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## The Effect of Diagnostic Prescriptive Instruction Using Team Teaching of Language Arts

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THE EFFECT OF DIAGNOSTIC PRESCRIPTIVE INSTRUCTION  
USING TEAM TEACHING OF LANGUAGE ARTS

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A Thesis  
Presented to  
the Graduate Faculty  
Central Washington State College

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Education

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by  
John Edward Gilmore  
August, 1972

APPROVED FOR THE GRADUATE FACULTY

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THE EFFECT OF DIAGNOSTIC PRESCRIPTIVE INSTRUCTION  
USING TEAM TEACHING OF LANGUAGE ARTS

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John Edward Gilmore

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This study attempts to determine the effect of using diagnostic prescriptive instruction under the organization of team teaching. The study was designed to evaluate the academic progress of students in a pilot program using team teaching. The results indicate that students having team teaching do not score significantly higher than students receiving conventional instruction.

During the study the author developed and field-tested a semantic differential attitude scale that will be used to determine attitudinal differences among groups of students.

## CHAPTER I

### THE PROBLEM AND DEFINITIONS OF TERMS USED

Most educators would agree that one of the primary objectives of modern, progressive education is for educators to find ways to better provide for students' individual needs. One such method has been revealed in the area of special education. This method, most commonly called a "diagnostic prescriptive" approach to instruction, recently has received some consideration by classroom teachers.

In diagnostic prescriptive instruction the teacher orders learning goals for the learner by setting up necessary learning sequences appropriate for his specific needs and ability. The teacher translates these learning goals into behavioral terms which provide a sequential learning pattern for the child. Prior to making the prescription the teacher must analyze and assess the level at which each child is functioning. This is accomplished through careful observation, formal and informal testing by the teacher. Having completed the diagnostics the teacher arranges skills sequentially in small appropriate steps and prescribes the next learning task. Because the learning tasks are behaviorally oriented, the teacher is able to constantly assess

the degree of accomplishment of each student. In this way, diagnostic prescriptive instruction provides a method for individualization of instruction.

According to J. Richard Suchman (21:62)

Diagnostic teaching is obviously far more effective than straight didactics (lecturing without feedback or adaptation to the learner), because diagnostic teaching moves responsibility to both the teaching goals and the changing state of the learner.

### Importance of the Study

Educators have long recognized the need in our schools to provide for individual differences, however, little has been done to implement means of achieving this goal. A. Huxley (11:70) magnified this point very well in his writings:

In no other species are the differences between individuals so great as in the human race . . . On top of all the temperament and anatomical differences . . . are differences in biochemical make-up and differences in general ability and special gifts, differences so great that they can almost be regarded as differences, not in degree, but in kind. To herd all these dissimilar creatures into one classroom and to subject them all to the same kind of intellectual, emotional, and ethical training seems, on the face of it, absurd. At the present time, unfortunately, it is very difficult, for practical reasons, to adopt any other course.

Current educational and psychological research further supports these claims made by A. Huxley and others that for the most part schools of today are not adequately providing for students' individual needs and differences.

In recent years numerous descriptive articles and books have been written about team teaching. However, little has been published that is evaluative in nature. Furthermore, research on team teaching is generally of poor quality as reported in the Encyclopedia of Educational Research.

In a review of the research conducted up to 1971, Heathers 9:402 found no well-controlled studies that measured outcomes of team teaching . . . therefore, the reports available did not indicate any substantial effects of the plans on student achievement or student attitudes.

During the 1969-70 school year a team of five elementary teachers at Hoover Elementary, in Yakima, Washington, designed a diagnostic prescriptive method of teaching language arts. The teaching staff participating in this pilot program believed that such an approach was one good method of providing for students' individual needs. Because of the nature of the pilot program, the writer conducted an experimental study to evaluate the effectiveness of diagnostic prescriptive teaching of language arts using the organization of team teaching. The author was concerned with academic growth but was equally anxious to develop a semantic differential that could be used to measure students' attitude once the pilot program became operational.

### The Problem

The purpose of this study was to determine the effects of diagnostic prescriptive teaching of language arts under the conditions of team teaching and to determine whether or not such an instructional technique provides a good learning environment.

### Hypothesis

The objective of this research was to test the following null hypothesis: Children participating in the pilot program for the 1970-71 school year will not score significantly higher on an academic test of language arts achievement when compared to a control group who will not participate in the program.

### Definition of Terms

Diagnostic prescriptive instruction. A process whereby the teacher diagnoses for her student a needed skill or a level of readiness and then prescribes or orders sequential learning tasks which will enable the student to reach a given learning goal. The learning task is translated into behavioral terms so that sequential learning patterns for achieving them can be planned and evaluated.

Team teaching. A type of instructional organization involving teaching personnel and the students assigned to

them, in which two or more teachers are given the responsibility, working together, for all or a significant part of the instruction of the same group of students.

In direct application to the program being considered here, team teaching will heretofore refer to a staff of five intermediate teachers who are responsible for planning and instructing intermediate students in the language arts subjects. The teacher team will use the diagnostic prescriptive instructional technique.

Attitude scale or semantic differential scale. A method for measuring the connotative meanings of concepts. The semantic differential is based on the assumption that the connotative or affective components of meaning can be measured by the rating of objects or concepts with respect to bipolar adjective pairs.

#### Limitations of the study

The pilot program was implemented during the 1969-70 school year. The period of investigation and data collection extended over the academic year, 1970-71. Therefore, the newness of the program may have diminished such that students displayed normal interest and motivation as compared to the first year.

During the investigation period the writer was not a member of the team-teaching staff. This arrangement was

deliberately planned to minimize the possible influence of the Hawthorne Effect. Also, to minimize experimenter bias, the writer carefully trained a teacher-aide to administer both the academic tests and the semantic differential.

To establish matched groups for the experiment, students were randomly selected from comparable socio-economic backgrounds.

### Overview and Summary

In 1969, the intermediate teaching staff implemented a pilot program designed to improve the educational program for the children of their school. The program concentrated on individualized instruction using team teaching of language arts. The study was designed to evaluate the academic progress of the students and to research and to develop a semantic differential used to measure students' attitude toward school related concepts.

The research report consists of four chapters. Chapter I is composed of the statement of the problem and definitions of the terms used in the report. Chapter II is devoted to a review of current educational research on diagnostic prescriptive instruction, team teaching, and attitude scales. Chapter III explains the methods and procedures used in the study. The concluding chapter consists of results of the investigation, recommendations, and concluding statements concerning the results of the research study.

## CHAPTER II

### REVIEW OF THE LITERATURE

The purpose of this chapter was to acquaint the reader with some of the historical aspects of team teaching, diagnostic prescriptive instruction, and attitude scales. The writer felt that an historical background was helpful in placing these pedagogical methodologies in perspective with the evolution of modern educational practices. Another purpose of this review was to report recent research findings.

#### Historical Development of Team Teaching

The concept of team teaching began less than twenty years ago when the Commission on Curriculum Planning and Development of the National Association of Secondary School Principals decided to launch a series of experimental projects in secondary schools throughout the country. These projects were designed to devise new approaches to the critical problems confronting the schools in 1956. Educators then were facing the problems of acute shortage of teaching personnel, continuing curriculum explosion, and the population boom. The Commission, under the leadership of J. Lloyd Trump, sought financial support from the Fund for the

Advancement of Education. The Fund approved the proposal and agreed to provide the financial support. The Commission set out to develop various staff utilization techniques. Perhaps the most significant of these techniques became known as team teaching.

In more than one hundred secondary schools throughout the country, serious investigations of the team approach to instruction were launched. The most complete accounts of these experiments have appeared in The Bulletin of the National Association of Secondary School Principals.

During 1957-58 in cooperation with Harvard University (10:168), the Franklin School in Lexington, Massachusetts developed the first comprehensive project of team teaching involving an entire school. The project at Franklin Elementary School became the best known example of team teaching. The Franklin School Project was awarded a ten-year grant from the Ford Foundation to test the feasibility and the effect of a team teaching organizational plan. The Project became a major activity within the School and University Program for Research and Development of Harvard University.

The Franklin School Project has been followed by many others in scattered parts of the country. Estimates of the number and substance of these experiments have varied but nearly one hundred and fifty communities have been

counted. The more highly publicized projects include: Norwalk, Connecticut; Flint, Michigan; Baltimore, Maryland; Jefferson County, Colorado; Evanston Township, Illinois; Ft. Wayne, Indiana; Newton, Massachusetts; Montgomery County, Maryland; Palo Alto, California; and Claremont, California.

Most of the early projects in team teaching were supported out of foundation grants. The agencies involved required minimal evaluation. Rather than formal research, experience derived from field studies were deemed sufficiently satisfactory indicators of success or failure. Even within these restrictions some pieces of reasonably objective evidence have become available. Studies of the Claremont project have involved attitudes and opinions of people in team teaching and those who have close knowledge of team operation but not direct participation.

With respect to the opinions and attitudes of people concerning the desirability of team teaching and its personal attractiveness to them, Claremont conducted a study over the past four years involving about 7,000 students, 450 teachers, 1,200 parents, and 50 administrators. Generally, those persons who participated directly in the program supported the concept enthusiastically and wished to continue their team teaching program.

The author reviewed several doctoral studies on the subject of team teaching. The available research was categorized by the author into two settings: (1) findings which described and supported the programs, and (2) findings which compared traditional methodology with team teaching strategies. The studies, being descriptive in nature and not evaluative, generally lacked quantitative data.

The study conducted by Beighley (3:1668-A) in 1968 was an attempt to define team teaching and to describe one program being used in Lewiston, Idaho. Conclusions indicated that a school building must be usable and flexible; that staff members and parents felt the program had been a success.

Jester (12:1002-A) conducted a study to determine if differences existed between team teaching of language arts to eighth grade students and the traditional departmentalized organization. He concluded that team teaching of language arts was more effective in producing achievement.

The two studies referred to above represent the kind of research done recently that are supportive to the team teaching organization.

Other studies indicated there was no significant difference between student academic achievement when compared to the traditional organization. The following

studies are examples of those indicating no significant differences in student academic achievement.

Boren (4:2993-A) attempted to provide experimental data on team teaching. He found no significant differences in achievement of the low ability group of students receiving team teaching; some differences in spelling achievement for boys in the team teaching, as well as reading, grammar, and vocabulary development. Boren concluded that in some instances with specific subject matter an increase in achievement resulted, however, there were no significant differences in the overall programs being compared.

In Schlaadt's (18:3763-A) study of team teaching as compared to traditional organization, he selected a high school health program for sophomores. His conclusion was that no significant difference existed to support either the traditional or the team approach between academic scores by sophomore students in high school.

The available research on team teaching reviewed by the author was generally of poor quality. Most of the studies have been descriptive rather than evaluative. There seems to exist no well-controlled studies that measured outcomes of team teaching. The results reported lack data on the implementation of the plans being compared. The research also pointed out that existing reports on team teaching did not provide a basis for determining separately the effects

of the different features of team organization, such as flexible scheduling, flexible grouping, staff utilization, the use of teacher aides, or team planning.

Therefore, most reports available did not indicate any substantial effects of the plans on student achievement or student attitudes. In general, however, it was found that attitudes of students, parents, and teachers were favorable toward the team organizational pattern. The one area most considerably affected has been the team teacher's own pleasure and satisfaction in teaching.

Harry Wigderson concluded:

There is no research evidence that team teaching increases pupil effectiveness. Studies to date show no significant pupil difference between team teaching techniques and those of conventional self-contained classrooms. . . . If team teaching achieves educational approbation for no other reason, it is worthy of serious consideration as one of the most stimulating and effective teacher growth processes developed to date (23:21).

### Diagnostic Prescriptive Instruction

An educational program based upon the best current thinking strives to support the learner in his purposes by helping him to acquire new experiences, and by making available to him opportunities for ever richer, broader, and deeper understanding. The child's search for learning satisfaction is carried on within himself; it's personal.

Teaching a student from where he is implies knowledge of his background, intellectual and emotional levels, attitudes, and specific learning skills. Teachers who become skilled in the use of the diagnostic prescriptive method are able to determine such important information as attitudes, special interests and aptitudes, basic social drives, physical and emotional maturity, educational age in the various learning areas, and inter-personal adjustment factors. With this kind of valuable information of the child, the teacher is better able to give meaningful guidance to each individual child. Ruth Strang says:

By combining diagnosis with instruction we give the student the satisfaction of accomplishing something in every period. The information obtained is immediately used. Most important, this approach gives definite responsibility for self-appraisal; it encourages the student to take the initiative in solving his own reading problems. Children and young people need to take more responsibility for their own development. They need to take an objective attitude toward their strengths and limitations. All in all, this approach of meeting the individual's needs as they are uncovered seems to be the more desirable (20:9).

The uniqueness of the individual must come first, and each child must be given opportunities and experiences that will enable him to become all that he is capable of becoming--to realize his potentials. In the diagnostic prescriptive method of instruction, growth of individuals is cumulative, realistic, and oriented to individual student success. As Lee states:

Diagnostic teaching employs procedures that are based on the findings of experience and research about children and learning, those that can be effective in attaining the goals of the school and those that recognize unique personal values (14:Preface).

### Attitude Scales and the Semantic Differential

The concept of attitudes was first established as a central variable by Thomas and Znaniecki in 1918 in their monumental study of people in transition between two cultures.

The techniques of attitude research introduced by sociologists have evolved in a direction closely related to those of psychoanalysis and clinical psychology. Research in this area underwent early modification in the direction towards the development of attitude questionnaires.

In 1925 Watson developed a test of fairmindedness which was an attempt to provide a measure of prejudice on twelve different issues related to religious observance, moral code, and political beliefs. The twelve issues were to be rated on a five point scale.

An extremely important contribution was made by Thurstone and Chave in 1929. They used averages and were able to develop data having a stable means by a method much less laborious than was Watson's of 1925.

Later, more elaborate procedures for scale construction and refinement were proposed by Coombs (1952), Guttman

(1950), and Lazarsfeld (1950). Coombs (1953) and Green (1954) have each contributed excellent analyses of current methodological problems and developments in the measurement of attitudes.

By 1957 A. L. Edwards was able to provide a good general introduction to basic techniques of attitude scale construction in his text, Techniques of Attitude Scale Construction (6:1).

A major breakthrough in the measurement of attitudes came when Charles E. Osgood, and associates, invented the semantic differential, a method of measuring the psychological meaning of things usually referred to as concepts. Osgood found that the connotative or affective components of meaning can be measured by the rating of concepts with respect to bipolar adjective pairs.

Osgood points to several examples of the use of the semantic differential. Some include such fields as psychotherapy, personality, aesthetics, advertising, and communications research. He says that there are many potential points of application of a semantic differential to problems in the clinical and psychotherapeutic area.

Consider, for example, the matter of diagnosis: We have some data to show that disturbed individuals can be selected from a sample in terms of meanings of certain key concepts (particularly the self-concept) (15:221).

Semantic measurement enters the communication field by providing an index of certain aspects of meaning, particularly the connotative aspects. Osgood states: "The applications of semantic measurement to human communications problems are potentially as broad and varied as the communication area itself" (15:274).

Kerlinger says:

The semantic differential can be applied to a variety of research problems. The SD should be useful in exploring the meaning structures of children at different ages. What concepts has the child of five, six, or nine learned? What are their connotative meanings? The semantic differential is a fairly sensitive measure of attitude change. Indeed, Osgood believes that the SD can be used as a generalized attitude measurement technique, provided that Evaluative adjective pairs are used. These are only a small sample of the possibilities. We have here a useful and perhaps sensitive tool to help in the exploration of an extremely important area of psychological and educational concern: connotative meaning. The next decade should see many results of this exploration (13:578-580).

In a study conducted in 1971 by Dr. Leo M. Harvill (8:1-34), five methods for measuring young children's educational attitudes were evaluated. One of the methods evaluated was the semantic differential, based on the work of Osgood (1957). Harvill concluded that one of the most promising methods for measuring attitude is the semantic differential. However, he recommends that pictures accompany the scale between the bipolar adjective pairs to provide clarity for use with younger children.

Another example of the use of the semantic differential appeared in Robert M. Seim's (19:2098-A) doctoral thesis in which he tried to measure attitudinal change of tenth graders with respect to school-related concepts. Seim used a SD adapted from the Webb-Harris Word Meaning Test. He concluded that for measuring attitude change the SD was a most satisfactory instrument especially because it provided a remarkable amount of data.

George H. Voegel (22:3403-A) conducted a research project during an educational media workshop. He used a SD to determine attitude change with respect to concepts related to audiovisual media. Voegel found that workshop participants experienced an attitude change to be significant toward selected audiovisual media concepts.

The use of the semantic differential technique of measuring attitude has been employed at an increasing rate in the field of educational research. Many people have come to realize that the proper use of measurement in the affective area can be just as important as its cognitive counterpart for assessing children's needs and for making school an enjoyable place to learn.

## CHAPTER III

### METHODS AND PROCEDURES

#### Description of the Program

During the 1969-70 school year the intermediate teaching staff of Hoover Elementary, in Yakima, Washington, designed and implemented a new program for elementary students. The program used a diagnostic prescriptive method of instruction. It was organized around the team teaching concept which included five teachers and approximately 327 students.

Grouping was basically multi-grade level although much flexibility within groups did exist. Two large team rooms and one classroom were organized to accommodate multi-grade level students. Two teachers per large room constituted a teaching team. One classroom was established as a middle room managed by the fifth team member. Initially the children were ability grouped so that teaching of specific skills were not duplicated. Room one was composed of low ability to middle ability students. The single classroom was composed of middle ability students, while the third team room was made up of middle ability to high ability students.

The language arts curriculum consisted of reading, language, spelling, and penmanship. Sequential skills charts were designed for each area of the language arts curriculum. Using a battery of testing devices, the teachers were able to diagnose specific skill levels and to prescribe appropriate learning activities. The activities were designed in package form and stated in behavioral terms. Upon completion these could be evaluated by the teachers and a new package would then be prescribed.

Reporting of pupil progress was centered around the parent-teacher conferences and was supplemented by two informal written reports. The traditional A, B, C, marking system was replaced by a system which emphasized the strengths of the individual.

### Selection of Students

The students for the study were chosen from a population of 327 intermediate grade students, all of whom attended the same school. The entire population was subjected to a table of random numbers to select a random sample of fifty subjects. When completely randomized, the sample consisted of approximately the same number of students from each grade level. This sample represented the experimental group used to measure academic achievement.

The control group was selected from the sixth grade class in a nearby elementary school of comparable socio-economic background.

Both the experimental and the control groups were matched in the following manner: (1) The experimental group consisting of fifty subjects was separated into grade-level groups. As a result seventeen sixth grade students became the matched group used as the experimental group; (2) the control group, which consisted of the sixth grade class of thirty students, was subjected to a table of random numbers and seventeen subjects were randomly selected for the control group. These two groups were used for purposes of comparing academic achievement in language arts.

In developing the semantic differential two control groups and one experimental group were selected. The experimental group for the semantic differential consisted of twenty-nine randomly selected subjects in the fourth grade who received instruction in the pilot program.

A dual control group was established; one control of thirty subjects was selected randomly from the third grade population of the school using the pilot program; the other control group of thirty subjects was chosen from a nearby school's third grade population.

The following table illustrates the control and the experimental groups for comparing academic achievement.

TABLE I  
CONTROL AND EXPERIMENTAL GROUPS FOR  
COMPARING ACADEMIC ACHIEVEMENT

School	Group	Pre- test	Post- test	Random Sample
Hoover	Experimental	50 (4-6)	50 (4-6)	17 (6)
X-School	Control	30 (6)	30 (6)	17 (6)

Table II illustrates the composition of the groups used to develop the semantic differential.

TABLE II  
CONTROL AND EXPERIMENTAL GROUPS FOR  
SEMANTIC DIFFERENTIAL

School	Group	Test (S.D.)
Hoover	Experimental	30 Fourth Graders
Hoover	Control	30 Third Graders
X-School	Control	30 Third Graders

#### Selection of Personnel

The writer selected a competent teacher-aide to administer the academic tests and the semantic differential.

This person was carefully trained to carry out the procedures necessary for pre-testing, for post-testing and for administering the semantic differential. This procedure was used to minimize experimenter bias that might influence the results of the study.

### Procedures

The experimental study was conducted during the 1970-71 school year, or a period of approximately nine months. During that time span the control groups received instruction from one teacher in a self-contained classroom. The students in the experimental group were dispersed among three team teaching rooms. They received language arts instruction from their team teachers who used the diagnostic prescriptive method of instruction.

In the fall of 1970, at the onset of the study, a pre-test for academic achievement was administered to the two groups of students. Form II of the Iowa Tests of Basic Skills was used. In May of 1971, Form I of the Iowa Tests of Basic Skills was administered to the same two groups as a post-test. See Table I.

For the purpose of measuring student attitude, the author developed a semantic differential modeled after Osgood's semantic differential.

The procedure for developing the SD consisted of meeting with the entire staff of Hoover Elementary to establish a list of concepts which related to a student's attitude toward the school setting. These concepts were carefully analyzed by the author and the staff. As a result, eleven concepts were selected. The same process was used to develop and to select nine bipolar adjective pairs that were used as evaluative scales for each concept. The author conducted extensive research in developing the semantic differential which resulted in the following format. See Appendix C.

	(CONCEPT)					
(Scale)	LARGE GROUPS OF STUDENTS					
Bipolar adjective pairs						hard
easy	very happy	happy	not happy not sad	a little sad	very sad	
(value)	+2	+1	0	-1	-2	

The semantic differential was administered to both the experimental group and to the control groups in May of 1971. Refer to Table II of this chapter.

The data received from the academic tests in language arts was treated statistically by use of the t-test (for

determining differences between two independent means). To determine whether the  $t$  value was significant, the degrees of freedom ( $df$ ) were computed at the .05 level of significance (5:9-12).

It was the author's intention to develop a semantic differential that could be used once the pilot program reached the implementation stage. Therefore, data collected using the SD was treated statistically using the same procedure that was used to compare academic data. However, the author was primarily interested in developing a usable SD instrument to be used at a later time.

Chapter IV will consist of reporting results, conclusions and recommendations based on the study.

## CHAPTER IV

### RESULTS, RECOMMENDATIONS, AND CONCLUSIONS

The purpose of the experimental study was to determine the effects of diagnostic prescriptive instruction of language arts under the conditions of team teaching. A control and an experimental group were randomly selected. Subjects were given a pre-test in the fall, and later in the spring a post-test was given to the same groups. The language arts section of Form I of the Iowa Tests of Basic Skills was used as the post-test.

The mean differences in achievement in language arts between experimental and control groups of the post-test were calculated. A t test was used to determine whether or not there was any significant difference in the mean scores of the post-test. The degrees of freedom were calculated at the .05 level of significance. The critical ratio for t values was 2.042 (5:218-219). Table III summarizes the results of these comparisons.

The data analyzed in Table III indicated that no significant differences occurred between mean achievements of the experimental and the control groups. Therefore, the null hypotheses: that children participating in the pilot

program for the 1970-71 school year would not score significantly higher on an academic test of language arts achievement when compared to a control group who did not participate in the program is statistically supported.

TABLE III  
COMPARISON OF POST-TEST LANGUAGE ARTS SCORES  
FOR EXPERIMENTAL AND CONTROL GROUPS

Test Sections	Experimental Mean	Control Mean	df	t
Vocabulary	6.45	6.46	32	0.0243
Reading Comprehension	6.17	6.83	32	0.929
Spelling	7.35	6.51	32	1.647
Capitalization	7.12	6.54	32	0.983
Punctuation	6.94	7.00	32	0.350
Usage	6.13	6.25	32	0.240

Results of the Iowa Tests of Basic Skills are given in raw scores. The scores are converted to grade level equivalents which are based on ten months, e.g., a score of 68 would represent sixth grade, eighth month or 6.8. The study was conducted for a period of approximately nine months. A natural gain of 9.0 months might be expected during that time. Tables IV and V of Appendix A illustrate

a comparison of the pre-test and post-test language arts scores for the experimental group and the control group. The mean differences in achievement in language arts between the pre-tests and the post-tests for each group were calculated. A t test was used to determine whether or not there was any significant difference in achievement. At the .05 level of significance, the critical ratio for t values was 2.042. In both cases there was no significant difference in academic achievement.

#### The Semantic Differential

The purpose in developing a semantic differential was to provide an instrument that could be used to measure students' attitude toward school related concepts. The data in Appendix B, Table VI, is presented to illustrate one use of the semantic differential. The semantic differential developed by the author appears to be a good instrument to use in differentiating attitudinal change of groups of students. It was not used to make a statistical comparison of students' change of attitude toward school but merely to provide baseline data for future use. Appendix C contains an example of the actual semantic differential that was used in the study.

## Conclusions

Since there was no significant difference between the control and experimental groups in language arts achievement, the author concludes that the pilot program is no less effective than the self-contained classroom organization in providing an effective learning environment. This supports many of the studies that were reviewed by the author.

In analyzing the mean gain in academic achievement for both the experimental and the control groups one would expect to find a greater gain than the study indicated. The author concludes that the present testing program is inadequate to measure accurately what is currently being taught students of grades four, five, and six in language arts.

The findings of the study will be used as baseline data to evaluate and to upgrade the pilot program as it becomes operational.

It is the opinion of the writer that the semantic differential is a good instrument in determining attitudinal differences in groups of students. The results of the semantic differential indicate that the control group rated school related concepts significantly higher than did the experimental group. One may speculate as to what factors

may have caused this difference. One, that fourth grade students tend to be more discriminatory when they analyze the school environment. Two, that third graders may anticipate entering the team teaching program and want to score high to gain admission. Three, that the semantic differential needs to be carefully analyzed for validity and reliability.

### Recommendations

The author recommends that the study be made available to the staff of the pilot program for their careful analysis. This would assist them in evaluating and upgrading their program by considering such items as changing the physical plant to accommodate the needs of the program of instruction.

The study points out the need for further research in the use of the semantic differential as a measure of students' attitude in the field of educational research. Furthermore, the testing procedures and the kinds of instruments used to measure academic achievement should be examined and perhaps revised to meet the current instructional program in language arts.

## BIBLIOGRAPHY

## BIBLIOGRAPHY

1. Anderson, Robert H. "Team Teaching in Action", The Nation's Schools, 65:62-65, May, 1960.
2. Beggs, David W., III. Team Teaching--Bold New Venture, Indianapolis: Unified College Press, 1964. 192 pp.
3. Beighley, Archie F. "The Origin, Development, and Implementation of Elementary Team Teaching in Lewiston, Idaho", Dissertation Abstract, Ann Arbor: University Microfilms, XXIX:1668-A, 1968.
4. Boren, Donald J. "A Comparative Study of Team and Traditional Teaching Methodologies", Dissertation Abstracts, Ann Arbor: University Microfilms, XXIX: 2993-A, 1969.
5. Bruning, James L. Computational Handbook of Statistics, Glenview, Illinois: Scott, Foresman and Company, 1968. 269 pp.
6. Edwards, A. L. Techniques of Attitude Scale Construction, New York: Appleton-Century-Crofts, 1957. 256 pp.
7. Goodlad, John I. "Diagnosis and Prescription in Educational Practice", Education Digest, 32:8-11, May, 1966.
8. Harvill, Leo M. "Evaluation of Several Methods for Measuring Young Children's Educational Attitudes", Research Document, South Dakota University, Vermillion, S. D., ERIC ED-056-059, May, 1971. 38 pp.
9. Heathers, Glen. "Research on Team Teaching", In Shaplin, Judson T., and Olds, Henry F., Jr. (Eds.) Team Teaching, New York: Harper & Row. 306-44 pp.
10. Hillson, Maurie. Change and Innovation in Elementary School Organization. New York: Holt, Rinehart and Winston, 1967. 387 pp.
11. Huxley, A. "Human Potentialities", Psychology Today, Vol. 1, 1:70, May, 1967.

12. Jester, James. "A Comparative Study of the Effects of Team Teaching and Departmentalized Teaching on the Scholastic Achievement of Eighth Grade Students in Social Studies and Language Arts", Dissertation Abstracts, Ann Arbor: University Microfilms, XXXVIII: 1002-A, 1969.
13. Kerlinger, Fred N. Foundations of Behavioral Research, Educational and Psychological Inquiry, New York: Holt, Rinehart and Winston, Inc., 1965. 739 pp.
14. Lee, Dorris, M. Diagnostic Teaching, Department of Kindergarten, Nursery Education, N. E. A. Publications, 1966. 52 pp.
15. Osgood, Charles E. The Measurement of Meaning, Urbana, Illinois: University of Illinois Press, 1961. 342 pp.
16. Peter, Lawrence J. Prescriptive Teaching, New York: McGraw-Hill Company, 1965. 246 pp.
17. Rosenberg, Marshall B. Diagnostic Teaching, Seattle: Special Child Publications, 1968. 125 pp.
18. Schlaadt, Richard G. "An Analysis of the Effectiveness of Team Teaching Compared to Traditional Teaching of Health to High School Sophomore Students," Dissertation Abstracts, Ann Arbor: University Microfilms, XXVII:3763-A, 1966.
19. Seim, Robert M. "A Measurement of Attitudinal Change Following a Ten-Week Guidance Class: A Semantic Differential Study", Dissertation Abstracts, Ann Arbor: University Microfilms, XXIX:2098-A, 1968.
20. Strong, Ruth. Diagnostic Teaching of Reading, New York: McGraw-Hill, Inc., 1964. 310 pp.
21. Suchman, Richard J. "Diagnostic Teaching", The Instructor, 8(LXXVI):62, April, 1967.
22. Voegel, George H. "A Semantic Differential Approach to the Assessment of Attitude Change of Selected School Personnel in the Upper-Midwest Toward Selected Audiovisual Media Concepts", Dissertation Abstracts, Ann Arbor: University Microfilms, XXIX:3403-A, 1968.
23. Wigderson, Harry I. "Research Document on Team Teaching" Coordinator of Research, Tulane County Department of Education, Visalia, California, June, 1964. 21 pp.

## APPENDICES

APPENDIX A

## APPENDIX A

TABLE IV

COMPARISON OF PRE- AND POST-TEST LANGUAGE ARTS  
SCORES OF THE EXPERIMENTAL GROUP

Test Section	Pre-test Mean	Post-test Mean	df	t	Difference
Vocabulary	6.08	6.45	32	0.948	0.37
Reading comprehension	5.78	6.17	32	1.000	0.39
Spelling	6.71	7.35	32	1.185	0.64
Capitalization	6.65	7.12	32	0.723	0.47
Punctuation	6.95	6.94	32	0.017	-0.01
Usage	5.78	6.13	32	0.648	0.35

TABLE V

COMPARISON OF PRE- AND POST-TEST LANGUAGE ARTS  
SCORES OF THE CONTROL GROUP

Test Sections	Pre-test Mean	Post-test Mean	df	t	Difference
Vocabulary	6.26	6.46	32	0.480	0.20
Reading comprehension	5.99	6.83	32	1.166	0.84
Spelling	5.62	6.51	32	1.560	0.89
Capitalization	6.30	6.54	32	0.657	0.14
Punctuation	6.81	7.00	32	0.388	0.19
Usage	6.05	6.25	32	0.350	0.20

APPENDIX B

## APPENDIX B

TABLE VI

COMPARISON OF ATTITUDES OF STUDENTS  
EXPERIMENTAL GROUP AND  
CONTROL GROUP

Concepts	Experimental Mean	Control Mean	df	t
Me, My Citizenship, My Behavior	0.43	1.21	57	4.10
Large Team Room, Two Teachers	0.52	1.09	57	1.78
Self-contained Room, One Teacher	0.69	1.11	57	3.56
My School Work	0.44	1.17	57	6.70
Progress Reports, Goal Sheets	0.35	1.31	57	8.14
Large Groups of Students	0.52	1.14	57	5.25
Small Groups of Students	0.52	1.18	57	5.40
Class Schedule	0.44	1.02	57	5.32
Noise Level	0.08	0.83	57	37.50
Student Aides, Mother Aides	0.61	1.13	57	5.77
Sharing of Desks, Books, Materials, Equipment	0.48	1.09	57	8.71

APPENDIX C

APPENDIX C

AN EXAMPLE OF THE SEMANTIC DIFFERENTIAL

ME, MY CITIZENSHIP, MY BEHAVIOR

easy						hard
	very happy	happy	not happy not sad	a little sad	very sad	
dislike	very sad	a little sad	not happy not sad	happy	very happy	like
fair			· · ·			unfair
noisy		LARGE TEAM ROOM, TWO TEACHERS				quiet
		SELF-CONTAINED ROOM, ONE TEACHER				
fun		MY SCHOOL WORK				not fun
		PROGRESS REPORTS, GOAL SHEETS				
bad		LARGE GROUPS OF STUDENTS				good
		SMALL GROUPS OF STUDENTS				
successful		CLASS SCHEDULE				not successful
		NOISE LEVEL				
confused		STUDENT AIDES, MOTHER AIDES				organized
		SHARING OF DESKS, BOOKS, MATERIALS, EQUIPMENT				
relaxed						tense