



A comparison between two methods of teaching social studies at the college level
by Melvin William Roe

A thesis submitted in partial fulfillment of the requirements for the degree of DOCTOR OF
EDUCATION

Montana State University

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Abstract:

The central problem of this study is to determine if there is any significant difference between students taught by the face-to-face instructional method and those taught by an individual instructional program with reference to their achieving selected objectives applicable to a course of study dealing with ethnic minority groups, and if there is a difference in the achievement of these students which can be related to personality variables of the students with reference to scores derived from the Achievement Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale.

Seventy-two students enrolled in an Ethnic Studies course at Eastern Montana College in the Fall of 1974 were randomly divided into two groups with one being subjected to the traditional method and the other the experimental method. Students in both groups were evaluated by means of a series of tests in which the items were classified according to each of the three objective domains (cognitive, affective, and psychomotor) as well as scores obtained by students in each of these areas. All scores were recorded as absolute numbers and the total of all scores was used in calculating group means for purposes of testing null hypotheses. The experimental design consisted of a 2x2x2 matrix on which was performed an analysis of variance testing the significance of differences of two independent variables (the control and experimental method), the significant difference between the two sets of moderator variables (the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale), and to test the significance of difference of various interactions. These procedures were done for all dependent variables (achievement of cognitive, affective, and psychomotor objectives, and total scores of all three) meaning that four AOV studies were completed.

The subsequent statistical analysis indicates that a "no difference" hypothesis for the two methods can be rejected at .01 confidence level with the students in the experimental group scoring considerably higher than students in the control group. In addition, a "no difference" hypothesis for the interaction between methods and achievement levels derived from the Edwards Personal Preference Schedule can be rejected at .05 confidence level with students characterized as "low achievers" in the experimental group scoring considerably higher than all other students in either group. No evidence was found to substantiate a rejection of a "no difference" hypothesis relative to scores derived from the Rokeach Dogmatism Scale.

A COMPARISON BETWEEN TWO METHODS OF TEACHING

SOCIAL STUDIES AT THE COLLEGE LEVEL

by

MELVIN WILLIAM ROE

A thesis submitted in partial fulfillment
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DOCTOR OF EDUCATION

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Thanks are due, lastly, to my colleagues at Eastern Montana College for encouraging me to pursue my interests in the topic of this thesis and for contributing to a climate conducive to scholarship. Then too, there was the environment provided by my loving wife who furnished the proper perspective.

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ABSTRACT

The central problem of this study is to determine if there is any significant difference between students taught by the face-to-face instructional method and those taught by an individual instructional program with reference to their achieving selected objectives applicable to a course of study dealing with ethnic minority groups, and if there is a difference in the achievement of these students which can be related to personality variables of the students with reference to scores derived from the Achievement Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale.

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The subsequent statistical analysis indicates that a "no difference" hypothesis for the two methods can be rejected at .01 confidence level with the students in the experimental group scoring considerably higher than students in the control group. In addition, a "no difference" hypothesis for the interaction between methods and achievement levels derived from the Edwards Personal Preference Schedule can be rejected at .05 confidence level with students characterized as "low achievers" in the experimental group scoring considerably higher than all other students in either group. No evidence was found to substantiate a rejection of a "no difference" hypothesis relative to scores derived from the Rokeach Dogmatism Scale.

CHAPTER I

PROLEGOMENON

It is almost certain that any systematic search in scholarly works on teaching and learning in higher education will lead the reader to a number of aphorisms relative to one method of instruction being preferred over others. And while these no doubt will vary from one discipline to another as well as to the temperament of the professor and/or writer, there is usually the supporting belief or belief-system that alleges superiority for the preferred method in question. In fact, it may be a Sisyphean task for any researcher who enters into this arena of strong affect and little concern in an endeavor to assess the relative utility of various college teaching methods. It is no surprise then that such inquiry has received remarkably little attention from experimentalists. For even in the academic community, where men's work is supposedly based upon a rigorous testing of accepted ideas, there is a tendency to think it somewhat indecent to apply the same standards of inquiry to their own teaching practices. J. P. Powell has observed that "few university teachers are even aware that many of their instructional problems have already been investigated experimentally, and only a tiny minority take the trouble to acquaint themselves with the results."¹

Any belief-system, however hallowed, regarding effective teaching

methods, be it the time-honored traditional face-to-face instruction or the latter-day innovative individual instructional program, stands in need of empirical support, with the ultimate criteria for effectiveness being not only measured with reference to the accumulation of knowledge and the development of desirable attitudes, but with regard to student's individual personality differences. The purpose of this study is to compare two such methods of teaching a social studies course at the college level. This present chapter will enable the reader to identify the central problem under consideration, discern the need for the study, adjudge questions to be answered, appraise the research procedures, perceive recognizable limitations, and recognize relevant terminology.

STATEMENT OF THE PROBLEM

The central problem of this study is to determine if there is any significant difference between students taught by the face-to-face instructional method and those taught by an individual instructional program with reference to their achieving selected objectives applicable to a course of study dealing with ethnic minority groups, and if there is a difference in the achievement of these students which can be related to personality variables of the students with reference to scores derived from the Achievement Scale of the Edwards

Personal Preference Schedule and the Rokeach Dogmatism Scale.

NEED OF THE STUDY

In 1968, two researchers at the Center for the Advanced Study of Educational Administration at the University of Oregon published a monograph, The Teaching-Learning Paradox, in which, after examining some "forty years of research" on the various methods of college teaching, they concluded "we are able to state decisively that no particular method of college instruction is measurably to be preferred over another, when evaluated by student examination performances."² Think what this means to all those teachers in the world who recite from yellowed notes and never consider any other technique. Think what this means to the professor who neglects his teaching for research. Think what this means to the administrator who is concerned with the cost-benefit analysis of college work. To some it means a clear conscience at last. But to others, the "no difference" conclusion provides a launching pad for new directions in research on college teaching methods as well as to make clear the grounds for educational policy decisions regarding college teaching methods.

The authors said that the facts "demonstrate clearly and unequivocally that there is no difference."³ Thus, forty years of research have

apparently proved that subject-matter content can be taught by any teaching technique. If this is true then the choice of a goal for an educational system becomes critical. If the content is the goal, then how you teach does not matter. But to many, the primary goal of higher education is to develop the student's motivation and ability to continue to learn throughout his life. Few of us are satisfied with achievement of knowledge if the student is unable to use it in solving problems where the knowledge is relevant, or if the student fails to relate the knowledge to relevant attitudes. The current generation of students is wise enough to recognize the sham of a content goal and some have revolted in the face of it. Many students are asking for a meaningful education which will prepare them to make a contribution to the solution of the relevant problems of our society. If the goal of our educational system is to prepare them for this role, then how you teach does make a difference.

Many competent educators hold that educational goals beyond content require carefully considered teaching techniques. Of course this is not obvious to all educators and as dedicated men attempt to find answers to complex problems, they need not be surprised by the presence of sniping critics. In 1903, comparable critics described the 400 years of research in flying, from Leonardo da Vinci's first attempts in 1500, to the failure of the day. It was clearly time for new direction in research; man would never fly. Education is at a

similar turning point. The Wright brothers of the educational world have flown new systems all over the country. The recognition of the potential of these programs will no doubt accelerate future innovations. In the not too distant future, we can expect to find educational systems equivalent to the modern jet, while others dream of walking on the moon.

The individual instructional technique is one of these relatively new programs being introduced into contemporary education. The purpose of this study is to comparatively evaluate this teaching method with the more traditional face-to-face instructional method in order to ascertain if there is a difference relative to the most fundamental objectives of social studies education--the higher level cognitive and affective goals.

GENERAL QUESTIONS TO BE ANSWERED

This study attempts to answer the question whether there is any significant difference between students taught by the face-to-face instructional method and those taught by an individual instructional program with reference to their achieving selected objectives applicable to a course of study dealing with ethnic minority groups, and if there is a difference in the achievement of the students which can be related to personality variables of the students with reference to scores derived from the Achievement Scale of the Edwards

Personal Preference Schedule and the Rokeach Dogmatism Scale.

Through the use of a specially designed interdisciplinary, multi-ethnic course which was offered to a group of students (the control group) by the face-to-face instructional method and a group of students (the experimental group) by an individual instructional program, this research seeks answers to the following questions:

- 1- How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives normally associated with the cognitive domain, i.e., facts, concepts, generalizations, theories, and laws?
- 2- How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives normally associated with the affective domain, i.e., attitudes and values?
- 3- How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives normally associated with the psychomotor domain, i.e., skills of inquiry, communication, resource use, and group interaction?
- 4- How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives of the social studies? Since the ultimate criterion on the social studies is the character of the changes brought about in the behavior of the students, the learner then becomes the focal point for evaluation. In assessing what these students are learning, all of the objectives claimed for the social studies must be taken into account: cognitive, affective, and psychomotor.

- 5- How do students who exhibit a high dogmatic score on the Rokeach Dogmatism Scale compare with students who exhibit a low dogmatic score on the Rokeach Dogmatism Scale with reference to the two instructional treatments?
- 6- How do students who exhibit a high level of achievement on the Edwards Personal Preference Schedule compare with students who exhibit a low level of achievement on the Edwards Personal Preference Schedule with reference to the two instructional treatments?
- 7- How do students who exhibit a high dogmatic score on the Rokeach Dogmatism Scale and a high level of achievement on the Edwards Personal Preference Schedule compare with students who exhibit a low dogmatic score on the Rokeach Dogmatism Scale and a high level of achievement on the Edwards Personal Preference Schedule with reference to the two instructional treatments?
- 8- How do students who exhibit a high dogmatic score on the Rokeach Dogmatism Scale and a low level of achievement on the Edwards Personal Preference Schedule compare with students who exhibit a low dogmatic score on the Rokeach Dogmatism Scale and a low level of achievement on the Edwards Personal Preference Schedule with reference to the two instructional treatments?

GENERAL PROCEDURES

An interdisciplinary course in ethnic studies was offered as part of the social science curriculum at Eastern Montana College during the fall quarter, 1974. The course was offered for all students without prerequisites or restrictions relative to classification or class size. At the first meeting (September 26, 1974), all students were administered both the Achievement

Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale. These tests were administered and graded by the Counseling Center of Eastern Montana College. At this time the students were divided into two groups equal in size by a randomization method with one group assigned as the control group (those who were taught by a face-to-face instructional method) and the other group constituting the experimental group (those who were taught by an individual instructional program).

Beginning with the second week, the control group was scheduled to meet twice each week in two-hour sessions until the close of the quarter, December 10, 1974 (a total of 40 hours of classroom instruction). The students assigned to the experimental group were provided with the individualized instructional program consisting of forty cassette programs, five slide programs, and programmed workbooks. These students had free access to the Resource Center of the Language Department or the Learning Center of the Audio Visual Center for listening to tapes and/or viewing slides, or they could check these items out of the library for use at their pleasure.

The course of study for both groups was identical with each group presented with identical goals, subjected to identical lectures, provided with identical resource materials and evaluated with identical tests. The difference between the two groups was not in course content but in method of instruction.

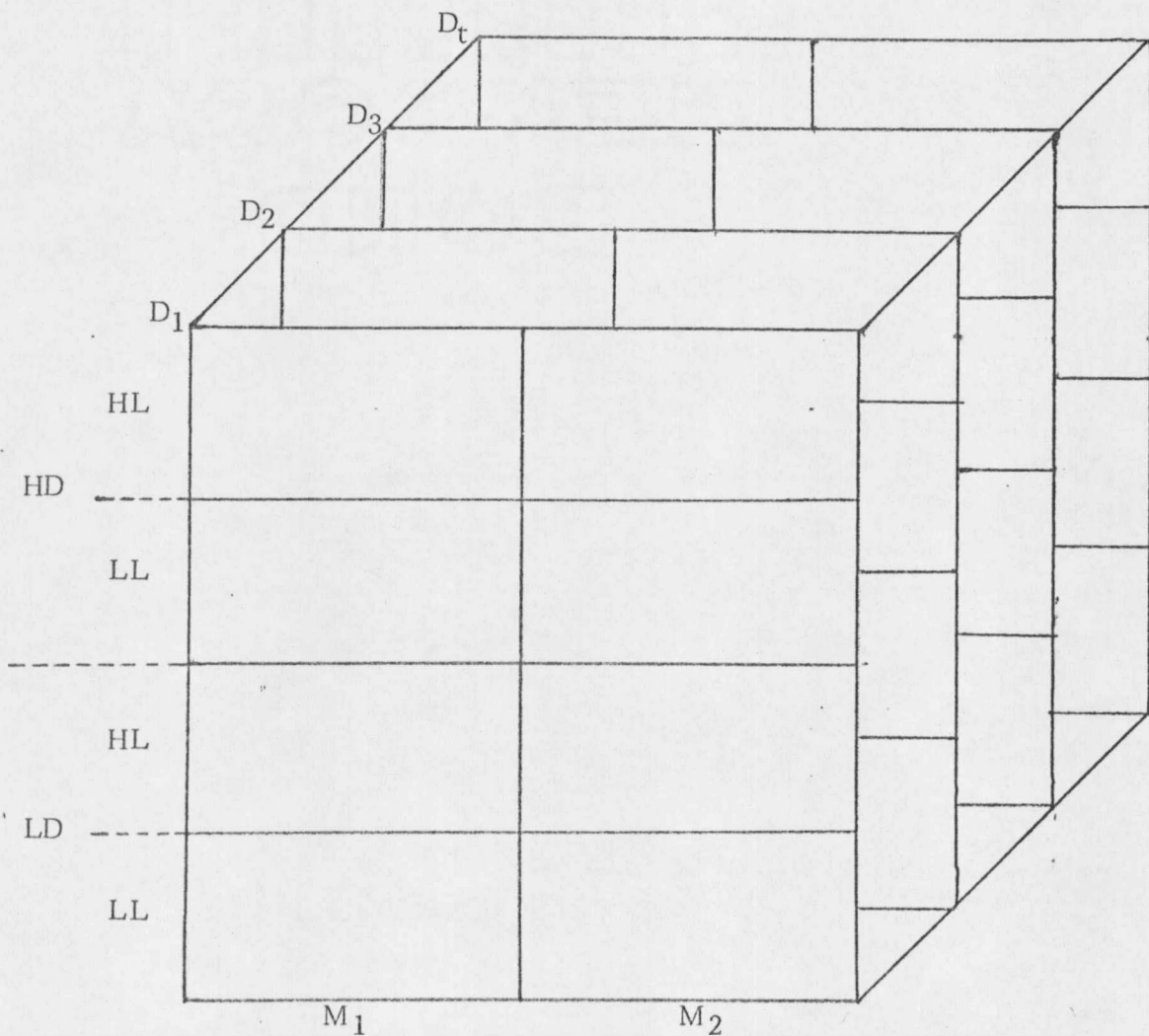
Whereas the control group had lectures presented in a traditional face-to-face method, the experimental group had access to the same lectures via audio-tape. Furthermore, whereas the control group had ample opportunity for unstructured discussion in each class session, the experimental group was subjected to a structured program provided in the workbooks.

Students in both groups were evaluated by means of five proctored essay tests and five proctored objective tests. All essay tests were graded by averaging independent ratings submitted by a panel of raters consisting of five secondary education majors recruited from an advanced class in evaluating social science objectives. All scores were recorded as absolute numbers and the total of all scores were used in calculating group means for purposes of testing null hypotheses. For the purpose of additional study, test items were classified by this researcher according to each of the three objective domains (cognitive, affective, and psychomotor) as well as scores obtained by students in each of these areas.

The experimental design consisted of a 2x2x2 matrix on which was performed an analysis of variance (AOV) testing the significance of difference of two independent variables (the control and experimental method), the significant difference between the two sets of moderator variables (the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale), and the

significance of difference of various interactions. These procedures were done for all dependent variables (achievement of cognitive, affective, and psychomotor objectives, and total of scores of all three) meaning that four AOV studies were completed.

Data was cast into a table as follows:



In the experimental design illustrated above,

D_1 equals achievement of cognitive objectives

D_2 equals achievement of affective objectives

D_3 equals achievement of psychomotor objectives

D_t equals D_1 plus D_2 plus D_3

M_1 equals face-to-face method of instruction

M_2 equals individual instructional program

HD equals high dogmatic score on the Rokeach Dogmatism Scale

LD equals low dogmatic score on the Rokeach Dogmatism Scale

HL equals high level of achievement on the Edwards Personal Preference Schedule

LL equals low level of achievement on the Edwards Personal Preference Schedule

LIMITATIONS OF THE STUDY

The instructor assigned to the control group--those taught by the face-to-face instructional method--was the same person responsible for the development and implementation of the individual instructional program. Ideally, if one wished to adhere to investigative techniques as suggested by the five famous Mill's Canons, or rules of experimental research, he would withdraw to the atmosphere of the laboratory.⁴ Or, with reference to a comparative study as

is set forth in this thesis, many different instructors would have been engaged to teach the control method and many different instructors the experimental. But with the severe limitation of time and resources, this was not possible. Nor was it possible to employ even one additional person to teach one method while the researcher was engaged with the other. Thus, it is assumed that this researcher, by virtue of his training and years of experience, is a competent educator and that he is sufficiently knowledgeable about both the subject matter and various teaching techniques involved to carry this investigation to its fullest extent. It is further assumed that, by virtue of his personal and professional integrity, this researcher was able to adequately teach students in both the control and experimental groups without biases toward either.

While student achievement of some objectives can be measured by means of objective examinations, there are many which can only be measured by means of subjective--essay type examinations. Realizing the controversy surrounding the subject of essay grading, a number of steps were taken to mitigate the subjectivity and reduce the biases in evaluating answers to each essay examination. These are simply attempts to break up the process of evaluation into a series of more specific, fractionated judgments made upon a common base and applied to an anonymous product. Some of these steps were as follows: (1) to decide in advance what factors were to be measured and if

more than one distinct quality was to be appraised, separate evaluations would be made for each; (2) to prepare a model answer in advance showing what points should be covered and how many credits were to be allowed for each; (3) to grade the papers anonymously--that is with no understanding about who wrote the answer; and (4) to gain greater reliability by averaging independent ratings submitted by a panel of competent raters.⁵

The students participating in this research project represented a sample of the population which elect to take a general education social studies course as part of their college curriculum. Thus it must be understood that the subjects of this investigation were limited to those who opted to enroll in the course in question as it was offered in the college class schedule. Once this class materialized, students were assigned to either the control or experimental group by a randomization method.

While there are a number of acceptable instruments for measuring certain personality variables, this researcher has found by empirical evidence that the Achievement Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale are more suitable for this present investigation.⁶ Need for achievement as a personality attribute is considered a relatively independent normal personality variable which relates to the manifestation of an individual to do his best, to be successful, to accomplish tasks requiring

an effort, to be recognized as an authority, to accomplish something of great significance, to do difficult jobs well, and to be able to do things better than others. Such a level of achievement can be measured using the Achievement Scale of the Edwards Personal Preference Schedule. There are three types of acceptances and rejections which are ordinarily regarded as more or less distinct: the acceptance and rejection of ideas, of people, and of authority. The first is classified as a cognitive phenomenon, the second involves the phenomenon of prejudice or intolerance, and the third, authoritarianism. Is it not possible, however, that the way we accept or reject ideas, people, and authority all go together? Perhaps they are but different facets of the same thing, related to each other in a one-to-one fashion within the belief system. The degree of acceptance or rejection can be measured using the Rokeach Dogmatism Scale.

DEFINITION OF TERMS

Although most of the terms will be defined within the body of this paper, the following terms are defined here for special emphasis:

"Significant difference"--In order to prevent the rejection of a true null hypothesis by committing a Type I (or alpha) error, it was determined to let alpha equal .05. This means that if a difference as large or larger than the

one obtained could occur by chance as often as 5 times out of 100, the null hypothesis (no significant difference between the means) could be rejected.⁷

The .05 significance level has been selected for two reasons: .05 represents a fair balance between the probability of committing an alpha and beta error, and the greatest amount of comparable research (discussed in Chapter II) has been based on an .05 significance level.

"Face-to-face instruction"--Face-to-face methods of teaching such as the lecture, group discussion, and the tutorial are explicit examples of teaching technologies based on traditional assumptions concerning the teaching-learning linkage. The instructor is not only assumed to be a sufficient condition but also a necessary condition for learning, and outputs from the teaching-learning situation are assumed to be a function of differential teaching inputs.⁸

"Individual instructional program"--Ideally, individualized instruction means an arrangement that makes it possible at all times for each student to be engaged in learning those things that are most appropriate for himself as an individual. It is based on the assumption that all students have the same capabilities; while they may not have the same capacities, they all possess the ability to learn. Thus, the very heart of the program is student participation in the learning process.⁹

"Ethnic minority groups"--The focal point of an ethnic minority course

might be characterized as follows: those who are subordinate segments of our complex society; those having special physical or cultural traits which are seen as undesirable by the dominant segments of the society; those having a group self-awareness brought about by the special traits they share and the special disabilities these traits cause them; those whose membership in the group is transmitted by a rule of descent; and those who, whether by choice or by necessity, tend to practice endogamy.¹⁰

"Objectives"--There are at least three classifications of objectives for social studies instruction. They are: (1) those associated with the cognitive domain (facts, concepts, generalizations, theories, and laws); (2) those associated with the affective domain (attitudes and values); and (3) those associated with the psychomotor domain (skills of inquiry, communication, resource use, and group interaction).¹¹

SUMMARY

An educator who undertakes to deal with social studies education, or any phase of this discipline in our schools, is faced with an unwieldy set of challenges arising from the newness, imprecision, and complexity of the curriculum field. It is no small task to resolve the dilemmas caused by conflicts in a person's ideologies and the persistent shifts in curriculum emphases.

Yet anyone who is anxious to make a difference in the lives of those for whom he is responsible, must be engaged in a constant search for alternatives to the traditional ideas and practices.

While there are some who look at the current status of social studies pessimistically, there are developments in progress that promise a brighter future for the field. The great challenge then is for the continual evaluation of the content and consequences of social studies materials. An even greater challenge, however, is for the continual evaluation of the method whereby this material is transmitted to an eager student community. As the shape of the social studies curriculum undergoes transformation, the opportunities for studying innovation and instructional patterns should not go unheeded. It is hoped that the alternatives presented in this study will expedite our entry into what might be a most exciting era of teaching social studies.

FOOTNOTES

1. J. P. Powell, "Experimentation and Teaching in Higher Education," Educational Research, 6. (1964), 179.
2. Robert Dubin and Thomas C. Taveggia, The Teaching-Learning Paradox (Eugene, Oregon: University of Oregon Press, 1968), 10.
3. Ibid., 35.
4. The four major principles or methods of procedure (to which a fifth may be added by combining the first two) as identified by Mill are the method of agreement, the method of concomitant variations, the method of difference, and the method of residues. John Stuart Mill, A System of Logic (New York: Harper and Brothers, Inc., 1873), Book III, Chapter 8.
5. Robert L. Thorndike and Elizabeth Hagen, "Advantages and Disadvantages of Essay Tests," Measurement and Evaluation in Psychology and Education (New York: John Wiley and Sons, Inc., 1961), 43-56.
6. A. L. Edwards, Edwards Personal Preference Schedule (New York: Psychological Corporation, 1957) and Milton Rokeach, The Open and Closed Mind (New York: Basic Books, Inc., 1960, 71-100. There are 1080 references to research utilizing the Edwards Schedule in Oscar K. Buros, ed., Seventh Mental Measurements Yearbook, Vol. I (Highland Park, N. J.: The Gryphon Press, 1972), 140-148. The Rokeach Dogmatic Scale is based on the personality scales widely known as the California F Scale and the California Ethnocentrism Scale, which along with evidence for their validity, appeared in T. W. Adorno, et. al., The Authoritarian Personality (New York: Harpers, 1950). The Rokeach Scale has been tested extensively at Michigan State University, Purdue University, and Ohio State University (see pp. 71-97 in Rokeach).
7. Sometimes the alpha error is replaced by an acceptable level of probability (called a confidence level) and is usually set at 95% (the so-called .05 level) meaning that there is a 95% chance that the sample is distributed in the same way as the population. See Bruce W. Tuckman, Conducting Educational Research (New York: Harcourt Brace Jovanovich, Inc., 1972), 205.

8. For a more exhaustive study of what Dubin and Taveggia call "face-to-face" instruction, consult William H. Weston, "Value, Methods, and Criteria in Teaching," in Bernice B. Cronkhite, ed., A Handbook for College Teachers (Cambridge: Harvard University Press, 1950) 57-84.
9. Two important works on this subject are Nelson B. Henry, ed., Individualizing Instruction (Chicago: University of Chicago Press, 1962), and Phil C. Lange, Programed Instruction (Chicago: University of Chicago Press, 1967) which constitute the 61st and 66th Yearbooks of the National Society for the Study of Education respectively.
10. George E. Simpson and J. Milton Yinger, Racial and Cultural Minorities (New York: Harper and Brothers, 1958) 349-380.
11. Frank J. Estvan, Social Studies in a Changing World: Curriculum and Instruction (New York: Harcourt, Brace and World, Inc., 1968), 236-267 on cognitive objectives, 300-332 on affective objectives, and 333-368 on psychomotor objectives.

CHAPTER II

REVIEW OF RELATED RESEARCH

Any student of comparative college teaching methods will remember the impact of the work of Dubin and Taveggia which appeared in 1968.¹ Their contribution to the discipline took the form of a reanalysis of data on comparative teaching methods throughout a four-decade period using the methods of science to establish the superior utility of one college teaching method over another. The conclusions were characterized by conciseness: no particular method of college instruction was measurably to be preferred over another when evaluated by student examination performances. In addition, the authors went a step further to predict that replication of the 91 studies examined in their survey would not produce conclusions different from theirs. According to the authors of the monograph, the express object of their work and the "no difference" conclusion was to provide a launching pad for new directions in research on teaching methods. Unfortunately, they built their "pad" on a questionable foundation. As a result, a book which might be expected to be an unbiased scientific treatise, appears to be designed to make a single point. The authors saw the need for new directions because 40 years of research have shown no differences among various methods of college teaching. Lest we miss the point, they repeated the statement in one form or another on 13 of the 53 pages

in the monograph.

To promote their case, these two men have either carelessly or carefully failed to include a critical point in their repetition of the statement. They did make the point in the monograph, at least once near the beginning and once near the end, but only the most careful reader will realize that something important has been omitted from almost all the other statements. What is missing? The fact that different teaching methods do not affect the students' ability to learn and regurgitate content, subject-matter, or knowledge. The authors did state this point when they described the examinations used to judge the effectiveness of various teaching methods. These examinations were "typically content-oriented" and designed to "determine how much of the content presented by the teacher can be recalled, after some delay, during the final examination by the student."² Although the words "final examination" were frequently included in the no difference statement, the critical words "recalled content" were not, and the authors failed to mention that it was only when recalled content learning was the measurement that no difference occurred.

When the entire monograph is studied, it is not easy to see how the authors could so easily overlook the word "content". In fact, they saw content as "the" objective of a college education. To say that content learning is not

relevant to the reasons why students are in college, they posited, "is simply to fly in the face of reality. Students are in institutions of higher education to learn content."³ Once you have made this decision, the statement that different teaching methods do not make a difference follows logically. In this context, the statement is not new at all, many others have said it. However, not many enunciated their conclusions with quite the determination and vigor used by these authors, nor did they omit the key word "content" when they said it.

The authors made it quite clear that, as far as they were concerned, content was the only real goal of a college education.

It would be unfortunate if, because subject matter-oriented examinations proved no differences among teaching methods, we would then conclude that subject-oriented examinations do not measure useful, important, or relevant features of the impact of higher education upon students. It works the other way around: the content retention among students is the same regardless of the methods by which they are taught. This content retention is important as a way of staying on top of the knowledge explosion.⁴

Since knowledge is now doubling every ten years, it is clear that we must find ways to stay on top. Apparently, the authors would have us create methods to double the rate of transmission, double the retention, or double the length of education. The odds of any one of these changes occurring is slight, to say the least, so the race is already lost. The authors' viewpoint also ignored the

fact that a student who learns how to think and how to search for the information he needs can always get the content that is relevant to his work.

The authors' lack of concern for educational goals other than content were clearly set forth. They listed preparation for a vocation as the first goal of public education. And they pointed out that "content learning in subject matter courses clearly contributes to the first goal."⁵ The second goal they listed was that of a responsible, constructive educated citizen. They noted that if the second goal "were to achieve greater emphasis than it does at present, a whole new set of activities may be brought into the college environment".⁶ Such activities as modification or development of emotional life and expressive behavior, or self-conscious behavior, would take on new emphasis. These are not goals of the present system as far as the authors were concerned because they stated that few administrators or faculty "are trained or knowledgeable about providing these kinds of educational experiences."⁷

Not only did the authors degrade the goal of an educated citizen, they lumped thinking with it. In a comment on the concept that higher education should teach people to think they stated that "although no one would contend that thinking is a low-order outcome of education, thinking needs content and the skills of thought must be applied to subject matter."⁸ No one would argue with the idea that thinking needs content. However, much of the content taught

under a philosophy like that expressed earlier is irrelevant to anything the student may later think about. Half of this content will be obsolete within ten years. And most of it is memorized until the examination need for it has passed, and then forgotten. The question the authors failed to face was when, where and how the skills of thought are taught. Content is totally useless in the hands of someone who does not know how to use it to solve meaningful problems.

The authors of this monograph were so busy concentrating on the one point they wanted to make that they missed the implication of their own conclusion. If content is the objective, and it can be learned by any teaching method, then there is no need for a system of higher education as it now exists. In fact, the students will be just as well off to study on their own at home. The authors said as much themselves. "Face-to-face with their instructors, or independent of them, college students can pass their course examinations with equal facility and level of performance."⁹ Since the authors were quite concerned with the cost-benefit analysis of college work, their own statement suggests the obvious --leave the students home and turn universities into correspondence schools. But they missed this implication. Their response to lower costs was to use graduate teaching assistants and increase the size of already large lecture classes.

The peculiar determination of the authors to discredit various teaching

methods caused them to miss another implication of their work. Consider the following statement:

All researchers have been inclined to overlook what is, perhaps, the outstanding commonality among teaching methods compared in a given study. This is the textbook(s) utilized.... It may very well be that the most pervasive commonality among teaching methods is the employment of and dependence on textbooks and other reading materials. Perhaps the 'no difference' results of comparing teaching methods can be attributed largely to the powerful impact of textbooks which cannot be washed out by any known methods of instruction.¹⁰

Had the authors reported all the research available to them, they would have noted that teaching methods not only fail to make a difference, but that the students are better off not going to class at all when the content examination is based on the text. The cost-benefit results of a no-class system are certainly to be preferred to low cost, often unqualified graduate students and large lecture classes.

But the authors missed this point too as they concentrated instead on berating their colleagues. "The purpose of this brief review," they affirm, "is not to prove how stupid, or narrow-minded, or ideologically committed have been the researchers who have compared college teaching methods," but to simply demonstrate that the "data are overwhelming in the direction of no differences among various methods of college instruction."¹¹ What appears to

be overwhelming here is not the data, but a desire to make a point--regardless of the lack of reason applied or the distortion by omission.

In the interest of objectivity, contrast the words of the monograph authors with those of the psychologist, W. J. McKeachie. Indeed, the authors have detected McKeachie's bias and reported it in their study.

We have here, of course, reviewed many more studies than those covered by Professor McKeachie in his analysis in the Handbook. Professor McKeachie may be quite right in suggesting that the rare cases where differences favor one method of teaching over another provide us with possible clues as to why. It is clear, however, that McKeachie prefers the discussion method, based upon the work of researchers, like N. R. F. Maier, who have focused their analytical attention solely on discussion groups rather than being grounded in comparative studies of two or more teaching methods.¹²

In spite of this bias, McKeachie had earlier reported conclusions similar to those given in the monograph. For example, in his invited address before the Division of Teaching of the American Psychological Association in 1967, McKeachie said "research results thus tend to slightly support the generalization that lecture is more effective than discussion in teaching knowledge."¹³

McKeachie's text on teaching techniques presents further evidence on this point when he described an experiment in which different teaching methods were compared to each other and no class at all. The results showed that the groups who did not come to class did best of all on the final examination. The

catch is that the examination was based entirely upon the textbook.¹⁴ Beyond this point, McKeachie and the monograph authors disagree because McKeachie's work has led him to believe that how you teach does make a difference. The fact that McKeachie's conclusion is diametrically opposed to that expressed in the monograph is not surprising when one knows the goal McKeachie saw for a college education. He stated this goal in his American Psychological Association address.

The primary goal of higher education today is to develop the student's motivation and ability to continue to learn throughout his life. This implies training students to learn from one another, from books, and from their own experience. It implies developing lasting motivation Few of us are satisfied with achievement of knowledge if it is not remembered, if the student is unable to use it in solving problems where the knowledge is relevant, or if the student fails to relate the knowledge to relevant attitudes.¹⁵

The choice of a goal for an educational system is critical to the argument presented here. If content is the goal, then how you teach does not matter. This has been the traditional viewpoint of the educational system for many years and it has produced a society which is less creative and less adaptive than it must be. The philologist is clearly not the one who will solve the problems of pollution, overpopulation, bigotry, and nuclear disarmament. We do not need people who can regurgitate all there is to know. Instead, we need people

who know how to use their knowledge to think about and solve the problems that face us.

The central problem of this research project has already been clearly stated: to compare certain teaching methods with reference to achieving specified goals or objectives and with reference to certain personality variables of the students subjected to these teaching methods. This present chapter will present a review of research literature which focuses on a comparative analysis of college teaching methods where special attention is paid to the attainment of objectives other than course content. To this end, the reader will find a review of studies dealing with a comparative analysis where one of the treatments includes the traditional face-to-face instructional method. Second, there will be included a review of studies dealing with a comparative analysis where one of the treatments includes the individual instruction program. Finally, the reader will find a review of literature relative to the effective use of both the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale with reference to personality variables.

THE FACE-TO-FACE INSTRUCTIONAL METHOD

Charles E. Wales and Robert A. Stager recently concluded their study which examined the impact a new pattern of course design and operation might

have on a selected number of student personality variables.¹⁶ The teaching method conceptualized and applied to a Freshman Engineering Design course at West Virginia University is called Guided Design and places primary emphasis on the skilled performance of thinking and the iterative process of decision making. In view of the unique nature of the Guided Design course pattern, it was hypothesized that in comparison to a traditional lecture-laboratory graphics course, which was being replaced, the Guided Design method would (in addition to facilitating the performance of thinking and decision-making) bring about significant, desirable changes in the student in certain personality variables. Specifically, it was expected that this course pattern would accomplish four things: (1) increase the student's internal orientation with regard to locus of control; (2) increase the student's tolerance of ambiguity; (3) increase the student's need for achievement; and (4) lower the student's manifest anxiety.

The pretest-post test control group design was used with 65 students enrolled as freshman engineers at West Virginia University. Of these, 43 were enrolled in two sections of a 3 credit hour Guided Design course (hereafter referred to as the experimental group). Twenty-two students were enrolled in one section of a 3 credit hour graphics course (hereafter referred to as the control group). Both the experimental and control groups were

pretested for the four personality variables at the beginning of the semester and post-tested at the end. The results of this experiment were based on the calculated means and standard deviations of the pretest and post test scores for the experimental and control groups on the four dependent variables. The analysis of these data show that within the experimental group, all four changes were statistically significant and in the desired direction. Within the control group, three of the four changes were significant and in the desired direction, with the need for achievement the only exception.

Next, the pretest score for each subject was subtracted from the post test score to produce a gain score. The gain scores for all students were then analyzed using a one-way AOV. The analysis of these data showed that the experimental course did produce a significant difference in the desired direction for two variables, the locus of control and manifest anxiety. Thus, the hypothesis that in comparison to the traditional lecture-laboratory method, the Guided Design method would bring about significant changes in the student in the areas of locus of control and manifest anxiety. Although significant gains were made in the other two variables, no significant difference was measured for the experimental and control groups.

The cause of the two confirmed personality changes can be related to the patterns used in the Guided Design course. In class, the students worked

in a six or seven man design team to make step by step decisions in the solution of a design problem. They were guided in this process by printed instructions and feedback and by the instructor. Subject matter pertinent to each project was transmitted by programmed instruction studied at home. Each student was responsible for checking his homework problems and self-quizzes. Content quizzes and hour examinations were given on a mastery basis. The student took alternate forms of a given exam until he was able to demonstrate a passing ability. In this sense, then, the student groups set the pace for the course and the students themselves controlled all aspects of the course operation. They controlled the classroom pace, the homework pace, and the testing pace.

Since the students controlled so much of the environment in this course, it was not surprising that they became more internal--that they saw events as more positively under their control. These same factors might also be expected to reduce the manifest anxiety of the student. However, the fact that these changes occurred is more striking when one considers the setting--this Guided Design course was only one of the four or five taken by the freshmen. In this light, these changes appear to be quite significant.

Until recently, despite widespread popularity, the teaching team remained a concept yet to be demonstrated as a means for improving instruction

in the schools. Scott Dayton Thomson has presented his study which compares learning outcomes of students taught by traditional methods with students instructed by the team approach.¹⁷ The hypothesis was that students will achieve better when instructed by a team of several teachers possessing a variety of specialties and who control the necessary teaching aids to facilitate flexible grouping, than when taught by individual teachers each using conventional techniques and working independently.

The experiment included two conditions: one was of teachers teaming together, the other emulates that situation which is ordinarily considered traditional. The same teachers instructed by both methods. The primary criterion measure, a multiple-choice achievement test of 46 items, was administered upon termination of instruction and twenty days after conclusion of the unit of study. A secondary measure, consisting of 30 items, was given unannounced after four days of instruction. Both examinations were selected from a common pool of test items.

The criterion measure was developed in three sections to assess different types of learning: (1) facts, (2) association, and (3) application of principles. In measuring achievement immediately upon completion of the unit, the control group achieved significantly better at the .05 level on the composite score, while in measuring learning twenty days following the

termination of the unit the experimental group either did significantly better than the control group at the .05 level or else differences approached this level. Thus, achievement levels tended to favor significantly the traditionally taught groups when examined immediately upon termination of the unit, and tended to favor the team taught classes twenty days thereafter.

A somewhat different experimental method has been utilized by John Theodore Fodor who was concerned with appraising the effectiveness of two approaches to health instruction at the college level.¹⁸ Personal-community health classes utilizing the lecture method exclusively were compared to personal-community health classes utilizing a variety of methods. A group of students who were not enrolled in health education classes were used as a control group. Four criteria were used in the comparison and included the following: (1) a pretest and post-test of an objective health knowledge test to determine whether or not there was any significant differences between the students in the classes in terms of health knowledge gained during the semester of instruction; (2) a health knowledge problem-solving essay test to determine whether or not there was any significant difference between the students in the classes in regard to their ability to solve practical health problems after taking the courses; (3) anecdotal records kept by the instructor to determine whether or not there was a difference in interest displayed by the students in

the two classes; and (4) student evaluations of the course to determine whether or not there was any bias displayed by the instructor teaching the course and to give further insights into interest displayed by the students.

The results of this study show that regardless of the method employed in the two classes, the students were able to gain sufficient health knowledge. Students who were in the experimental group developed and displayed a greater interest in personal and community health and showed greater appreciation for and interest in the course than did the students in the control group. Thus, if the objectives of the course encompass more than merely instilling knowledge in the minds of students, the results of this study indicate that there must be the utilization of something more than the traditional lecture method in presenting materials.

Leland Peterman Bechtel, of Bates College, subjected students enrolled in a course in General Psychology to critical analysis while weighing the traditional lecture method with what he called an "interpersonal approach" of teaching psychology with reference to student beliefs, attitudes, values and personal adjustment.¹⁹ The general characteristic of the experimental method was in the role the instructor played: Bechtel related himself closely to the student by democratic discussion in the class and through a series of private and small group conferences. Informality was achieved even to the point of

conducting some sessions in conjunction with dinner meetings.

Using the "t" test of significance of difference between means of pre and post-scores derived from a Content Examination, the Bills Index of Adjustment and Values, the Inventory of Beliefs, and the Allport Vernon Lindzey Study of Values, Bechtel reported no significant differences in gains between the control and experimental groups. This study indicated that the close association of the instructor with the student involving interest in his needs, problems, aspiration and values did not show any conclusive superiority over the traditional method of teaching in the area of producing belief, attitude, value and personal adjustment changes.

With the central problem of determining the differences in achievement, critical thinking, and attitudes of junior college freshmen, Alvin Truett Bean conducted an investigation between conventional teaching methods and a composite of procedures involving large lecture groups, seminars, and guided independent study as approaches to the teaching of English composition and American history.²⁰ The experimental and control groups were given alternate forms of four criteria instruments and the data was subjected to multiple linear regression analyses. Two instruments, the Watson-Glaser Critical Thinking Appraisal and the Purdue Attitude Scale revealed significant gains made by the experimental group. There were no significant differences in

gains on the other criteria measures. Bean concluded that while factual content achievement is not significantly related to instructional methodology, the ability to think critically may be increased by the deliberate utilization of instructional procedures to achieve this goal.

Two somewhat similar studies were conducted at North Texas State University by Hillery Melton Motsinger and Robert Sydney Trotter, Jr. in an effort to compare methods of teaching American history and American government respectively.²¹ Both used the traditional lecture method with the control group, with Motsinger employing a directed-study method involving the use of special lectures and Trotter focusing upon the problem-media-dialogue in the experimental groups. All of Motsinger's hypotheses were rejected in that his study indicated no significant difference in either the achievement of factual knowledge, improvement of study methods, or improvement of attitudes toward the study of American history between students in the two groups. While above-average and below-average students overwhelmingly approved of and favored the directed-study approach, the conclusions drawn from the study were that directed study was no more effective than the traditional approach in the areas of knowledge achievement, improved study habits, and attitudes toward the subject.

Trotter's thrust was somewhat more exhaustive: Was there value in

employing a problem-oriented, multi-media approach to the study of American government? Would the experimental approach produce a more favorable attitude toward the inclusion of this required course of study? Would one method prove superiority over the other in quickening the students' ability to think critically and reflectively? And would one method be more conducive to subject matter retention than the other?

Using a standard three by two factor analysis of variance in the statistical treatment of the data, three F-ratios were computed for the teaching method factor, the ability level factor, and the interaction between the two for each of four criterion measures. The result: significant F-ratios were found for the teaching method factor and the ability level factor when the criterion measure focused on attitude (The Hand Scale of Attitudes Toward American Government as a College Course). Thus it was concluded that the problem-media-dialogue and lecture methods are equally effective when the objective of the course is the student achievement. However, the experimental method promoted a more positive attitude in students than the traditional method.

THE INDIVIDUAL INSTRUCTION METHOD

There have been some very impressive research products relative to the phenomenon commonly called programmed instruction. A little more than a

decade ago two such surveys were presented by Wilbur Schramm and A. A. Lumsdaine.²² Our purpose here is to survey research which has come forth since that time and which has comparatively analyzed programmed instruction with other acceptable methods of instruction at the college level. It is safe to say that there has been no striking breakthrough into new levels of understanding of human learning, attributable to the study or use of programmed instruction, but perhaps this is the curve of progress one might expect--many small advances, resulting, over time, in the accumulation of insights to the size of a critical mass.

Such an advance was made by Norman Hankele Smith who compared programmed instruction with the conventional classroom method of teaching an elementary statistics course at the United States Air Force Academy.²³ Smith attempted to analyze these two methods of instruction relative to three specified goals: (1) individual achievement of content matter; (2) student interest in the study of statistics; and (3) student attitudes toward programmed instruction. The results of this study indicate that programmed instruction is just as effective as conventional classroom instruction in producing overall learning and learning at different levels of ability. However, there was a strong indication that the time which students need to learn a specified body of knowledge can be reduced substantially through the application of programmed

instruction and that the experimental method of instruction is more efficient at all levels of ability. Smith concluded that the students being taught by programmed instruction did, on the whole, respond favorably to this method of instruction.

A similar project was conducted by Jeanne Foster Wardian at Eastern Washington State College where the investigator compared the programmed learning method in teaching fundamentals of music with the more conventional lecture-recitation method.²⁴ Wardian sought answers to two basic questions: (1) would students using the programmed instructional method acquire as much knowledge of fundamentals of music as a similar group of students taught in the conventional manner? and (2) would students using the programmed instructional method require less time or more time in acquiring this knowledge? In addition there was an attempt made to ascertain the attitude of the students in the experimental group.

In terms of performance scores based upon a pretest and a post-test, students taught in the experimental group using the programmed learning method performed as well as the students in the control group using the conventional method. The mean scores favored the experimental method, though not at a statistically significant level. In terms of time spent in the experimental group and time spent in the control group for completion of the experiment,

the students in the experimental group spent a significantly smaller amount of time. In addition, the experimental group rated the programmed instructional method as a significantly favorable method.

Donald William Johnson devised a programmed instructional sequence in the operation of six types of audiovisual equipment for a course in pre-service elementary teacher training and compared the performance of students taught by this method with the performance of students taught by the conventional demonstration-practice laboratory method.²⁵ Both groups were taught how to operate the motion picture projector, the filmstrip-slide projector and the opaque projector: one group by programmed self-instruction, and the other in the conventional demonstration-practice laboratory. The groups were then transposed; the former experimental group became the control group, and vice-versa. Both groups were taught to operate the overhead projector, the tape recorder, and the record playback. Each student thus received instruction on three types of equipment in the conventional laboratory, and instruction on three types in the programmed self-instructional laboratory.

The results reported by Johnson were as follows: (1) an anonymously filled out questionnaire revealed that students preferred to learn equipment operation by programmed self-instruction over the conventional method; (2) students were able to manage the operation of difficult equipment better when

taught by the programmed instructional method; and (3) the experimental self-instructional group performed equipment operation as well, or significantly better than, students taught by the conventional method.

Providing for a variety of student interests and abilities found in any class has long been a challenge for teachers. Despite attempts to minimize these differences through homogeneous grouping and track systems, differences between students exist and influence learning experiences. New York University professors Gladys Crosby and Herbert I. Fremont recently developed a method of individualized instruction to help meet this diverse need of their students and conducted research comparing their experimental program with the traditional method of teaching a college course in plane geometry.²⁶

The method of individual instruction employed was one in which the student planned his work within course limitations in accord with his interests and abilities, determined the rate of work, assigned his own homework, and determined his test readiness. In general, the student had the responsibility for his own learning under the leadership of the instructor.

In comparing the individual instruction with a traditional approach, an analysis of variance was carried out to determine whether or not there was a significant difference between the groups in achievement, attitude towards mathematics, and social acceptance. The results indicated that there

were no significant differences in any variable except in the attitude held by students. Since the experiment was conducted by two investigators, it is significant to note that where a difference did exist in attitude, it was on the part of students assigned to the more experienced of the two instructors.

A similar study by Judson Marc Vander Wal at Western Michigan University investigated two methods of teaching biology using a traditional lecture-laboratory method and an audio-tutorial approach.²⁷ The primary problem was to investigate the relationships between these two methods of presenting biological information and student's attitude toward biology and their terminal achievement. A secondary problem involved the comparison of inter-relationships among a number of student variables (age, sex, etc.) which served as criteria upon which a match-pairing technique was based.

Using the "t" test to determine what differences might exist, Vander Wal found the following: there was no significant difference in achievement for either group; there was a positive significant difference on gain scores for the experimental group; and there was a negative significant difference on attitudinal measures for the control group.

John Tomb Flynn's recent investigations into the influence of programmed methods of instruction in a course in Educational Psychology for Secondary Teachers was somewhat more exhaustive.²⁸ Flynn sought to

examine individual instruction relative to the following: achievement, gain scores, retention factors for both achievers and under-achievers, and the relationships existing between personal subject characteristics, sex, intelligence, reading ability, attitude toward the method under investigation and the performance on the criterion measures of achievement, gain scores, and retention.

A brief summary of the findings issued from this study are as follows: achievers in the experimental group gained significantly more from pre-test to post-test than achievers in the control group but showed no significant difference in post-test performance or retention; under-achievers in the experimental group showed no significant difference in any of the criterion measures in comparison with the control group; and the relationship between reading ability and general intelligence was significant for the achievers in the experimental group. Thus, while achievers taught by individual instruction gain more from pre-test to post-test, there is a relationship of importance relative to general intelligence and reading ability which contributes to performance achieved by the individual instructional method.

THE MODERATOR VARIABLES

The preceding chapter has set forth one of the criteria used in this

research project for testing the "significant difference" hypothesis of the two instructional methods as being the use of scores derived from two sets of moderator variables, the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale. While the Edwards Personal Preference provides a means for testing in fifteen categories, i.e., achievement, deference, order, exhibition, autonomy, affiliation, intraception, succorance, dominance, abasement, nurturance, change, endurance, heterosexuality, and aggression, this study has been based solely on scores derived from the first - the Achievement Scale. According to Michael G. McKee, while the research data provides "insufficient justification for saying that the scales of the EPPS measure the constructs they intend to....some scales (particularly the Achievement Scale) still have promise."²⁹

When A. L. Edwards first published the Personal Preference Schedule in 1954, he sought to demonstrate that there was a high positive correlation between students' endorsement of typical personality inventory items and the rated social desirability of the items. Since that date, the Edwards Personal Preference Schedule has served as a useful catalyst for research and psychometric debate over the role of social desirability response set and the effect of ipsative scaling.³⁰ The content of Edwards' Schedule, as evidenced by the scale names, represents an important cross-section of normal interpersonal

dynamics. A. B. Heilburn, Jr. has reported that "scale reliabilities are satisfactory, norms are based on stable samples, and interscale correlations are reasonably low." Gauging by the long bibliography of studies in which it has been employed, the Edwards Personal Preference Schedule has proved to be a most attractive research instrument, especially for counseling purposes where it provides quick and convenient measures of a number of relatively independent normal personality variables.³²

The primary purpose of the Rokeach Dogmatism Scale is to measure individual differences in openness or closedness of belief systems or general authoritarianism and general intolerance. Such a measurement seeks to define the extent to which a person's system is open or closed; namely, "the extent to which the person can receive, evaluate, and act on relevant information received from the outside on its own intrinsic merits, unencumbered by irrelevant factors in the situation arising from within the person or from the outside."³³ The procedure used by Rokeach in constructing the Dogmatism Scale was essentially deductive in which various definitions or characteristics of open and closed systems were scrutinized and statements designed to tap these characteristics were constructed. Much of Rokeach's scale is based on suggestions found in the work of E. M. Berger, E. Hoffer, and the Minnesota Multiphasic Personality Inventory.³⁴

SUMMARY

A survey of the literature reviewed in this chapter indicates that subject-matter content can be taught (to properly motivated students) by any teaching technique, including individual instruction. At the same time we find that educational goals beyond content require carefully considered teaching methods. The purpose of this research project was clearly in line with the findings revealed in the literature surveyed in this chapter--to carefully consider two teaching methods with reference to specified goals other than the mere acquisition of knowledge.

FOOTNOTES

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CHAPTER III

DESIGN OF THE STUDY

In the previous chapter, the reader has been given the opportunity of becoming acquainted with a representative sample of empirical research relating to comparative analyses of college teaching methods. Regardless of the decision to either retain or reject a "no difference" hypothesis, one thing is clear in each project: in evaluating the effectiveness of college instruction we need to consider not only the accumulation of knowledge but the development of problem-solving skills and desirable attitudes. Thus, the reader is invited to return once again to the central problem of this present study: is there any significant difference between students taught by the face-to-face instructional method and those taught by an individual instructional program with reference to their achieving selected objectives applicable to a course of study dealing with ethnic minority groups, and is there a difference in the achievement of these students which can be related to personality variables with reference to scores derived from the Achievement Scale of the Edwards Personal Preference Schedule and Rokeach Dogmatism Scale? In light of this statement of the problem and the various questions inherent in the problem which have been raised in Chapter I, this present chapter will reveal the design of the study

undertaken and will focus on the following: 1) the translation of the problem into statistical hypotheses which can be defined as the expectation about events based on generalizations of the assumed relationships between variables; 2) the delineation of the experimental treatments with reference to the course of study offered and the two methods of instruction utilized; 3) a description of the population as well as a disclosure of the sampling procedure followed; and finally, 4) the method utilized for the collection, organization, and analysis of the observations which were used to test the hypotheses.

STATEMENT OF THE HYPOTHESES

The questions implicit in the statement of the problem can best be answered by translating the problem into suitable hypotheses which can in turn be subjected to systematic testing procedures. Since it is extremely difficult to obtain unequivocal support for a hypothesis, the researcher intended to test and disprove its negation, hence, the negative or "no differences" version of a hypothesis (commonly called the null hypothesis) was used throughout this research project. Six such hypotheses were tested as follows:

Null Hypothesis Number 1:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the cognitive

domain.

Alternate Hypothesis Number 1:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the cognitive domain.

Null Hypothesis Number 2:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the affective domain.

Alternate Hypothesis Number 2:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the affective domain.

Null Hypothesis Number 3:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the psychomotor domain.

Alternate Hypothesis Number 3:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the psychomotor domain.

Null Hypothesis Number 4:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the social studies (the combination of cognitive, affective, and psychomotor domains).

Alternate Hypothesis Number 4:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the social studies (the combination of cognitive, affective, and psychomotor domains).

Null Hypothesis Number 5:

There is no significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule.

Alternate Hypothesis Number 5:

There is a significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule.

Null Hypothesis Number 6:

There is no significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Rokeach Dogmatism Scale.

Alternate Hypothesis Number 6:

There is a significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Rokeach Dogmatism Scale.

As previously stated, in order to prevent the rejection of a true null hypothesis by committing a Type I (or alpha) error, it was determined to let alpha equal .05. This means that if a difference as large or larger than the one obtained could occur by chance as often as 5 times out of 100, the null hypothesis (no significant Difference between the means) can be rejected. The .05 significance level represents a fair balance between the probability of committing an alpha and beta error.

THE EXPERIMENTAL TREATMENTS

Since this research project was concerned with the achievement of students enrolled in a college-level social science course with respect to their being subjected to two different teaching methods, it is appropriate for the reader to be informed about the course in question as well as the teaching methods to be employed.

The Course of Study

An interdisciplinary course in ethnic studies was offered as part of the social science curriculum at Eastern Montana College during the fall quarter, 1974. The course was offered for all students without prerequisites or restrictions relative to classification or class size. Students were permitted to use the five quarter hours of credit obtained from this course of study in either a major or minor area of social science or, with the permission of the Chairman of their major department, as part of the requirement for other academic areas, i.e., elementary education, sociology, or psychology. From past experience, it was expected that the greater number of students enrolling in the course would use the credits to fulfill a general education requirement in social science or as a free elective. Thus it was anticipated that when the class materialized, there would be a fair representation from all academic

areas within the college community, as well as a diversity of ages and background in academic activities. The outline for this course of study was as follows:

A Study of America's Ethnic Minorities

Part I - The American Dream--An American Dilemma: A Study of Prejudice and Discrimination in the American Society

- A-The Nature of Prejudice
- B-The Dynamics of Racism
- C-The Structures of Prejudice

Part II - Bondage, Back-Seats and Blues: A Study of the Black Man and the Promise of America

- A-Out of Bondage into the Promised Land
- B-Myths, Heroes and Reality
- C-Achievement Against All Odds

Part III - Chicanos at the Crossroads: A Study of America's Second Largest Minority

- A-Mexican Americans in Historical Perspective
- B-Bronze Power and Brown Berets
- C-Viva la Raza

Part IV - Beans, Blankets and Bureaucracy: A Study of America's First Inhabitants

- A-Noble Savage or Child of Nature
- B-Haunted by History
- C-The Case of the Non-Vanishing Indian

Part V - America--Crucible or Caldron of Conflict: A Study of Assimilation and Resistance of America's Ethnic Minorities

A-"From Many, One"
B-Harvest of Discontent
C-Heritage of Conflict

In the development of this course of study, this researcher was influenced by the underlying assumption that students should be guided toward democratic values and behaviors which are the foundation of our American way of life in order that each student will have the freedom and opportunity to develop his innate capacities in our democratic society. To accomplish this it is necessary:

- a. to develop a sound and functional knowledge of historical events and their causes, the interrelationship of man, and the basic social processes in which man engages to meet his basic needs in his efforts to improve his ways of living;
- b. to inculcate an appreciation and respect for other persons which will be evidenced in behavior toward others that is based on respect for individual dignity regardless of race, creed, national origin, or social or economic status;
- c. to install a sense of responsibility in the individual toward governmental functions and their impact on daily living;
- d. to stimulate the ability to think critically and creatively in all situations involving human relationships;
- e. to provide practice in democratic action at school and community levels which will develop group skills and social competencies based upon respect for differences of opinion, and a respect for the rights of the individual;
- f. to provide opportunities for each student to become a democratic person whose behavior and attitudes are consistent with our democratic principles of cooperative group living;

- g. to recognize the increasing need for world understanding, exploring implications of scientific and technological advances for human welfare;
- h. to foster a concern for the needs and problems of others in order that we may bring about changes consistent with our democratic ideals; and
- i. to encourage the use of problem solving techniques in considering issues facing people in an increasingly complex society.

In addition to these goal expectations, it was anticipated that this course of study would contribute to encouraging each student to become a process-oriented being. Process orientation means simply that man has within his personality elements of dynamism, motion, and responsibility which enable him to live as an adequate and contributing member of the world of which he is a part. Not only is man process-oriented, but he can become more so through planned educational experiences. Some of the processes which were given high priority within this interdisciplinary course in ethnic studies are as follows:

- a. Perceiving--one must have impressions, ideas, and concepts out of which to add to one's own knowledge and life from which he can make sense from the past;
- b. Communicating--there must be the ability of effectively sharing one's own thoughts and ideas;
- c. Love--we should take constructive steps to help the student understand the satisfactions that can come from relating to others in mutually satisfying ways;

- d. Decision Making--while similar to problem-solving, the ability to make decisions is unique in that meaningful decisions can and often should be made in an intuitive manner;
- e. Knowing--knowledge is essential if we are to make wise decisions, to love intensely, and to communicate clearly (teaching how to know is more essential than teaching the known);
- f. Patterning--one needs to have at his command the skills for organizing material, both old and new, into coherent patterns;
- g. Creating--the intricacies of the creative process cannot be left to chance if we expect our students to be able to shape his own ideas into something new which may be either for himself or for the outside world, a better approach or solution; and
- h. Valuing--opportunities should be given students to become involved with value-laden situations in order to share with him the excitement which the ethical can play in adding unity and cohesion to life.

These then were the course goals as established by the instructor. In addition, a series of performance objectives were developed which were made available to each student. Within each of the five parts of the course of study there were three units. Each unit carried with it a statement similar to the following which is taken from Part I, Unit One, "The Nature of Prejudice" (the entire course as prepared for the students in the experimental group has been placed on deposit in the library of the College of Education, Montana State University):

After carefully proceeding through this unit of study, you

will be able to:

1. Distinguish between prejudice, antipathy, segregation and discrimination.
2. Discriminate between attitudinal and overt prejudicial behavior.
3. Determine the difference between prejudice as an individual matter as compared to prejudice as a collective or group phenomenon.
4. Define what is meant by stereotyping and demonstrate how it is related to prejudice.
5. Recognize the greater implications of the process of projection (scapegoating) vis-a-vis racial prejudice.

After carefully proceeding through this unit of study, the instructor intends that you will:

1. Be aware of, and take action to eliminate, any prejudice you might hold toward any minority group.
2. Incorporate egalitarian principles into every phase of your life to the end that prejudice and discrimination might be reduced or even eliminated in our society.

The Experimental Method of Instruction

The experimental method of instruction consisted of allowing a select number of students to pursue the course in ethnic studies by means of an individual instructional program. Ideally, individualized instruction means an arrangement that makes it possible at all times for each student to be engaged

in learning those things that are most appropriate for himself as an individual.

It is based on the assumption that all students have the same capabilities.

While they may not have the same capacity, they all possess the ability to learn.

Thus, the very heart of the program is student participation in the learning

process. The course described in the previous section was programmed by

this researcher for individualized instructional activity and was made possible

by a generous grant from the Ford Foundation Venture Fund. Each of the five

volumes of the student access-workbooks presents a series of seven steps for

each of the fifteen units of study, thus allowing each student the opportunity to

proceed through the material in a systematic manner. These steps, which were

similar for each unit, were as follows:

- | | |
|------------|---|
| Step One | <u>Establishing Goals</u> --these goals are those discussed in the previous section of this chapter. |
| Step Two | <u>Acquiring Insights</u> --after getting his direct-set, the student then proceeded to listen to a thirty minute cassette lecture by the instructor. |
| Step Three | <u>Expressing Opinions</u> --each student had access to a workbook in which he had the opportunity of expressing his opinions to a number of questions relative to the material presented in the lecture as well as selected materials which appear in abstracted form. |
| Step Four | <u>Comparing Approaches</u> --the student then returned to the second side of the cassette tape and listened to a discussion of all the material covered in the unit of |

study. This discussion takes place between the instructor and a number of students who were involved in the development of the course in its formative stage.

- Step Five Assessing Progress--at this stage, the student was encouraged to test his knowledge and attitudes about the originally stated goals set forth in Step One.
- Step Six Evaluating Achievement--the student was evaluated by answering a number of subjective type questions which were submitted for grading.
- Step Seven Expanding Horizons--before leaving the unit in question, the student was encouraged to read and/or review selected literature and/or engage in a pre-selected research problem.

At the completion of each of the five parts (after completing each of the three units of study) the student was given an opportunity of listening to a tape containing interviews with a number of persons involved with the subject (i. e., prominent Negroes, Indians, authors, statesmen, etc.) and of viewing a specially prepared slide and sound survey of the entire part under consideration.

At this time the student was required to submit to an objective examination over the entire subject covered by the respective part of the course.

Thus, each student involved in this individual instructional program had access to five student workbooks, forty cassette programs, and five slide programs (consisting of eighty slides each).

The Traditional Method of Instruction

The traditional method of instruction followed with reference to this research project was that which has already been described as "face-to-face" instruction. Face-to-face methods of teaching such as the lecture, group-discussion, and the tutorial are explicit examples of teaching technologies based on traditional assumptions concerning the teaching-learning linkage. The instructor is not only assumed to be a sufficient condition but also a necessary condition for learning, and outputs from the teaching-learning situation are assumed to be a function of differential teaching inputs.

Even as a select number of students were assigned to the experimental group thereby following the individual instruction program previously described, so a select number of students were assigned to the control group in which the face-to-face method was employed. The course of study for both groups was identical with each group presented with identical goals, subjected to identical lectures, provided with identical resource materials and evaluated with identical tests. The difference between the two groups was not in course content but in method of instruction. Whereas the control group had lectures presented in a traditional face-to-face method, the experimental group had access to the same lectures via audio tape. Furthermore, whereas the control group has ample opportunity for unstructured discussion in each class session, the experimental group was subjected to a structured program provided in the

workbooks.

POPULATION DESCRIPTION

The students participating in this research project represent a sample of the population which elect to take a general education social studies course as part of their college curriculum. Thus it must be understood that the subjects of this investigation were limited to those who opted to enroll in the course in question as it was offered in the college class schedule. Once this class had materialized, students were assigned to either the control or experimental group by a randomization (odd-even) method.

COLLECTING, ORGANIZING, AND ANALYSIS OF DATA

At the first meeting of the class (September 26, 1974), the students enrolled in the ethnic studies course were divided into two groups equal in size by a randomization method. Once these two groups had been constituted, all students were administered both the Achievement Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale. These tests were administered and graded by the Counseling Center of Eastern Montana College. These instruments appear in Appendix A and B.

When scores were received for all students on the Dogmatism Scale,

the students were classified as being either high in dogmatism or low in dogmatism with the median score being used to distinguish between these two categories. Students within these two categories were then classified according to their scores on the Personal Preference Schedule in a similar manner with the upper fifty percent being classified as high achievers and the lower fifty percent as low achievers. This procedure was done for students in each of the two groups involved in this research experiment. The following chart illustrates how these students were treated with reference to the test of the hypotheses:

Control Group		Experimental Group
High Dogmatic	High Achiever	S_1 S_2 S_n
	Low Achiever	S_1 S_2 S_n
Low Dogmatic	High Achiever	S_1 S_2 S_n
	Low Achiever	S_1 S_2 S_n

Students in both groups were evaluated by means of five proctored essay tests and five proctored objective tests. All essay tests were graded by averaging independent ratings submitted by a panel of raters consisting of five secondary education majors recruited from an advanced class in evaluating social science objectives. All scores were recorded as absolute numbers and the total of all scores were used in calculating group means for purposes of testing the null hypotheses. For the purpose of additional study, test items were classified by this researcher according to each of the three objective domains (cognitive, affective, and psychomotor) as well as scores obtained by students in each of these areas.

The experimental design consisted of a 2x2x2 matrix on which was performed an analysis of variance testing the significance of difference of two independent variables (the control and experimental methods), the significant difference between the two sets of moderator variables (the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale), and in addition, to test the significance of difference of various interactions. These procedures were done for all dependent variables (achievement of cognitive, affective, and psychomotor objectives, and total of scores of all three) meaning that four AOV studies were completed.

CHAPTER IV

SUMMARIZATION OF THE DATA

This chapter proposes to set forth the findings of a statistical analysis of the study under investigation including the following: Procedures for assigning students according to independent variables; Classification of students according to scores on moderator variables; Assignment of scores for dependent variables; Analysis of variance for the four dependent variables; and the t-Test for a difference between standard deviations for each of the four dependent variables. All quantitative data was assembled with the use of a Monroe 1785 Mini-Computer.

SCORES OF THE INDEPENDENT VARIABLES

At the first meeting of the class on September 26, 1974, the students enrolled in the ethnic studies course were randomly divided by an "odd-even" method. This procedure produced a control group numbering forty students and an experimental group numbering forty-one students. Subsequently, three members of the control group withdrew from the course and one student received a grade of incomplete due to excessive absenteeism. Thus, the total number of students involved in the following statistical study for the control group (or M_1) equalled 36. In addition, five of the forty-one students assigned to the experimental group were rejected for inclusion in the

study: three withdrew from the course and two received incomplete grades due to excessive absenteeism. Thus, the total number of students involved in the following statistical study for the experimental group (or M_2) equalled 36. In each case, the students receiving incomplete grades had not participated to an extent to warrant inclusion in the study.

The total number of students participating in the following statistical study was seventy-two (72) with thirty-six (36) in each of the two independent variables (the Control Group, M_1 , and the Experimental Group, M_2). Thus with an equal and even number in each, an equal and even number of students were ultimately assigned to the cells characterizing the moderator variables (eighteen students assigned as High Dogmatic in both M_1 and M_2 , eighteen students assigned as Low Dogmatic in both M_1 and M_2 , and nine students assigned as either High Achievers or Low Achievers in the High Dogmatic and Low Dogmatic category in both M_1 and M_2).

SCORES OF THE MODERATOR VARIABLES

Once the control and experimental groups had been constituted, all students were administered both the Achievement Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale. The possible range for scores on the Rokeach Dogmatism Scale is +120 to -120. The actual range for students in the control group was +44 to -92 and the range for stu-

dents in the experimental group was +30 to -60. Since scores at either extremes of the continuum represent a high level of dogmatism, it was decided to calculate the upper and lower quartile for this characterization. Thus, students scoring +44 to -1 and -56 to -92 in the control group were designated as those with high dogmatism while students scoring +30 to +15 and -44 to -60 in the experimental group were designated as those with high dogmatism. The remaining students in either group were designated as those with low dogmatism.

The possible range for scores on the Achievement Scale of the Edwards Personal Preference Schedule is 0 to 28. The actual range for students in the control group was 6 to 20 and the range for students in the experimental group was 7 to 22. Since it was necessary to characterize the high and low achievers within the respective dogmatism categories, the scores were arranged according to the dogmatism level with the median score used to distinguish between high and low achievers. Thus the range for students in the control group was as follows: High Dogmatism--High Achievers, 12 to 16, Low Achievers, 6 to 11; Low Dogmatism--High Achievers, 14 to 20, Low Achievers, 8 to 13. The range for students in the experimental group was as follows: High Dogmatism--High Achievers, 14 to 24, Low Achievers, 8 to 13; Low Dogmatism--High Achievers, 16 to 22, Low Achievers, 7 to 22.

SCORES OF THE DEPENDENT VARIABLES

The performance of each student was evaluated by means of an examination consisting of five essay questions and five multiple choice sections (one for each of the five units of study). The essay questions were graded by a panel of five evaluators and the multiple choice tests were machine graded. In each instance, the essays were compiled into one package and evaluated at one time by each of the members of the evaluation panel. A model was provided by the instructor and the scores submitted by the panel were averaged to produce a score for use in the statistical analysis. All test items were prepared by this researcher and were designed to evaluate the various objectives (cognitive, affective, and psychomotor) which were explicitly set forth in the course of study.

ANALYSIS OF VARIANCE FOR D_1

Table 1 shows the scores derived for D_1 (the cognitive domain) for M_1 (the control group) and M_2 (the experimental group). The idiographic display in Figures 1 and 2 presents this data in the form of a histogram. The reader will note that with an N of 72, the Mean for M_1 is 267.22, while the Mean for M_2 is 289.30. The Standard Deviation for M_1 is 36.69, while the

Standard Deviation for M_2 is 24.37.

Table 2 lists the Effects for D_1 . The F factor for Methods shows 9.818/7.04 is greater than 1.00 at .01 confidence level, therefore we can reject Hypothesis Number 1 which stated "there is no difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the cognitive domain." The F factor for scores of the first and second order of interaction give no sufficient reason for rejecting Hypotheses Number 5 and 6.

Table 1
D₁ Scores

	M ₁ Control Group	M ₂ Experimental Group	
High Dogmatic	S ₁ -240	S ₁ -275	High Achiever
	S ₂ -226	S ₂ -288	
	S ₃ -287	S ₃ -296	
	S ₄ -287	S ₄ -290	
	S ₅ -260	S ₅ -300	
	S ₆ -276	S ₆ -271	
	S ₇ -309	S ₇ -306	
	S ₈ -263	S ₈ -246	
	S ₉ -280	S ₉ -297	Low Achiever
	S ₁ -260	S ₁ -273	
	S ₂ -271	S ₂ -297	
	S ₃ -154	S ₃ -295	
	S ₄ -325	S ₄ -288	
	S ₅ -246	S ₅ -275	
	S ₆ -240	S ₆ -276	
	S ₇ -293	S ₇ -318	
	S ₈ -184	S ₈ -303	
Low Dogmatic	S ₉ -214	S ₉ -345	High Achiever
	S ₁ -290	S ₁ -280	
	S ₂ -278	S ₂ -246	
	S ₃ -284	S ₃ -260	
	S ₄ -279	S ₄ -282	
	S ₅ -230	S ₅ -308	
	S ₆ -326	S ₆ -232	
	S ₇ -232	S ₇ -300	
	S ₈ -264	S ₈ -321	Low Achiever
	S ₉ -293	S ₉ -257	
	S ₁ -312	S ₁ -320	
	S ₂ -268	S ₂ -295	
	S ₃ -276	S ₃ -285	
	S ₄ -242	S ₄ -284	
	S ₅ -294	S ₅ -331	
	S ₆ -283	S ₆ -288	
	S ₇ -316	S ₇ -327	
	S ₈ -277	S ₈ -282	
	S ₉ -261	S ₉ -278	

Figure 1
Histogram for Data of Table 1 Control Group
 D_1 Frequencies

$N = 72$
 $M = 267.22$
 $SD = 36.69$

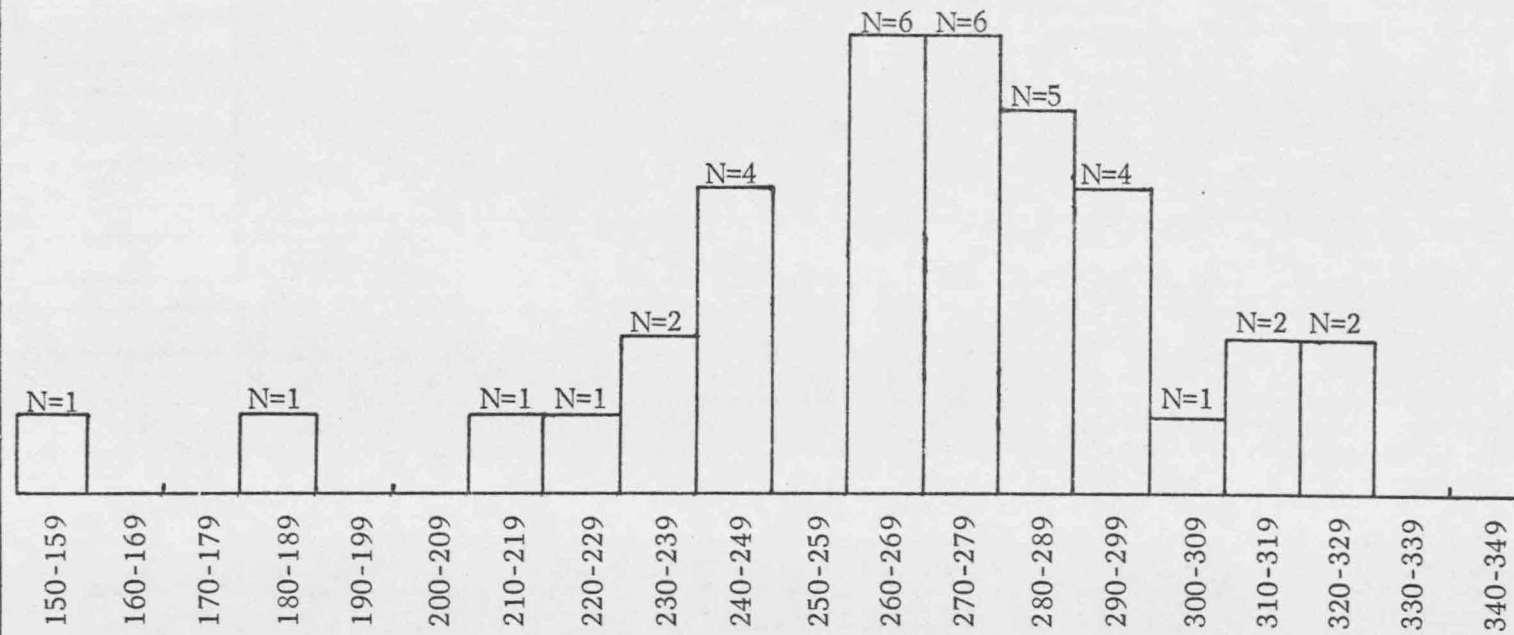


Figure 2
Histogram for Data of Table 1 Experimental Group
 D_1 Frequencies

$N = 72$
 $M = 289.30$
 $SD = 24.37$

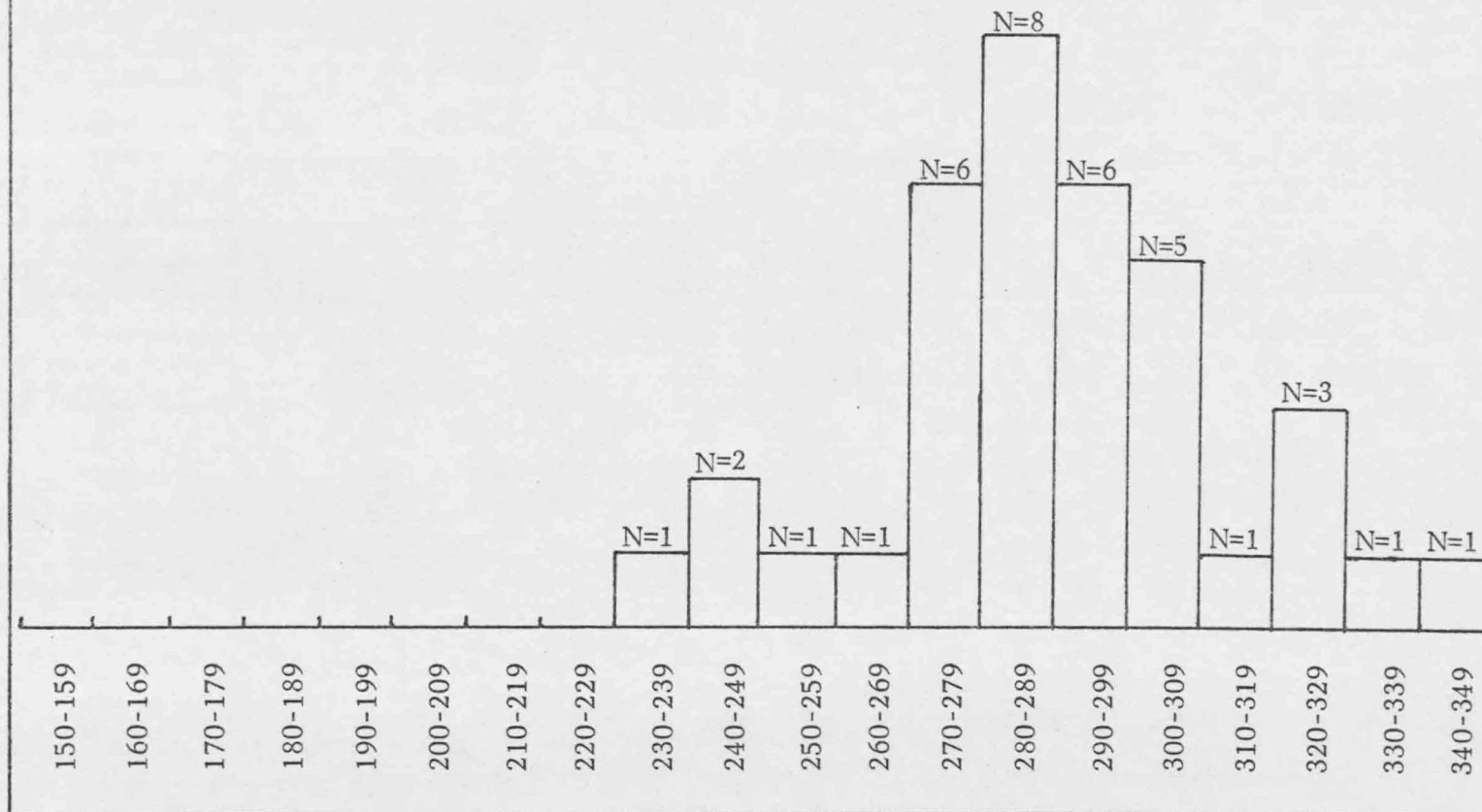


Table 2
Table of Effects for D₁

EFFECTS	SS	df	ms	F
TOTAL	76723.00	71	-----	-----
Cells	19391.888	7	-----	-----
Methods	8795.138	1	8795.138	9.818*
Dogmatism	1502.138	1	1502.138	1.676
Achievement	207.138	1	207.138	0.231
Methods/ Dogmatism/	2833.112	1	2833.112	3.162
Dogmatism/ Achievement	2172.001	1	2172.001	2.424
Methods/ Achievement	3358.668	1	3358.668	3.749
Methods/ Dogmatism/ Achievement	523.693	1	523.693	0.584
Within	57331.112	64	895.798	-----
*9.818/7.04 is greater than 1.00 at .01 confidence level, therefore we can reject hypothesis number 1.				

ANALYSIS OF VARIANCE FOR D_2

Table 3 shows the scores derived for D_2 (the affective domain) for M_1 and M_2 . The idiographic display in Figures 3 and 4 presents this data in the form of a histogram. The reader will note that with an N of 72, the Mean for M_1 is 568.28, while the Mean for M_2 is 602.56. The Standard Deviation for M_1 is 64.76, while the Standard Deviation for M_2 is 46.49.

Table 4 lists the Effects for D_2 . The F factor for Methods shows 7.361/7.04 is greater than 1.00 at .01 confidence level, therefore we can reject Hypothesis Number 2 which stated "there is no difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the affective domain." The F factor for the interaction between Methods and Achievement shows 5.847/3.99 is greater than 1.00 at .05 confidence level, therefore we can reject Hypothesis Number 5 which stated "there is no difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule." Figure 5 is an idiographic display comparing mean scores for D_2 which indicates that the major difference can be traced to those students in M_2 who were characterized as "low achievers."

Table 3
D₂ Scores

		M ₁ Control Group	M ₂ Experimental Group		
High Dogmatic		S ₁ -529 S ₂ -480 S ₃ -540 S ₄ -610 S ₅ -544 S ₆ -597 S ₇ -629 S ₈ -582 S ₉ -648	S ₁ -571 S ₂ -632 S ₃ -646 S ₄ -635 S ₅ -548 S ₆ -555 S ₇ -608 S ₈ -591 S ₉ -650	High Achiever	
		S ₁ -549 S ₂ -623 S ₃ -404 S ₄ -654 S ₅ -540 S ₆ -473 S ₇ -597 S ₈ -436 S ₉ -484	S ₁ -583 S ₂ -638 S ₃ -591 S ₄ -588 S ₅ -562 S ₆ -552 S ₇ -636 S ₈ -599 S ₉ -712	Low Achiever	
	Low Dogmatic		S ₁ -598 S ₂ -619 S ₃ -637 S ₄ -597 S ₅ -547 S ₆ -702 S ₇ -510 S ₈ -537 S ₉ -619	S ₁ -632 S ₂ -522 S ₃ -556 S ₄ -581 S ₅ -610 S ₆ -531 S ₇ -601 S ₈ -615 S ₉ -499	High Achiever
			S ₁ -648 S ₂ -565 S ₃ -556 S ₄ -550 S ₅ -565 S ₆ -532 S ₇ -653 S ₈ -545 S ₉ -559	S ₁ -644 S ₂ -609 S ₃ -585 S ₄ -629 S ₅ -694 S ₆ -572 S ₇ -633 S ₈ -672 S ₉ -610	Low Achiever

Figure 3
Histogram for Data of Table 3 Control Group
D₂ Frequencies

N = 72
M = 568.28
SD = 64.76

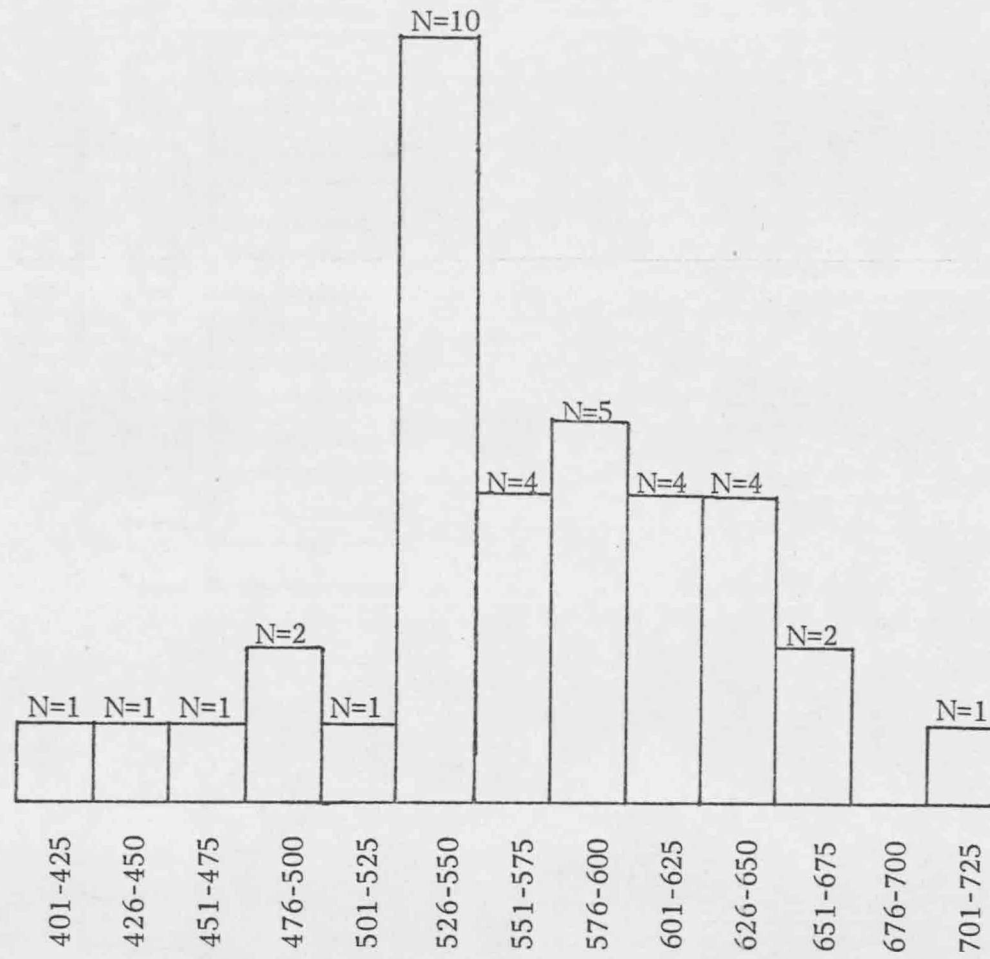


Figure 4
Histogram for Data of Table 3 Experimental Group
D₂ Frequencies

N = 72
M = 602.56
SD = 46.49

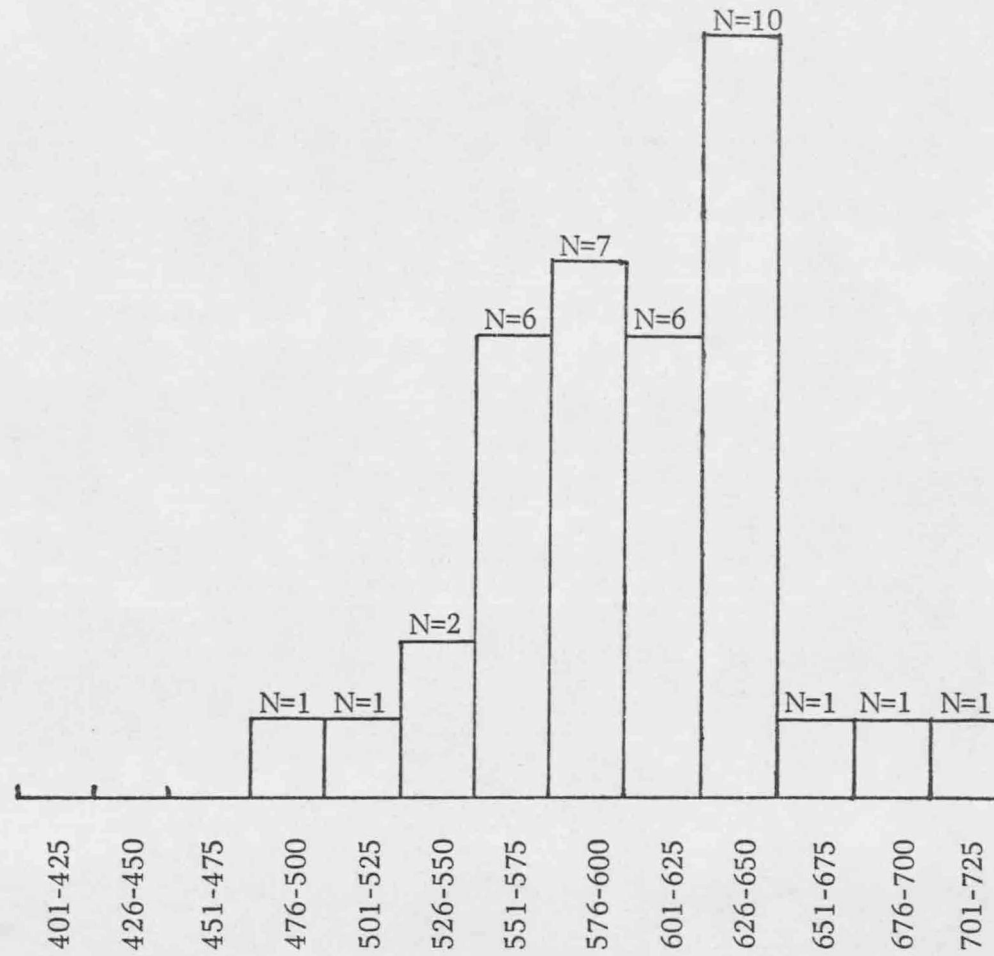
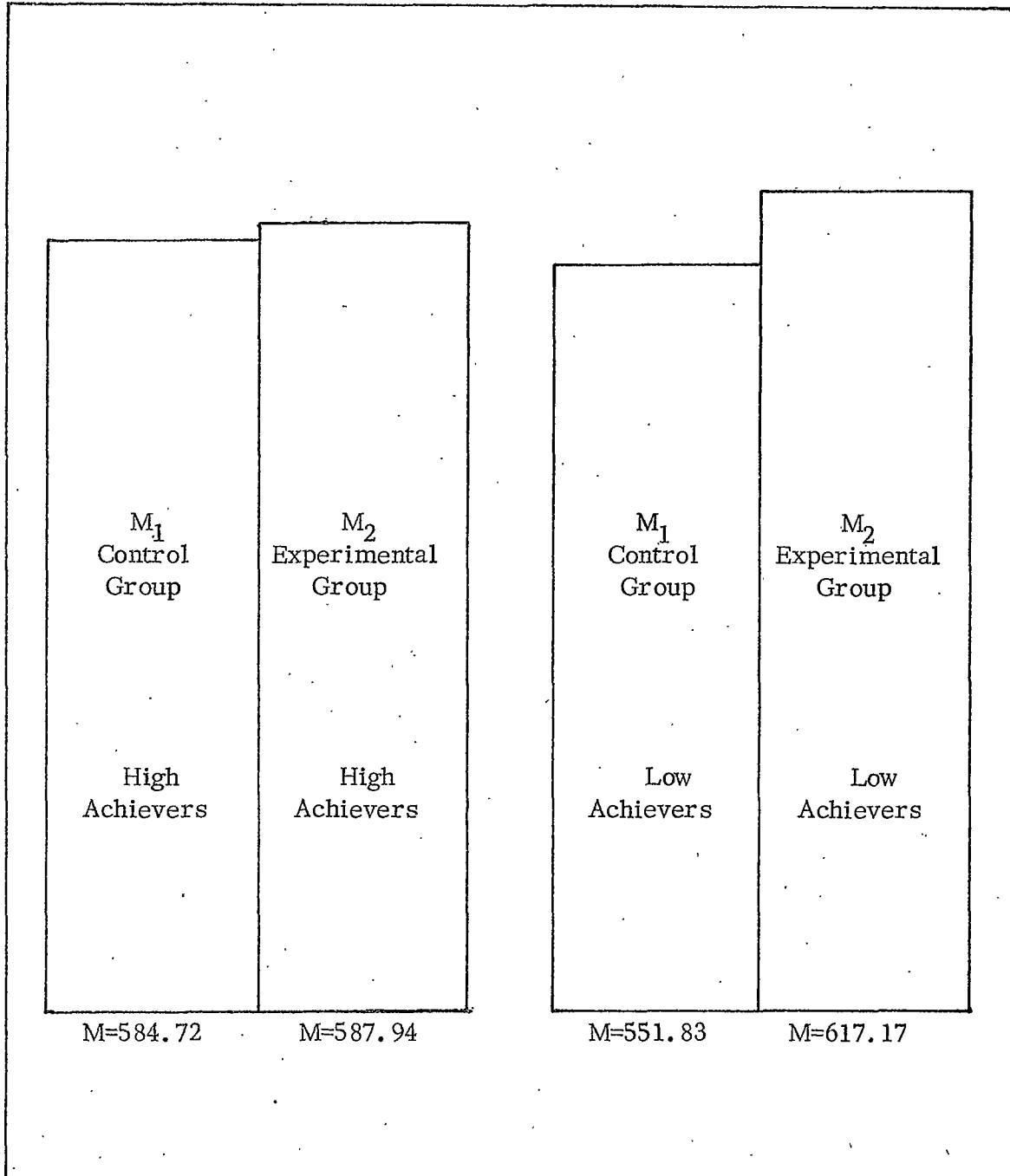


Table 4
Table of Effects for D₂

EFFECTS	SS	df	ms	F
TOTAL	243918.000	71	-----	-----
Cells	57321.777	7	-----	-----
Methods	21461.888	1	21461.888	7.361*
Dogmatism	4039.222	1	4039.222	1.385
Achievement	373.000	1	373.000	0.127
Methods/ Dogmatism	6927.556	1	6927.556	2.376
Dogmatism/ Achievement	6147.555	1	6147.555	2.108
Methods/ Achievement	17047.556	1	17047.556	5.847**
Methods/ Dogmatism/ Achievement	1325.008	1	1325.008	0.454
Withins	186596.223	64	2915.565	-----
<p>*7.361/7.04 is greater than 1.00 at .01 confidence level, therefore we can reject hypothesis number 2.</p> <p>**5.847/3.99 is greater than 1.00 at .05 confidence level, therefore we can reject hypothesis number 5.</p>				

Figure 5
Comparison of Mean Scores for D₂
Methods/Achievement Effects



ANALYSIS OF VARIANCE FOR D_3

Table 5 shows the scores derived for D_3 (the psychomotor domain) for M_1 and M_2 . The idiographic display in Figures 6 and 7 presents this data in the form of a histogram. The reader will note that with an N of 72, the Mean for M_1 is 145.14, while the Mean for M_2 is 160.00. The Standard Deviation for M_1 is 24.95, while the Standard Deviation for M_2 is 18.02.

Table 6 lists the Effects for D_3 . The F factor for Methods shows 8.761/7.04 is greater than 1.00 at .01 confidence level, therefore we can reject Hypothesis Number 3 which stated "there is no difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the psychomotor domain." The F factor for scores of the first and second order of interaction give no sufficient reason for rejecting Hypotheses Number 5 and 6.

Table 5
D₃ Scores

		M ₁ Control Group	M ₂ Experimental Group	
High Dogmatic	High Achiever	S ₁ -136	S ₁ -144	
		S ₂ -104	S ₂ -164	
		S ₃ -140	S ₃ -176	
		S ₄ -144	S ₄ -152	
		S ₅ -136	S ₅ -192	
		S ₆ -148	S ₆ -136	
		S ₇ -176	S ₇ -156	
		S ₈ -140	S ₈ -136	
		S ₉ -168	S ₉ -168	
	Low Achiever	S ₁ -140	S ₁ -156	
		S ₂ -160	S ₂ -160	
		S ₃ -84	S ₃ -156	
		S ₄ -188	S ₄ -148	
		S ₅ -132	S ₅ -152	
		S ₆ -96	S ₆ -164	
		S ₇ -160	S ₇ -168	
		S ₈ -104	S ₈ -164	
		S ₉ -116	S ₉ -204	
Low Dogmatic	High Achiever	S ₁ -165	S ₁ -180	
		S ₂ -168	S ₂ -140	
		S ₃ -156	S ₃ -136	
		S ₄ -144	S ₄ -144	
		S ₅ -124	S ₅ -184	
		S ₆ -188	S ₆ -128	
		S ₇ -128	S ₇ -168	
		S ₈ -152	S ₈ -176	
		S ₉ -152	S ₉ -128	
	Low Achiever	S ₁ -184	S ₁ -180	
		S ₂ -144	S ₂ -164	
		S ₃ -160	S ₃ -160	
		S ₄ -136	S ₄ -148	
		S ₅ -160	S ₅ -184	
		S ₆ -144	S ₆ -160	
		S ₇ -180	S ₇ -176	
		S ₈ -136	S ₈ -164	
		S ₉ -132	S ₉ -144	

Figure 6
Histogram for Data of Table 5 Control Group
D₃ Frequencies

N = 72
M = 145.14
SD = 24.95

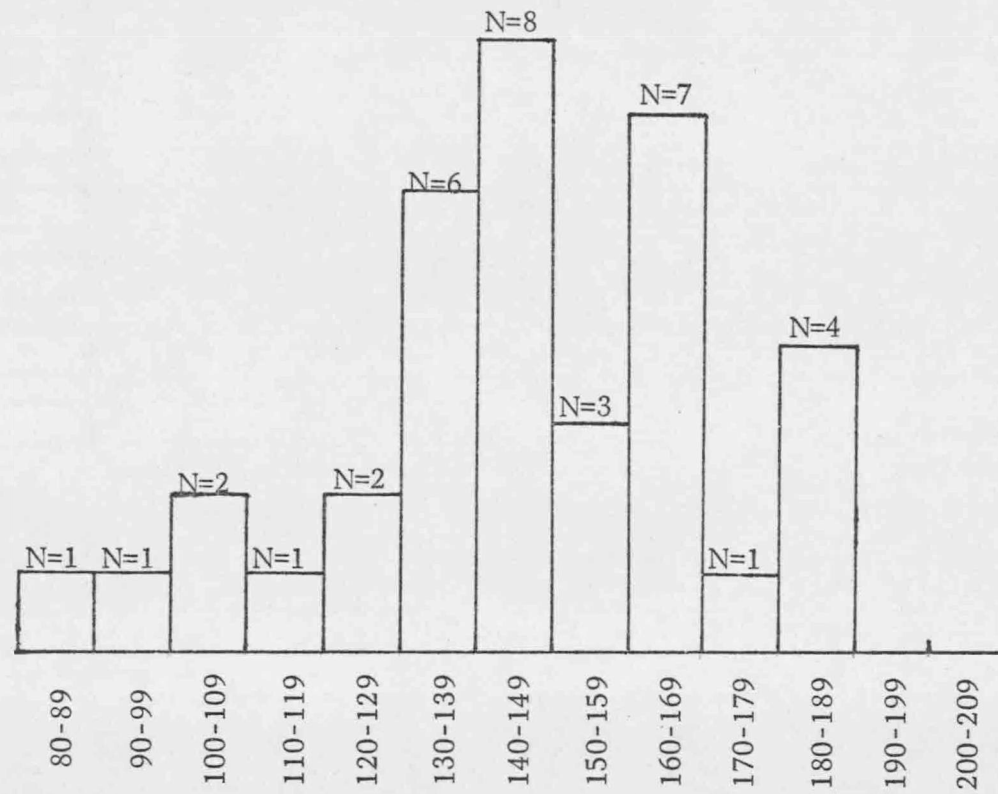


Figure 7
Histogram for Data of Table 5 Experimental Group
D₃ Frequencies

N = 72
M = 160.00
SD = 18.02

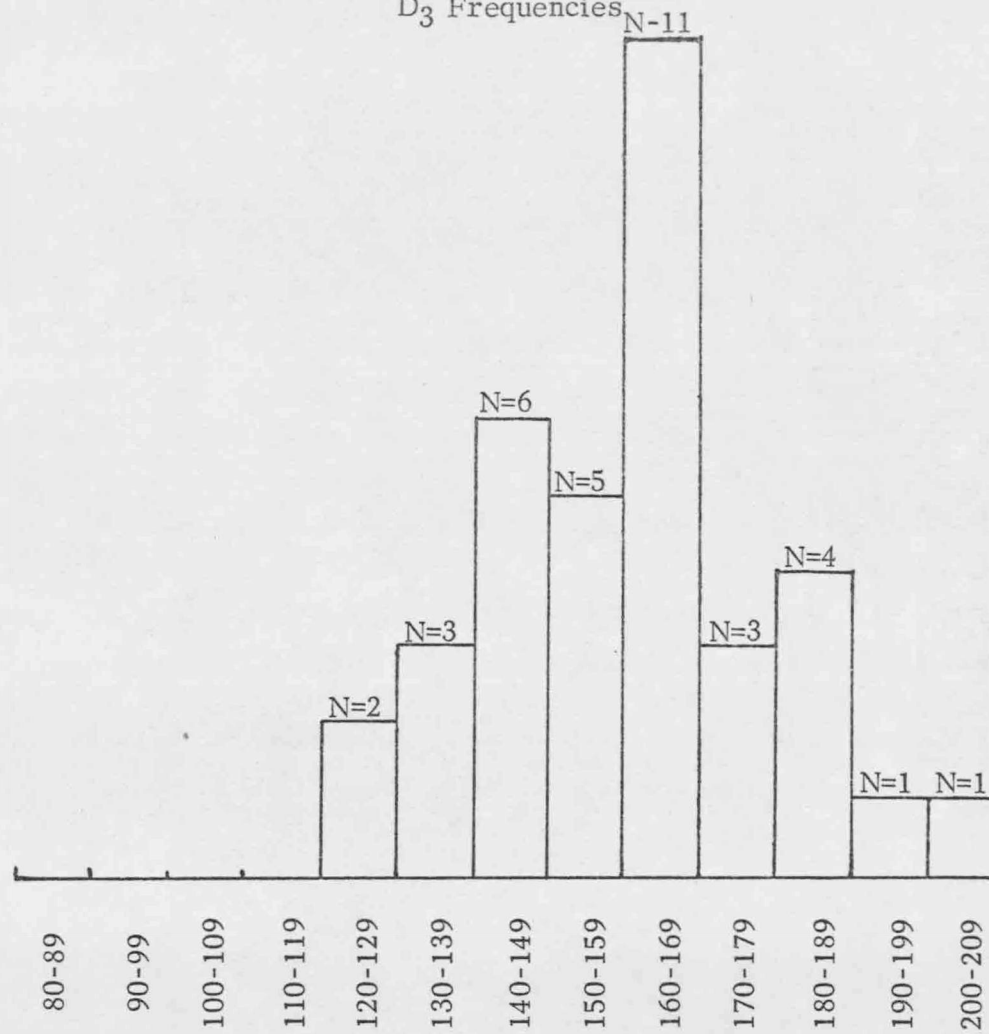


Table 6
Table of Effects for D_3

EFFECTS	SS	df	ms	F
TOTAL	37197.000	71	-----	-----
Cells	7608.444	7	-----	-----
Methods	4050.694	1	4050.694	8.761*
Dogmatism	936.472	1	936.472	2.025
Achievement	88.694	1	88.694	0.191
Methods/ Dogmatism	1285.334	1	1285.334	2.780
Dogmatism/ Achievement	275.778	1	275.778	0.596
Methods/ Achievement	842.000	1	842.000	1.821
Methods/ Dogmatism/ Achievement	129.472	1	129.472	0.280
Within	29588.556	64	462.321	-----
*8.761/7.04 is greater than 1.00 at .01 confidence level, therefore we can reject hypothesis number 3.				

ANALYSIS OF VARIANCE FOR D_t

Table 7 shows the scores derived for D_t (the combination of scores for the cognitive, affective, and psychomotor domains) for M_1 and M_2 . The idiographic display in Figures 8 and 9 presents this data in the form of a histogram. The reader will note that with an N of 72, the Mean for M_1 is 964.33, while the Mean for M_2 is 1051.86. The Standard Deviation for M_1 is 134.97, while the Standard Deviation for M_2 is 81.24.

Table 8 lists the Effects for D_t . The F factor for Methods shows 11.822/7.04 is greater than 1.00 at .01 confidence level, therefore we can reject Hypothesis Number 4 which stated "there is no difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the social studies (the cognitive, affective, and psychomotor domains). The F factor for the interaction between Methods and Achievement shows 5.531/3.99 is greater than 1.00 at .01 confidence level, therefore we can reject Hypothesis Number 5 which stated "there is no difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule. Figure 10 is an idiographic display comparing mean scores for D_t which indicates that the major difference can be traced to those students in M_2 who were characterized as "low achievers."

Table 7
D_t Scores

	M ₁ Control Group	M ₂ Experimental Group	
High Dogmatic	S ₁ -905	S ₁ -990	High Achiever
	S ₂ -810	S ₂ -1084	
	S ₃ -827	S ₃ -1118	
	S ₄ -1041	S ₄ -1077	
	S ₅ -940	S ₅ -1040	
	S ₆ -1021	S ₆ -962	
	S ₇ -1114	S ₇ -1070	
	S ₈ -985	S ₈ -973	
	S ₉ -1096	S ₉ -1115	
	S ₁ -949	S ₁ -1012	
	S ₂ -1053	S ₂ -1095	
	S ₃ -642	S ₃ -1042	
	S ₄ -1167	S ₄ -1024	Low Achiever
	S ₅ -918	S ₅ -989	
	S ₆ -713	S ₆ -992	
	S ₇ -1050	S ₇ -1122	
	S ₈ -724	S ₈ -1066	
	S ₉ -814	S ₉ -1261	
	S ₁ -1053	S ₁ -1092	
	S ₂ -1065	S ₂ -908	
	S ₃ -1077	S ₃ -952	
	S ₄ -1020	S ₄ -1007	
	S ₅ -901	S ₅ -1102	High Achiever
	S ₆ -1216	S ₆ -891	
	S ₇ -870	S ₇ -1069	
	S ₈ -953	S ₈ -1112	
	S ₉ -1064	S ₉ -884	
	S ₁ -1144	S ₁ -1144	
	S ₂ -977	S ₂ -1068	
	S ₃ -922	S ₃ -1030	
	S ₄ -928	S ₄ -1061	Low Achiever
	S ₅ -1019	S ₅ -1209	
	S ₆ -815	S ₆ -1020	
	S ₇ -1149	S ₇ -1136	
	S ₈ -822	S ₈ -1118	
	S ₉ -952	S ₉ -1032	

Figure 8
Histogram for Data of Table 7 Control Group
 D_t Frequencies

$N = 72$
 $M = 964.33$
 $SD = 134.97$

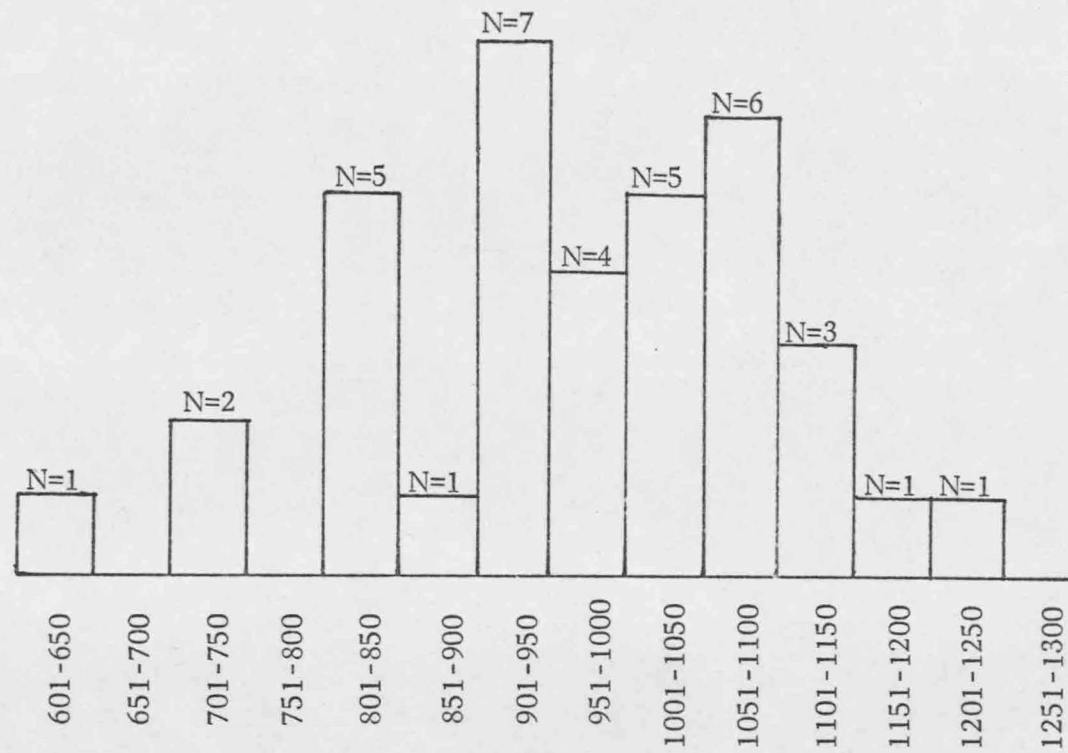


Figure 9
Histogram for Data of Table 7 Experimental Group
 D_t Frequencies

$N = 72$
 $M = 1051.86$
 $SD = 81.24$

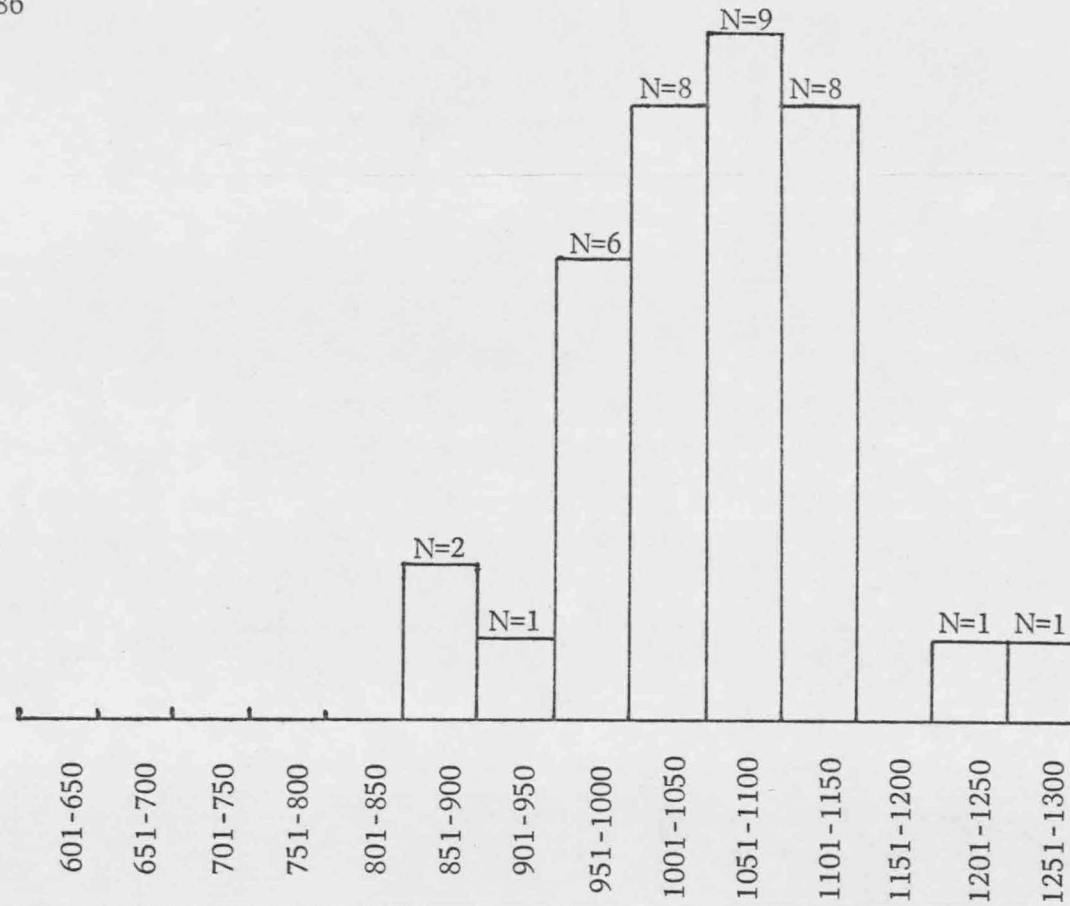


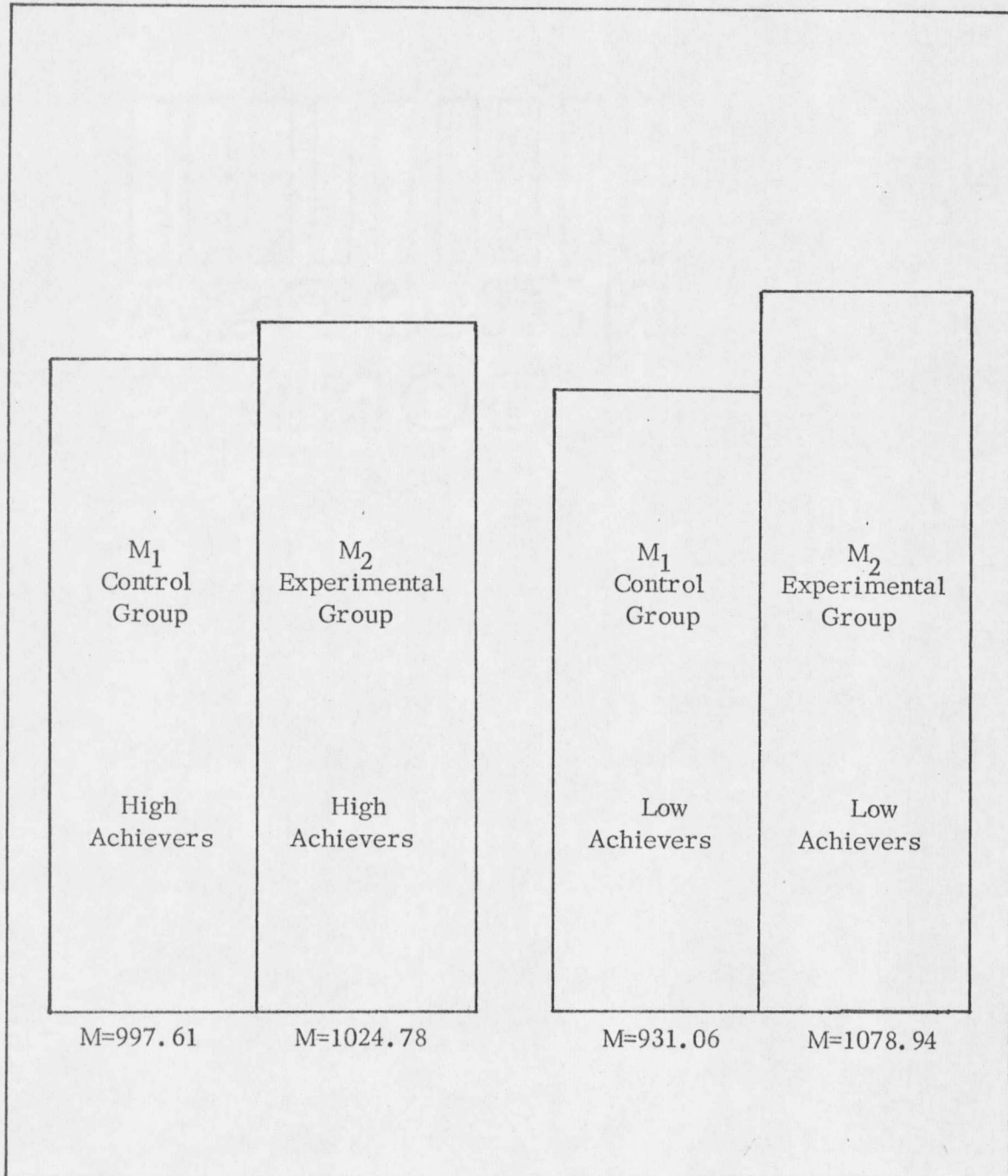
Table 8
Table of Effects for D_t

EFFECTS	SS	df	ms	F
TOTAL	1007169.000	71	-----	-----
Cells	256734.777	7	-----	-----
Methods	138620.694	1	138620.694	11.822*
Dogmatism	14086.805	1	14086.805	1.201
Achievement	1411.361	1	1411.361	0.20
Methods/ Dogmatism	25538.001	1	25538.001	2.177
Dogmatism/ Achievement	9149.445	1	9149.445	0.780
Methods/ Achievement	64861.667	1	64861.667	5.531**
Methods/ Dogmatism/ Achievement	3066.804	1	3066.804	0.261
Withins	750434.223	64	11725.534	-----

*11.822/704 is greater than 1.00 at .01 confidence level, therefore we can reject hypothesis number 4.

**5.531/3.99 is greater than 1.00 at .01 confidence level, therefore we can reject hypothesis number 5.

Figure 10
Comparison of Mean Scores for D_t
Methods/Achievement Effects



THE t-TEST FOR STANDARD DEVIATIONS

In light of the preceding statistical analysis which indicated a significant difference between the control group and the experimental group for all four treatments, it was decided to carry the analysis one step further. In order to test the apparent homogeneity of the groups in question, a t-test for a difference between standard deviations was conducted for each treatment.

From Figures 1 and 2, the reader found the following data for D_1 :

	<u>Mean</u>	<u>Standard Deviation</u>
Control Group	267.22	36.69
Experimental Group	289.30	24.37

The t-score for the data listed above is 2.37. $2.37/2.36$ is greater than 1.00 at .02 confidence level, therefore we can reject a "no difference" hypothesis.

From Figures 3 and 4, the reader found the following data for D_2 :

	<u>Mean</u>	<u>Standard Deviation</u>
Control Group	568.28	64.76
Experimental Group	602.56	46.49

The t-score for the data listed above is 1.94, which does not give sufficient reason for the rejection of a "no difference" hypothesis.

From Figures 6 and 7, the reader found the following data for D_3 :

	<u>Mean</u>	<u>Standard Deviation</u>
Control Group	145.14	24.95
Experimental Group	160.00	18.28

The t-score for the data listed above is 1.91, which does not give sufficient reason for the rejection of a "no difference" hypothesis.

From Figures 8 and 9, the reader found the following data for D_t :

	<u>Mean</u>	<u>Standard Deviation</u>
Control Group	964.33	134.97
Experimental Group	1051.86	81.24

The t-score for the data listed above is 2.89. $2.89/2.62$ is greater than 1.00 at .01 confidence level, therefore we can reject a "no difference" hypothesis.

SUMMARY

This chapter has set forth the procedure whereby seventy-four students enrolled in a general education course on ethnic studies at Eastern Montana College were randomly assigned into two classes of thirty-six students each--the Control Group which was subjected to a traditional face-to-face instructional method, and the Experimental Group which was subjected to an experimental individualized instructional method. Once the two groups were constituted, the students were administered both the Achievement Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale whereby they were characterized as being either High or Low Dogmatic

and either High or Low achievers. Throughout the course of study, these students were subjected to a series of examinations and their scores were calculated according to the achievement of specified objectives--the cognitive, affective, and psychomotor domain as well as the combination of all three.

The chapter continues with data derived from conducting an analysis of variance on each of the four treatments. The F factor for Methods for each of these treatments shows that Hypotheses Number 1 through 4 can be rejected at .01 confidence level. In addition, the F factor for the interaction between Methods and Achievement for D_2 and D_t shows that Hypothesis Number 5 can be rejected at .05 and .01 confidence level respectively.

As a follow-up of the analysis of variance study, a t-test for a difference between standard deviations was conducted for all four treatments. The t-score for D_1 shows that a "no difference" hypothesis can be rejected at .02 confidence level. The t-score for D_t shows that a "no difference" hypothesis can be rejected at .01 confidence level.

CHAPTER V

RATIOCINATION

At the outset of this study we stated our intention to answer the question whether there is any significant difference between students taught by the face-to-face instructional method and those taught by an individual instructional program with reference to their achieving selected objectives applicable to a course of study dealing with ethnic minority groups, and if there is a difference in the achievement of the students which can be related to personality variables of the students with reference to scores derived from the Achievement Scale of the Edwards Personal Preference Schedule and the Rokeach Dogmatism Scale.

STATEMENT OF THE HYPOTHESES

The questions implicit in the statement of the problem were translated into six hypotheses which were then subjected to systematic testing procedures. The six hypotheses tested were as follows:

Null Hypothesis Number 1:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the cognitive domain.

Alternate Hypothesis Number 1:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the cognitive domain.

Null Hypothesis Number 2:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the affective domain.

Alternate Hypothesis Number 2:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the affective domain.

Null Hypothesis Number 3:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the psychomotor domain.

Alternate Hypothesis Number 3:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the psychomotor domain.

Null Hypothesis Number 4:

There is no significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the social studies (the combination of cognitive, affective, and psychomotor).

Alternate Hypothesis Number 4:

There is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives associated with the social studies (the combination of cognitive, affective, and psychomotor).

Null Hypothesis Number 5:

There is no significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule.

Alternate Hypothesis Number 5:

There is a significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule.

Null Hypothesis Number 6:

There is no significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Rokeach Dogmatism Scale.

Alternate Hypothesis Number 6:

There is a significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Rokeach Dogmatism Scale.

GENERAL QUESTIONS ANSWERED

In our effort to test these hypotheses, eight questions were raised which the findings of the preceding chapter now enable us to answer.

Question Number 1

How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives normally associated with the cognitive domain, i.e., facts, concepts, generalizations, theories, and laws?

Answer Number 1

From the data presented in Figures 1 and 2 which was based upon scores derived from D_1 (scores relative to the cognitive domain), it was shown that students in the experimental group had a mean score of 289.30 as compared to 267.22 for students in the control group. In addition, the standard deviation of scores for students in the experimental group was 24.37 as compared to 36.69 for students in the control group. The F factor for Methods shown on Table 2 gives credence to the proposition of a "no difference" hypothesis. Thus, the mean scores and the standard deviation show that students in the experimental group achieved higher scores than students in the control group with reference to fulfilling the traditional objectives normally associated with the cognitive domain.

Question Number 2

How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives normally associated with the affective domain, i.e., attitudes and values?

Answer Number 2

From the data presented in Figures 3 and 4 which was based upon

scores derived from D_2 (scores relative to the affective domain), it was shown that students in the experimental group had a mean score of 602.56 as compared to 568.28 for students in the control group. In addition, the standard deviation of scores for students in the experimental group was 46.49 as compared for students in the control group. The F factor for Methods shown on Table 4 gives credence to the proposition calling for a rejection of a "no difference" hypothesis. Thus, the mean scores and the standard deviation show that students in the experimental group achieved higher scores than students in the control group with reference to fulfilling the traditional objectives normally associated with the affective domain.

Question Number 3

How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives normally associated with the psychomotor domain, i.e., skills of inquiry, communication, resource use, and group interaction?

Answer Number 3

From the data presented in Figures 6 and 7 which was based upon scores derived from D_3 (scores relative to the psychomotor

domain), it was shown that students in the experimental group had a mean score of 160.00 as compared to 145.14 for students in the control group. In addition, the standard deviation of scores for students in the experimental group was 18.02 as compared to 24.95 for students in the control group. The F factor for Methods shown on Table 6 gives credence to the proposition calling for a rejection of a "no difference" hypothesis. Thus, the mean scores and the standard deviation show that students in the experimental group achieved higher scores than students in the control group with reference to fulfilling the traditional objectives normally associated with the psychomotor domain.

Question Number 4

How do students in the experimental group compare with students in a control group with reference to fulfilling the traditional objectives of the social studies? Since the ultimate criterion of the social studies is the character of the changes brought about in the behavior of the students, the learner then becomes the focal point for evaluation. In assessing what these students are learning, all of the objectives claimed for the social studies must be taken into account: cognitive, affective, and psychomotor.

Answer Number 4

From the data presented in Figures 8 and 9 which was based upon

scores derived from D_t (scores relative to the combination of the cognitive, affective, and psychomotor domains), it was shown that students in the experimental group had a mean score of 1051.86 as compared to 964.33 for students in the control group. In addition, the standard deviation of scores for students in the experimental group was 81.24 as compared to 134.97 for students in the control group. The F factor for Methods shown on Table 8 gives credence to the proposition calling for a rejection of a "no difference" hypothesis. Thus, the mean scores and the standard deviation show that students in the experimental group achieved higher scores than students in the control group with reference to fulfilling the traditional objectives of the social studies--cognitive, affective, and psychomotor.

Question Number 5

How do students who exhibit a high dogmatic score on the Rokeach Dogmatism Scale compare with students who exhibit a low dogmatic score on the Rokeach Dogmatism Scale with reference to the two instructional treatments?

Answer Number 5

The data reported in the preceding chapter reveals no significant difference existed between students in either group with reference to all four treatments relative to scores derived from the Rokeach

Dogmatism Scale.

Question Number 6

How do students who exhibit a high level of achievement on the Edwards Personal Preference Schedule compare with students who exhibit a low level of achievement on the Edwards Personal Preference Schedule with reference to the two instructional treatments?

Answer Number 6

From the data presented in Tables 4 and 8 which was based upon scores derived from D_2 and D_t respectively, it was shown that the F factor for the interaction between Methods and Achievement gives credence to the proposition calling for a rejection of a "no difference" hypothesis. In addition, the data displayed in Figure 5 shows that students in the experimental group characterized as high achievers had a mean score of 587.94 as compared to 584.72 for students in the control group characterized as high achievers for D_2 . Figure 5 also shows that students in the experimental group characterized as low achievers had a mean score of 617.17 as compared to 551.83 for students in the control group characterized as low achievers for D_2 . The data displayed in Figure 10 shows that students in the experimental group characterized as high achievers had a mean score of 1024.78 as compared to 997.61 for students in the control group characterized as high achievers

for D_t . Figure 10 also shows that students in the experimental group characterized as low achievers had a mean score of 1078.94 as compared to 931.06 for students in the control group characterized as low achievers for D_t . Thus, the mean scores show that students in the experimental group achieved higher scores than students in the control group for D_2 and D_t with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule with the greater difference being found in those characterized as low achievers.

Question Number 7

How do students who exhibit a high dogmatic score on the Rokeach Dogmatism Scale and a high level of achievement on the Edwards Personal Preference Schedule compare with students who exhibit a low dogmatic score on the Rokeach Dogmatism Scale and a high level of achievement on the Edwards Personal Preference Schedule with reference to the two instructional treatments?

Answer Number 7

The data reported in the preceding chapter reveals no significant difference existed between students in either group with reference to all four treatments relative to the second order of interaction between methods, dogmatism, and achievement.

Question Number 8

How do students who exhibited a high dogmatic score on the Rokeach Dogmatism Scale and a low level of achievement on the Edwards Personal Preference Schedule compare with students who exhibit a low dogmatic score on the Rokeach Dogmatism Scale and a low level of achievement on the Edwards Personal Preference Schedule with reference to the two instructional treatments?

Answer Number 8

The data reported in the preceding chapter reveals no significant difference existed between students in either group with reference to all four treatments relative to the second order of interaction between methods, dogmatism, and achievement.

ANALYSIS AND INTERPRETATION

In an effort to make a comparison between the traditional face-to-face instructional method and an individualized instructional method relative to achieving specified objectives normally associated with the social studies, this experimenter randomly selected two groups from the same population, subjected one group to the traditional method and the other group to the experimental method, and compared the performance of the two groups with a distinction being made to certain personality variables of the students within each

group. An analysis of variance was conducted for scores derived on four treatments and a t-test was conducted to determine a difference between standard deviations. The F factor for group means for each of the four treatments relative to the two methods gives credence to the proposition that the "no difference" Hypotheses Number 1 through 4 can be rejected at .01 confidence level. Further support to this assumption can be found in the t-test for D_1 and D_t which gives credence to the proposition that the "no difference" Hypotheses Number 1 and 4 can be rejected at .02 and .01 confidence level respectively. Therefore, this researcher rejects Hypotheses Number 1 through 4 and accepts Alternate Hypotheses Number 1 through 4 which state "there is a significant difference between group means for students in the traditional class and those in the experimental class relative to achieving specified objectives" be they associated with the cognitive domain (Alternate Hypothesis Number 1), the affective domain (Alternate Hypothesis Number 2), the psychomotor domain (Alternate Hypothesis Number 3), or the combination of cognitive, affective, and psychomotor domains (Alternate Hypothesis Number 4). There is a difference and that difference is clearly seen in the higher performance level of those students assigned to the experimental group.

In addition, the F factor for group means for D_2 and D_t relative to the interaction between Methods and Achievement gives credence to the proposition that the "no difference" Hypothesis Number 5 can be rejected at .05

confidence level. Therefore this researcher rejects Hypothesis Number 5 and accepts Alternate Hypothesis Number 5 which states "there is a significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Achievement Scale of the Edwards Personal Preference Schedule. There is a difference and that difference is clearly seen in the higher performance level of those students characterized as "low achievers" assigned to the experimental group. The researcher finds no evidence for rejecting Hypothesis Number 6 which states "there is no significant difference between the mean performance of the individual students in each of the two classes with reference to their scores on the Rokeach Dogmatism Scale.

CONCLUSIONS AND RECOMMENDATIONS

At the outset of this dissertation it was suggested that teaching methods, be it the time-honored traditional face-to-face instruction or the latter-day innovative individual instructional program, stand in need of empirical support, with the ultimate criteria for effectiveness being not only measured with reference to the accumulation of knowledge and the development of desirable attitudes and skills, but with regard to certain individual personality differences. Thus this researcher initiated and brought to fruition this study comparing two such methods of teaching a social studies course at the college level.

The intention was clear: to discover an effective teaching method which facilitates effective learning in the social studies.

From the survey of literature reviewed in Chapter II, it was found that subject-matter content can be taught (to properly motivated students) by any teaching technique, including individual instruction. At the same time we found that educational goals beyond content require carefully considered teaching methods. Since the complex of goals and objectives for the social studies far exceed the mere acquisition of knowledge but include the development of problem-solving skills and desirable attitudes, this researcher was provoked to analyze individual instructional programming as a reasonable alternative to the traditional face-to-face instructional method of teaching. The design process for the individual instructional system began with the specification of instructional objectives in behavioral or measurable terms. This was followed by the optimal sequencing of course content and the definition of relevant criterion-referenced measures of achievement. These were all combined in an empirical manner to produce a viable and efficient learning system. This present study has shown that the system's proven capability of producing measurable learning achievement is its hallmark.

The implications of this study are legion and the following list should not be construed as being definitive, only suggestive.

Implication Number 1

Even the casual observer of the contemporary educational scene is aware that a new instructional technology and an empirically-based science of pedagogy are in the process of emerging. This present study shows that a research-based approach to instruction stressing student learning (a learning-oriented system of instruction) can be developed, implemented, and evaluated.

Implication Number 2

An individual instructional program can provide a way of incorporating and integrating educational and psychological principles into a uniform system. The approach is, to be sure, eclectic. It is partially Skinnerian, it is highly cognitive, and it espouses modeling concepts. It begins with problems. It asks for clarification of the instructional problems and specification of goals, purposes, outcomes, and objectives. Then, most importantly, it demands a survey of known or available theoretical principles, methods, materials, or approaches and a selection of these to achieve the goals. As a result, the contributions may come from divergent theoretical positions. While the theoretical underpinnings of such a program are drawn eclectically, it is nevertheless an integrated, consistent whole.

Implication Number 3

The teacher who opts to make the crucial change to the individualized approach to instruction will find a new dimension added to his professional activities. Since the individual teacher is potentially the most sensitive, flexible, and divergently responsive component of any instructional system, the new thrust and purpose realized through the utilization of an individualized instructional program may result in a renewed enthusiasm and a restoration of the enjoyment of teaching which is all-too-often dissipated in the face of many conventional teaching methods. Utilizing individual instructional programming, the teacher may find time to do what teachers can do best: diagnose individual learner's difficulties; interact with learners when they need help on a one-to-one basis; inspire and motivate; and identify and encourage creativity and self-direction.

Implication Number 4

When the goals of higher education and institutional and/or course objectives include attitudinal changes as well as more obvious cognitive goals, teachers can improve the effectiveness of their instruction by arranging course activities into short segments through which learners can proceed at their own pace, by

monitoring the achievement of learners after completion of individual segments of a course, and by revising instructional segments until the desired level of achievement is attained by the learners. This present study which compares the individualized instructional method (which included all the aforementioned characteristics) with the traditional face-to-face method, shows that students did attain higher levels of achievement with reference to all goal categories by participating in the individual instructional program.

Implication Number 5

The one characteristic of a motivated teacher is that he can respond to feedback from his students so as to achieve better and better approximations to optimal solutions to the problems of teaching. As additional information from research accumulates, as better conceptualizations emerge, he should be able to do an even better job. This present study shows that one might accept with some modicum of assurance, that individualized instruction is superior to traditional forms of teaching with reference to the achievement of objectives normally associated with the social studies. It also shows that students who might be characterized as "low achievers", might find individual instructional programming an avenue into

increased levels of performance. If educational goals beyond content require carefully considered teaching methods, even more attention should be given with reference to the personality variables within the student population.

There is nothing static about either the purposes or the methods of education, thus the study of theory and practice must continue. Specifically, this study might be replicated to determine the degree to which the individual instructional method brings about significant, desirable changes in the student in certain personality variables, such as increasing the student's internal orientation with locus of control (using the Rotter Internal-External Locus of Control Scale), increasing the student's tolerance of ambiguity (using the MacDonald Revised Scale of Ambiguity Tolerance), and lowering the student's manifest anxiety (using the Revised Form of Taylor's Manifest Anxiety). Moreover, related issues which require further research clarification not observed in this study include creativity, improvement in study habits, motivation, and growth in acceptance of responsibility.

The dissertation is finished but the need to study is by no means concluded. When an educator is no longer concerned with the basic intents and purposes of education, he ceases to be an educator; when one no longer is concerned with the continual evaluation of his own methods in light of changing needs, he ceases to be a teacher.

APPENDIX

APPENDIX A

PERSONAL PREFERENCE SCHEDULE

This schedule consists of a number of pairs of statements about things that you may or may not like: about ways in which you may or may not feel. Look at the example below.

a) I like to talk about myself to others

b) I like to work towards some goal that I have set for myself

Which of these two statements is more characteristic of what you like? If you like "to talk about yourself to others: more than you like "working towards some goal that you have set for yourself" then you should choose a) over b). If you like "working towards some goal that you set for yourself" more than you like "talking about yourself to others" then you should choose b) over a).

Your choice should be in terms of what you like at the present time and not in terms of what you think you should like. This is not a test. There are no right and wrong answers. Your choices should be a description of your own personal likes. Make a choice for every pair of statements; do not skip any. Indicate your choice in the left margin according to what you like.

1. _____ a) I like to find out what great men have thought about various problems in which I am interested.
b) I would like to accomplish something of great significance.
2. _____ a) Any written work that I do I like to have precise, neat and well-organized.
b) I would like to be a recognized authority in some job, profession, or field of specialization.
3. _____ a) I like to tell amusing stories and jokes at parties.
b) I would like to write a great novel or play.

4. _____ a) I like to be able to come and go as I want to.
b) I like to be able to say that I have done a difficult job well.
5. _____ a) I like to solve puzzles and problems that other people have difficulty with.
b) I like to follow instructions and do what is expected of me.
6. _____ a) I would like to be a recognized authority in some job, profession, or field of specialization.
b) I like to have my work organized and planned before beginning it.
7. _____ a) I like to be able to do things better than other people can.
b) I like to tell amusing stories and jokes at parties.
8. _____ a) I like to accomplish tasks that others recognize as requiring skill and effort.
b) I like to be able to come and go as I want to.
9. _____ a) I like to be successful in things undertaken.
b) I like to form new functions.
10. _____ a) I like to solve puzzles or problems that other people have difficulty with.
b) I like to judge people by why they do something--not by what they actually do.
11. _____ a) I like to accomplish tasks that others recognize as requiring skill and effort.
b) I like my friends to encourage me when I meet with failure.

12. _____ a) I would like to write a great novel or play.
b) When serving on a committee, I like to be appointed or elected chairman.
13. _____ a) I would like to be a recognized authority in some job, profession or field of specialization.
b) I feel guilty whenever I have done something I know is wrong.
14. _____ a) I like to do my very best in whatever I undertake.
b) I like to help other people who are less fortunate than I.
15. _____ a) I like to be able to do things better than other people can.
b) I like to eat in new and strange restaurants.
16. _____ a) I like to be able to say that I have done a difficult job well.
b) I like to work hard at any job I undertake.
17. _____ a) I would like to accomplish something of great significance.
b) I like to kiss attractive persons of the opposite sex.
18. _____ a) I would like to write a great novel or play.
b) I like to attack points of view that are contrary to mine.
19. _____ a) I like to be loyal to my friends.
b) I like to do my very best in whatever I undertake.
20. _____ a) I like to observe how another individual feels in a given situation.
b) I like to be able to say that I have done a difficult job well.

21. _____ a) I like my friends to encourage me when I meet with failure.
b) I like to be successful in things undertaken.
22. _____ a) I like to be one of the leaders in the programs in groups to which I belong.
b) I like to be able to do things better than other people can.
23. _____ a) When things go wrong for me I feel that I am more to blame than anyone else.
b) I like to solve puzzles and problems that other people have difficulty with.
24. _____ a) I like to help my friends when they are in trouble.
b) I like to do my very best in whatever I undertake.
25. _____ a) I like to travel and see the country.
b) I like to accomplish tasks that others recognize as requiring skill and effort.
26. _____ a) I like to work hard at any job I undertake.
b) I do not like to accomplish something of great significance.
27. _____ a) I like to go out with attractive persons of the opposite sex.
b) I like to be successful in things undertaken.
28. _____ a) I like to read newspaper accounts of murders and other forms of violence.
b) I would like to write a great novel or play.

APPENDIX B

THE DOGMATISM SCALE

The following is a study of what the general public thinks and feels about a number of important social and personal questions. The best answer to each statement below is your personal opinion. Mark each statement in the left margin according to how much you agree or disagree with it. Please mark every one. Write +1, +2, +3, or -1, -2, -3, depending on how you feel in each case.

+1: I agree a little

-1: I disagree a little

+2: I agree on the whole

-2: I disagree on the whole

+3: I agree very much

-3: I disagree very much

- _____ 1. The principles I have come to believe in are quite different from those believed in by most people.
- _____ 2. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.
- _____ 3. Even though I have a lot of faith in the intelligence and wisdom of the common man I must say that the masses behave stupidly at times.
- _____ 4. Man on his own is a helpless and miserable creature.
- _____ 5. Most people just don't give a "damn" for others.
- _____ 6. It is only natural for a person to be rather fearful of the future.
- _____ 7. Once I get wound up in a heated discussion I just can't stop.
- _____ 8. It is better to be a dead hero than to be a live coward.
- _____ 9. My hardest battles are with myself.
- _____ 10. At times I think I am no good at all.
- _____ 11. The main thing in life is for a person to want to do something important.

- _____ 12. If given a chance I would do something of great benefit for the world.
- _____ 13. I am sure I am being talked about.
- _____ 14. People say insulting and vulgar things about me.
- _____ 15. There are a number of people I have come to hate because of things they stand for.
- _____ 16. A man who does not believe in some great cause has not really lived.
- _____ 17. A person who gets enthusiastic about too many causes is likely to be a pretty wishy-washy sort of person.
- _____ 18. When it comes to differences of opinion in religion we must be careful not to compromise with those who believe differently from the way we do.
- _____ 19. In times like these, a person must be pretty selfish if he considers primarily his own happiness.
- _____ 20. To compromise with our opponents is to be guilty of appeasement.
- _____ 21. A group which tolerates too much difference of opinion among its own members cannot exist for long.
- _____ 22. I sometimes have a tendency to be too critical of the ideas of others.
- _____ 23. In the long run the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own.
- _____ 24. Most people just don't know what's good for them.
- _____ 25. It is sometimes necessary to resort to force to advance an ideal one strongly believes in.
- _____ 26. There are two kinds of people in this world: those who are for the truth and those who are against the truth.
- _____ 27. My blood boils whenever a person stubbornly refuses to admit he's wrong.

- _____ 28. A person who thinks primarily of his own happiness is beneath contempt.
- _____ 29. Most of the ideas which get printed nowadays aren't worth the paper they are printed on.
- _____ 30. In this complicated world of ours the only way we can know what's going on is to rely on leaders or experts who can be trusted.
- _____ 31. It is often desirable to reserve judgement about what's going on until one has had a chance to hear the opinions of those one respects.
- _____ 32. The present is all too often full of unhappiness. It is only the future that counts.
- _____ 33. If a man is to accomplish his mission in life it is sometimes necessary to gamble "all or nothing at all."
- _____ 34. Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what's going on.
- _____ 35. The worst crime a person could commit is to attack publicly the people who believe in the same thing he does.
- _____ 36. In times like these it is often necessary to be more on guard against ideas put out by people or groups in one's own camp than by those in the opposing camp.
- _____ 37. It is only when a person devotes himself to an ideal or a cause that life becomes meaningful.
- _____ 38. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.
- _____ 39. In a heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.
- _____ 40. Of all the different philosophies which exist in this world there is probably only one which is correct.

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