same as the Model-Reinforcement Booklet with the exception that the same "pre-organizers" that were used in the Model-Attentional Booklet were included (Appendix D).

Control Booklet: This treatment booklet contained information taken from the Occupational Outlook Handbook, 1968. Models were absent and no mention was made in the material included about information-seeking tasks (Appendix E).

At the beginning of each booklet except the Control Booklet the subject was informed that the following pages contained information about a student just like himself. In this manner, the only characteristics attributed to the model stick figure cartoons were those placed on the model by the observer.

Criterion Measures

The purpose of this study was to investigate effective methods to stimulate information-seeking

behaviors, increase interests in information-seeking, and increase the knowledge of vocational planning strategies. As a measure of the acquisition of the modeled behaviors, the knowledge of the modeled behaviors was measured for each of the subjects. A tally of the number of modeled information-seeking behaviors performed during a nine-day period following the administration of the treatments was used as a measure of performance. The responses of each subject on a twenty-three item scale of interest in information-seeking was used as a measure of information-seeking interest.

Frequency of Information-Seeking Behaviors (Performance): The number of modeled information-seeking behaviors that were performed by the subject during a nine-day period following the administration of the treatments was assumed to arrive at a measure of performance. These behaviors were counted by collecting the following data at the end of the nine-day period:

(1) post cards mailed to a specified post office box for educational-vocational information,
(2) requests to see a counselor for an interview about educational-vocational planning,
(3) requests to hear a speaker talk about career opportunities,
(4) requests to read library books on reserve about educational-vocational opportunities.

Vocational Planning Strategies (Knowledge): To obtain a measure of the acquisition of the modeled behaviors, the subjects were asked to suggest possible ways to receive educational-vocational information. The number of responses to this open-ended questionnaire (Appendix F) which were those modeled during the treatments were counted. The total number counted was used for the Knowledge dependent variable.

Information-Seeking Interest (Interest): To obtain a measure of the level of interest the subject had in information-seeking activities, a scale was constructed (Appendix G). The constructed scale consisted of twenty-three items which described various information-seeking activities. The subject was asked to rate his level of interest for each of the activities that was presented. Five levels of interest, from "definitely interested" to "definitely not interested," were available for the subject's rating. A reliability estimate was taken for the instrument using Hoyt's measure of internal consistency (Hoyt, 1941) and calculated by means of a computer program designed by Baker (Wright & Porter, 1968). The reliability of the instrument was estimated at .91 using the Hoyt procedures (Table 2).

Table 2.--Hoyt's Reliability Estimate for Information-Seeking Interest Scale

Source	D.F.	Sum of Squares	Mean Square	F	R and S.E.
IND	1.39	1.076	7.740	1.085	9.078-001
Item	2.20	6.889	3.131	4.389	3.962+000
Error	3.06	2.181	7.134	0.000	0.000+000
Total	3.22	3.946			

Experimental Procedures

The various aspects of the experiment were completed according to the following schedule during the winter and spring of 1970:

1. Identification of the school and subjects--January 19-23.
2. Meetings with the superintendent of the school district, the high school principal, and the classroom teachers involved to determine the dates for the administration of the treatment and follow-up procedures--January 26-February 4.
3. Division of the subjects into groups based on sex and grade level--February 5.
4. Reduce the subject pool by withdrawing the absent students--February 10.
5. Assignment of subjects to treatment groups and treatments to treatment groups--February 10.

6. Administration of the treatment procedures--February 10.
7. Conduct the follow-up procedures and collect the data--February 19.
8. Distribute the request for speaker, library books, and counselor appointment forms to the appropriate school personnel for disposition--February 20-27.
9. Forward the students' post cards to the appropriate agencies--February 20.

Treatment Procedures

The tenth-grade subjects received their treatments during the Biology classes and the eleventh-grade subjects received their treatments during the American history classes. These classes are required for each of the grade levels respectively. In this manner, all of the tenth and eleventh graders would be reached for treatment administration procedures. The presentation of the booklets as the treatment media permitted the administration of the treatments to the individual subjects in each of the classroom settings.

In each of the treatment administrations, the experimenter gave standard instructions (Appendix H) and proceeded to distribute the treatment booklets to the students. At the end of the administration of the treatments, the experimenter collected the treatment

booklets from the subjects and distributed the Vocational-Educational Planning Packet to each of the subjects. Included in this packets were the four instruments that were used for the criterion measure of Performance. These were: (1) post card pre-addressed to a post office box number in Williamston, Michigan which could be used to obtain educational and/or vocational information (Appendix I), (2) request form to make an appointment with the school counselor (Appendix J), (3) request form to read reserve books in the school library (Appendix K), and (4) request form to attend a session in which a person would speak on the skills of career planning (Appendix L). The individual who administered the treatments in each of the classrooms was the experimenter. The treatment administration took 25 minutes and the entire set of treatment procedures took 35 minutes.

Follow-Up Procedures

Nine days following the administration of the treatment procedures each student in the Biology and American History classes was given the Vocational Planning Strategies instrument. When completed, these forms were collected and the Information-Seeking Interest instrument was distributed and completed by each individual subject. The second instrument was then collected when it was completed. The entire follow-up procedure for each classroom took about 30 minutes.

Experimental Design

This investigation used the "post-test only" design strongly suggested for educational research (Campbell & Stanley, 1963). The random assignment of subjects to treatment groups permitted the absence of pre-test measures.

A 5 x 2 x 2 factorial design with five levels of treatments, two levels of grade, and two levels of sex was used as the basic matrix. A total of 140 students were included in the experiment analysis procedures and the subjects were distributed within the twenty-cell matrix equally so that each cell had a subject frequency of seven.

Statistical Procedures

Data were keypunched and verified at the Michigan State University Computer Center. The statistical analyses were calculated on the Control Data 3600 computer using a multivariate analysis of variance program developed by Finn (1967).

A multivariate analysis of variance with the dependent variables of information-seeking interest, frequency of information-seeking behavior, and knowledge of vocational planning strategies was computed to test hypothesis I. The effects of the independent variables of treatments, subject sex, and subject grade level as well as all first and higher order interactions were examined. The complete 5 x 2 x 2 factorial design matrix was used to test this hypothesis.

Planned comparisons were used to test the remaining hypotheses, Hypotheses II through VII. A multivariate analysis of variance was computed and the univariate analysis of variance for each of the three dependent variables examined was used to test the specific hypothesis under investigation. The results of these various analyses procedures to test the specific hypotheses of interest in this study are reported in the next chapter.

CHAPTER III

RESULTS

The first hypothesis of interest in the study was a non-directional hypothesis and was tested in the null form. The remaining hypotheses were directional and were tested by planned comparison techniques.

A 5 x 2 x 2 data matrix was constructed for the tests of the hypotheses. The cell means by treatment, sex, and grade level for the three dependent variables used in this study are displayed in Table 3. An alpha level of .05 was chosen to determine the statistical significance for reporting this study.

Results of the Test of Hypothesis I

The test for the effects of all first and higher order interactions of treatments, subject sex, and subject grade level on the dependent variables was made for Hypothesis I. A multivariate analysis of variance procedure was used to test Hypothesis I with the knowledge of the modeled behaviors (Knowledge), performance of the modeled behaviors (Performance), and level of information-seeking interest as the dependent variables.

Table 3.--Cell Means for Knowledge, Performance, and Interest by Treatment, Sex, and Grade Level.

	Grade 11						Grade 10					
	Male			Female			Male			Female		
	K*	P*	I*	K	P	I	K	P	I	K	P	I
Model	1.285	2.142	89.857	1.714	2.571	91.285	0.857	1.571	80.857	0.571	2.571	84.571
Model-Attentional	1.857	2.142	85.428	2.142	2.714	89.142	1.428	1.857	81.714	1.285	2.285	82.857
Model-Reinforcement	0.857	1.857	88.285	1.285	2.714	86.142	0.571	2.142	85.714	1.142	2.142	87.428
Model-Reinforcement-Attentional	1.428	2.571	91.428	2.571	2.714	79.000	1.285	3.000	82.857	1.857	2.285	86.857
Active Control	0.857	1.714	77.571	1.428	1.142	83.714	0.142	1.857	74.428	0.857	2.000	81.571

*K = Knowledge; P = Performance; I = Interest.

The interaction of treatment by sex was not statistically significant ($p < .0603$). A summary of the results of the multivariate and univariate tests of the mean vectors for the treatment by sex interaction is reported in Table 4.

Table 4.--Multivariate and Univariate Tests for Treatment x Sex Interaction.

Multivariate			
D.F. = 12 and 312.4902		F-Ratio = 1.7266	
$p < .0603$			
Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	1.4179	1.3690	.2488
Performance	0.8571	1.9355	.1090
Interest	112.0607	0.5999	.6635
D.F. for Hypothesis = 4		D.F. for Error = 120	

The interaction of treatments and the grade level of the subject was not statistically significant ($p < .8680$). The results of the multivariate and univariate analysis of variance tests for this interaction are summarized in Table 5.

Table 5.--Multivariate and Univariate Tests for Treatment x Grade Interaction.

Multivariate		
D.F. = 12 and 312.4902	F-Ratio = 0.5673	
p < .8680		

Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	0.8107	.7828	.5386
Performance	0.3500	.7903	.5337
Interest	69.6679	.3729	.8276
D.F. for Hypothesis = 4		D.F. for Error = 120	

The interaction of the sex of the subject and the grade level of the subject was not statistically significant ($p < .2422$). The results of the multivariate and univariate tests for the grade x sex interaction are summarized in Table 6.

The interaction of treatments x grade x sex was not statistically significant ($p < .5396$). A summary of the results of the multivariate and univariate tests for the

Table 6.--Multivariate and Univariate Tests for Grade x Sex Interaction

Multivariate			
D.F. = 3 and 118		F-Ratio = 1.4141	
		$p < .2422$	
Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	0.1143	.1103	.7404
Performance	0.7143	1.6129	.2066
Interest	154.3500	.8262	.3652
D.F. for Hypothesis = 1		D.F. for Error = 120	

interaction of treatments x grade x sex is displayed in Table 7.

Hypothesis I stated that the treatment variables would not interact with the subject variables on the dependent variables. This hypothesis was not rejected. All first and higher order interactions between treatments, sex, and grade level were not statistically significant at the .05 level.

Table 7.--Multivariate and Univariate Tests for the Interaction Treatments x Grade x Sex.

Multivariate

D.F. = 12 and 312.4902 F-Ratio = .9076

$p < .5396$

Univariate

Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	0.9893	.9552	.4349
Performance	0.2857	.6452	.6314
Interest	91.6179	.4904	.7428

D.F. for Hypothesis = 4 D.F. for Error = 120

Results of the Tests of Hypotheses II-IV

The tests for the second, third, and fourth hypotheses were completed using the techniques of planned comparisons. A multivariate analysis of variance was computed and the particular univariate measures were used to determine whether the specified hypotheses were rejected. The cell means summed across sex and grade level of the subject for each of the three dependent variables by the four treatment groups of interest in the tests for Hypotheses II-IV are reported in Table 8.

Table 8.--Mean Knowledge, Performance, and Interest Scores by the Treatment for the Experimental Groups.

	Knowledge	Performance	Interest
Model	1.10675	2.21375	86.64250
Model-Attentional	1.67800	2.24950	84.78225
Model-Reinforcement	.96375	2.21375	86.89225
Model-Reinforcement-Attentional	1.78525	2.64250	85.03550

Hypothesis II was based on the proposition of Bandura (1969) that the presence of reinforcement will raise the frequency of the performance of modeled behaviors compared to the absence of similar reinforcement. A planned comparison of the means of the groups that received reinforcement verses the means of the groups that did not receive reinforcement was completed to test Hypothesis II. The cell means used for this comparison for all three of the dependent variables is reported in Table 9.

Table 9.--Cell Means for Reinforcement and Non-Reinforcement Treatment Groups.

	Knowledge	Performance	Interest	Total
Non-Reinforcement	2.23214	1.39285	85.61425	89.33928
Reinforcement	2.42857	1.37500	85.96428	89.76786

Both a multivariate and univariate analysis comparing the groups receiving reinforcement and the groups not receiving reinforcement were computed. A summary of the results is displayed in Table 10. Of particular interest in the test of Hypothesis II is the univariate analysis of the effect on the variable Performance.

Table 10.--Multivariate and Univariate Tests for Means for Reinforcement and Non-Reinforcement Groups.

Multivariate

D.F. = 3 and 106 F-Ratio = .7341

$p < .4279$

Univariate

Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	1.0804	1.0894	.2990
Performance	.0089	.0154	.9014
Interest	1.7500	.0103	.9195

D.F. for Hypothesis = 1 D.F. for Error = 108

Hypothesis II was rejected because the univariate analysis comparing the groups receiving reinforcement and the groups not receiving reinforcement on the dependent variable Performance was not statistically significant ($p < .9014$).

Hypotheses III and IV were formulated to test the proposition of Bandura (1969) that the presence of attentional or coding factors in observational learning would increase the knowledge and the performance of the modeled behaviors. A planned comparison of the means of the groups that received attentional factors with the groups that did not receive the attentional factors was completed to test Hypotheses III and IV. The cell means for this comparison for all three of the dependent variables as well as the combined total score of the three measures is reported in Table 11.

Table 11.--Cell Means for Attention and Non-Attentional Treatment Groups.

	Knowledge	Performance	Interest	Total
Non-Attentional	2.21429	1.03571	86.81786	90.01786
Attentional	2.44643	1.73214	84.91071	89.03928

Both a multivariate and univariate analysis of variance was computed comparing groups receiving attentional factors and the groups not receiving attentional factors. A summary of the results of these analyses is reported in Table 12. The univariate analysis of variance for the effect of the attentional factors on the dependent variable of Performance is of interest in the test for Hypothesis III. The univariate analysis of variance for the effect

attentional factors on the dependent variable Knowledge of interest in the test for Hypothesis IV.

le 12.--Multivariate and Univariate Tests of Means for Attentional and Non-Attentional Treatment Groups

Multivariate			
D.F. = 3 and 106		F-Ratio = 10.5938	
		$p < .0001$	
Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	1.5089	1.5215	.2201
Performance	13.5804	23.4803	.0001
Interest	96.5714	.5669	.4532
D.F. for Hypothesis = 1		D.F. for Error = 108	

One canonical variate was significant in the sting of Hypotheses III and IV and it accounted for the tire variance. The discriminant analysis of this canical variate is reported in Table 13.

Hypothesis III was not rejected because the univariate analysis comparing the mean of the group receiving ttentional factors with the mean of the group not eceiving attentional factors indicated that on the dependent variable of Performance the groups differed in the

le 13.--Discriminant Analysis of Significant Canonical Variate for the Tests of Hypotheses III and IV.

	Discriminate Function Coefficients	
Variable	Raw Coefficient	Standardized
Knowledge	-0.007780	-0.0077
Performance	-1.424141	-1.0831
Interest	0.044031	0.5747

rection hypothesized to a degree that was statistically gnificant ($p < .0001$). The groups that received the tentional factors performed more of the modeled formation-seeking behaviors during a nine-day period llowing the administration of the treatments than did the roup that did not receive the attentional factors.

Hypothesis IV was rejected. The univariate analy-s comparing the mean of the group receiving attentional actors with the mean of the group not receiving at-ntional factors for the dependent variable Knowledge was ot statistically significant ($p < .2201$).

The presence of attentional or coding factors had n effect on the performance of the observed modeled ehaviors. It did not have an effect on the knowledge of ne modeled behaviors.

Results of Tests for Hypotheses V-VII

The tests for the fifth, sixth, and seventh ypotheses were completed using the techniques of planned nparisons. Planned comparisons of the means of the four perimental treatment groups with the mean of the active ntrol treatment group on each of the three dependent riables of this study were computed. Each of the pothesis of interest compared the experimental treatment oups with an active control group on a particular de- ndent variable.

In the computation of the planned comparisons for ie tests of Hypotheses V-VII, the four experiment reatment group means were weighted one-fourth and the ctive control treatment group mean was weighted one. The eans summed across sex and grade for the experimental com- ared with the control treatments for each of the dependent ariables in this study and the combined total measure of ie three variables are reported in Table 14. The means eported in Table 14 are the weighted means used in the lanned contrasts.

able 14.--Weighted Cell Means for Experimental and Control Treatment Contrasts.

	Knowledge	Performance	Interest	Total
xperimental	2.33038	1.38392	85.83928	89.55358
ontrol	1.67857	.82143	79.32143	81.82143

A multivariate and univariate analysis of variance
cedure was completed to test Hypotheses V-VII. A sum-
y of the results of these analyses is displayed in
le 15. The univariate analysis for the dependent vari-
e Interest was of interest in the test of Hypothesis V.
test of Hypothesis VI used the univariate analysis for
dependent variable Performance. The univariate analysis
the dependent variable Knowledge was used to test
othesis VII.

le 15.--Multivariate and Univariate Tests of Weighted
ns for the Experimental Versus Control Treatment Contrasts.

Multivariate			
D.F. = 3 and 133		F-Ratio = 6.1886	
		p < .0006	
Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	9.5161	9.2280	.0029
Performance	7.0875	12.4957	.0006
Interest	951.6071	5.3264	.0226
D.F. for Hypothesis = 1		D.F. for Error = 135	

One canonical variate was significant in the sting of these hypotheses. It accounted for the entire riance. The discriminant analysis of this canonical riate is reported in Table 16.

ble 16.--Discriminant Analysis of the Significant Canonical Variate for the Tests of Hypotheses V-VII.

Variance of Canonical Variate = 0.1396

Percentage of Canonical Variation = 100

Discriminant Function Coefficients		
Variable	Raw Coefficient	Standardized
Knowledge	-0.542376	-0.5508
Performance	-0.878597	-0.6617
Interest	-0.010663	-0.1425

Hypothesis V was accepted because the difference tween the means of the experimental and control groups on e variable of Interest was statistically significant < .0226) in the direction hypothesized. Hypothesis VI s accepted due to a statistically significant ($p < .0006$) fference between the means of the experimental and control oups on the dependent variable Performance in the desired rection. The last hypothesis of this study, Hypothesis I, was accepted because the difference between the means the experimental and control groups for the dependent riable Knowledge was statistically significant ($p < .0029$)

the direction that was hypothesized. Since the control oup was active, the results of the tests for Hypotheses VII indicate that the differences between the groups was e to the treatments rather than the Hawthorne effect.

Summary of the Tests of Hypotheses

Five of the seven specified hypotheses in this udy were accepted. In the case of the other two hy- theses, the differences were not statistically signifi- nt. A summary of the testing results for each of the pothesis of this study follows a restatement of the ecific hypothesis.

Hypothesis I was not rejected. It stated:

> The variables of treatments will not interact with the subject variables on each of the dependent variables.

l first and higher order interactions of the independent riables of treatments, sex of the subject, and grade vel of the subject were not statistically significant. e levels of significance were: treatment x sex inter- tion ($p < .0603$); treatment x grade interaction ($p <$ 680); grade x sex interaction ($p < .2422$); and treatment grade x sex interaction ($p < .5396$).

Hypothesis II was rejected. It stated:

> Students who receive treatment procedures which include the presence of reinforcement will perform a greater frequency of modeled behaviors during a nine-day period following the administration of the treatment than students who receive treatment procedures that do not include the presence of reinforcement.

e difference in the means of the groups receiving rein-
rcement and the groups not receiving reinforcement was
t statistically significant ($p < .9014$) in the direction
pothesized.

Hypothesis III was not rejected. It stated:

> Students who receive model or model-reinforcement treatment procedures which include attentional variables will perform a greater frequency of modeled information-seeking behaviors during a nine-day period following the administration of the treatments than students who receive model or model-reinforcement treatment procedures which do not include attentional variables.

e difference between the means of groups receiving at-
ntional factors and the groups not receiving the
tentional factors was in the direction hypothesized and
s statistically significant ($p < .0001$). The subjects
o received attentional factors performed a greater
equency of the modeled behaviors than did students who
d not receive the attentional factors in the treatments.

Hypothesis IV was rejected. It stated:

> Students who receive model or model-reinforcement treatment procedures which include attentional variables will know more of the modeled vocational planning strategies at the end of a nine-day period following the administration of the treatments than students who receive model or model-reinforcement treatment procedures which do not include attentional variables.

e difference between the means of the groups receiving
e attentional factors and the groups not receiving
tentional factors on the dependent variable Knowledge was
the direction hypothesized but was not statistically
gnificant ($p < .2201$).

Hypotheses V, VI, and VII were not rejected. They

ated:

V. Students receiving either model or model-reinforcement treatment procedures both with and without the presence of attentional variables will indicate a higher level of information-seeking interest at the end of a nine-day period following the administration of the treatments than students who receive an active control treatment procedure.

VI. Students receiving either model or model-reinforcement treatment procedures both with and without the presence of attentional variables will perform a greater frequency of the modeled behaviors during a nine-day period following the administration of the treatments than students who receive an active control procedure.

VII. Students receiving either model or model-reinforcement treatment procedures both with and without the presence of attentional variables will know more of the modeled vocational planning strategies at the end of a nine-day period following the administration of the treatments than students who receive an active control treatment procedure.

e differences on the dependent variable Interest between

e experimental and control groups was in the direction

pothesized and was statistically significant ($p < .0226$).

e differences between the experimental and control groups

the dependent variable Performance were in the direction

pothesized and were statistically significant ($p < .0006$).

e differences on the dependent variable Knowledge were in

e direction hypothesized and were statistically signifi-

nt ($p < .0029$).

Results of Supplementary Tests for Main Effects

Although not specific hypotheses of this study, sts for the main effects of treatments, sex of the bject, and grade level of the subject on the dependent riables were completed. The test for each of the three in effects was completed using a multivariate analysis of riance procedure. The cell means of the treatment groups mmed across subject sex and grade level for each of the ree dependent variables are reported in Table 17.

ble 17.--Cell Means of Dependent Variables for Treatment Effects.

	Knowledge	Performance	Interest
del	1.10675	2.21375	86.64250
del-Attentional	1.67800	2.24950	84.78525
del-Reinforcement	.96375	2.21375	86.89225
del-Reinforcement-tentional	1.78525	2.64250	85.03550
tive Control	.82100	1.67825	79.32100

The effect of the treatments on the dependent riables was found to be statistically significant < .0001). Statistically significant differences were und for the dependent variable Knowledge ($p < .0160$) and rformance ($p < .0001$). Table 18 summarizes the results both the multivariate and univariate tests for the fects of treatments.

ble 18.--Multivariate and Univariate Tests of Means for Treatment Effects.

Multivariate			
D.F. = 12 and 312.49		F-Ratio = 5.0379	
	p < .0001		
Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	3.2964	3.1828	.0160
Performance	5.2786	11.9194	.0001
Interest	262.4821	1.4051	.2365
D.F. for Hypothesis = 4		D.F. for Error = 120	

One canonical variate was significant in the ting for the main effect of treatments. The discriminant lysis of this significant canonical variate is displayed Table 19.

The cell means for the variable of sex summed across atments and grade level of the subjects are displayed Table 20.

The multivariate analysis of variance test for the ect of the sex of the subject was statistically signifi- t ($p < .0018$). The female subjects in the experiment formed more of the modeled behaviors than the males to

le 19.--Discriminant Analysis of the Significant Canical Variate for the Test for Treatment Main Effects.

Variance of the Canonical Variate = 0.4798

Percentage of Canonical Variance = 85.95

Discriminant Function Coefficient		
Variable	Raw Coefficient	Standardized
Knowledge	-0.246292	-0.2507
Performance	-1.558733	-1.0373
Interest	0.031452	0.4299

le 20.--Cell Means of Dependent Variables for Sex Effects.

	Knowledge	Performance	Interest
Male	1.05670	2.08530	83.81390
Female	1.48520	2.31380	85.25670

legree that was statistically significant ($p < .0003$). ble 21 reports a summary of the results of the multi- riate and univariate tests for the effects of sex.

ble 21.--Multivariate and Univariate Tests of Means for Sex Effects.

Multivariate			
D.F. = 3 and 118		F-Ratio = 5.339	
		$p < .0018$	
Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
nowledge	1.8286	1.7655	.1865
erformance	6.4286	14.5161	.0003
nterest	72.8643	0.3900	.5335
D.F. for Hypothesis = 1		D.F. for Error = 120	

One canonical variate was significant in the test the effect of sex. The discriminant analysis of this nificant canonical variate is displayed in Table 22.

The cell means of each of the three dependent vari- es for the variable of grade level of the subject summed oss treatments and sex are displayed in Table 23.

ble 22.--Discriminant Analysis of the Significant Canonical Variate for the Test for Sex Main Effects.

Variance of the Canonical Variate = 0.1358

Percentage of Canonical Variance = 100

Discriminant Function Coefficient		
Variable	Raw Coefficient	Standardized
Knowledge	-0.187230	-0.1905
Performance	-1.575867	-1.0487
Interest	0.024895	0.3403

ble 23.--Cell Means of Dependent Variables for Grade Effects.

	Knowledge	Performance	Interest
Grade 11	1.5424	2.2281	86.1852
Grade 10	.9995	2.1710	82.8854

The multivariate analysis of variance test for the fect of grade was statistically significant ($p < .0001$). e subjects in the eleventh grade performed more of the deled behaviors than did the subjects in the tenth grade a degree that was statistically significant ($p < .0001$). summary of the results of both the multivariate and the ivariate tests for the effect of grade level of the oject is reported in Table 24.

ole 24.--Multivariate and Univariate Tests of Means for Grade Effects.

Multivariate			
D.F. = 3 and 118		F-Ratio = 7.9105	
		p < .0001	
Univariate			
Variable	Between Mean Squares	Univariate F	p Less Than
Knowledge	0.1143	0.1103	.7404
Performance	10.3143	23.2903	.0001
Interest	381.1500	2.0403	.1558
D.F. for Hypothesis = 1		D.F. for Error = 120	

One canonical variate was significant in the test or grade effects and it accounted for the entire variance. he discriminant analysis of this significant canonical ariate is reported in Table 25.

able 25.--Discriminant Analysis of the Significant Canonical Variate for the Test for Grade Main Effects.

Variance of the Canonical Variate = 0.2011

Percentage of Canonical Variance = 100

	Discriminant Function Coefficient	
Variable	Raw Coefficient	Standardized
Knowledge	0.123913	0.1261
Performance	-1.601889	-1.0660
Interest	0.009738	0.1331

CHAPTER IV

SUMMARY, DISCUSSION, AND IMPLICATIONS

Summary

The purpose of this study was to investigate the ombined and separate effects of models, reinforcement, and ttentional factors. It examined the use of these three ariables in stimulating and teaching effective methods of nformation-seeking with adolescents. Research completed y a group of counseling psychologists at Stanford Uni- ersity under the direction of Dr. John Krumboltz has resented evidence that the use of social models and rein- rcement is an effective manner to stimulate information- eking behaviors.

The previous research in counseling using models d reinforcement did not investigate the separate effects these two variables. Completed counseling research did t investigate the effects of these variables on the parate measures of the acquisition of the behaviors and e performance of the behaviors. Bandura (1969) has posed that the presence of attention or coding factors hin the presentation of model will enhance the

probability that the behaviors observed during the model presentation will be acquired and performed by the observer. The present research study investigated the separate and combined effects of the presence of models, reinforcement, and attentional factors on the information-seeking behaviors of tenth and eleventh grade students. Separate measures were taken on the acquisition and the performance of the modeled behaviors.

The basic design of the study was an experimental "post-test only" design suggested for educational research by Campbell and Stanley (1963). Subjects in this study were randomly assigned to one of five treatment groups and then the five treatments of the study were randomly assigned to one of the groups. The five treatments in the study were: (1) Model, (2) Model-Attentional, (3) Model-Reinforcement, (4) Model-Reinforcement-Attentional, and (5) Active Control. The treatments were administered in booklet form which permitted individual administration of the treatments within a grouped classroom setting. The treatment administration procedures took 35 minutes. Nine days following the treatment administration a follow-up session was conducted with the subjects. During the follow-up session the subjects completed an information-seeking interest scale and a measure of the acquisition of the modeled behaviors.

The subjects for the present study were 140 tenth and eleventh grade students. The subject pool was divided by the sex of the subject and the grade level of the subject. The two subject variables were completely crossed with the five treatment variables of the study. Within the 5 x 2 x 2 matrix, the subjects were equally distributed with the twenty-cell design matrix having equal cell subject frequencies.

The criterion measures used in this study were formulated to examine the separate portions of observational learning: acquisition and performance. A third measure was a level of information-seeking interest. The measure of performance was obtained by counting the total number of modeled behaviors that were performed by the subjects during a nine-day period following the administration of the treatment procedures. Standard opportunities to perform these modeled behaviors were presented to the subjects of all of the treatment groups. The measure of the acquisition of the modeled behaviors was obtained by asking each subject to suggest methods of receiving educational or occupational information. The measure of the level of interest in information-seeking was taken through a paper-pencil scale that was constructed for the study.

It was hypothesized that subjects who received reinforcement would perform more of the modeled behaviors during the nine-day period following the administration of

the treatments than would the subjects that did not receive the reinforcement. It was also hypothesized that the subjects that received the attentional factors would acquire and perform more of the modeled behaviors that would the subjects not receiving the attentional factors. The active control treatment was included in the study to control for the Hawthorne effect. It was hypothesized that subjects receiving the experimental treatments would obtain higher scores on all of the criterion measures than would the subjects who received the active control treatment. All first and higher order interactions between the subject variables of sex and grade level and the treatment variables were also investigated.

The data were analyzed using a multivariate analysis of variance to examine the test for interactions. The separate and combined effects of models, reinforcement, and attentional factors on each of the three dependent variables were investigated through planned contrast techniques which utilized a univariate analysis of variance. The differences between the experimental and active control treatments also were investigated using the univariate analysis of variance procedure with planned comparisons.

When the subjects who received the attentional factors were compared with the subjects who did not receive the attentional factors, those receiving the factors performed more of the modeled behaviors ($p < .0001$). Subjects who received treatments which included vicarious

reinforcement did not perform more of the modeled behaviors than did subjects who did receive treatments without the vicarious reinforcement.

On all three of the criterion measures, the students who received the experimental treatments scored higher than the subjects who received the active control procedure. The differences between the experimental and control groups were significant on the variable of Knowledge ($p < .0029$), Performance ($p < .0006$), and Interest ($p < .0226$).

The treatment variables and the subject variables did not interact. Statistically significant effects were found due to treatments ($p < .0001$), subject sex ($p < .0018$), and subject grade level ($p < .0001$). The female subjects performed more of the modeled behaviors ($p < .0003$) and the eleventh-graders performed more of the modeled behaviors ($p < .0001$) than did the males and tenth-graders respectively.

Discussion

Bandura (1969) proposes that the presence of symbolic coding or attentional variables with social modeling will aid the observer in the mental coding processes utilized in learning. The presence of attentional factors will provide the observer with clues which will be useful during both the acquisition and performance stages. Once acquired, the observed behaviors

will be more readily accessible for performance purposes if attentional factors have been included in the model presentation. In the present study, the presence of attentional or coding factors did not effect the knowledge of the modeled behavior to a degree that was statistically significant ($p < .2201$). The presence of the attentional factors in the treatments did produce a statistically significant difference on the performance of the behaviors that were modeled ($p < .0001$). The presence of the coding or attentional factors made the knowledge of the behavior more accessible for the purposes of performance of the modeled behaviors.

It is also proposed by Bandura (1969) that the presence of reinforcement will increase the performance of the modeled behavior. Previous research has demonstrated that the application of reinforcement variables to the model will act a vicarious reinforcement to the observer. The variable investigated in the present study was the effect of reinforcement of the model on the performance of the modeled behaviors by the observer. The differences produced by the presence of reinforcement were not statistically significant ($p < .9014$). A possible explanation for this finding is that the observers may have found that the rewarding consequences of the models actions were self-evident. The possibility that the rewarding consequences of the modeled behavior were self-evident to both the

reinforced and non-reinforced groups would tend to eliminate the differences between the two types of treatments. This is a probable explanation for the inability of finding differences in the performance of the modeled behavior the reports of rewarding consequences present in the reinforced group.

Implications

The implications of this investigation must be interpreted in terms of the population used in the study and the materials employed in the treatments as well as the criterion measures. The range of generalizability in light of these facts is to be determined by the reader.

Implications for Research

Social modeling, reinforcement, and the presentation of attention factors have been shown to have the effect of increasing the knowledge, performance, and interest in information-seeking behaviors. Research using different types of criterion measures could indicate the efficacy of using these variable to teach and increase different types of behavior.

The models in this study were characteristicless. The models were cartoon stick figures and the only intended characteristics placed on the models were by the observer. The observers were informed that the model was "someone just like you." Future research could investigate the

similarities of the observer's characteristics and those attributed to the model by the observer.

The investigation of the use of animated cartoon stick figures by video presentation could prove to be of benefit in attempts to find the best way to present models to particular students. Attention in future research could also be given to presenting the reinforcement in varied methods.

The criterion measures in this study were all collected within a nine-day period following the administration of the treatment procedures. An examination of the effects of the treatments over a longer period of time would be of benefit. Future research could also investigate whether performing information-seeking behaviors were of benefit to the subjects in terms of aiding them in the construction of viable plans for the future.

Implications for Practice

Stewart (1969) suggests that counselors need to find an effective method to motivate and stimulate students to explore and obtain information regarding educational and vocational planning. The present study demonstrated that one such effective method is the presentation of models in conjunction with reinforcement and attentional factors. The booklets constructed for the treatments in this experiment were effective in attempts to increase the

interest, knowledge of, and performance of information-seeking behaviors.

Students desire help in locating information. The counselors could in effect save time for other activities if a program similar to the one used in the treatment materials of this study was used in the school setting. The behavioral approach to counseling views the counseling setting as one which includes the teaching of efficient behaviors which are of use in determining the solutions to problems. The materials used in this study have that utility.

The procedures used in this study were completed in group settings. The fact that the treatment procedures were only 35 minutes and large numbers of students were contacted during a relatively short period of time is evidence that the manner of teaching information-seeking behaviors used in the present study were efficient. Group procedures using booklets may be as effective as the counseling procedures used in the research studies completed at Stanford University under the direction of Dr. Krumboltz.

The research completed in this study demonstrated that the use of attentional or symbolic coding factors is facilitative in the learning and performing of behaviors. The application of this knowledge to educational settings other than counseling situations could be beneficial.

The classroom and counseling settings have been established to help the student learn about himself and his environment. The application of principles of learning theory appear to be viable and efficient methods to effectively reach this end.

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APPENDICES

APPENDIX A

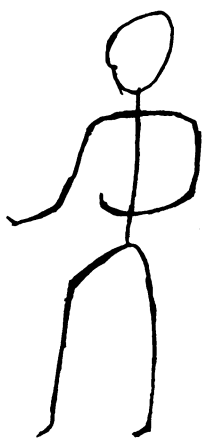
MODEL TREATMENT BOOKLET

CAREER

INFORMATION

Making decisions concerning what to do after finishing high school often becomes a difficult task. The tenth grade is a good time to collect educational and occupational information which would be valuable in planning which courses to take while in high school. The eleventh grade is a good year to collect occupational and educational information to be used in making after-high school plans.

The following story is about a student just like you. The student is in the same grade as you are and must make some decisions regarding what courses to take next year and what to do after finishing high school.



It was suggested to the student that one way to obtain educational and occupational information was to send for the information through the mails.

The student was given an addressed post card that was already stamped.

CAREER INFORMATION

P. O. Box _____

Williamston, Michigan

PLEASE SEND ME THE INFORMATION CHECKED BELOW:

llege ____ Name of the College _____
upations ___ Name of the Occupation _____
ational Training ___
eral Career Information ___

PLEASE PRINT YOUR NAME AND ADDRESS:

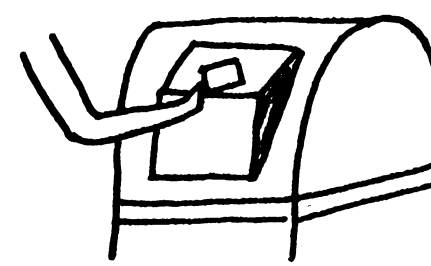
_____

_____

_____

On the back of the post card the student wrote what information was desired and where the information should be sent.

When the post card was filled out, the student put the card in a mail box.



It was announced that a special speaker was going to visit the school. The speaker was going to give a talk about post-high school educational and occupational opportunities. The announcement also stated that the speaker would answer students questions after the talk had been finished.

A sign-up sheet was given to each of the students in the class to permit the students to sign up to hear the speaker.

SPEAKER SIGN-UP SHEET
Check the appropriate boxex below·

Do you wish to hear the speaker? YES

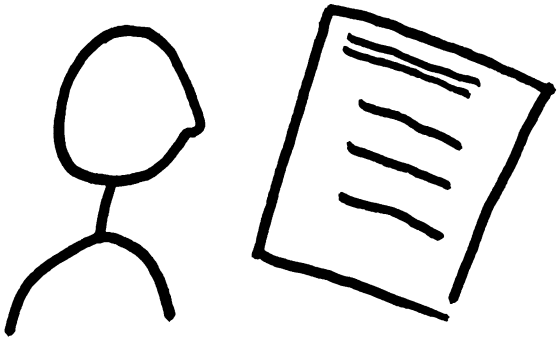
NO

PLEASE PRINT YOUR NAME _____
GRADE _____

The student checked that it was desired to hear the speaker. When the form was completed, the student handed it in to the teacher.

Reading books and pamphlets about possible occupational and educational opportunities after high school may provide information useful in making plans.

The student saw a list of books and pamphlets which had occupational and educational information. These materials were being held on "reserve" in the school library.



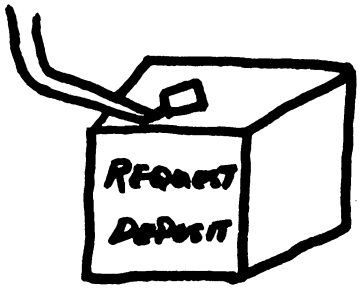
A "Library Request Form" was given to the student. This form was to be used to be able to look through and read the materials.

LIBRARY REQUEST FORM
Circle the numbers of the materials you want:

I. II. III. IV.

Please Print Your Name _____
Grade _____

The student completed the "Library Request Form" and then put it in the REQUEST DEPOSIT box in the school library.



It was announced that the counseling staff would be available during the next few weeks to talk to students about educational and occupational planning. The student thought that a counselor might be able to give some relevant information which would be useful in making decisions.

A "Counselor Appointment Request Form" to be used to see a counselor was given to the student in a class.

COUNSELOR APPOINTMENT REQUEST FORM

I would like to talk about (check the areas desired):

Occupational Information ___
College Programs ___
Vocational Training ___
Course Planning ___

The best time for me to see a counselor is:

Days _____
Times _____

PLEASE PRINT YOUR NAME _____ GRADE _____

The student filled in the form by checking that a meeting with a counselor was desired and stating a suggested time for the meeting.

When the form was completed, the student put it in the REQUEST DEPOSIT box which was in the school library.

APPENDIX B

MODEL-ATTENTIONAL TREATMENT BOOKLET

CAREER

INFORMATION

As you read the story on the next pages of this booklet, take special notice of the four major activities that were used to obtain educational and occupational information.

The four activities to notice in the story are:

1. Mailing a post card for information

2. Listening to a speaker talk about educational and occupational opportunities

3. Requesting library materials about educational and occupational planning on reserve in the school library

4. Making a counseling appointment to talk about occupational and educational opportunities.

Making decisions concerning what to do after finishing high school often becomes a difficult task. The tenth grade is a good time to collect educational and occupational information which would be valuable in planning which courses to take while in high school. The eleventh grade is a good year to collect occupational and educational information to be used in making after-high school plans.

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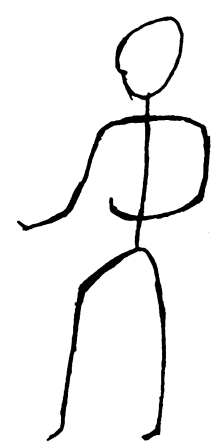

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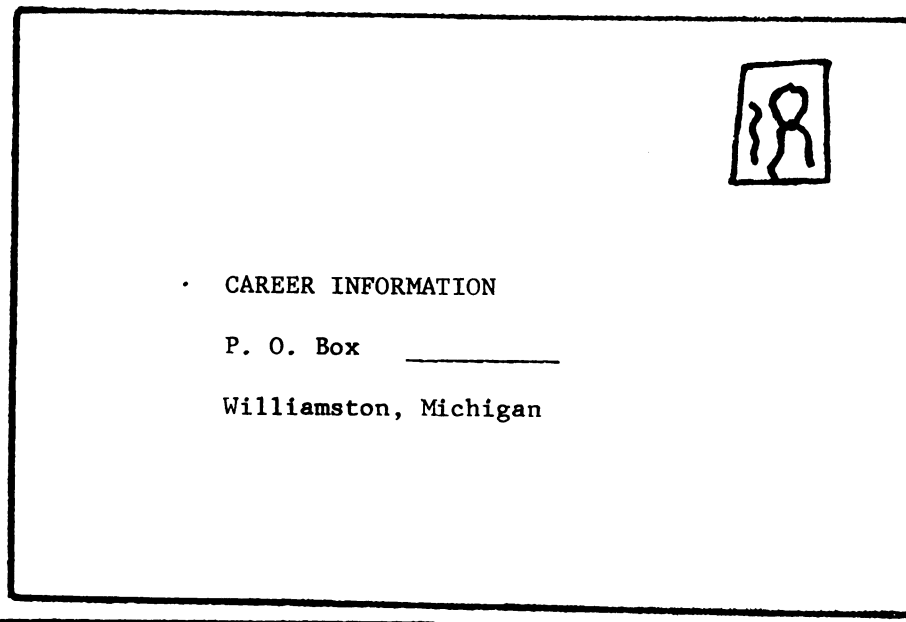

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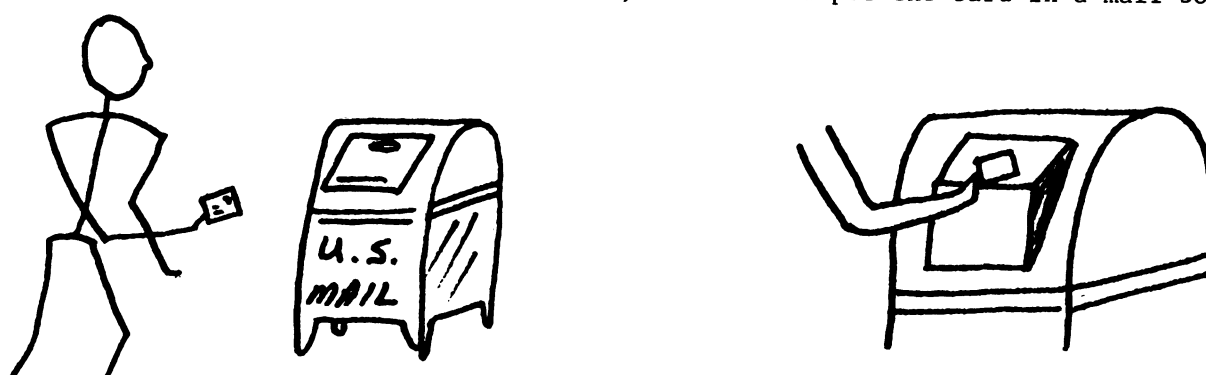

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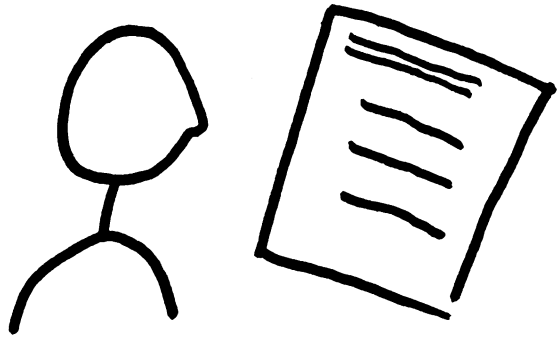

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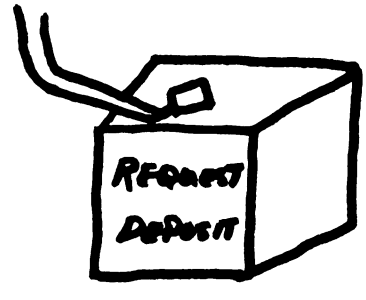

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COUNSELOR APPOINTMENT REQUEST FORM

I would like to talk about (check the areas desired):

Occupational Information ___
College Programs ___
Vocational Training ___
Course Planning ___

The best time for me to see a counselor is:

Days ___
Times _____

PLEASE PRINT YOUR NAME _____ GRADE _____

The student filled in the form by checking that a meeting with a counselor was desired and stating a suggested time for the meeting.

When the form was completed, the student put it in the REQUEST DEPOSIT box which was in the school library.

APPENDIX C

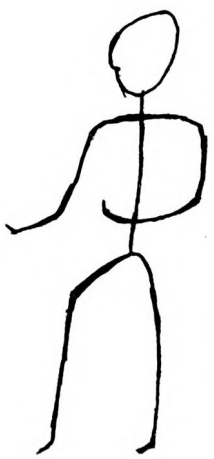
MODEL-REINFORCEMENT TREATMENT BOOKLET

CAREER

INFORMATION

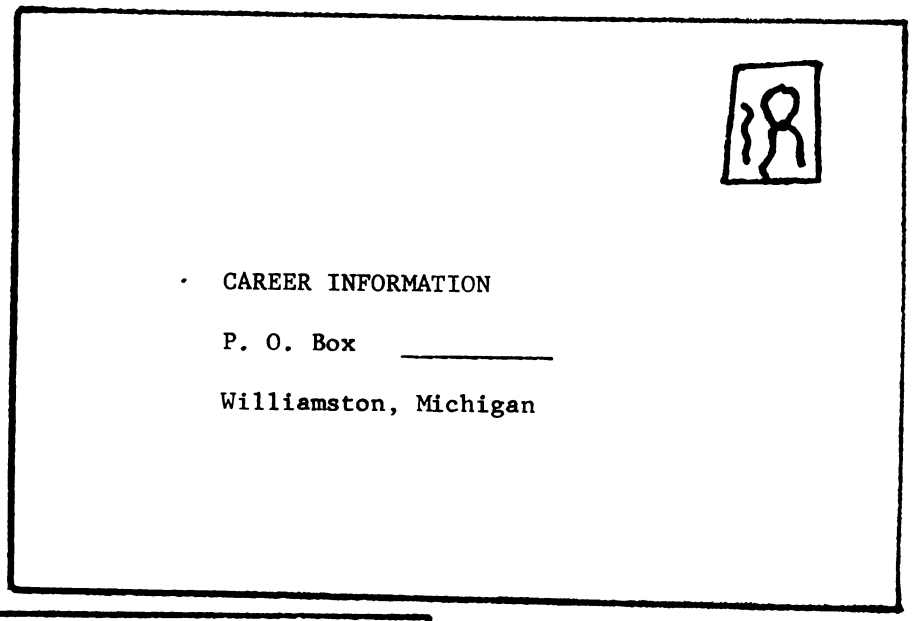
Making decisions concerning what to do after finishing high school often becomes a difficult task. The tenth grade is a good time to collect educational and occupational information which would be valuable in planning which courses to take while in high school. The eleventh grade is a good year to collect occupational and educational information to be used in making after-high school plans.

The following story is about a student just like you. The student is in the same grade as you are and must make some decisions regarding what courses to take next year and what to do after finishing high school.



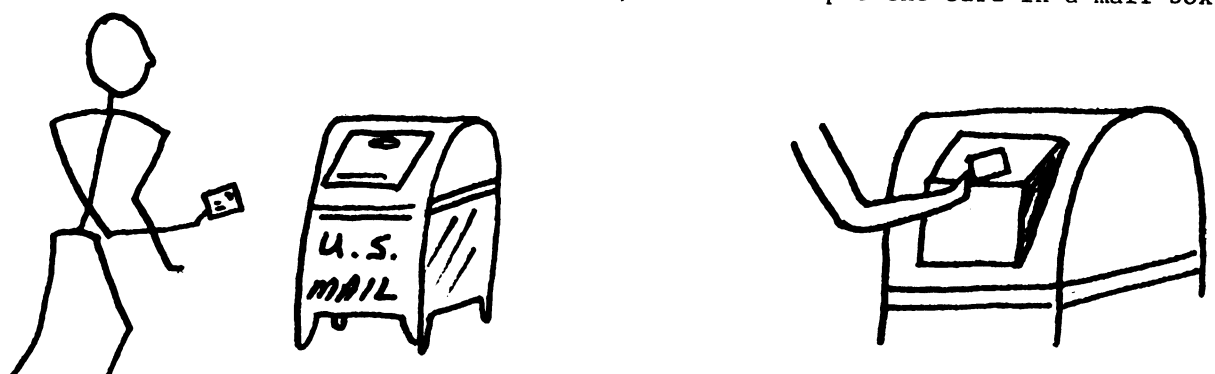
It was suggested to the student that one way to obtain educational and occupational information was to send for the information through the mails.

The student was given an addressed post card that was already stamped.

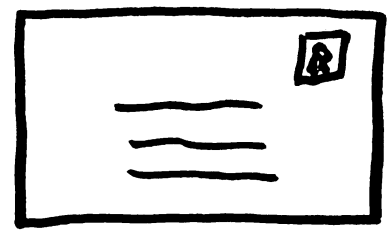


On the back of the post card the student wrote what information was desired and where the information should be sent.

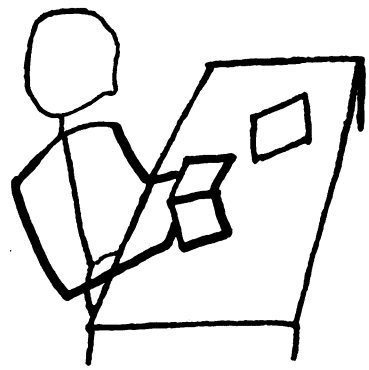
When the post card was filled out, the student put the card in a mail box.



In about two weeks the student received in the mail the information which was requested.



The information that came in the mail was read by the student and it provided valuable facts and ideas for making course choices and after-high school plans.



It was announced that a special speaker was going to visit the school. The speaker was going to give a talk about post-high school educational and occupational opportunities. The announcement also stated that the speaker would answer students questions after the talk had been finished.

A sign-up sheet was given to each of the students in the class to permit the students to sign up to hear the speaker.

SPEAKER SIGN-UP SHEET
Check the appropriate boxex below·

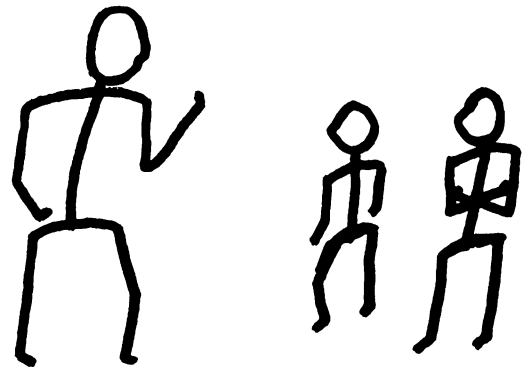
Do you wish to hear the speaker? YES

NO

PLEASE PRINT YOUR NAME _____
GRADE _____

The student checked that it was desired to hear the speaker. When the form was completed, the student handed it in to the teacher.

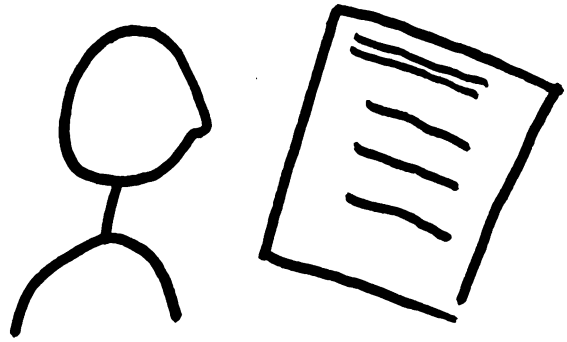
With other classmates, the student went to hear the speaker who came to school. The speaker talked about educational and occupational possibilities after finishing high school. At the end of the talk, the speaker agreed to answer questions that the students wanted to ask.



The information that the speaker gave and the answers to the questions asked by the student and the classmates was helpful. The student was glad that the speaker had come to the school and that the classmates had attended the program.

Reading books and pamphlets about possible occupational and educational opportunities after high school may provide information useful in making plans.

The student saw a list of books and pamphlets which had occupational and educational information. These materials were being held on "reserve" in the school library.



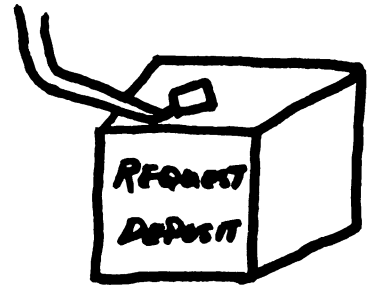
A "Library Request Form" was given to the student. This form was to be used to be able to look through and read the materials.

LIBRARY REQUEST FORM
Circle the numbers of the materials you want:

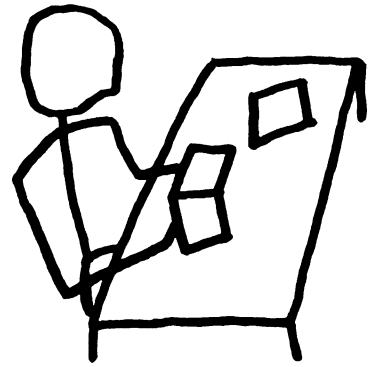
I. II. III. IV.

Please Print Your Name _____
Grade _____

The student completed the "Library Request Form" and then put it in the REQUEST DEPOSIT box in the school library.



The student looked through some of the materials that he had requested to read in the school library.



Valuable information was found in the library materials. The information was very helpful in making plans for the future. The student was happy that the idea of requesting the library materials held on "reserve" had been suggested.

It was announced that the counseling staff would be available during the next few weeks to talk to students about educational and occupational planning. The student thought that a counselor might be able to give some relevant information which would be useful in making decisions.

A "Counselor Appointment Request Form" to be used to see a counselor was given to the student in a class.

COUNSELOR APPOINTMENT REQUEST FORM

I would like to talk about (check the areas desired):

Occupational Information ___
College Programs ___
Vocational Training ___
Course Planning ___

The best time for me to see a counselor is:

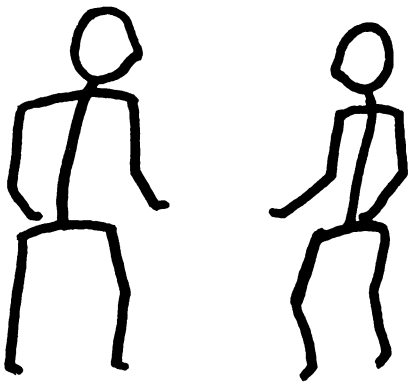
Days _____
Times _____

PLEASE PRINT YOUR NAME _____ GRADE _____

The student filled in the form by checking that a meeting with a counselor was desired and stating a suggested time for the meeting.

When the form was completed, the student put it in the REQUEST DEPOSIT box which was in the school library.

The student met with the counselor and discussed opportunities that were possible after finishing high school. The counselor explained what the requirements were for entering particular training programs which interested the student. Jobs and college programs which interested the student were also discussed.



The student was happy that the meeting with the counselor had been arranged. The information that the counselor provided would be very helpful in making course choices for next year and in the making of plans for the year after finishing high school.

APPENDIX D

MODEL-REINFORCEMENT-ATTENTIONAL

TREATMENT BOOKLET

CAREER

INFORMATION

As you read the story on the next pages of this booklet, take special notice of the four major activities that were used to obtain educational and occupational information.

The four activities to notice in the story are:

1. Mailing a post card for information

2. Listening to a speaker talk about educational and occupational opportunities

3. Requesting library materials about educational and occupational planning on reserve in the school library

4. Making a counseling appointment to talk about occupational and educational opportunities.

Making decisions concerning what to do after finishing high school often becomes a difficult task. The tenth grade is a good time to collect educational and occupational information which would be valuable in planning which courses to take while in high school. The eleventh grade is a good year to collect occupational and educational information to be used in making after-high school plans.

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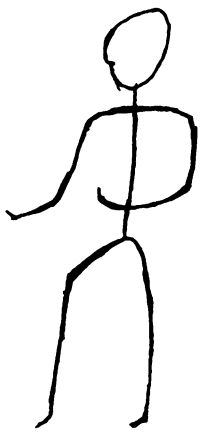

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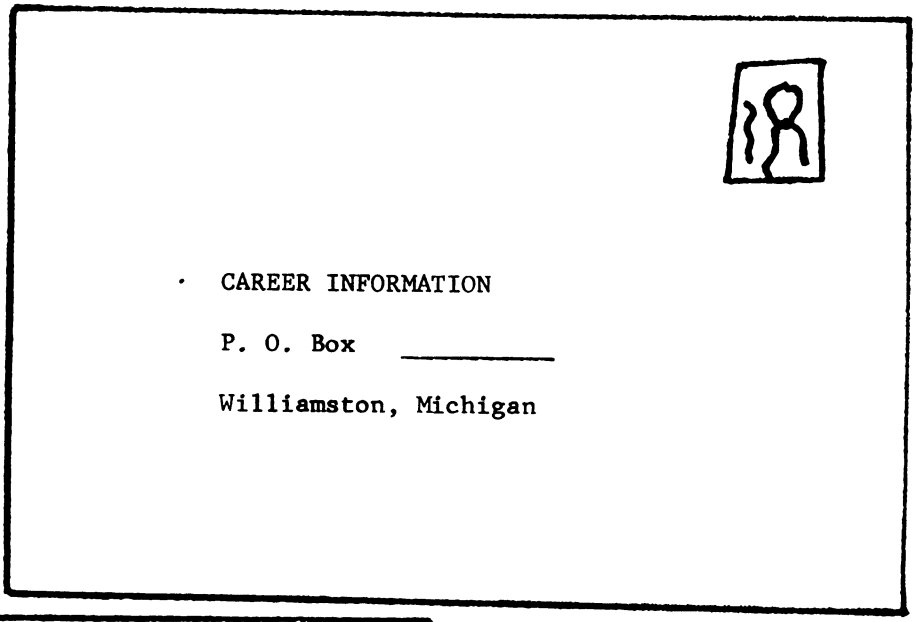

CAREER INFORMATION

P. O. Box _____

Williamston, Michigan

PLEASE SEND ME THE INFORMATION CHECKED BELOW:

llege ____ Name of the College _____
upations ___ Name of the Occupation _____
ational Training ___
eral Career Information ___

PLEASE PRINT YOUR NAME AND ADDRESS:

_____

_____

_____

On the back of the post card the student wrote what information was desired and where the information should be sent.

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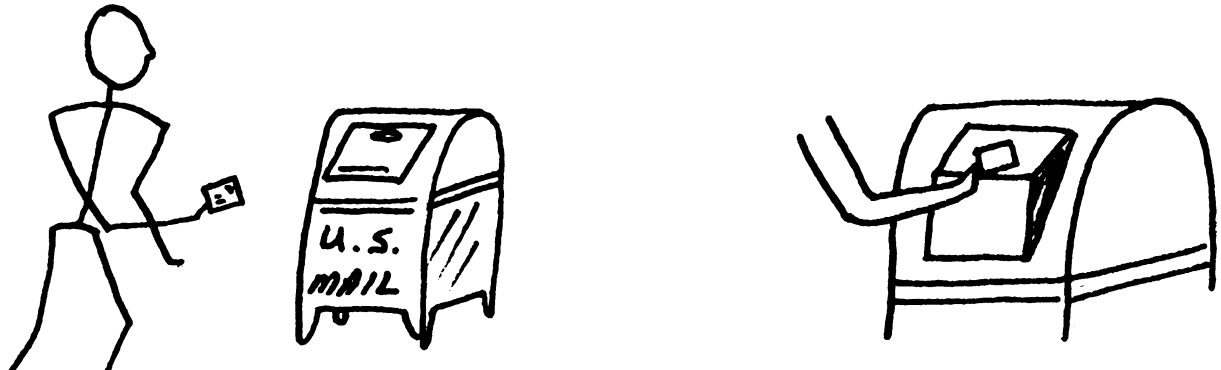

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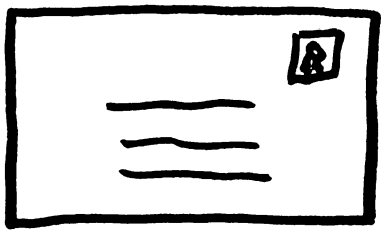

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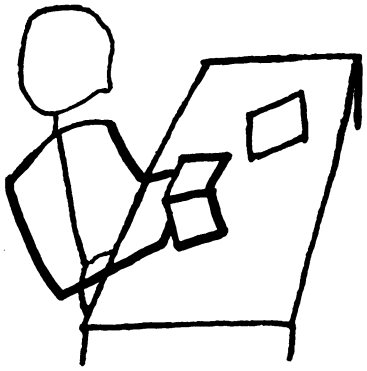

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SPEAKER SIGN-UP SHEET
Check the appropriate boxex below·

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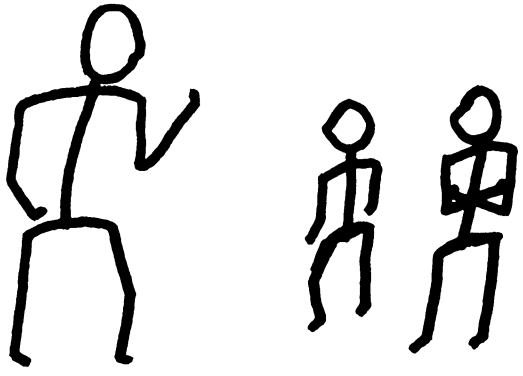

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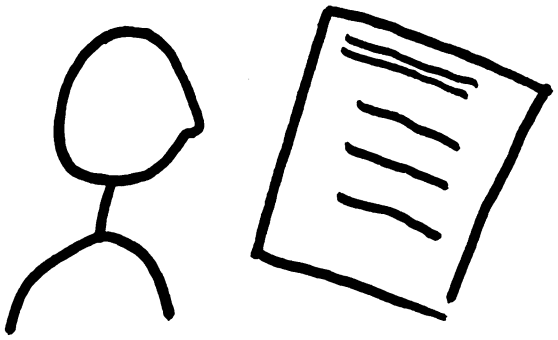

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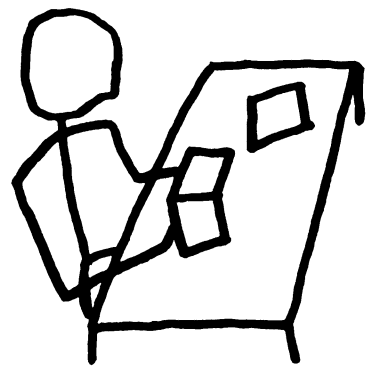

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College Programs ___
Vocational Training ___
Course Planning ___

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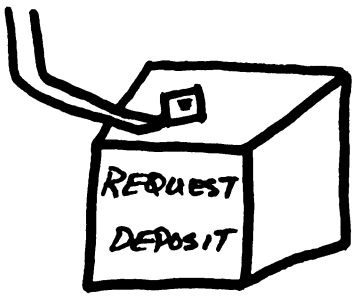

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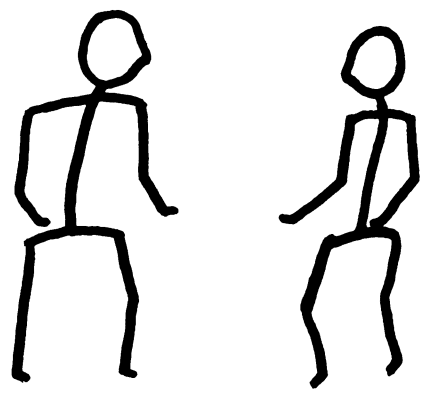

The student was happy that the meeting with the counselor had been arranged. The information that the counselor provided would be very helpful in making course choices for next year and in the making of plans for the year after finishing high school.

APPENDIX E

ACTIVE CONTROL TREATMENT BOOKLET

CAREER

INFORMATION

Choosing a career is one of the most important decisions a young person will ever make. This choice depends on an appraisal of his interests and abilities, as well as on a knowledge of the economic and other factors that are likely to affect his future career and employment opportunities. Among these factors are changes in the composition of the country's work force and in its businessess and industries, as well as changing occupational trends. These developments in the economy are ceaseless and ever present. They affect the kinds of work that people will do and determine the changes in education and training that are required to prepare individuals for different kinds of work.

The ability of young people to maximize the opportunities that await them will depend to a great extent on their education and training. There is a need for workers to be broadly educated so that they can more readily adapt to changing job requirements and absorb the training and retraining that may be necessary to permit them to switch jobs.

Workers who have completed the most education generally have the highest incomes. Yet, experience has shown that the amount of money one

can earn over a lifetime should not be the compelling consideration in choosing a career. Job satisfaction and the many other personal rewards that flow from the right choice of a career may be even more important than monetary considerations. It follows, therefore, that a young person must first of all consider his own interests, talents, and abilities in making alternative occupational choices.

About 40 percent of our total population is working to provide our growing national requirements for food, clothing, shelter, and services. More than a third of these workers (27.2 million) are women.

Most people work for someone else, either for a salary or a wage. Yet 1 out of every 7 workers is either self-employed or contributing his services to a family enterprise. The majority of workers are employed in private industry, and about 13 percent work for Federal, State, and local government.

Despite the long-term shift away from employment in goods producing industries to employment in the service industries, manufacturing is still the largest employer among the major industry divisions. About 19 million persons worked in manufacturing in 1965. The second and third largest industries, trade and services accounted for nearly 14 and 13 million workers, respectively.

In general, employment growth will be fastest among those occupations requiring the most education and training to enter. The completion of a high school education has become standard for American workers. Employers are seeking people with higher levels of education because job content is more complex and requires higher levels of skill. Many rapidly growing jobs in the clerical, sales, and service fields reflect this trend.

Even among unskilled workers, an occupational group which is not expected to increase at all during the next decade, roughly one-half million jobs will need to be filled to replace workers who die or retire. Semiskilled workers have, on the average, about a year and a half less education that the typical American worker. Though the growth rate anticipated for this group is relatively low, 4 million semiskilled jobs

are expected to be available over the next decade.

Service workers are a very diverse group and include workers with both high and low levels of education and skill. Service jobs requiring high levels of educational attainment will account for most of the projected growth of about 3 million workers. Nevertheless, due to the size of this group, another 3 million job openings will arise because of replacement needs.

Note: The above information was taken from the Occupational Outlook Handbook, U. S. Department of Labor, 1968-69 Edition, pp. 13-18.

APPENDIX F

VOCATIONAL PLANNING STRATEGIES MEASURE

VOCATIONAL PLANNING STRATEGIES

Directions: If a friend of your's wanted some educational or occupational information, could you give some suggestions where to get it? In the space below, list as many of the suggestions as you can. Number your suggestions.

APPENDIX G

INFORMATION-SEEKING INTEREST MEASURE

INFORMATION-SEEKING INTEREST

Directions: The statements given on the following pages describe actual activities for seeking information about educational and occupational opportunities. You are to decide whether you are interested or not interested in each of the activities.

Think of each of the activities that is presented as being available to you.

Following each of the statements presented on the following pages, place a check mark (X) in the box that best describes your level of interest in the activity. There are five possible answers to each of the activities. Each of the answers has a number from 5 to 1 which indicates the following levels of interest:

5 = I am definitely interested in this activity

4 = I am interested in this activity.

3 = I am neutral or undecided about my interest in this activity.

2 = I am not interested in this activity.

1 = I am definitely not interested in this activity.

Read each statement and then check the box that best describes your level of interest in the activity. You must mark an answer to each statement. Turn to the next page and begin.

	Definitely Interested 5	Probably Interested 4	Neutral or Undecided 3	Probably not Interested 2	Definitely not Interested 1
1. Reading information about occupations in general.					
2. Writing for information about post-high school education in general.					
3. Talking with someone presently working in a job of your interest.					
4. Listening to a speaker talk about occupations in general.					
5. Taking a part-time or summer job in an occupation of your interest.					
6. Visiting the place of a job in which you are interested.					
7. Reading information about post-high school educational programs.					
8. Writing for information about occupations in general.					
9. Talking with someone about a specific occupation.					
10. Visiting a school or college of your interest.					
11. Talking with someone presently attending a school or college of your interest.					
12. Reading information about a specific job of your interest.					

	Definitely Interested 5	Probably Interested 4	Neutral or Undecided 3	Probably not Interested 2	Definitely not Interested 1
13. Talking with someone about occupations in general.					
14. Writing for information about a specific school or college.					
15. Listening to someone who is presently attending a specific school or college give a speech.					
16. Listening to someone presently working in a job of your interest give a speech.					
17. Talking with someone about a school or college of your interest.					
18. Writing for information about a specific occupation.					
19. Reading information about a specific school or college of your interest.					
20. Listen to a speaker talk about post-high school educational programs in general.					
21. Talk with someone about post-high school educational programs in general.					
22. Listening to a speaker talk about a specific occupation of your interest.					
23. Listen to a speaker talk about a specific educational program of your interest.					

APPENDIX H

TREATMENT INSTRUCTIONS

I am a student at Michigan State University and I am in your school today to help the school staff with a project.

I have some booklets for you. When you receive your booklets, please write your name, grade, and ses on the cover and begin to read the booklet carefully.

When you have finished reading the booklet, raise your hand.

APPENDIX I

POST CARD

PLEASE SEND ME THE INFORMATION CHECKED BELOW:

College ___ Name of the College _____
Occupations ___ Name of Occupation _____
Vocational Training ___
General Career Information ___

PLEASE PRINT YOUR NAME AND ADDRESS:

_____

_____

_____

Stamped post card addressed to:

Career Information
P. O. Box 58
Williamston, Michigan 48895

APPENDIX J

COUNSELOR APPOINTMENT REQUEST FORM

If you would like to talk to a counselor about future occupational and educational planning, complete this form and put it in the "REQUEST DEPOSIT BOX" located in the school library.

* * * * * * * * * * *

PLEASE PRINT YOUR NAME _____

I would like to talk about (check the areas desired):
Occupational Information ___
College Programs ___
Vocational Training ___
High School Course Planning ___

The best time for me to see a counselor is:
DAYS_____ TIMES_____

APPENDIX K

LIBRARY BOOK REQUEST FORM

ANNOUNCEMENT

The following materials are being held on reserve in the school library.

Careers In Depth - this is a series of books which describes the history, types of jobs, training requirements for the jobs, physical and educational requirements for the jobs, and places to write for more information.

Aim High Vocational Series - this series of talks about careers is presented in general terms with specific facts about a number of common jobs and occupations included.

Encyclopedia of Careers and Vocational Guidance

(1) Vol. I (Planning) presents the need to find out about your interests, how to find a job, predictions about the "job market", and descriptions of over 30 occupations.
(2) Vol. II (Careers & Occupations) presents detailed descriptions of jobs in the occupational areas of clerical, technical, semi-skilled, unskilled, and skilled.

Occupational Outlook Handbook - this government publication presents ways to get information, predictions for the "job market", and descriptions of over 70 jobs.

If you would like to read any of the materials listed above when they are available about one week from now, circle the numbers of the materials you wish to have.

* * * * * * *

PLEASE PRINT YOUR NAME _____ GRADE ____

I would like to read the materials circled when they are available:

I. Careers In Depth
II. Aim High Vocational Series
III. Encyclopedia of Careers and Vocational Guidance
IV. Occupational Outlook Handbook

When you have completed this form, put it in the "REQUEST DEPOSIT BOX" located in the school library.

APPENDIX L

SPEAKER REQUEST FORM

ANNOUNCEMENT

A special speaker will be available in the school to talk about educational and occupational planning. Following the talk, the speaker will answer student questions about specific jobs, training programs, and colleges.

If you want to attend the session with the speaker, please fill out the form below and put it in the "REQUEST DEPOSIT BOX" in the school library.

* * * * * *

PLEASE PRINT YOUR NAME AND GRADE BELOW:

Name _____

Grade _____

What topics would you like to hear the speaker talk about? _____