

EFFECTS OF A CLASSROOM SIMULATION
ON SELECTED CAREER DECISION-MAKING VARIABLES
WITH NINTH-GRADE STUDENTS

By

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Abstract of Dissertation Presented to the
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The challenge of helping students prepare to fulfill the demands of today's world of technology and rapid change is ever-present for school counselors. Making of Life Decisions (MOLD) is a simulation designed to motivate students through direct involvement in the areas of personal assessment, vocational exploration, and educational exploration. This study was designed to test the effects of MOLD on ninth-grade students, utilizing the fact that in selecting a curriculum for next year, they face a major educational decision, one which can have far-reaching influence on their

future decisions and opportunities. Four variables were selected: knowledge of graduation requirements; vocational maturity; study habits and attitudes; and behavior in a decision-making situation.

Subjects were randomly selected from all students classified as ninth graders and randomly assigned to one of three groups: Treatment, Control I, and Control II. Students in the treatment group experienced MOLD, meeting with a counselor one period daily for eight sessions. Students in Control I met for the same sessions. Materials relevant to the study were made available, but no assistance was given. Control II, although identified, did not meet except for the testing.

Three written tests and an individual audio tape-recorded interview were used to assess the effects of MOLD on the four variables. A single question was used for students' knowledge of graduation requirements. Super's Career Development Inventory was used for measuring vocational maturity. The Brown-Holtzman Survey of Study Habits and Attitudes rated the third variable. Judges rated the taped interview to assess student behavior in a decision-making situation, using the number of questions asked by each student as the criterion.

Statistical analysis of the data was computed using a variety of tests: an analysis of variance, a three-by-two factorial, Tukey's honestly significant difference--all at

the .05 confidence level. The results of the analyses supported the hypotheses that MOLD does have some effect on students. Students experiencing MOLD were able to list significantly more graduation requirements and asked significantly fewer questions in their interview than students in either control group. Although there was a statistical difference in vocational maturity, with the fact that the Tukey's honestly significant difference showed no pair-wise difference, the practical conclusion is that MOLD does not affect vocational maturity. Likewise, MOLD exhibited no effect on study habits and attitudes.

Several implications for future research and practical application were suggested by this study. A longitudinal study of MOLD would perhaps be a more effective means of assessing effects on vocational maturity and study habits and attitudes. Research could also test other independent variables--quality of decisions, various decision-making situations, as well as MOLD's effect on subjects of varying classifications--race, academic ability, or socio-economic level.

The positive results obtained from this study make MOLD a practical technique. MOLD offers counselors a means of helping students not only make educational-vocational choices but also develop those skills of decision-making which will have lasting benefit. The current problems facing today's

young people demand that school do more than teach "content" areas--learning to live in a world of technology and change is equally important.

CHAPTER I

Introduction

Today's space-age technology in combination with an era of rapid change has rendered the traditional secondary school less than adequate in preparing young people to fulfill the demands of today's world (Boocock & Coleman 1966; Hall, L. 1963; Raser 1969; Toffler 1970). Changes in the educational situation--more students in school, less coercion and more persuasion in discipline at home and at school (Boocock & Coleman 1966)--as well as changes in the role and expectations of adolescents in American society (Carlson 1969) have created a need for more relevancy in the overall structure and program. The present emphasis is often on teaching for the long-distant future within the limits of an enforced, involuntary curriculum (Boocock & Coleman 1966) with few opportunities for relating the educational experience to life (Hall, L. 1963).

Chronologically parallel with the questioning of the relevancy of high school is a questioning of the theoretical frame of reference for counseling students. One approach which frequently appears in the professional literature is based on decision theory (Clarke, Gelatt, & Levine 1965; Gelatt 1962; Gelatt & Varenhorst 1968; Thomas 1972). The

high school counselor's function is described as facilitating decision-making, both helping a student to make a "good" decision as well as equipping him with skills for making good future decisions (Clarke, et al. 1965; Dilley 1967; Tyler 1961). This emphasis on decision-making is even more stimulated by developments in vocational or career counseling, for vocational choice is often "the first important decision with which one is faced that will have marked effects on later experience" (Galinsky & Fast 1966). Super (1954, 1957, 1964; Super & Bachrach 1957) and Tiedeman (1961) have described vocational choice as a developmental process. Hilton (1962) defines career development as an "accretion" of a chain of decisions with decision-making skill of key importance. It thus would seem that the problems herein presented are interrelated: the relevancy of education being linked with decision-making skills and particularly educational and vocational decisions.

Among the innovations being developed to augment and improve current educational practices is one technique--simulation--historically used in many other situations, but just recently being given attention for its educational possibilities. First used in training administrators (Hemphill, Griffiths, & Frederiksen 1962), simulation has expanded in usage, being incorporated into classroom techniques in certain subject areas. At the Twenty-eighth

Annual Invitational Conference on Testing Problems, October, 1967, Coleman described games as providing students a chance "to act out lifelike, decision-making roles in realistic settings . . ." (Smith 1968). Although simulation is not a panacea for educational problems, it does provide "fast and effective" relief in many areas (Abt 1970; Curtis 1971; Stark 1968; Tansey & Unwin 1969).

Statement of the Problem

Entry into high school presents new challenges to the ninth-grade student, not the least of which involves making several choices (Cass & Tiedeman 1960). Many of these decisions ask the student to commit himself to a course of action which has far-reaching influence on his further development, sometimes even a limiting effect on future opportunities (Abt 1970; Johnson, R. G. 1970; Wurtz 1966). The problem lies in the fact that ninth-grade students are often making such choices when they have no experience in decision-making nor any concept of "how the choice will affect their lives" (Abt 1970). Even a "simple" selection of a curriculum is in reality "a projection into the future" (Wurtz 1966).

A review of the literature provides several explanations as to the basis for and the importance of such problems, especially as they relate to educational and vocational selections. The extension of adolescence through protracted training periods has made it more difficult for the young

person to make the transition from school to job (Ehrle 1970). The increasing number and variety of opportunities causes many potentialities to be overlooked completely (Ehrle 1970; Johnson, R. G. 1970, 1971). This factor, combined with few chances for learning about possibilities or for relating them to personal aptitudes and interests, complicates the problem (Hall, L. 1963). Another factor cited is the deprivation of youth of all socio-economic and educational levels of relevant prevocational experiences; even parttime work is not usually relative to lifetime career choices (Johnson, R. G. 1970). Finally, students have little understanding of the role of work and its effect on life and little knowledge of the sociological and economical value of work and its influence on one's future dignity and identity (Hall, L. 1963).

If these factors may be assumed to be true, the question is raised, "Are ninth-grade students ready to begin such exploration?" Research studies prove the answer to be affirmative: counseling can be beneficial (Anderson & Heimann 1967; Jessee & Heimann 1965). Super's studies (1960, 1961) with ninth-grade boys stressed that while not ready for vocational choice, they were ready for vocational exploration, as exhibited by four criteria: development of attitudes, development of self-knowledge, development of aptitudes, and development of interests.

Several counseling approaches are described in the literature. One model for career decision-making, described

by Katz (1966), utilizes "Experience Tables," showing the relationship between ninth-grade grades and high school grade point averages, then grade point averages to college admissions and achievement (Yabroff 1969). Super's research with ninth-grade boys (1961) has concluded that the best means of aiding a student is to assist him in assimilating external data into his self-concept and in exploring his self-concept. However, research has also shown that information and/or knowledge of scholastic ability is not sufficient in itself (Johnson, R. G. 1970; Koch 1972; Westbrook 1967). Fletcher (1960) identified three characteristics of experiences to which junior high school students respond: meaningful to the student, challenging and attention-attracting, encouraging a feasible behavioral sequence to follow. Ehrle (1970) has suggested the use of demonstrations, simple tryouts, simulations, and games, asserting that such "techniques build up a backlog of synthetic experiences in decision-making for the student"

Making of Life Decisions (MOLD) is a simulation designed for use with middle school students, for the purpose of motivating through direct involvement. Developed as an attempt to augment and improve current practices of occupational and educational counseling, MOLD also provides training in decision-making (Johnson & Myrick 1972). In an initial testing of MOLD, two questions were studied:

1. Will MOLD increase students' knowledge of educational and occupational information?

2. Will students perceive MOLD as an interesting and meaningful activity?

Results tentatively indicated that MOLD was perceived as interesting and did have a positive effect upon acquisition of educational and occupational information (Johnson & Myrick 1972).

Recent professional literature has affirmed a need for innovative approaches to vocational-educational counseling, as well as for training in decision-making. Likewise, impetus has been given to the newer educational concepts of gaming and simulations as possible techniques for meeting this need. From the initial testing of MOLD, it would seem that simulation may well provide one positive solution to the problem. However, much research is needed before the effectiveness of simulations and/or games as learning environments is established (Fletcher 1971; Twelker 1972).

Purpose of the Study

This study represents an experimental design in which the simulation program, Making of Life Decisions (MOLD), is further researched, specifically its effects on ninth-grade students. Four variables have been selected in an attempt to explore not only the effects of MOLD on students' knowledge (as in previous research), but also its effects on students' vocational maturity, study habits and attitudes, and behavior in a decision-making situation (as reflected in the number of questions asked when presented the task of

selecting courses for the following school year). Thus, this study will hopefully provide a step in the search for innovative approaches to vocational-educational counseling.

Definitions of Specific Terminology

Simulation.--A simulation is a model, an abstraction with some factors omitted, or a substitution (Raser 1969). It can give the appearance and/or the effect of something else (Cruickshank 1972). In education, it permits one to "look at the large and complex pattern of human relationships and abstract therefrom parts that need investigation or that are considered important" (Tansey & Unwin 1969).

Game.--Abt in Serious Games (1970) formally defines a game as "an activity among two or more independent decision-makers seeking to achieve their objectives in some limiting context," asserting that they offer one "action in a mode that, while chiefly mental, includes the felt freedom, intuitive speed, and reactive response of physical movements." Coleman (1968) describes academic games as "partitioning off a portion of action from the complex stream of life activities"--a "mirror of life."

The distinction between simulations and games is one of degree; simulations omit fewer aspects in the creation of the abstraction (Cruickshank 1972). Also, simulations are more programmed with less player control of the outcomes. MOLD is a program which more closely resembles a simulation than

a gaming technique in that each student is responsible for making his own decisions, for which he receives probable consequences. No points are awarded, nor does anyone win or lose (Johnson & Myrick 1972).

Vocational maturity.--Super (1957) has defined vocational maturity as a point on the continuum of vocational development, a term which summarizes the position one has reached in his vocational development from exploration to decline. For further definition, refer to Chapter II, Vocational Maturity and Its Measurement.

School attitude.--Within the context of this study, school attitude is defined by the researcher as those feelings and/or opinions of students which are directed toward the learning environment--including curriculum, teachers, peers, parents--and which are reflected in study skills and habits. For further definition, refer to Chapter II, School Attitude and Its Measurement.

Hypotheses.--Stated as research questions, the following are the variables being tested:

1. What effects does MOLD have on the number of questions asked by high school freshmen in a decision-making situation?
2. What effects does MOLD have on high school freshmen's knowledge of graduation requirements?
3. What effects does MOLD have on high school freshmen's vocational maturity level?

4. What effects does MOLD have on high school freshmen's school attitude?

While there are many outcomes which could be studied in researching MOLD, expediency and practicality necessitate a limiting of these. The four research questions selected represent an effort to focus on the variables which are relevant to ninth graders and the particular situation in which they find themselves, stress being placed upon the vocational-educational decisions they face and on a means of helping them explore the relationships between school, study, and life.

CHAPTER II

A Review of the Literature

An extensive review of professional literature related to the focus of this research--simulation techniques as a possible innovation to vocational-educational counseling--discloses many ideas, theories, and concepts which combine to present a broad overview of the problem being studied. To simplify such a review, several sub-topics have been outlined.

Decision-Making: Theoretical Concepts

The importance of working with students to develop decision-making skills is a primary assumption of many counseling authorities (Krumboltz 1965; Tyler 1961; Wrenn 1962). However, there is less agreement about exactly what the process entails or how this is achieved. In working with the process of decision-making, Gelatt (1962) and associates (Clarke, Gelatt, & Levine 1965; Gelatt & Varenhorst 1968) have developed and researched a decision-making paradigm. Subsequently delineating its implications for guidance practices, they have based the model on the assumptions that good decisions require information, that the more information, the greater potential for good

decisions, and that important information can be reduced to a few basic classes. The decision-making strategy consists of a prediction system--possible alternative actions, possible outcomes, and probability of outcomes; a value system--desirability of outcomes; and criterion--evaluation and selection of a decision (Gelatt 1962). In further describing the decision-making process, division is made according to what is known of the relationship between action and possible outcomes: certainty, action which invariably leads to specific outcomes; risk, action which leads to any one of a group of outcomes, but each with a known probability; uncertainty, action which may lead to any one of a group of outcomes, but the probabilities are completely unknown. These levels of probability can greatly affect an individual's choices--his acting depending upon how he perceives them.

Descriptions of the process of vocational and educational decision-making range from the complex theoretical to the simple. A tentative theory is based on Festinger's "cognitive dissonance," the major motivation for decision-making stemming from the need to reduce the dissonance among the individual's perceptions of himself and his environment. Inputs from the environment raise the dissonance to such an intolerable level that the process is set in motion. The dissonance is then reduced through one of several possibilities: manipulation of premises; search

for new plans, adoption of general plans; postponement of a decision; or adoption of a short-term career (Hilton 1962). Two broad trends in the decision-making process are identified by Hershenson and Roth (1966). First, the range of possibilities is narrowed; secondly, the remaining possibilities are strengthened. These trends are more explicitly depicted.

1. Each vocationally-oriented decision limits the range of possible subsequent experiences.
2. With the range more narrow, available alternatives are also narrowed.
3. With fewer alternatives, more focus is given to a particular course of action.
4. Focusing on a particular course causes one to be more likely to perceive future events as consistent with this course; thus, this course is reinforced.

Dilley (1967) proposes that decision-making is both a dilemma and a purpose for counselors, for while the goal is to help students make good decisions, the dilemma is: "What is 'good'?" Should judgment be made in terms of outcome or process? The counselor's role is seen as helping the student understand that both process and outcome are important because knowledge of the real world is imperfect, and thus an individual should be tentative about his "knowledge." Hoyt (1972) describes the process of career choice in three questions: "What is important to me?" "What is possible for me?" "What is probable for me?"

Empirical research of these processes has not been strong (Thoresen & Mehrens 1967). Some research, however,

has been conducted with regard to the developmental trends of high school students' vocational decisions. Studying the "self-concept" of high school boys as exhibited in aptitude, interest, social class, values, and the individual's ability to evaluate his standing in these four areas, O'Hara and Tiedeman (1959) inferred that the self-concept (excepting with social class) is clarified as the students pass from the ninth grade to the twelfth grade. Hollender (1967), testing the hypothesis that vocational choices become more realistic with advancing age, has obtained statistically significant results (also Smith & Herr 1972), but has raised the question, "What is the definition of realistic?" Hollender used intellectual capacity for his criterion. In investigating vocational choice and indecision, using age, grade, and ability as variables, Hollender (1971) has found that only ability reflects a difference, with males being more decisive as ability increases, but females increasing accordingly until the highest level, where they become more indecisive.

Dilley, suggesting that a relationship exists between decision-making ability and vocational maturity, used a Decision-Making Ability Instrument and conducted correlation tests with three correlates of vocational maturity: intelligence, achievement, participation in extracurricular activities. He concluded that all three variables were indicative of decision-making ability. A research study by Biggers (1971) investigated the types of information used in

decision-making and searched for developmental trends in the use of information--is there a corresponding increase in maturity of using information with an increase in age? Using an Occupational Construct Inventory, Biggers concluded that while a variety of types of information is used, no trend can be observed.

Group Methods for Teaching Decision-Making

Bruner (1963) has pointed out that

in order to learn or to solve problems, it is necessary that alternatives be explored and . . . you cannot have effective learning or problem solving without the learner's having the courage and the skill to explore alternative ways of dealing with a problem.

This should be less risky for a student if the exploration takes place in the presence of a teacher or counselor. This statement is supported by research by Evans and Cody (1969). Using three groups--one receiving assistance with strategies for decision-making, one receiving no assistance, and one control group--the researchers gave each group a similar task and set a standard criterion for each to achieve. Only the assisted group met criterion within the time limits established, all subjects doing so; however, no subjects in either of the other groups achieved criterion. It would appear that guidance in developing decision-making skills is more effective.

Professional literature contains recommendations as to how knowledge of the process of decision-making and of the influential factors might be applied to counseling practices.

Four directions for progress in operationalizing counseling to promote occupational exploration are formulated:

1. Seek tools sensitive to the expanded variables-- both occupational and personal--which have been identified as significant.
2. Stress longer, progressive vocational planning as opposed to a final occupational choice.
3. Correlate self-exploration with occupational exploration.
4. Encourage a search based on personal-vocational factors with individual hypotheses modified and verified.

(Pritchard 1962)

An answer to the question of how to aid students in developing skills in decision-making has been proposed by Katz (1966). His model incorporates three systems of data-- values, information, and prediction--using numerical input from these sources to obtain expected values. The strength of the model resides in the consideration given to a student's values. Another answer, which represents an attempt to combine the best features of other systems and approaches, is "feasible alternative counseling" (Thomas 1972). Within this framework, the counselor and student work together, the student writing the specific aspects of the problem and any solutions he perceives, the counselor adding any other possibilities. Then together the counselor and student work through the alternatives, weeding out those which are impossible and thoroughly discussing each of the others. At this point the student is in a position to

choose a course of action. Effective Problem Solving is a counseling model for helping students solve educational and vocational problems. A type of self-directed learning program, the model teaches the steps in Effective Problem Solving, then presents the student an opportunity to apply them to a personal problem. The model has several advantages for the counselor: (1) it permits him to be a consultant to the student; (2) it utilizes his training in keeping the student moving optimally; (3) it permits him to work with one or a group of students at the same time, each student working independently. The structured model consists of twelve parts, each with a "carefully arranged sequence of questions." It has been used successfully with students of several levels--junior high school through high school, marginally achieving through college-bound (Magoon 1969).

Two research studies involving modeling and reinforcement present specific counseling techniques. Using external information-seeking behavior as the criterion, Krumboltz and Schroeder (1965) have studied the effects of verbal reinforcement and modeling reinforcement. The results show a sex difference, with males responding with more information-seeking behavior with model reinforcement, while females respond more positively with verbal reinforcement. Thoresen and Hamilton (1972) have tested three techniques--peer social modeling; modeling and materials (pamphlets and role

playing); and materials--with subjective knowledge, identification and use of information in a simulated career exploration situation, and frequency and variety of career exploratory behavior as criteria. Their conclusion was that peer social modeling may be effective and that structured written material may be enhanced by social modeling.

From their research with the Life Career Game, Gelatt (1962) and Gelatt and Varenhorst (1968) have developed six implications for counselors working with decision-making.

1. The collection and utilization of information
2. The utilization of decision-making opportunities to develop a capacity for decision-making
3. The recognition of student inability to make accurate assessments
4. The recognition of interaction among immediate, intermediate, and long-range decisions
5. The development of an awareness of all alternatives
6. The utilization of the acquisition of decision-making skills as a baseline for evaluation of a guidance program

Vocational-Educational Counseling

The relationship between vocational choices and educational choices is not clearly defined. Based on cross-sectional and longitudinal studies which show that there are other determinants of educational decisions besides vocational choice, Dole (1963) has argued for treating them separately. The inverse position as stated by Ciavarella (1972) proposed a reciprocal influence--"each

having significant implication for the other." The curriculum is seen as influencing vocational development through the number and variety of offerings available and the status of teachers and students in a given program. However, regardless of how the relationship is perceived, students do face these choices and do experience difficulty in making them (Galinsky & Fast 1966; Gunmere 1967; McDaniels 1968). Gunmere (1967) has proposed three psychological and sociological reasons for this difficulty: (1) the natural resistance of adolescents to "interference"; (2) a disillusionment with the value of adult guidance; (3) the change and instability of the directions in which natural and social forces are moving people.

Factors, including external, internal, and adaptation variables (Beilin 1955), which affect vocational and educational decisions have also been researched (Dole 1963). Dole has noted from his studies that educational decisions are affected by internal factors--values, interests--and external factors--sex, confidence, and parental occupation. In evolving one of the earlier theories of the development of vocational attitudes, Carter (1940) conducted research to determine which educational and maturational factors were most significant. Home environment was found to be the most important external influence, while individual native equipment, coupled with subjective factors involving adjustment for satisfaction and attempts to gain identification, were

the internal factors. Astin (1967) has attempted to identify those personal characteristics of ninth-grade students which can predict expressed vocational choice at graduation and those characteristics of a secondary school which affect senior choices. Her results for personal characteristics showed that interest measures and initial career choices are relevant. The size of the school and the mean score on a reading comprehension test are significant school characteristics. Research to determine if there are any sex differences in vocational maturation has shown that females tend to be more mature than males, with both sexes becoming more mature as grade level advances (Smith & Herr 1972). Crites and Semler (1967) have conducted longitudinal research to determine if change in adjustment and achievement occurred as a student progressed from the fifth grade to the twelfth grade and to test whether adjustment and achievement could predict vocational development. Their results showed all three interrelated, earlier adjustment measures being predictive of later measures and closely related to educational achievement and vocational maturity.

A vocational-educational program is divided into three services by Woodruff (1972). The career decision guidance information service aids the student in learning all the options, based on his skills, interests, and aptitudes; the career objective analysis service enables the student to know what he must learn or do for a given career; the

conceptual and operational education and experience help the student develop the skill and knowledge he needs. The model, after the initial beginning, allows for re-cycling. A system piloted at San Diequito High School, Encinitas, California, presented four phases of the program: (1) the selection of a post-graduate goal; (2) self-evaluation; (3) a study of goal requirements; (4) development of a projected high school program (Koch 1972).

Beilin (1955) has listed several principles of general development which are applicable to any program. Development, a continuous process, irreversible and differentiable into patterns, should have pre-eminence; levels of maturity should be considered; the process, incorporating both differentiation and integration, develops at a rapid pace in the beginning, but slows down; progress moves from dependence to independence, from egocentric to social behavior; and the process is interactive and interdependent.

Vocational Maturity and Its Measurement

In his studies of vocational development, Super (1955) established a conceptual framework for a vocational maturity quotient (the ratio of vocational maturity to chronological age), vocational maturity being a point on the continuum of vocational development. This term was introduced to provide "an organizing construct that summarizes the place reached on the continuum of vocational development from exploration to

decline" (Super 1957). It is multi-dimensional, being composed of both cognitive processes and attitudinal variables. In educational concepts it indicates a readiness to make the vocational decision called for by society (Super 1964). Using this framework Super delineated those dimensions and indices which were indicative of vocational maturity (1955).

From a study of writing and research concerning vocational maturity, Crites (1961) has suggested the use of two independent measurable constructs: degree of vocational maturity and rate of vocational development. He has also recommended a combination of age and point-scales, with scoring keys constructed which differentiate older and younger age groups within a given vocational life stage. Wurtz (1969) has questioned the use of intelligence as a variable in researching vocational maturity. Statistics support the use of a mental age in preference to a chronological age with reading tests; therefore, according to Wurtz, when intelligence or scholastic aptitude is used as a variable in vocational developmental research, mental age would provide the better perspective.

A review of professional literature discloses an array of instruments designed to measure vocational maturity. Mathewson and Orton (1963) have developed a vocational maturity scale using vocational imagery as the measurement. Working with high school students, they have observed a

"ubiquity of immaturity in much of their vocational thinking and imagery." A Vocational Sentence Completion Blank, to be hand-scored, was developed by Dole (1958). It encompasses three major areas: general self-achievement (independence, satisfaction, problems); general emphases (intellectual, activities, other people); and specific preference (outdoor, mechanical, computational). For research studies in schools in the lowest social ratings, a Vocational-Educational Survey for High School Seniors was constructed by Vriend (1969). The survey compared students in an experimental two-year program with a control group, showing the experimental group higher on total vocational maturity and exhibiting more positive behavior toward goals. A discussion tool, the Occupational-Attitude Rating Scale, was developed at Ohio State University, utilizing general types of technical satisfaction; social-contact satisfaction; and social-service satisfaction (Hammond 1954).

The Vocational Development Inventory was developed, based on Super's dimensions, but with the assertion "that the concept of vocational maturity is more comprehensive than vocational choice, including not only the selection of an occupation, but also attitudes toward decision-making, comprehension and understanding of job requirements, planning activity and ability, and development of vocational capabilities" (Crites 1965). It consists of two sections: a Competence Test and an Attitude Scale. The Competence Test

contains five subtests:

1. Problem--ability to solve conflicts
2. Planning--ordering steps toward a goal
3. Occupational Information--factual knowledge
4. Self-knowledge--score against objective information
5. Goal Selection--choosing the best goals for a hypothetical person

The Attitude Scale contains self-descriptive statements (Crites 1968). The Inventory was initially tested with three thousand elementary and secondary students in two separate experiments. Several conclusions were drawn (Crites 1965): while the test did not distinguish by age, it did by grade levels (Hall, D. 1963); a notable trend in response set from "true" in elementary school to "false" in high school was also observed.

Maynard and Hansen (1970) used the Vocational Development Inventory in research assessing the vocational maturity of black and white inner-city youths in both segregated and integrated high schools. The results ranked suburban students, white inner-city students, black inner-city students respectively from highest to lowest. Alone, all differences were significant, but when I.Q. was used as a co-variant, there were no differences. This was attributed to the belief that students from lower socio-economic levels are not test-oriented and that a cultural bias exists within tests. Two possible interpretations are suggested. Disadvantaged students may have different patterns of vocational

development; further research is needed.

A measurement of readiness for vocational planning has been designed and researched by Gribbons (May 1964; 1967) and his associate Lohnes (Spring 1964; September 1964; 1965; 1969). From multi-dimensional personal interviews conducted in the eighth grade and again in the tenth grade, eight numerical variables, considered to represent eight dimensions of readiness for vocational planning were scaled. These variables are:

1. Curriculum choice--awareness of factors to be considered (abilities, interests, available courses, relationship to occupational goals)
2. Occupational choice--awareness of factors to consider (abilities, interests, values, educational requirements, definitions, limitations, scope, stating choice as tentative, not final)
3. Verbalized strengths and weaknesses--those relative to educational and vocational choices
4. Accuracy of self-appraisal
5. Evidence for self-rating
6. Awareness of interests and their relation to occupational choice
7. Awareness of values and their relation to occupational choice
8. Independence of choice

(Gribbons 1964; Gribbons & Lohnes Spring 1964, 1965). The analysis of the interviews revealed several factors. Many tenth-grade students made decisions based on poor information, reflecting a need for counseling (Gribbons 1964). The Readiness for Vocational Planning Scale separated students into

three curricular groups: college preparatory, business, industrial arts and general, the college preparatory group consistently exhibiting higher scores. A seven-year follow-up study (Gribbons 1967) revealed that the scale was able to predict criterion variables based on an interview two years after graduation. In 1969 Gribbons and Lohnes, using the same subjects and data as in the original research, developed a new method of analysis--a univariate scaling. This change was justified by the opportunity it presented for combining a vocational maturity measure with other predictors. As a result of such a combination (Readiness for Vocational Planning, sex, socio-economic status, intelligence) a career development tree was designed.

Finally, a new assessment of career development is presently being researched and standardized by the American College Testing Program. Developed at North Carolina State University, the intention was to design a scale for measuring vocational maturity with objective items (Westbrook & Cunningham 1970; Westbrook, Parry-Hill, & Woodbury 1971). The test, Assessment of Career Development, is composed of two major components: Occupational Awareness; Career Planning and Decision-Making. In each area both student knowledge and student experience are assessed (American College Testing Program, Developmental Research Department 1972).

School Attitude and Its Measurement

The character of student attitudes toward school and education in general has posed problems of both theoretical and practical importance to educators (Brodie 1964).

As part of a project to study the nature and attitudinal structure of the educational environment and to attempt to modify the attitudes of significant people in it, Tuel and Shaw (1966) developed a scale to measure the attitudinal dimensions of the educational environment. Previously, Tuel and Wursten (1965) had defined the "climate of learning" as that portion of the total, objective environment which exerts direct influence on a student's learning, conceptualizing it as "several concentric spheres radiating outward." These spheres include home, classroom, school, district, region, and nation. Supported by a review of relevant research, the influences of those spheres most closely related to this study were identified as home--parental attitudes and behaviors and parental acceptance; classroom--instructional methods, evaluation techniques, group structure, and interpersonal relations; school--social pressures, peer group influences and values as exhibited in rewards, the role of competition, extra-curricular activities, and academic freedom. The School Opinion Survey, which resulted, assesses education-related attitudes of parents, teachers, students, and administrators in two broad areas (factors extracted from the initial items being used to develop the instrument). Dimensions of educational philosophy encompass

the first three subscales, while the final seven subscales are grouped as technique scales (Tuel & Shaw 1966). The Survey identifies the attitudinal dimensions of each individual toward the educational system, thus helping to identify any existing specific problems.

Research has been conducted to study any attitudinal differences distinguishing satisfied and dissatisfied students. Williams (1970) used the California Study Methods Survey to identify students with positive and negative attitudes and then attempted to delineate personality, ability, and achievement correlates which would differentiate between the two groups. He observed that students in the negative attitudinal group score significantly lower on all three variables. A study to examine the difference in psychological functioning and classroom effectiveness between satisfied and dissatisfied students used the Student Opinion Poll to classify the students and then studied correlations with individual I.Q. tests, a standardized verbal achievement test, a numerical achievement test, the California Personality Test, direct sentence completion, indirect sentence completion, teacher rating, the Adjective Checklist, and a group Rorschach. Results indicated that the two groups did not differ in intellectual ability or scholastic achievement, appearing to differ psychologically rather than scholastically. The dissatisfaction thus is considered a part of a larger picture of psychological

discontent rather than a reflection of inefficient functioning in class, almost as if it is a product of a "pervasive perceptual set" coloring the student's view of himself and the world (Jackson & Getzels 1959). A partial replication of this study was conducted by Brodie (1964). Again distinguishing satisfied and dissatisfied students by means of scores on the Student Opinion Poll, the research compared the scores of the two groups on the Iowa Test of Educational Development. Those satisfied with school scored higher, with academic skill development closely associated with classroom objectives and drill, and general knowledge more associated with independent reading. A negative attitude was found to have an inhibitory effect on classroom learning, but less effect on learning not identified with school and education. A slightly different study by Tseng and Carter (1970), examining "achievement motivation and fear of failure as determinants" of vocational decisions, found a significant difference between students with high achievement and low fear of failure and students with low achievement and high fear of failure.

Instruments for assessing attitudes have been developed by researchers in many forms. One theoretical approach was based on the assumption that

attitudes of students toward school subjects might be illustrated by analyzing the habitual orientation of students toward decision or choice situations according to two dimensions

(Edwards & Wilson 1959), the degree of deliberation or the

preference for abstract or immediate ends and the preference for social or non-social objects. The scale was constructed with six scores, presenting valid indices of an individual's relative position on the six continua; (1) prudent-aesthetic; (2) prudent-immediate; (3) prudent-theoretic; (4) theoretic-immediate; (5) theoretic-aesthetic; (6) aesthetic-immediate (Edwards & Wilson 1959). Juola (1963) attempted to construct an "empirically derived non-cognitive scale," based on the values and attitudes which students "seem to hold for education and educational activities." The result, the Academic Attitude Preference Inventory, consisted of one hundred items, selected from an initial two hundred seventy-five items given to nine hundred freshmen at Michigan State University. Items were chosen by responses of high and low achievement students which met three criteria:

1. An item must correlate to grade point average at .10 or higher, either sex.
2. If an item qualifies for one sex, a correlation of .08 must be found for the other sex.
3. An item must show a higher per cent of high achievers preferring that response than lower achievers.

Research has shown some relationship with ability; however, the studies are not yet complete. An instrument designed to measure specific attitudes (not an omnibus measure) toward instruction was designed by Finch (1969). Students were to indicate the degree to which they agreed or

disagreed with statements relating to a particular period of instruction. Initial tests conducted with vocational students showed a reliability coefficient of .918, with a repeat of .931. A completely different measurement instrument for assessing attitude established a semantic differential. Seven positions on an ordinal scale were used with bipolar adjectives: extremely, moderately, slightly, neutral, slightly, moderately, extremely. Three revisions yielded an item correlation of .20 or higher, standardized on high school and college students.

The Survey of Study Habits and Attitudes (SSHA) by Brown and Holtzman is a widely used attitude assessment instrument (Draayer & McLure 1972; Haslam & Brown 1968; Khan & Roberts 1969; Martens 1964). Form H, for use with students in grades seven through twelve, was developed and standardized after the initial test (Holtzman & Brown 1968). Other improvements corrected shortcomings--the use of different norms and scoring keys by sex; the use of only forty-three of seventy-five items; results in terms of one score--and benefited counselor purposes (Roark & Harrington 1969). Two studies have shown that the SSHA does seem to measure significant nonintellectual variables while having predictive qualities of grades (Khan & Roberts 1969; Martens 1964). The SSHA has also been used as the major instrument in studies of the effectiveness of various educational problems (Draayer & McLure 1972; Haslam & Brown 1968).

Two research problems concerning attitude change have been observed and studied. Questioning the relationship between new information and cognitive change accompanying such learning, Greenberg (1964) conducted a research study. Field studies, which show that selective exposure (purposely choosing what agrees with one's cognitions and thereby having no opportunity to learn facts to the contrary) operates in learning situations, raise the question of whether learning may modify beliefs. Working with students at San Francisco State College in political science classes, Greenberg found that if an individual is deliberately exposed to new information, he begins to learn "perhaps in spite of himself." Learning changes one's belief structure and then the change directs one to acquire more information. Which comes first has not been determined (Greenberg 1964). Another problem of attitudinal change research has been studied by Nosanchuk, Mann, and Pletka (1972). They were concerned with the effects of a pretest on the subsequent learning; specifically with the effects of the communication of information within the test, the commitment demanded by signing the pretest, and the decisioning demanded by responding to the pretest. A complex design utilizing one hundred thirty-six students in an introductory psychology class showed that none of the three has any significant effect.

A longitudinal analysis of the relationship between high school values and participation with educational-

occupational achievement has shown that values in high school radically change shortly after graduation, having no significant relationship to future educational and occupational achievement. A suggested explanation is that there is a lack of association between the two (Snyder 1969). This explanation, if assumed to be correct, gives impetus to the need for finding some means of helping high school students see such a relationship and its relevance to themselves.

Simulation and Games

The impetus of simulation and gaming as an educational tool is evidenced in part by the number of books currently being published (Abt 1970; Boocock & Schild 1968; Carlson 1969; Raser 1969; Tansey & Unwin 1969). Educational games have been characterized as follows:

1. Simplification of the real world
2. Progression as a series of cycles, each a period of time and a sequence of events
3. Compression of time
4. Employment of a simulated environment which represents aspects of the real world
5. Instructions for students to act out roles
6. Competitive

(Kasperson 1968). Games induce learning by two means: the high level motivation and interest focuses player attention to specific tasks and skills; a series of contingencies is established, "where reinforcement is contingent upon

specific behaviors . . ." (Schild 1966). Before acceptance of this technique, Beals (1971) recommends consideration of several issues.

1. Willingness to use the necessary time
2. Consideration of students' background and their specific needs
3. Personal and school philosophy
4. Oversimplification of the situation
5. Availability of materials
6. Justification as part of the curriculum
7. Evaluation process
8. Emphasis: winning or learning?
9. Preparation for participation in society
10. Sophistication for realism
11. "Dehumanizing" to children

The potential value of simulation and gaming involves several features. The motivational quality is heightened (Abt 1970; Boocock & Coleman 1966; Kasperson 1968; Kelly 1970; Raser 1969; Stark 1968; Tansey & Unwin 1969). Cruickshank (1972) describes simulation as developing more involvement, both intellectually and emotionally. This involvement is based on the natural interest inherent in children in games--even small children become involved in "playing store" (Rogers & Kysilka 1970). Another factor is the immediate feedback which results (Kasperson 1968; Schild 1966; Stark 1968). Not only does the student learn

to anticipate and deal with situations, receiving the consequences immediately (Rogers & Kysilka 1970), but after seeing the effects of his decision-making, in many simulations he must live with those effects (Kelly 1970). The feedback factor is heightened by another feature--the opportunity for decision-making without censure (Tansey & Unwin 1969). This permits the student to engage in "dangerous, threatening situations" without problems (Cruickshank 1972) and offers the opportunity for repeated trials (Kasperson 1968; Schild 1966). The actual simulation situation affords several potentially valuable features. The simplification from the "real" to the "simulated" makes the whole situation "easier to see" (Raser 1969), thus facilitating adaptation to crucial factors (Schild 1966). Simulation can also provide experiences which are not normally available (Boocock & Coleman 1966; Cruickshank 1972). Another potentially valuable factor involves the role of the teacher, as a consultant and helper, not a judge; the game being self-judging with the outcome deciding the winner (Boocock & Coleman 1966; Rogers & Kysilka 1970; Tansey & Unwin 1969). However, Fletcher (1971) has questioned this factor on the basis that at the same time, different students will see the teacher's role from different viewpoints. The various learning potentialities constitute another value. In Serious Games Abt (1970) identifies four types of learning: intuition-building (also, Stark 1968),

problem-solving, social behavior training, and allocation of resources. The opportunity for personality development and stimulation of the imagination is suggested by Stark (1968). The focus on decision-making skills as well as on factual knowledge and concepts is yet another learning potential (Rogers & Kysilka 1970). A final value in simulation and gaming is its appropriateness for students of all levels (Rogers & Kysilka 1970), especially in that students can simultaneously learn different things on different levels in the same game (Abt 1970).

Simulation, however potentially valuable, has some limitations. The teacher's attitude can be a hindrance (Boocock & Schild 1968); the situation may be threatening since the teacher no longer has the "right" answers (Rogers & Kysilka 1970). The opposite, attraction for the student, may also be a limitation if the simulation is a substitute for learning, emphasizing winning, not learning (Boocock & Schild 1968; Kasperson 1968; Rogers & Kysilka 1970). The expense of commercial simulations and the time involved may also be limitations (Rogers & Kysilka 1970). Baldwin (1969) points out some detrimental administrative problems. Instructions and/or suggestive labels can suggest behaviors. Excessive rules or progressively complex situations can affect the development of strategies.

Professional literature contains many reports of studies using simulation and gaming techniques in educational

situations, both in general curricular settings and in counseling settings. In the social science area, a Community Disaster simulation has been tested. Reporting descriptive results (not empirical), Inbar (1966) supported the motivational and teaching values. Kinkade and Kidd (1962) used an operational game as a method of task familiarization with air traffic control, concluding that the game facilitated the training process more economically. The Department of Agricultural Education at Pennsylvania State University tested the effectiveness of alternative uses of simulation in agricultural management (Curtis 1971).

The conclusions were as follows:

1. Simulation is useful for teaching concepts to high school students and adults.
2. Interest is high and sustained.
3. Team size, the number of decisions, and the type of data may be varied without sacrificing potentialities.
4. Model complexity has no adverse effect.
5. The method of dissemination of material has a significant effect.

In teacher education, simulated teaching experiences were offered, with novice teachers working first with other teachers and then with students. Evidence supported the fact that behavior acquired during the simulation with peers transferred to work with students (Emmer 1971).

Counselors and counselor educators have also used simulation with students on all levels. Although supported

by no empirical evidence, the University of Missouri has developed a program using simulation techniques in counseling practicums, which is considered successful (Gysbers & Moore 1970). Simulated career experiences in the form of kits were designed at Sanford University (Peterson 1972; Johnson, R. G. 1971). Five guidelines were in the design of each kit:

1. Realistic and representative problems from the occupation
2. Reading level such that ninety-five per cent of the students have no difficulty
3. Problems intrinsically interesting to a majority of the students
4. Problems successfully read and solved in fifty minutes by seventy-five per cent of the students
5. Self-contained, self-administered

(Krumboltz & Sheppard 1969). Research, following that of Krumboltz and using a test of occupational information and self-rated interest in obtaining more occupational information, showed no difference between simulation and a general approach in motivating interest in learning about vocations in general. However, the kits did generate more interest in specific occupations (Johnson, R. G. 1971). The Life Career Game, developed by Boocock, has been researched with high school students. It utilizes the learning principles of modeling, reinforcement, successive approximation, discrimination learning, and skill development. The decision-making conditions are fulfilled through involvement,

the realization of a need for facts--where to find them and how to use them--a clarification of values, and practice in decision-making (Varenhorst 1969). A research study conducted at a Four-H convention utilized two games--career and legislature--with each group a control group for the other. The overall evaluation was that "a good deal of learning--and several different kinds of learning--can occur in simulation games of this sort" (Boocock 1966; Boocock & Coleman 1966). Empirical research with the Life Career Game at the University of Missouri tested the amount of learning of educational-occupational information, the retention of this information, and interest in the activity. The results showed no difference in the experimental and control groups in interest; with educational information the experimental group learned less, while the groups were equal in learning occupational information; the two groups were equal in retaining educational information, while the experimental group retained more occupational information (Johnson & Euler 1972). Collecting data from several research experiments, Boocock (1967) has noted several positive characteristics of the Life Career Game.

1. High interest
2. Efficient means of communicating factual information
3. "Substitute for experience"
4. Appreciation for the importance and the complexities of decisions ahead

Evaluation of the processes, strategies, and general outcomes of simulations and games is needed (Fletcher 1971; Kelly 1970; Schild 1966; Twelker 1972). However, some research in these areas is available. Using the Generation Gap game, Chartier (1972) has attempted to answer the question: "Would discussion of game experience aid learning--both at the cognitive and the affective level?" Although differences were not significant, the affective level was higher with the game experience; the cognitive level reflected no difference. Likewise, research in junior college political science classes revealed no significant change in cognitive learning through simulation experiences, but desirable attitudinal changes were noted (Heinkel 1970). In general, empirical findings support only the hypothesis that more interest is generated; all other hypotheses--more facts learned, better retention, critical thinking and decision-making skill developed, attitudes altered--must be at least tentatively rejected (Cherryholmes 1966).

Conclusion

The quantity of professional literature related to the focus of this research attests to the relevance of such study. The content of such literature supports the fact that simulation is a possible innovative technique for vocational-educational counseling. The emphasis upon decision-making skills lends validity to the use of

simulation techniques because of the incorporation into the process of opportunities to develop these skills with immediate feedback for evaluation. However, this review of the literature has also revealed a need for further research, not only for developing theoretical explanations of the processes, but also for identifying and researching the effectiveness of these techniques. The research proposed represents an effort to contribute to the growing knowledge of the effectiveness of MOLD with students, focusing on its effects upon a student's behavior in a decision-making situation, knowledge of graduation requirements, level of vocational maturity, and attitude toward school and study.

CHAPTER III

Design and Methodology

Although students are continually making important educational and vocational decisions, the spring semester brings these into focus with emphasis upon selecting a curriculum for the following school year. The significance of these curriculum decisions is accentuated for ninth-grade students at Whitehaven High School because they have the opportunity--for the first time--to choose between academic and vocational programs, as well as among the various facets within each broad designation. This research study utilizes this focus in assessing the effects of MOLD on ninth-grade students as related to the four independent variables.

Description of Treatment

Making of Life Decisions (MOLD) is a unique approach to career decision-making developed by Richard H. Johnson. It motivates students through direct involvement in a series of eight activities, each designed to focus upon one specific aspect of career decision-making: personal assessment, occupational exploration, occupation choice, educational exploration, and educational choice. Some activities are

individual, while others involve group participation; however, each concludes with a group discussion and evaluation. Activities range from simple tasks (sentence completion) to a simulation experience, in which a student makes a personal evaluation, then makes decisions based on that evaluation, and finally is given probable consequences.

Method of Research

The overall method of research has been developed as herein presented in an effort to provide an experimental situation which parallels as closely as possible the actual conditions under which MOLD is intended to be used. Consideration has also been given to the experimental setting, with efforts to design a study which realizes the maximum potential of the purposes yet is appropriate within the limits of the setting.

Design

This research study employs a posttest-only control group design (Campbell & Stanley 1963). The following is a graphic summary of the design:

<u>Phases</u> <u>Groups</u>	I	II	III	IV
Treatment	R	O ₁	X ₁	O ₂ O ₃ O ₄ O ₅
Control I	R	O ₁	X ₂	O ₂ O ₃ O ₄ O ₅
Control II	R	O ₁		O ₂ O ₃ O ₄ O ₅

- X₁ - MOLD
- X₂ - Unstructured Study Hall
- O₁ - I.Q. scores
- O₂ - Graduation Requirements Test
- O₃ - CDI
- O₄ - SSHA
- O₅ - Individual Interview

The first phase involves a randomized selection of ninety-six students from all students enrolled in ninth-grade homerooms, forty-eight boys and forty-eight girls, randomly assigned to one of the three groups, with stratification by sex. The randomization represents an effort to assure a lack of initial biases among the three groups, thereby permitting the omission of pretests (Campbell & Stanley 1963). The use of a control group selected from within the same school has been studied and results have shown that the contamination which would possibly occur is negligible (Rothney & Lewis 1969; Johnson, R. H. 1970).

Phase two provides a means of checking the randomization, using I.Q. scores found on students' cumulative records. If significant difference is found among the groups on this variable, the statistical analysis for the instruments in phase four is adjusted to eliminate any bias.

Phase three provides for the testing of MOLD against the two control groups, one control group remaining unidentified except to the experimenter until the posttesting; the other group meeting at the same periods as the treatment group for an unstructured study hall, with vocational-educational materials available.

Phase four is concerned with the three instruments and the individual interview which measure the four variables being studied. Each instrument is administered to

all students and then each student has an individual interview with a counselor, the purpose of such interview being to give the student his curriculum selection sheet.

Setting

The research was conducted in Memphis, Tennessee, a large metropolitan city of approximately 626,000 people. Located in the extreme southwest corner of Tennessee, it serves as a center for the rural and industrial region known as the "Mid-South" or the "Tri-State" area. Memphis provides a link to the Midwest, being the major crossing point of the Mississippi River between St. Louis, Missouri, and New Orleans, Louisiana.

The school in which the research was conducted is Whitehaven High School, one of twenty-nine high schools in the tenth largest school district in the United States. The experimenter is currently employed as a counselor in this school. The school has a staff of sixty-four and an integrated student body of approximately fifteen hundred, with an approximate ratio of ninety percent white and ten percent black. Located in a suburban community in the southern part of Memphis, Whitehaven was one of several high schools which was annexed into the city system in 1970. The socio-economic level of the students ranges from low, many black students living in a low-income housing project, to higher levels, students from professional families.

Whitehaven is a comprehensive high school, built in 1928, with a broad curriculum offering both college preparatory and vocational programs. The college preparatory curriculum includes these subject areas: English, mathematics, social studies, science, language, music. Within the vocational program, business, automotive shop, machine shop, cosmetology, and distributive education are offered.

Subjects

The subjects for this research study were randomly selected from those students enrolled in the ninth-grade homerooms at Whitehaven High School during the spring, 1973. These students came to Whitehaven from schools of varying situations: junior high schools (grades seven through nine); junior-senior high schools (grades seven through twelve); and elementary schools (grades one through eight), predominantly the latter. Also included in the list for random selection were those students who, because of their failure to obtain enough credits, were repeating some ninth-grade subjects and possibly taking some tenth-grade subjects, but who were classified as ninth-grade students.

These students were given the opportunity to make course selections within a few weeks following the study. The research design utilized this factor in studying the variables. The choices available to these students represented a broader scope than previously available, with the

options of an academic, a business, or a vocational program.

Procedures

Phase One: From a composite list of all students assigned to ninth-grade homerooms, boys and girls separated, forty-eight boys and forty-eight girls were selected, using a table of random numbers from Fisher and Yates' Statistical Tables for Biological and Medical Research (1963). These students were randomly assigned to one of three groups: Treatment, Control I, Control II.

Phase Two: The cumulative records of the students selected were examined and the latest I.Q. score recorded. An analysis of variance was computed to determine if a significant difference existed among the three groups. If there was no difference on this variable, the groups were to be treated as statistically equal; if there was a difference, adjustment was to be made by means of a co-variant analysis in phase four.

Phase Three: Those students in the treatment group spent one period daily, approximately fifty-five minutes, rotating through the six available periods, for a total of eight days, experiencing MOLD. Each day one activity as outlined by the MOLD program was presented. These are briefly described by the following outline:

First Day

Activity 1: Personal Assessment
"Complete the Sentence"

Focus: The process and personal relevance of
career decision-making

Second Day

Activity 2: Personal Assessment
"The Me Tree"

Focus: Understanding of abilities and interests

Third Day

Activity 3: Personal Assessment
"The Millionaire"

Focus: Personal values that affect career
decision-making

Fourth Day

Activity 4: Occupational Exploration
"Nano"

Focus: Occupational groupings

Fifth Day

Activity 5: Occupational Choice
"Guess a Group Game"

Focus: Personal reasons for selecting an
occupational area

Sixth Day

Activity 6: Educational Exploration
"The Simulation"

Focus: Educational requirements and electives

Seventh Day

Activity 7: Educational Choice
"The Simulation II"

Focus: Components of educational choices

Eighth Day

Activity 8: Other Exploration
Focus: Other possible actions

Those students in Control I spent one period daily, approximately fifty-five minutes, rotating through the six available periods, for a total of eight days, in a study hall. There were no structured activities--rather, educational-vocational materials were made available, but with no insistence that students use them. A teacher was in charge of the study hall.

Those students in Control II, while identified by the experimenter, were not assembled until the administration of the measurement instruments. At this time they were instructed as to the tests to be administered and the purpose for such testing.

Phase Four: At the conclusion of the eight days, the three measurement instruments and the interview were administered to students in the three groups in the following order: (1) test on graduation requirements; (2) Career Development Inventory; (3) Survey of Study Habits and Attitudes; (4) individual interview. The three paper-and-pencil instruments were administered by the leader who worked with each group, Treatment and Control I, and another counselor with Control II. The individual interviews were conducted by a counselor who did not have knowledge of the group in which the student had been participating. The interviews were standardized to include the question, "Do you have any questions?" A taped recording was made, allowing judges to listen and count the number of questions each student asked.

Instrumentation

Four different measuring techniques were used to assess the effects of MOLD on ninth-grade students, one for each of the independent variables included in the study.

To measure the student's knowledge of graduation requirements, each student was asked to list these requirements.

Using the Memphis Board of Education Curriculum Handbook as a key, one point was awarded for each correct requirement listed.

An individual interview with each student was conducted. At this time the counselor presented him with a standard form on which the student was to indicate his curriculum choices for the following school year. This form listed all possible subjects and levels and necessitated the student's making a decision which required his parents' signature. This interview, conducted by the counselor using a structured statement, was recorded, after which the tapes were rated by judges, who assessed the effect of MOLD on the number of questions asked by students by counting the questions.

Two standardized instruments were used: the Brown-Holtzman Survey of Study Habits and Attitudes, Form H (SSHA) (1967), to assess school attitude and the Career Development Inventory (CDI) (1972), to assess the level of vocational maturity.

The Survey of Study Habits and Attitudes

The Survey of Study Habits and Attitudes is described in the manual as "an easily administered measure of study methods, motivation for studying, and certain attitudes toward scholastic activities . . ." (1967). Form H is the high school edition. The survey consists of one hundred

statements to which the student responds in accordance with how he feels about the statement in relationship to himself: rarely, sometimes, frequently, generally, or almost always. The answer sheets may be machine or hand scored, with the results recorded on four basic scales (delay avoidance, work methods, teacher approval, and education acceptance), two subtotals (study habits, study attitudes), and a total score (study orientation). For the statistical analysis in this research study, the two subtotals and the total score were used. Some of the research using the Survey of Study Habits and Attitudes has been reported in Chapter II, Review of the Literature, School Attitude and Its Measurement.

The Career Development Inventory

The Career Development Inventory is "an objective, multifactor, self-administering, paper-and-pencil inventory measuring the vocational maturity of adolescent boys and girls" (Super & Forrest 1972). The inventory consists of ninety-one questions, requiring various kinds of answers, using either a series of differential statements or a multiple choice format. Because of its vocabulary and content and the reading difficulty level, the Career Development Inventory is appropriate for junior and senior high school students.

The test yields three scale scores, two attitudinal (Planning Orientation and Resources for Exploration) and

one cognitive (Information and Decision-Making). For the statistical analysis in this research study, the three scale scores and the total score were used. Presently the Career Development Inventory is unpublished, but has been offered by Donald Super for research and field trials.¹

Hypotheses

The research questions presented in Chapter I were tested at the .05 level of confidence, using the following null hypotheses:

- H₁ There is no difference in the knowledge of graduation requirements among boys and girls in the treatment and control groups.
 - 1a There is no difference in the knowledge of graduation requirements among subjects in the treatment and control groups.
 - 1b There is no difference in the knowledge of graduation requirements between boys and girls.
 - 1c There is no interaction between treatment and sex in the knowledge of graduation requirements.
- H₂ There is no difference in the level of vocational maturity among boys and girls in the treatment and control groups.
 - 2a There is no difference in the level of vocational maturity among subjects in the treatment and control groups.
 - 2b There is no difference in the level of vocational maturity between boys and girls.

¹Permission obtained from Donald Super, February, 1973.

- 2c There is no interaction between treatment and sex in the level of vocational maturity.
- H₃ There is no difference in the vocational attitude toward Planning Orientation among boys and girls in the treatment and control groups.
- 3a There is no difference in the vocational attitude toward Planning Orientation among subjects in the treatment and control groups.
- 3b There is no difference in the vocational attitude toward Planning Orientation between boys and girls.
- 3c There is no interaction between treatment and sex in the vocational attitude toward Planning Orientation.
- H₄ There is no difference in the vocational attitude toward Resources for Exploration among boys and girls in the treatment and control groups.
- 4a There is no difference in the vocational attitude toward Resources for Exploration among subjects in the treatment and control groups.
- 4b There is no difference in the vocational attitude toward Resources for Exploration between boys and girls.
- 4c There is no interaction between treatment and sex in the vocational attitude toward Resources for Exploration.
- H₅ There is no difference in the cognitive Information and Decision-Making among boys and girls in the treatment and control groups.
- 5a There is no difference in the cognitive Information and Decision-Making among subjects in the treatment and control groups.
- 5b There is no difference in the cognitive Information and Decision-Making between boys and girls.

- 5c There is no interaction between treatment and sex in the cognitive Information and Decision-Making.
- H₆ There is no difference in the Study Orientation among boys and girls in the treatment and control groups.
- 6a There is no difference in the Study Orientation among subjects in the treatment and control groups.
- 6b There is no difference in the Study Orientation between boys and girls.
- 6c There is no interaction between treatment and sex in Study Orientation.
- H₇ There is no difference in Study Habits among boys and girls in the treatment and control groups.
- 7a There is no difference in Study Habits among subjects in the treatment and control groups.
- 7b There is no difference in Study Habits between boys and girls.
- 7c There is no interaction between treatment and sex in Study Habits.
- H₈ There is no difference in Study Attitudes among boys and girls in the treatment and control groups.
- 8a There is no difference in Study Attitudes among subjects in the treatment and control groups.
- 8b There is no difference in Study Attitudes between boys and girls.
- 8c There is no interaction between treatment and sex in Study Attitudes.

- H₉ There is no difference in the number of questions asked among boys and girls in the control and treatment groups.
- 9a There is no difference in the number of questions asked among subjects in the control and treatment groups.
- 9b There is no difference in the number of questions asked between boys and girls.
- 9c There is no interaction between treatment and sex in the number of questions asked.

Statistical Analysis

Using the .05 level of confidence as the determinant of statistical significance, analysis was made on the data obtained from each of the four measurements. A one-way analysis of variance was applied to the data for each major hypothesis, comparing the six groups: boys in treatment group, boys in Control I, boys in Control II, girls in treatment group, girls in Control I, and girls in Control II. When the F-ratios were significant at the .05 level or beyond, a three-by-two factorial analysis was applied. When these F-ratios were significant at the .05 level or beyond, a Tukey's honestly significant difference test was applied.

CHAPTER IV

Results and Discussion

Making of Life Decisions (MOLD) is a simulation experience designed to be used with middle school students, emphasizing motivation through direct involvement. This research study has focused upon the effects of MOLD on ninth-grade students, using four variables as criteria: knowledge of graduation requirements, behavior in a decision-making situation, vocational maturity, and study habits and attitudes. Four measurement instruments were administered to a treatment group, which experienced MOLD, and two control groups, one of which met for an unstructured study period. These techniques included two standardized instruments, Super's Career Development Inventory and the Brown-Holtzman Survey of Study Habits and Attitudes, one paper-and-pencil test, and an individual audio tape-recorded interview.

Random Selection of Subjects

As a means of substantiating the random selection of students and their random placement in groups, an analysis of variance was performed with the I. Q. scores of students, on file in the cumulative folders. The results of the analysis, presented in Table I, showed that there was no

significant difference among the groups. Thus, for statistical purposes, the three groups were considered equal and no covariant procedures were considered necessary. An interesting observation has also been noted. The ninth-grade class at Whitehaven High School numbers 440, with 45 black students or 10%. The random selection of 96 students yielded nine Blacks or 9.5%, further supporting the validity of the randomization.

TABLE I
ANALYSIS OF VARIANCE: I.Q. SCORES

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	220.31	2	110.16	0.709
Within	12,582.93	81	155.35	
Total	12,803.24	83		

$F_{.95, d.f. = 2, 81} = 3.11$

Results

This study included the effects of MOLD upon four variables. An analysis of the data collected has revealed the following results, presented by hypothesis.

Hypothesis I

H₁ There is no difference in the knowledge of graduation requirements among boys and girls in the treatment and control groups.

To assess the knowledge of graduation requirements of students in the three groups, the question, "List the requirements for graduation," was administered. With the Memphis Board of Education Curriculum Handbook as a key, one point was awarded for each correct response, the perfect score being eight. Table II shows the mean scores of each group. With an F-ratio significant at the .05 level of confidence (see Table III), a factorial analysis was computed which showed no significant difference by sex, nor a significant interaction, but a significant group difference (see Table IV). To determine exactly wherein the group differences lay, a Tukey's honestly significant difference was computed. This showed significant differences among all groups--treatment, Control I, and Control II (see Table V).

TABLE II
MEAN SCORES: GRADUATION REQUIREMENTS

	I	II	III	Total Sex
Boys	5.400	3.200	4.667	4.422
Girls	6.867	3.467	4.867	5.067
Total Groups	6.133	3.333	4.767	
Grand Mean				4.744

I = Treatment II = Control I III = Control II

TABLE III
ANALYSIS OF VARIANCE: GRADUATION REQUIREMENTS

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	117.621	2	58.811	15.072*
Within	339.501	87	3.902	
Total	457.122	89		

$F_{.95, d.f. = 2, 87} = 3.12$

* Significant difference

TABLE IV
 FACTORIAL ANALYSIS: GRADUATION REQUIREMENTS

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Group	117.621	2	58.811	15.315*
Sex	9.344	1	9.344	2.433
Group X Sex	7.625	2	3.813	0.990
Within	322.532	84	3.840	
Total	457.122	89		

$F_{.95, d.f.=1, 84} = 3.96$

$F_{.95, d.f.=2, 84} = 3.11$

TABLE V
 TUKEY'S HSD: GRADUATION REQUIREMENTS

	T	C_I	C_{II}
T	6.133	1.366*	2.800*
C_{II}	4.767		1.434*
C_I	3.333		

Critical difference $_{.95, d.f.=2, 84} = 1.209$

Hypothesis II

- H₂ There is no difference in the level of vocational maturity among boys and girls in the treatment and control groups.

In assessing the effect of MOLD on ninth-grade students' vocational maturity, the total score on Super's Career Development Inventory was used as an index. The means for each group are presented in Table VI. Upon finding an F-ratio significant at the .05 level of confidence (see Table VII), a factorial analysis was computed which showed no significant difference between sexes and no significant interaction, but which did show a significant difference among the groups (see Table VIII). However, the Tukey's honestly significant difference did not indicate a significant difference among the means of any of the groups in pair-wise comparisons (see Table IX).

TABLE VI
GROUP MEANS: VOCATIONAL MATURITY

	I	II	III	Total Sex
Boys	343.733	366.600	315.133	341.822
Girls	353.667	332.400	321.611	335.889
Total Groups	348.700	349.500	318.367	
Grand Mean				338.856

TABLE VII
ANALYSIS OF VARIANCE: VOCATIONAL MATURITY

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	18,570.355	2	9,285.178	3.342*
Within	241,704.767	87	2,778.216	
Total	260,275.122	89		

$F_{.95, d.f. = 2, 87} = 3.12$

TABLE VIII
 FACTORIAL ANALYSIS: VOCATIONAL MATURITY

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Groups	18,570.355	2	9,285.178	3.364*
Sex	462.100	1	462.100	0.167
Group X Sex	9,363.877	2	4,681.939	1.696
Within	231,878.790	84	2,760.462	
Total	260,275.122	89		

F_{.95}, d.f. = 1, 84 = 3.96

F_{.95}, d.f. = 2, 84 = 3.15

TABLE IX
 TUKEY'S HSD: VOCATIONAL MATURITY

	C _I	T	C _{II}
C _I	349.500	0.800	31.133
T	348.700		30.333
C _{II}	318.367		

Critical difference_{.95}, d.f. = 2, 84 = 32.424

Hypothesis III

- H₃ There is no difference in the vocational attitude toward Planning Orientation among boys and girls in the treatment and control groups.

The total score on Super's Career Development Inventory is composed of three subscale scores. Group means of the scores on the attitudinal scale, "Planning Orientation," are given in Table X. The analysis of variance revealed no significant difference among the groups (see Table XI).

Hypothesis IV

- H₄ There is no difference in the vocational attitude toward Resources for Exploration among boys and girls in the treatment and control groups.

Another aspect measured by Super's Career Development Inventory was a student's vocational attitude toward "Resources for Exploration." The mean score for each group and the results of analysis of variance are given in Tables XII and XIII. No significant difference was found among the groups.

TABLE X
GROUP MEANS: PLANNING ORIENTATION

	I	II	III	Total Sex
Boys	96.200	102.200	85.600	94.667
Girls	102.667	87.133	84.067	91.089
Total Groups	99.133	94.667	84.833	
Grand Mean				92.878

TABLE XI
ANALYSIS OF VARIANCE: PLANNING ORIENTATION

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	3,211.355	2	1,605.678	3.004
Within	46,499.301	87	534.475	
Total	49,710.656	89		

F_{.95}, d.f. = 2, 87 = 3.12

TABLE XII
GROUP MEANS: RESOURCES FOR EXPLORATION

	I	II	III	Total Sex
Boys	233.610	248.533	224.467	232.200
Girls	234.867	231.200	223.133	229.733
Total Groups	234.233	239.867	218.800	
Grand Mean				230.967

TABLE XIII
ANALYSIS OF VARIANCE: RESOURCES FOR EXPLORATION

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	7,137.266	2	3,568.633	1.834
Within	169,305.634	87	1,946.042	
Total	176,442.900	89		

$F_{.95, d.f. = 2, 87} = 3.12$

Hypothesis V

- H₅ There is no difference in the cognitive Information and Decision-Making among boys and girls in the treatment and control groups.

The cognitive subscale of the Career Development Inventory, "Information and Decision-Making," was the third component of the overall vocational maturity score. Table XIV represents the means of each group and Table XV, the results of the analysis of variance. There was no significant difference among the groups.

Hypothesis VI

- H₆ There is no difference in the Study Orientation among boys and girls in the treatment and control groups.

The variable of study habits and attitudes was assessed by the Brown-Holtzman Survey of Study Habits and Attitudes from which is derived a total score, "Study Orientation," composed of two subscores, "Study Habits" and "Study Attitudes." The group means and the results of the analysis of variance of the total score are shown in Tables XVI and XVII. No significant difference at the .05 level of confidence was found.

TABLE XIV
GROUP MEANS: INFORMATION AND DECISION-MAKING

	I	II	III	Total Sex
Boys	13.933	15.867	14.133	14.644
Girls	16.733	14.067	14.400	15.067
Total Groups	15.333	14.967	14.267	
Grand Mean				14.856

TABLE XV
ANALYSIS OF VARIANCE: INFORMATION AND DECISION-MAKING

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	17.621	2	8.811	0.462
Within	1,657.501	87	19.052	
Total	1,675.122	89		

$F_{.95, d.f. = 2, 87} = 3.12$

TABLE XVI
GROUP MEANS: STUDY ORIENTATION

	I	II	III	Total Sex
Boys	76.800	84.467	77.600	79.622
Girls	85.533	79.200	75.400	80.044
Total Groups	81.167	81.833	76.500	
Grand Mean				79.833

TABLE XVII
ANALYSIS OF VARIANCE: STUDY ORIENTATION

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	506.666	2	25.333	0.360
Within	61,229.834	87	703.791	
Total	61,736.500	89		

$F_{.95, d.f. = 2, 87} = 3.12$

Hypothesis VII

- H₇ There is no difference in Study Habits among boys and girls in the treatment and control groups.

To determine if there was a difference in the study habits of students in the three groups, an analysis of variance was computed on the Survey of Study Habits and Attitudes subscore. Tables XVIII and XIX indicate the results of the analysis and the group means. There was no significant difference.

Hypothesis VIII

- H₈ There is no difference in Study Attitudes among boys and girls in the treatment and control groups.

The subscore "Study Attitudes" of the Survey of Study Habits and Attitudes was analyzed to assess the effects of MOLD on ninth-grade students' study attitudes. Table XX gives the group means. Table XXI, which gives the results of an analysis of variance, shows that there was no significant difference.

TABLE XVIII
GROUP MEANS: STUDY HABITS

	I	II	III	Total Sex
Boys	35.400	40.267	36.067	37.244
Girls	40.600	36.667	35.267	37.511
Total Groups	38.000	38.467	35.667	
Grand Mean				37.378

TABLE XIX
ANALYSIS OF VARIANCE: STUDY HABITS

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	135.022	2	67.511	0.404
Within	14,544.134	87	167.174	
Total	14,679.156	89		

$F_{.95, d.f. = 2, 87} = 3.12$

TABLE XX
GROUP MEANS: STUDY ATTITUDES

	I	II	III	Total Sex
Boys	41.400	44.200	41.533	42.378
Girls	45.600	42.533	40.133	42.756
Total Groups	43.500	43.367	40.833	
Grand Mean				42.567

TABLE XXI
ANALYSIS OF VARIANCE: STUDY ATTITUDES

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	135.466	2	67.733	0.270
Within	21,850.634	87	251.157	
Total	21,986.100	89		

$F_{.95, d.f. = 2, 87} = 3.12$

Hypothesis IX

- H₉ There is no difference in the number of questions asked among boys and girls in the control and treatment groups.

To assess the behavior of students in a decision-making situation, a recorded interview was held for each student individually, during which he was presented with a curriculum sheet and the opportunity of selecting his courses for the next year. The number of questions asked during this interview was the criterion measured. Tables XXII and XXIII show the group means for the questions asked and the results of the analysis of variance. The significant F-ratio found in the analysis of variance led to a factorial analysis, presented in Table XXIV. This factorial analysis showed no significant difference between sexes and no significant interaction. However, there was a significant group difference. The Tukey's honestly significant difference, shown in Table XXV, showed a significant difference between the treatment group and Control II.

TABLE XXII
GROUP MEANS: INTERVIEW QUESTIONS

	I	II	III	Total Sex
Boys	0.929	1.714	2.929	1.857
Girls	0.643	2.286	3.929	2.286
Total Groups	0.786	2.000	3.429	
Grand Mean				2.071

TABLE XXIII
ANALYSIS OF VARIANCE: INTERVIEW QUESTIONS

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Among	98.000	2	49.000	9.326*
Within	425.571	81	5.254	
Total	523.571	83		

F_{.95}, d.f. = 2, 81 = 3.11

TABLE XXIV
 FACTORIAL ANALYSIS: INTERVIEW QUESTIONS

Sources	Sum of Squares	Degrees of Freedom	Mean Square	F-ratio
Groups	98.000	2	49.000	9.193*
Sex	3.429	1	3.429	0.643
Group X Sex	6.427	2	3.214	0.603
Within	415.715	78	5.330	
Total	523.571	83		

F_{.95}, d.f. = 1, 78 = 3.11

F_{.95}, d.f. = 2, 78 = 3.11

TABLE XXV
 TUKEY'S HSD: INTERVIEW QUESTIONS

	C _{III}	C _I	T
C _{III}	3.429	1.429	2.643*
C _{II}	2.000		1.214
T	0.786		

Critical difference_{.95}, d.f. = 2, 78 = 1.475

Discussion of the Results

A comprehensive assessment of the effects of MOLD on ninth-grade students as reflected in the four independent variables requires more than a statistical reporting of the data; many questions remain unexamined and unanswered. The statistical analyses show only where significant differences exist; they do not explain the meaning of such differences, nor do they reflect any other notable circumstances. Also, in some situations, there are important factors to consider even though there are no statistically significant differences.

Hypothesis I

The statistical results strongly support the hypothesis that MOLD does affect a ninth-grade student's knowledge of graduation requirements, the mean of the treatment group, 6.133, being significantly higher than either of the control groups' means, 3.333 and 4.767 respectively, and considerably higher than the grand mean, 4.744. The activities incorporated in MOLD emphasize an understanding of the high school curriculum as it relates to the requirements. The results would seemingly indicate that the method of presentation of this material is effective.

The analysis of graduation data also revealed an interesting phenomenon, the significant difference between the two control groups. The uniqueness is that Control II

showed a greater knowledge of graduation requirements than Control I. It is not possible to state explicitly why this difference exists, but there are possible explanations. Perhaps these data reaffirm the research of Evans and Cody (1969), who found a significant difference in decision-making strategy between a group receiving assistance with decision-making strategy and a group receiving the material, but with no assistance. Control I had material available during the sessions of the experiment--a bibliography is available in Appendix A--but had no instruction. Control II received nothing, remaining in regular classes. The group means would seem to suggest that nothing is at least equal to an unassisted presentation of material. Another plausible explanation is that students in Control II benefited more from remaining with a teacher in a regular class, regardless of the subject matter being taught or the competence of the teacher, than students in Control I, who were exposed to materials specifically selected for their content relevant to the question.

Finally, the analysis of data on graduation requirements showed no significant differences between sexes and no significant interaction. It may be suggested that the activities of MOLD have a uniform effect upon students, regardless of sex.

Hypothesis II

A second research variable was vocational maturity. Although the F-ratios for the analysis of variance and for the groups in the factorial analysis were significant, the Tukey's honestly significant difference showed no significant difference between any of the pair-wise comparisons. Two factors may be identified as contributing to this result. First, Tukey's honestly significant difference is a relatively powerful test for "a posteriori" multiple comparisons, setting the experimentwise error rate at the level of significance (Kirk 1968). Secondly, it should be noted that the significant F-ratios were not large, 3.342 with an $F_{.95, d.f.=2,87} = 3.12$; and 3.364 with an $F_{.95, d.f.=2,84} = 3.15$. The two factors combined may possibly explain the lack of significant differences among pair-wise group comparisons. It would seem feasible to conclude that there are, for practical purposes, no significant differences among the levels of vocational maturity. That MOLD does not affect students' vocational maturity may perchance be explained in that this research study with MOLD encompassed only eight activities experienced over a time period of two weeks. This is perhaps too short a time span to assess any effect on vocational maturity. The relatively small number of subjects could also have affected the results, as could the sensitivity of the assessment instrument.

Another observation which arouses speculation is the closeness of the means of the treatment group and Control I, while the mean of Control II is much lower. It would appear that the exposure of Control I to the material possibly exerted some influence or at least suggested a direction for the thinking of those students, while those students experiencing MOLD were being directly assisted. Therefore, the means of these two groups are higher than that of Control II, which received no such help.

Hypotheses III, IV, and V

The vocational maturity index can be divided into three subscales: "Planning Orientation," "Resources for Exploration," and "Information and Decision-Making." Although an analysis of variance indicated no significant differences with any of these, there are some notable trends and observations. The group means for both "Planning Orientation" and "Information and Decision-Making" demonstrated that students in the treatment group did score higher than students in either control group, though not significantly. The fact that the activities of MOLD incorporate many experiences related to these areas may account for these trends. It is difficult, however, to account for the closeness between the means of Treatment and Control I, especially with "Resources for Exploration" where the mean for Control I is higher than that for Treatment. It is

conceivable that the Hawthorne effect, special attention, will account for such results, especially in that both the mean for Treatment and the mean for Control I are somewhat higher than the mean for Control II.

Hypotheses VI, VII, and VIII

Study habits and attitudes constituted the third variable. The statistical analyses for the Survey of Study Habits and Attitudes total score and the two subscores revealed no significant differences. Like vocational maturity, these results are probably attributable to the short time span encompassed by this research study, as well as to the number of subjects and the sensitivity of the assessment instruments.

Hypothesis IX

The statistical data for the fourth variable, behavior in a decision-making situation, using the number of questions asked as the criterion, yielded significant F-ratios for the analysis of variance and the factorial analysis for group means. The lack of significant sex differences and interaction reflected a uniform effect of MOLD, making it effective with students of both sexes and relatively free from a compounded influence. The Tukey's honestly significant difference indicated only one significant pair-wise comparison, Treatment and Control II, but the Treatment and Control I comparison was very close to significance. An

examination of the group means showed a positive trend, with the means 0.786, 2.000 and 3.429 respectively. This would seem to indicate that MOLD does effect a practical influence upon student questions in a decision-making situation. Students who experienced MOLD made their curriculum choices with fewer questions; students in Control I apparently received partial answers to their questions from the material, while students in Control II had no source of information and thus, asked the greatest number of questions. The total number of questions asked by each group perhaps reflects the above concept more explicitly: Treatment, twenty-two (22); Control I, fifty-six (56); Control II, ninety-six (96). From these data it would thus appear that students experiencing MOLD learn more, have an opportunity to practice decision-making, and consequently, are ready to make decisions.

While the findings of this research study do not support at a statistically significant level all of the given hypotheses, there is sufficient reason to conclude that MOLD does effect positive gains in students' knowledge of graduation requirements and in their behavior in a decision-making situation as exemplified by the number of questions they ask. The effects of MOLD on a student's level of vocational maturity and his study habits and attitudes as studied in this research are inconclusive; however, there are factors which suggest that further research might prove productive.

CHAPTER V

Summary and Implications

Today's world of technology and era of rapid change have combined to produce unique problems for adolescents, which today's secondary schools are not coping with as effectively as needed (Boocock and Coleman 1966; Hall, L. G. 1963; Raser 1969; Toffler 1970). Educational and vocational decision-making ranks high among these problems. Innovations being developed to augment and improve current educational practices include a technique, not new, but until recently not recognized for its educational potentialities--simulation.

Ninth-grade students at Whitehaven High School face a challenging opportunity for decision-making, the selection of a course of study for the next year. This is a particularly difficult decision, for the available alternatives are considerably broader than previously offered. Especially significant is the fact that choices include vocational, business, and college preparatory programs--choices which have far-reaching influences on future decisions and opportunities.

Making of Life Decisions (MOLD) is a simulation experience designed for use with middle school students, utilizing direct involvement as a means of motivation. Through a series of eight activities students make personal

assessments, explore occupations and occupational choices, and finally explore educational opportunities and make educational choices. The last activities are simulated to provide feedback of consequences.

Utilizing the particular situation of ninth-grade students at Whitehaven, this research study was designed to test the effectiveness of MOLD in preparing the students for making the educational decisions they faced. Four independent variables were selected: knowledge of graduation requirements, level of vocational maturity, study habits and attitudes, and behavior in a decision-making situation as assessed by the number of questions asked.

For this study ninety-six students were randomly selected from those students classified as ninth-grade students and randomly assigned to one of three groups: Treatment, Control I, Control II. The treatment group met for one period, four times per week, for two weeks to participate in MOLD; Control I met during the same periods for an unstructured time, during which materials were made available, but no assistance was offered. Appendix A contains a bibliography of those materials made available to Control I. Control II met only for the testing periods. After the administration of the three written tests, each student was interviewed by a counselor who was unaware of the student's group membership.

Summary of Results

Statistical analysis of the data collected from the assessment procedures and instruments demonstrated that MOLD does have positive effects on students in some areas. With the variable knowledge of graduation requirements, statistical tests indicated a significant difference between the three groups: Treatment, Control I, and Control II. The treatment group was significantly higher than both control groups; thus, MOLD did positively affect knowledge of graduation requirements.

To assess students' levels of vocational maturity, Super's Career Development Inventory was administered. The total scores, utilized as the index of vocational maturity, when analyzed, yielded a significant F-ratio for groups. However, the pair-wise comparisons of Tukey's honestly significant difference indicated no significant differences among groups. It would thus seem that in actuality, MOLD effected no difference in the vocational maturity of the students. The analyses of the subscale scores, "Planning Orientation," "Resources for Exploration," and "Information and Decision-Making" indicated no significant differences. Likewise, the total score "Study Orientation" and the two subscores, "Study Habits" and "Study Attitudes" of the Brown-Holtzman Survey of Study Habits and Attitudes, which was used to measure the school attitude variable, reflected no differences among the three groups. In this study MOLD did

not effect any significant change in either of these two variables.

The fourth variable was assessed by means of an individual audio tape-recorded interview, during which each student was asked to make course selections for the following year. Judges rated the decision-making behavior by counting the number of questions each student asked. The analysis revealed a significant difference between Treatment and Control II. The difference between Treatment and Control I, though not significant, was large enough that it would seem plausible to conclude that MOLD did have an effect--Treatment students asking fewer questions, indicating a readiness to make this decision.

Care must be exercised in generalizing the results of this study to all ninth-grade students. The random selection of students and their assignment to one of the three groups was checked by means of an analysis of variance of I.Q. scores, which indicated there were no significant differences. Thus, the results may be considered valid for the ninth-grade class at Whitehaven High School, but further generalization would be speculative. In reviewing the results of this research, several relevant factors should be taken into consideration. Any study utilizing standardized assessment measures, especially concerning attitudinal concepts, can only be as strong as the sensitivity of the instruments. Such test scores are also accurate only to the

extent of the student's understanding of himself and his ability to express this understanding; however, the randomization procedure should equalize across the groups any student differences. Perhaps the greatest limiting factor in this research was the situation. It was necessary, because of working within a large school, to limit the number of subjects. A larger number of subjects might have reflected more or greater differences. Also, because of the inflexibility of the school's schedule, time became a crucial factor, not only in regard to the actual length of each daily period, but also regarding the period of time available over which the activities might be spaced.

Implications

One of the secondary outcomes of research is its implications for further research and for practical application. Several possibilities for further research have been suggested by the results of this study. First, there are many variables which might feasibly be relevant to an assessment of the effects of MOLD on students. The quality of the decisions made by students experiencing MOLD could be evaluated. Such a study would provide an index of the quality of MOLD's effects, as well as the quantity. The decision-making situation experienced by the student could be changed, affording an opportunity to determine other areas besides educational choices in which MOLD may be effective.

A second possibility for further research could involve the selection of subjects (students) in accordance with some specific design. Factors could include race, socio-economic level of family, or academic ability. Thirdly, the lack of significant results in this study in regard to the level of vocational maturity and to study habits and attitudes may possibly be attributed to a time factor. It is thus conceivable that a longitudinal study might reflect a significant effect of MOLD on these variables.

This research, while suggesting several subsequent study possibilities, also contains some implications for the practical application of MOLD. The fact that students in Control II knew graduation requirements significantly better than students in Control I may well imply that the mere presentation or availability of material is not sufficient; and yet, too frequently this is what is practiced. School libraries and counseling offices have extensive information available, but no organized assistance is provided. Thus, MOLD may be one method of disseminating such information in an efficient and effective manner. The significant results obtained for the variable, behavior in a decision-making situation, would imply that MOLD could be an effective technique for preparing students to make educational and vocational decisions. Indeed, MOLD could serve to implement present counseling practices, providing an emphasis upon decision-making, one of the areas being

stressed in professional literature as crucial.

Making of Life Decisions (MOLD) is one possible innovative technique for enabling counselors and teachers to meet the needs of students in today's world of technology and rapid change. The experiences provided are designed not to teach specific facts, but rather to develop some of the skills needed for meeting the problems which adolescents face. The results of this research study provide support for the belief that MOLD can make a difference and effect positive gains in some of those areas so crucial to a student's successful pursuit of an education and a better life. Further research is necessary to ascertain with whom MOLD is most effective, how effective MOLD can be and what other areas it may influence.

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APPENDIX A

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University of Tennessee at Chattanooga
Memphis State University

College Yearbooks

BIOGRAPHICAL SKETCH

Sara Joy Bailey was born in Memphis, Tennessee, September 18, 1938, the eldest of the two daughters of Roy David and Bertye Mae Bailey.

She was educated in the Memphis City School System, attending A. B. Hill Elementary School and graduating from South Side High School in 1956. She attended Memphis State University from September, 1956, through May, 1960, at which time she received a Bachelor of Arts degree, with a major in Spanish and minors in English and Education. While in undergraduate school, she was active in Delta Zeta sorority; Pi Delta Epsilon, honorary journalism fraternity; Associate Editor of the Memphis State University yearbook; Sigma Delta Pi, president, honorary Spanish fraternity; and Tassel, senior women's honorary. She was listed in Who's Who in American Colleges and Universities 1960.

In September, 1960, she began teaching at Westhaven Elementary School, Shelby County Board of Education, where she remained until May, 1966. During this time she taught fourth grade, one year, and junior high English, reading, and spelling, five years. In 1962 she returned to Memphis State University, summer and night school sessions, where she earned a Master of Arts degree in English with an

Education minor, graduating in August, 1965.

In September, 1966, she was transferred to Whitehaven High School, where she taught English III and IV and Honors and Advanced Placement English IV. In September, 1968, she became a parttime counselor at Whitehaven High School and returned to Memphis State University, summer and night school, to do graduate work in counseling. In September, 1970, she became a full-time counselor. (In 1970, Whitehaven High School was annexed to become a part of the Memphis Board of Education.) She received a sabbatical leave for the school year 1971-1972, during which time she attended the University of Florida, working on her Doctor of Philosophy degree in Counselor Education, specializing in secondary school counseling.

Miss Bailey is currently active in West Tennessee Personnel and Guidance Association, Tennessee Personnel and Guidance Association, American Personnel and Guidance Association, and American School Counselors Association. She is a member of the West Tennessee and the Tennessee Education Associations. She is also active in Alpha Delta Kappa, teachers' sorority. She is a member of Trinity Baptist Church.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



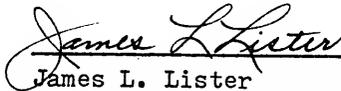
E. L. Tolbert, Chairman
Professor of Counselor Education

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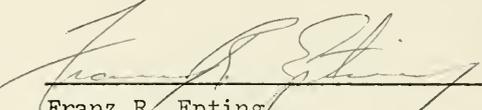
Richard H. Johnson
Assistant Professor of Counselor
Education

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James L. Lister
Professor of Counselor Education

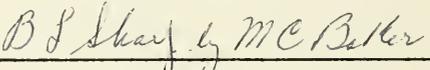
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Franz R. Epting
Associate Professor of Psychology

This dissertation was submitted to the Dean of the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1973



Dean, College of Education

Dean, Graduate School



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