

PREDICTION: AN AID TO COMPREHENSION

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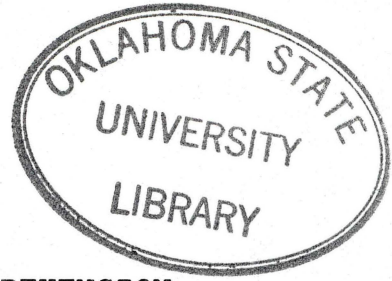
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This study is concerned with teaching prediction strategies to middle school students to attempt to raise vocabulary and comprehension levels. The primary purpose of this study was to research a teaching strategy under experimental controls to ascertain its level of significance to educators.

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CHAPTER I

THE RESEARCH PROBLEM

Introduction

Comprehension is the object and product of reading. As such, comprehension is the best window we have for observing reading ability. The window may be frosted, and we may see through it darkly, but it is all we have at the moment (Ester and Vaughn, 1978, p. 66).

The most important objective of every reader should be to derive meaning from the printed page. Many students work meticulously through a selection, pour over the vocabulary section, study each word dutifully and attend to everything except meaning. Failure to comprehend reading matter amounts to reading failure, suggested Cushenberg (1972).

Teachers have a responsibility to help every student in all areas of comprehension. Yet Durkin (1978-79, 1981) concluded that there is little teaching of comprehension in classrooms and little space in the instructional manuals of basal readers that center on comprehension instruction.

Content area teachers seem to lack a clear understanding of what comprehension is, what skills

comprise comprehension and how comprehension skills can be taught. Their lack of understanding seems to be explained by Roe and others, in their book Reading Instruction in the Secondary School (1978). They stated:

"Reading comprehension is an abstract process that occurs in the brain; it is difficult to observe, to measure, and teach directly."

The definition of reading comprehension and the skills necessary to teach comprehension vary from educator to educator. Wilson and Hall (1972) in Reading and the Elementary School Child described comprehension as "involving three levels of thinking." They labelled these levels as: "literal understanding, interpretation and problem solving."

In Bloom's Taxonomy of Educational Objectives: Cognitive Domain (1956) a theoretical description is given of the aspects of thinking. The elements are arranged in a hierarchial format and have been used to describe reading comprehension. The six phases of Bloom's taxonomy are "knowledge, comprehension, application, analysis, synthesis and evaluation."

Pearson and Johnson (1978) have defined reading as "building bridges between the new and the known."

A single definition of reading comprehension, which is acceptable to all who are involved in studying the reading process, is seemingly impossible to discover in the literature. Although it is apparent in the final

analysis, all authorities are suggesting the same concepts but are using different terminology. One thing is evident, all are in agreement that reading comprehension is a three level process.

The identification of specific reading skills essential to comprehension also varies in the literature.

Frederick B. Davis (1968) identified eight comprehension skills through a factor analysis procedure. The eight skills so identified were:

1. Recall word meanings.
2. Drawing inferences about the meaning of a word from context.
3. Finding answers to questions answered explicitly or merely in paraphrase of the content.
4. Weaving together ideas in the content.
5. Drawing inferences from the content.
6. Recognizing a writer's purpose, attitude, tone and mood.
7. Identifying a writer's technique.
8. Following the structure of a passage. (p.517)

Walter Barbe (1973) separated the specific skills necessary to learn to comprehend into segments which should be presented and mastered at each grade level. The major skills selected in grades 1 - 6 are:

1. Find the main idea
2. Keep events in proper sequence
3. Draw logical conclusions
4. Is able to see relationships
5. Can predict outcomes
6. Can follow printed directions
7. Can read for a definite purpose
8. Classify items
9. Can use an index
10. Knows technique of skimming (p. 154-164)

To compound the issue other authors have suggested there are many other factors which influence the ability

to comprehend. These factors seem to be unlimited, the personality of the reader, motivation, habits, reading rate, length and difficulty of the material, the reader's abilities and experiential background, memory and the ability to use prior knowledge to predict what will happen. Harris (1970) contends "verbal intelligence is highly correlated to reading tests." Spache & Spache (1973) have indicated "a positive correlation between reasoning, intelligence and reading comprehension." Samuels (1976) noted "short-term memory plays an important role in reading comprehension." The reader must recall what he reads as well as his own experiences; altogether, these factors result in comprehension. Tinker and McCullough (1975) believed "reading rate influenced comprehension." Smith (1975) postulated that "prediction was important to the reader when discussing comprehension."

Background of the Study

The power of reading lies in comprehension. One who can read a selection, understand the author's intent, find relationships in the material and determine what is being said, possesses a much sought after skill. The problem of how to impart to others the power of comprehension is one educators grapple with each day. A strategy of instruction which would assist teachers in imparting the power of comprehension is the central issue of this study.

Some have suggested that the strategy of prediction, when actively used by the reader, aids comprehension. Smith (1975) contended that fluent reading entails two fundamental skills:

1. prediction of meaning and sampling of surface structure sufficiently to make predictions certain, and
2. making the most efficient use of visual information, which is all the cues to meaning available in the printed text. (p. 308-311)

His position was that a child learns to read by reading materials in which he/she has an opportunity to test hypotheses. As a child becomes better able to predict or hypothesize what a sentence or a paragraph will say, he becomes a better reader. Smith felt so strongly about prediction that this statement was made:

I believe that reading is impossible without prediction, and since it is only through reading that children learn to read, it follows that the opportunity to develop and employ skills of prediction must be a critical part of learning to read.
(p. 308-311)

Olshavsky (1979) found the use of prediction as "an instructional strategy to be an important tool for teaching comprehension."

Purpose of the Study

The purpose of this study was to attempt to determine the effect of using prediction as an instructional strategy, in middle school content area classrooms by increasing the vocabulary, comprehension and total reading levels of the students involved in this study.

Prediction as it is being used here does not mean looking for a simple outcome in a story. Prediction as it is used in this study can be defined as an intellectual extension of one's knowledge and experience into the unknown, under the constraints of specific conditions or acts.

The definition and steps used to teach prediction are suggested by Herber (1978). The five basic steps are as follows:

1. The first step is to identify the concept which will serve as a focal point for the lesson.
2. The second step is to demonstrate how to connect prior experiences to the concept. This can be accomplished through an organizational scheme or format to enable prior knowledge to connect to the concept. Example: Vocabulary Development, Brainstorming or Discussion.
3. The third step is to present teacher prepared prediction statements. The statements are used to establish conditions or actions for the prediction in which the student's knowledge or experience is extended.
4. The fourth step is to simulate the prediction. A description of the article is given, students use the previously prepared statements to predict if the author will agree or disagree with the statement.
5. The fifth step is to simulate comprehension. The student reads the article and determines whether his predictions were accurate by finding evidence in the article. (p. 181-182)

Hypotheses

This study proposed to test the:

- HO₁: There is no significant difference between the total reading scores of middle school students using prediction strategies and those using traditional instruction.

HO₂: There is no significant difference between the vocabulary scores of middle school students using prediction strategies and those using traditional instruction.

HO₃: There is no significant difference between the comprehension scores of middle school students using prediction strategies and those using traditional instruction.

CHAPTER II

REVIEW OF LITERATURE

Prediction as a teaching strategy to aid comprehension has been used for a number of years by educators. Teachers of beginning readers have had children study the pictures and guess what is going to happen in the story before reading begins. This technique has been in teacher's manuals for many years.

In the 1970's, Goodman (1970), Hochberg (1970), Kolers (1970), and Smith (1971) began suggesting that "readers must make use of prior knowledge which is relevant to the material when endeavoring to read."

In learning theory the use of prior knowledge is frequently referred to as hypothesis testing. Teachers a century ago called it guessing and Frank Smith (1975) described it as "prediction."

Smith maintained that "reading was impossible without prediction and that the opportunity to develop and employ skills of prediction should be a critical part of learning to read."

Smith's definition of prediction is "the prior elimination of unlikely alternatives or the reduction of uncertainty."

Smith (1975) goes on to be more explicit:

Prediction in the sense in which I am using the word does not mean wild guessing, nor does it mean staking everything on a simple outcome. Rather prediction means the elimination from contention of those possibilities that are highly unlikely and the examination first of those possibilities that are most likely. Such a procedure is highly efficient for making decisions involving language. (p. 306)

Goodman (1974) explains prediction as it applies to the reading process. He states:

The reader selects the appropriate language cues in order to predict as best he can, based upon his knowledge of language and his background experiences. He confirms his predictions by testing these hypotheses or predictions. He does this by checking the syntactic and semantic acceptability of what he thinks he is reading against his knowledge of language and the world. Finally, he comprehends those items he believes to be significant. He integrates this new meaning or knowledge into an established meaning system. He then interacts with the print again the process is continuous, and as we read, we constantly add, alter or reorganize the meaning. (p. 18)

Frederiksen (1975) reports a study conducted at the University of California. In this study the subjects were asked to recall the semantic content of a text. They typically produced conceptual and relational responses which did not simply reproduce the text content. In other words, it was found that readers infer while reading. Although the semantic structure of the inferences were derived from the text, it was not expressed in the text. Frederiksen concluded that "it appeared readers were using prior knowledge as they made inferences when reading."

Anderson (1976) in a paper presented to the International Reading Association, postulated that procedures that force a reader to predict also facilitate learning.

Hockberg (1976) states:

It is plausible that children should be encouraged to predict and anticipate what is coming next in reading. The exact methods for so encouraging them, however, should be the subject for empirical study and not for speculation. (p. 249)

Olshavsky (1977) in research for her doctoral dissertation identified ten strategies used by 24 tenth grade students to comprehend a short story. The 10 strategies studied were: (1) use of context, (2) synonym substitution, (3) stated failure to understand a word (subject stated to researcher he/she did not understand), (4) re-reading inferences, (5) addition of information, (6) hypothesis testing, (7) stated failure to understand a clause, (8) use of information, (9) inferences and (10) personal identification with the author's message. Although all subjects used some of the strategies, readers with high interest and good readers used the strategies of hypothesis testing and synonym substitution more often while reading. Interesting enough the use of context clues were only used 10 times as compared to 273 times for synonym substitution and 104 times for hypothesis testing.

Olshavsky identified prediction strategies by analyzing the readers' description of their ongoing

reading behavior. Good readers predicted more frequently than poor readers. Olshavsky concludes:

This may merely reflect the inability of poor readers to predict when their faculties are initially engaged by just reading difficult material. (p. 674)

Frank Smith (1978) in his book Reading Without Nonsense discusses his theories of comprehension and prediction. He believes comprehension depends on prediction and to understand reading one must understand the function of the brain. Smith offered this theory:

The human brain is a system, an intricately organized and internally consistent model of the world built up as a result of experiences, not instructions, and integrated into a coherent whole as a result of continual effortless learning and thought. (p. 78)

Smith postulates that we have in our heads a theory of what the world is like, and this theory is the basis of all our perceptions and understandings of the world. These perceptions and understandings are the root of all learning, the source of motives, reasoning and creativity.

Smith connects his theory of how the brain functions and prediction in this way:

We use our theory of the world to tell us the most possible occurrences, and leave the brain to decide alternatives until our uncertainty is reduced to zero. To put more informally, prediction is a matter of asking question -- and comprehension is getting these questions answered. (p. 87).

Smith summarizes his beliefs in the following manner:

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Smith summarizes his beliefs in the following manner:

1. learning and comprehension cannot be separated, they are fundamentally the same, and
2. in order to comprehend one must predict, in order to learn one must hypothesize and prediction/hypothesis testing come out of our theory of the world. (p. 100)

Olshavsky and Kletzing (1979) conducted a follow-up to the study of 1976. The first purpose of the study was to determine whether poor readers could predict as well as good readers when easy material was read. It was expected that both good and poor readers would use prediction, but that good readers would make more accurate predictions.

The second purpose of the study was to determine what effect the difficulty of the material had on the reader's predictive ability or if the ability to comprehend affects prediction.

The results supported both hypotheses. The results indicated "good readers in secondary school are able to predict the events of a concrete or abstract story and good readers are better predictors."

Olshavsky and Kletzing reasoned that "poor readers may be content to read at the factual level and comprehend only what the author supplied them." Good readers not only comprehended what was read but used inferences to read ahead and to grasp the intentions of the author.

Olshavsky and Kletzing suggested research should be conducted to explore ways of teaching prediction and

investigate whether prediction is necessary for full comprehension.

Turney and others (1980) suggested developing reading lessons which included the following processes:

1. The reader selects appropriate and necessary language cues to make predictions.
2. The reader tries to verify these predictions.
3. The reader reprocesses the language cues if the predictions are not acceptable.

Langer and Nicolich (1981) investigated prior knowledge and its relationship to comprehension. The subjects were 36 high school seniors from a middle class suburban school district. The methodology used was free word association which would reflect the strength of existing knowledge of the key concepts and vocabulary. Also, two passages were read dealing with this concept along with vocabulary words used in the free word association experiment.

There was a high correlation between prior knowledge and recall of the passage. The researcher concluded "comprehension was enhanced by prior knowledge."

Crafton (1982) wrote that "teachers should facilitate comprehension by preparing students before reading, during reading and after reading."

In the before reading stage students should be encouraged to anticipate what they are going to meet in the text by concept development. Concept development uses prior knowledge to propel the reader from one state of understanding to another.

During reading, Crafton focuses on teachers guiding students to refine and modify interpretations as they read because authors provide adequate information for readers to construct an interpretation.

After reading the reader should expand, share and exchange information, therefore making reading an extended process.

Lehr (1982) commenting on the National Assessment of Educational Progress (NAEP) of 1980, which tested more than 100,000 nine, thirteen and seventeen year old students, concluded English and reading teachers have a difficult job ahead of them. She suggested students must have lessons devised to teach critical thinking skills.

She recommended the question classification system of Aschner and Gallagher to be followed to help students improve critical thinking skills. The system groups questions into one of four of the following categories:

1. Cognitive memory questions that elicit recall of facts or yes-no answers.
2. Convergent questions that ask students to explain, express in another mode, state relationships, compare and contrast, or solve a problem.
3. Divergent questions that ask students to infer, reconstruct, predict, hypothesize, invent or design.
4. Evaluate questions that require students to judge, value, defend, or justify a choice or solution. (p. 807)

Wilson (1983) believed teachers should teach reading comprehension by connecting the known to the new. She claimed current views of comprehension are focusing on what

is in the reader's head, rather than learning subskills. Along with Durkin, Wilson says there is very little comprehension instruction in classrooms and teaching manuals. She suggested comprehension lessons appear to be ends in themselves and the connection between the instruction and reading was not apparent to the reader. In other words, the subskill lessons teaching comprehension have not been transferred to the actual reading process.

Just as Crafton maintained, teachers should teach before reading, during reading and after reading, so does Wilson.

Wood and Robinson (1983) report the importance of teaching vocabulary, language and prediction (VLP) as a prereading strategy. This method is important because background information is provided, new knowledge is related to existing knowledge, purposes for reading are determined and significant vocabulary terms are taught.

The VLP strategy for prereading had two primary purposes:

1. Provide a means to preteach vocabulary using oral language activities.
2. Use the vocabulary as a basis for predicting what might happen in the reading selection.
(p. 393)

Blackowicz (1983) states:

Teachers need to involve young readers as active predictors. Predicting the direction a text might take leads readers to think actively about the message. It helps them use and further develop their schemata, their structure of knowledge about the stories. (p. 681)

The instructional methodology used is the Directed Reading Thinking Activity (DRTA) which Stouffer introduced in 1969. Here again the idea of instruction before reading, during reading and after reading is an important component of teaching reading comprehension.

To summarize from the foregoing review of literature, the following statements can be made:

1. Many educators are convinced students should be guided to use the prior knowledge each obtains to connect new information to old information.
2. Many educators believe prediction is a necessary part of comprehension, that prediction facilitates learning, comprehension depends on prediction and prediction is a part of critical thinking.
3. There seems to be a trend in teaching comprehension which leans away from the skill perspective and toward the psycholinguistic nature of language.

CHAPTER III

DESIGN AND METHODOLOGY

Introduction

This study sought to determine the differences in vocabulary and comprehension levels of students who had received instruction in prediction methodology. The purpose of this study was to determine the significance of teaching prediction as an instructional method to raise vocabulary and comprehension levels of students, thereby increasing the total reading skills of the students. This chapter presents an overview of the experimental design, the subjects involved in the experiment, the instrument utilized for gathering data and procedures followed in conducting the study.

Subjects

The subjects in this study were drawn from a population of approximately six hundred middle school students. All subjects were in the sixth grade and ranged in age from eleven to twelve years. The reading ability of these students ranged from low achievers to high achievers with the majority of students having

average reading ability. The subjects were drawn from the northern and southern sections of Oklahoma City to insure representation of high, low and average socioeconomic status. The groups contained both male and female subjects. The ethnic groups represented were Black, Caucasian, Indian, Spanish and Vietnamese. The majority of the students were Caucasian and Black. The four middle schools represented were Taft Middle School, Roosevelt Middle School, Eisenhower Middle School and Jackson Middle School.

The experiment was conducted during the fall semester of 1982, at the aforementioned middle schools. The students were already scheduled in classes and random selection was not possible so random assignment was used. Kerlinger and Pedhazur (1973) state:

Potentially the most powerful form of control in research is to assign subjects randomly to experimental groups. Other things being equal, if random assignment has been used, one can assume that one's groups are equal in all possible characteristics. In a word, all variables except the one that forms the basis for the groups -- different methods of changing attitudes -- are controlled. (p. 82)

Intact classes were used and individual students were assigned to either a treatment or control group. The students were randomly assigned to eight groups of twenty students each. The data from the four control groups were combined and the data from the four treatment groups were combined. The combined scores from the control group and the treatment group were compared in order to analyze the data.

Instrumentation

The instrument used for this study was the California Achievement Test (CAT), form C, level 16. The CAT is published by CTB/McGraw Hill, Monterey, California. This test provides comprehensive information for educational evaluation. The CAT can be reported as norm-referenced data and objective-based information. It measures achievement in areas of prereading, reading, spelling, language, mathematics and referenced skills.

The reading section of this test was used as the posttest of this study. Level 16 was administered as the posttest. The subtests of Vocabulary and Comprehension were used. Also, the total score of vocabulary and comprehension were compared.

The reading vocabulary test measures word categories, words with the same meaning, words with opposite meanings, multimeaning words and definitions. The reading Comprehension test measures skill in literal, interpretive and critical comprehension. Each type of comprehension is measured by a variety of reading passages.

The CAT was standardized using (1) geographic region, (2) size of enrollment in grades one through eight, and (3) demographic data based on community characteristics related to district achievement.

The students included in the sample which normed the CAT were 13.8% Black, 7.4% Spanish and 79.6% other.

A reliable test produces scores that remain relatively stable when the test is administered repeatedly under similar conditions. The reliability of CAT C is described by several kinds of data. These data include internal consistency, repeated administration after a short interval and repeated administration after a long interval.

A measure of internal consistency, the Kuder-Richardson formula 20 (KR20), which provides a single administration of the test was used. The KR 20 was used to estimate the consistency of performance from item to item within each form of CAT C. Level 16 had a r .76 for vocabulary, r .75 for comprehension and a r .83 for the total battery.

Since the California Achievement Tests are a series of standardized test batteries that were normed under specific conditions, the most valid test results are obtained by simulating the standard conditions as accurately as possible. Two areas were considered: (1) planning the testing sessions and (2) examiners training.

In this study, each testing session was planned to help all students do their best. These points were stressed at each site.

1. The testing sessions were to be spaced over three days to avoid fatigue.
2. The tests were to be administered on Tuesday, Wednesday and Thursday. Days just before or after vacations or important school functions were avoided.
3. The testing sessions were to be scheduled so that there would be sufficient time to complete a unit by the end of the testing session.

4. Breaks between test sessions were to be scheduled because middle school students become restless.

Examiners in the testing program were instructed to do the following tasks:

1. Become familiar with the test content by taking the test and rehearsing its administration.
2. Follow the specific directions for administering each test. Be precise.
3. Each examiner should make sure that the students understood what they were supposed to do before timing the test.
4. Each examiner should allow time for questions before beginning the testing session.
5. Each examiner should observe the time limits. No student was to work longer than the specified time designated.

This instrument appears to be a valid one for Oklahoma City students because it had been normed using similar demographic locations. In addition it tested students of the same race as the students in this district and students of similar socioeconomic background.

The CAT is the standardized test given in Oklahoma City Public Schools yearly. The test was administered on two occasions: (1) The CAT was administered at the close of the study and (2) the CAT was administered as it is normally administered each spring. Data for the subjects was taken from the CAT scores administered at the close of the study and data from the Spring 1982 CAT scores.

Procedure

Design

The experimental design of the study was the a

posttest only design. The design can be diagrammed in the following way:

R	XO
R	O

The combination of random assignment and the presence of a control group served to control for all sources of internal validity except mortality (Gay, 1976). Mortality was not controlled for and was a potential threat to the validity of the study. Since the duration of the study was to be short (two months) it made the probability of differential mortality low and the post test-only design was selected. Because there was a control group comprised of the same type of subjects as are in the treatment group, regression can be ruled out as an explanation of the differences between groups. The effects of history can be disregarded if the control groups and experimental groups are tested at the same time.

Simple, or one-way analysis of variance (ANOVA) was used to determine whether there was a significant difference between two means at a selected probability level.

Gay explains the procedure as follows (1976):

The concept underlying ANOVA is that the total variance, or variance of scores, can be attributed to two sources -- variance between groups (variance caused by the treatment), and variance within groups (error variance). Randomly formed groups are assumed to be essentially the same at the beginning of the study. At the end of the study, after administration of the independent variable (treatment) we determined whether the between group (treatment) variance differs from the within groups (error) variance by more than would be expected by chance. (p. 254)

The data was analyzed by computer. The program used was the Statistical Package for the Social Sciences, published by McGraw-Hill. The scores for each subject can be found in Appendix A.

For this study, the probability level for rejecting the null hypothesis was placed at $p = .05$. Gay (1976) concluded:

For most studies, $p = .05$ is a reasonable probability level. The consequences of committing a Type I error are usually not too serious.
(p. 240)

Site Selection

The specific sites for this study were chosen to attempt to balance the socioeconomic levels of the students involved. The criteria used was the existence of a free lunch program at the site and the numbers of students who qualified for the program. Jackson had 45% of the student body eligible for the free lunch program. Roosevelt and Taft had 25% - 35% eligible and Eisenhower did not have a free lunch program.

Teacher Selection

At these sites content area teachers were chosen to teach the instructional method of prediction. The selection of content teachers was an attempt to control internal validity. Teachers who were aware of other methodology to teach reading may have used these methods

during the study. Therefore, the selection of teachers who had not been trained to teach reading was essential.

A social studies teacher was selected at each school site by the principal. The Director of Middle Schools contacted each principal and explained that their school had been chosen for the study and that the study was of interest to the district. This chain of command made the principal and teacher at each site aware of the interest and importance of this experiment to the director.

The researcher met individually with each selected teacher to explain the purpose, requirements and necessary procedures to implement the experiment. Also, the meeting was to recruit, if possible, the chosen teacher for the study. At the conclusion of the meeting, each teacher was asked to make a decision to participate in the study by attending a training session the following week. The teachers at Taft, Roosevelt and Jackson agreed to continue, the teacher at Eisenhower did not wish to participate and another teacher was selected. The principal at Eisenhower suggested another teacher and he agreed to participate. It seemed very important to have teachers who were selected but also willing to be involved in order to have better control of the study.

Training Session

The teachers met September 23, 1981, after school for a training session. The session began with a question

and answer period to discuss anything the teachers felt unsure about since our previous meeting.

The researcher taught the teachers one of the lessons they would be teaching. The idea was to be a role model. The lesson plans were followed. The teachers cooperated as students and the session was profitable to the researcher. It confirmed the belief that the teachers involved were enthusiastic

After the session, each teacher filled out a survey which would ascertain if more help was needed and if the teachers were comfortable in the program. The surveys and appear in Appendix B. One teacher asked for more help and additional time was spent with the teacher.

For this study each teacher was asked to begin grouping students for instruction in their classes, if they were not doing so already. Most middle schools do not group for instruction, the teachers lecture to the class and do not individualize for instruction. It was necessary for the students participating in the study to believe the groups to which they were assigned was a normal course of action. This was done to attempt to prevent the Hawthorne effect when the actual study began. Gay (1976).

The term Hawthorne effect is used to describe any situation in which subjects' behavior is affected not by the treatment per se, but by their knowledge of participation in a study. (p. 171)

The teachers were asked to bring with them a copy of

their roll book. This was done to randomly assign students to groups.

The students in two time blocks were given numbers, as a number was chosen the student was placed in the control group or experimental group. The researcher made the assignment.

Format

The study had a treatment group and a control group. The twenty subjects in the treatment group were taught prediction strategies for a period of eight weeks. Each treatment group would have four lessons which would take 3 to 4 class periods. The teachers were free to take as much time as needed within a two week period to teach each lesson.

The researcher prepared the lesson plans, materials and prediction statements for each lesson. Examples of each are presented in Appendix C.

Each site rotated the treatment sessions in the following manner:

Taft:

Lesson 1 Survival
Lesson 2 Freedom
Lesson 3 Protest
Lesson 4 Conflict

X_1 X_2 X_3 X_4

Eisenhower:

Lesson 1 Protest
Lesson 2 Conflict
Lesson 3 Survival
Lesson 4 Freedom

X_3 X_4 X_1 X_3

Roosevelt:

Lesson 1 Freedom
Lesson 2 Protest
Lesson 3 Conflict
Lesson 4 Survival

X_1 X_2 X_3 X_4

Jackson:

Lesson 1 Conflict
Lesson 2 Survival
Lesson 3 Freedom
Lesson 4 Protest

X_1 X_2 X_3 X_4

The reseacher observed each class during the study to make sure the lesson plans and grouping assignments were followed. The last two weeks of the study the researcher evaluated each treatment group and evaluated the session. The instrument for evaluation was prepared by the researcher. The evaluations appear in Appendix D.

Assumptions

For the purpose of this study the following assumptions were posited:

1. The teachers administered the California Achievement Test according to standardized procedures.
2. The teachers in the study followed the lesson plans for teaching the strategies of prediction.

Limitations

The study is limited in that random selection of students was not feasible because of class scheduling. Random assignment of students into treatment groups was the best alternative. Therefore, the sample may be representative of only the students in Oklahoma City Middle Schools of Jackson, Taft, Eisenhower and Roosevelt.

A second limitation of the study was the administration of the California Achievement Test. This test was given as a regular part of the schools' testing program and the guidelines for administering this test may or may not have been followed.

A third limitation was sampling in time, in that the study was allotted a period of two months by the school's administration in order to keep disruption of the regular curriculum to a minimum. In order to teach prediction strategies, a longer period of instruction may have been a better indicator of the benefits of this instructional strategy.

The final limitation in this study was the possibility of reactive arrangement. Each teacher taught the treatment group and the control group during the same period of instruction. Although efforts were made to conduct the classroom in a "normal" setting, the behavior of the teacher and student may have been affected by the experiment.

CHAPTER IV

ANALYSIS OF THE DATA

Introduction

The central concern of this study was to determine the effectiveness of the instructional strategy of prediction in increasing the vocabulary and comprehension levels of middle school social studies students.

One hundred sixty students were randomly assigned into control and treatment groups. Since it was impossible to obtain that many subjects at one school, four sites were used. Twenty students were randomly assigned into the control and treatment groups at each site. All subjects completed the study so the concern for mortality was eliminated.

All subjects were administered the California Achievement Test form C, level 16, at the end of the study and all remaining subjects were administered the California Achievement Test, form C, level 16 in the spring of 1982.

The design of the study was a posttest-only design and the statistics used to analyze the data was the one-way analysis of variance.

Linton and Gallo (1976) concluded:

With one exception, all analyses of variance require an equal number of subjects in each treatment combination. The one exception, the one-way between-subjects analysis of variance does not require equal ns. (p. 130)

This chapter includes the research hypotheses and an analysis of the collected data. Each hypothesis and results of each analysis will be discussed separately.

Hypotheses

- HO₁: There is no significant difference between the total reading scores of middle school students using prediction strategies and those using traditional instruction.
- HO₂: There is no significant difference between the vocabulary scores of middle school students using prediction strategies and using traditional instruction.
- HO₃: There is no significant difference between the comprehension scores of middle school students using prediction strategies and using traditional instruction.

Data Analysis

Hypothesis 1: Total Reading Scores

In Table I below the posttest total reading score resulted in treatment group mean of 35.800 and control group mean of 36.412. The standard deviation and standard errors of the two groups were very close with little difference. The standard deviation for the treatment group was 13.615 and the standard deviation for the control group was 14.222. The standard error for the treatment group was 1.522 and for the control group 1.590.

TABLE I
 DESCRIPTIVE STATISTICS OF TOTAL
 READING POSTTESTS

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Standard Error</u>	<u>Score Range</u>
Control	80	36.412	14.222	1.590	12 - 65
Treatment	80	35.800	13.615	1.522	14 - 66

Table II gives the one-way analysis of variance results of the total reading posttest scores. Each of these ANOVA tables will give the squares of variance, degrees of freedom, mean sums of squares, F-ratio and level of significance of the F-ratio. For an F-ratio to indicate a significant difference between the treatment and control groups, the $\alpha = .05$ level of significance will be acceptable.

In Table II, the F-ratio was 0.077, a level of significance 0.7812, which exceeds the .05 alpha level for determining significant differences. Therefore, there was no significant difference between the posttest total reading scores of treatment and control groups. Therefore, H_{01} could not be rejected.

TABLE II
 ONE-WAY ANALYSIS OF VARIANCE F-TABLE
 TOTAL READING POSTTESTS

<u>Source of Variance</u>	<u>Degrees of Freedom</u>	<u>Sums of Squares</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>Level of Significance</u>
Between	1	15.006	15.006	0.077	0.7812
Within	158	30624.187	193.824		
Total	159	30639.193			
* .05 F (1, 120) = 3.92					
.01 F (1, 120) = 6.85					

Table III gives the results of follow-up testing done approximately five months after the completion of the study. The follow-up total reading mean score for the treatment group was 40.309 and control group mean of 41.225. The standard deviation of the two groups were very close with little difference. The standard deviation for the treatment group was 13.900 and the standard deviation for the control group was 12.864. The standard error for the treatment group was 1.649 and for the control group 1.438.

TABLE III
DESCRIPTIVE STATISTICS OF TOTAL READING
FOLLOW-UP SCORES

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Standard Error</u>	<u>Score Range</u>
Control	80	41.225	12.864	1.438	15 - 66
Treatment	71	40.309	13.900	1.649	11 - 63

Table IV gives the one-way analysis of variance results of the total reading follow-up scores. Each of these ANOVA tables will give the squares of variance, degrees of freedom, mean sums of squares, F-ratio and level of significance of the F-ration. For an F-ration to indicate a significant difference between the treatment and

control groups, the $\alpha = .05$ level of significance will be acceptable.

TABLE IV
ONE-WAY ANALYSIS OF VARIANCE F-TABLE
TOTAL READING FOLLOW-UP SCORES

<u>Source of Variance</u>	<u>Degrees of Freedom</u>	<u>Sums of Squares</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>Level of Significance</u>
Between	1	31.502	31.5027	0.176	0.675 (N.S.)
Within	149	26599.133	178.5177		
Total	150	16630.635			
* .05 F (1, 120) = 3.92					
.01 F (1, 120) = 6.85					

In Table IV, the F-ratio was 0.176, a level of significance 0.675, which exceeds the .05 alpha level for determining significant differences. Therefore, there was no significant differences between the total reading scores of treatment and control groups on the follow-up tests. This data substantiates the results obtained at the close of the study.

Hypothesis 2: Vocabulary Score

In Table V, the posttest vocabulary score resulted in

treatment group mean of 16.012 and control group mean of 16.375. The standard deviation and standard errors of the two groups were very close with little difference. The standard deviation for the treatment group was 5.722 and the standard deviation for the control group was 6.140. The standard error for the treatment group was 0.639 and for the control group 0.686.

TABLE V
DESCRIPTIVE STATISTICS OF
VOCABULARY POSTTESTS

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Standard Error</u>	<u>Score Range</u>
Control	80	16.375	6.140	0.686	3 - 29
Treatment	80	16.012	5.722	0.639	5 - 27

Table VI gives the one-way analysis of variance results of the vocabulary posttest scores. Each of these ANOVA tables will give the squares of variance, degrees of freedom, mean sums of squares, F-Ratio and level of significance of the F-ratio. For an F-ratio to indicate a significant difference between the treatment and control groups, the $\alpha = .05$ level of significance will be acceptable.

TABLE VI
ONE-WAY ANALYSIS OF VARIANCE F-TABLE
VOCABULARY POSTTESTS

<u>Source of Variance</u>	<u>Degrees of Freedom</u>	<u>Sums of Squares</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>Level of Significance</u>
Between	1	5.256	5.256	0.149	0.699 (N.S.)
Within	158	5565.737	35.226		
Total	159	5570.993			
* .05 F (1, 120) = 3.92					
.01 F (1, 120) = 6.85					

In Table VI, the F-ratio was 0.419, a level of significance of 0.699, which greatly exceeds the .05 alpha level for determining significant differences. Therefore, there was no significant difference between the posttest vocabulary scores of treatment and control groups. The researcher did not reject H_0 .

Table VII, in the follow-up tests done approximately five months after the study, the vocabulary score resulted in a treatment mean of 17.611 and a control group mean of 17.850. The standard deviation and standard error of the two groups were very close with little difference. The standard deviation for the treatment group was 6.305 and the standard deviation for the control group was 5.761. The standard error was 0.743 for the treatment group and 0.644 for the control group.

TABLE VII
DESCRIPTIVE STATISTICS OF THE VOCABULARY
FOLLOW-UP TESTS

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Standard Error</u>	<u>Score Range</u>
Control	80	17.850	5.761	0.644	6 - 30
Treatment	72	17.611	6.305	0.743	0 - 29

Table VIII gives the one-way analysis of variance results of the vocabulary follow-up scores. Each of these ANOVA tables will give the squares of variance, degrees of freedom, mean sums of squares, an F-ratio to indicate a significant difference between the treatment and control groups, the $\alpha = .05$ level of significance will be accepted.

TABLE VIII
ONE-WAY ANALYSIS OF VARIANCE F-TABLE
VOCABULARY FOLLOW-UP SCORES

<u>Source of Variance</u>	<u>Degrees of Freedom</u>	<u>Sums of Squares</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>Level of Significance</u>
Between	1	2.163	2.163	0.060	0.807 (N.S.)
Within	158	5445.311	36.302		
Total	159	5447.473			
* .05 F (1, 120) = 3.92					
.01 F (1, 120) = 6.85					

In Table VIII, the F-ratio was 0.060, a level of significance 0.807, which exceeds the .05 alpha level for determining significant differences. Therefore, there were no significant difference between the vocabulary scores of the treatment and control groups on the follow-up tests.

Hypothesis 2: Comprehension Scores

In Table IX the posttest comprehension score resulted in treatment group mean of 19.687 and control group mean of 19.937. The standard deviation and standard error of the two groups were very close with little difference. The standard deviation for the treatment group was 8.759 and the the control group 9.154. The standard error was 0.979 for the treatment group and 1.023 for the control group.

TABLE IX
DESCRIPTIVE STATISTICS OF COMPREHENSION
POSTTESTS

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Standard Error</u>	<u>Score Range</u>
Control	80	19.937	9.154	1.023	4 - 39
Treatment	80	19.787	8.759	0.979	5 - 39

Table X gives the one-way analysis of variance results of the comprehension posttest scores. Each of these tables will give the squares of variance, degrees of freedom, mean sums of squares, F-ratio and level of significance of the F-ratio. For an F-ratio to indicate a significant difference between the treatment and control groups, the $\alpha = .05$ level of significance will be accepted.

TABLE X
ONE-WAY ANALYSIS OF VARIANCE F-TABLE
COMPREHENSION POSTTESTS

<u>Source of Variance</u>	<u>Degrees of Freedom</u>	<u>Sums of Squares</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>Level of Significance</u>
Between	1	0.900	0.900	0.011	0.915 (N.S.)
Within	148	12682.075	80.266		
Total	149	12682.975			
* .05 F (1, 120) = 3.92					
.01 F (1, 120) = 6.85					

In Table X, the F-ratio was 0.011, a level of significance of 0.915, which exceeds the .05 alpha level for determining significant differences. Therefore there was no significant differences between the posttest comprehension scores of treatment and control groups. Hypothesis

H_0 could not be rejected because there were no significant differences between the comprehension posttest scores of the treatment group and the comprehension posttest scores of the control group.

Table XI gives the results of follow-up testing done approximately five months after the completion of the study. The follow-up comprehension mean score for the treatment group was 22.493 and control group mean was 23.500. The standard deviation of the two groups were very close with little difference. The standard deviation for the treatment group was 8.884 and the standard deviation for the control group was 7.767. The standard error for the treatment was 1.054 and for the control group 0.868.

TABLE XI
DESCRIPTIVE STATISTICS OF COMPREHENSIVE
FOLLOW-UP SCORES

<u>Group</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Standard Error</u>	<u>Score Range</u>
Control	80	23.500	7.767	0.868	9 - 37
Treatment	80	22.493	8.884	1.054	4 - 37

Table XII gives the one-way analysis of variance results of the comprehension follow-up scores. Each of

these ANOVA tables will give the squares of variace, degrees of freedom, mean sums of squares, F-ratio and level of significance. For an F-ratio to indicate a significant difference between the treatment and control groups the alpha level of .05 level of significance will be accepted.

TABLE XII
ONE-WAY ANALYSIS OF COMPREHENSION
FOLLOW-UP SCORES

<u>Source of Variance</u>	<u>Sums of Squares</u>	<u>Degrees of Freedom</u>	<u>Mean Squares</u>	<u>F Ratio</u>	<u>Level of Significance</u>
Between	641.355	1	641.355	1.906	0.1695 (N.S.)
Within	49,801.547	148	336.497		
Total	49,442.898	149			
* .05 F (1, 120) =		3.92			
.01 F (1, 120) =		6.85			

In Table XII the F-ratio was 0.552, a level of significance 0.458, which exceeds the .05 alpha level for determining significant differences. Therefore, there was no significant differences between the comprehension scores of the treatment and control groups on the follow-up tests.

CHAPTER V

SUMMARY, FINDINGS, DISCUSSION AND RECOMMENDATIONS

Introduction

This study was designed to determine the effectiveness of teaching the instructional strategy of prediction to middle school social studies students. The prediction strategies were taught using the steps and ideas of Dr. Harold Herber of Syracuse University. Many authors have suggested prediction as a key to comprehension. Therefore, the study attempted to establish a correlation between the teaching of prediction and an increase in vocabulary, comprehension and total reading scores.

The subjects of the study were 160 students drawn from four middle schools in the Oklahoma City School District (Taft, Roosevelt, Eisenhower and Jackson.) The subjects were randomly assigned to a treatment group or control.

The design of the study was a posttest-only design. The California Achievement Test (CAT) normally administered by the district was used to collect the data. The CAT was administered at the end of the study to analyze the data and the CAT normally administered in the spring of 1982

were analyzed to determine if any differences were apparent after a 5 month time lapse. The study took place in the fall of 1981 during the months of October and November. Teachers were trained, followed lesson plans and used the materials provided by the researcher.

The statistical technique used was the one-way analysis of variance and the results revealed no significant differences. Therefore, all hypotheses were not rejected.

Findings and Discussion

After examining the results of the one-way analysis of variance, it was concluded that there were no significant differences between posttest scores of the treatment and control groups in vocabulary, comprehension and total reading. Thus, the researcher did not reject the null hypotheses.

However, the determining factors may have been: (1) prediction strategies were taught for a short period (2 months); a longer period of instruction (6 - 9 months) may have made a difference, and (2) the fact that both groups (treatment and control) were instructed in the same classroom may have created the novelty effect which increases interest, motivation or participation on the part of both groups because one group was doing something different.

Recommendations

Instructional methods which could influence vocabulary and comprehension levels of students warrant investigation. Teaching comprehension, according to educators, is a difficult task. Therefore, useful or useless procedures to teach comprehension need to be established. The time and effort spent investigating prediction strategies has been an interesting study for the researcher. Although the data cannot and should not be generalized to any other schools but Jackson, Taft, Roosevelt and Eisenhower in the Oklahoma City School District, it appears the teaching of prediction strategies have not significantly raised reading levels of these students.

One of the interesting aspects of the study was the motivation effects these lessons had upon the treatment group. The students involved, when observed by the researcher, were highly interested in the lesson, eager to participate in the discussion, and were making contributions to the group. Several teachers commented on the interest the lessons had generated, not only by the students in the treatment but the interest of the students in the control groups as well.

The reactive arrangements due to the limitations of scheduling may have influenced the study. The treatment group and the control groups should not have been in the

same classroom. The Hawthorne effect which the researcher tried to avoid appeared to be present in both groups.

The study might have been improved if the study had been allowed more time in the curriculum. Instructional period of October through April may have been ample time for most students to learn this concept and transfer the generalizations to social studies materials.

A major error may have been the development of social studies materials to teach prediction strategies. The instrument used to test, the California Achievement Test, did not use content area material when evaluating reading skills. The effects of the strategy of prediction may have been more accurate if language arts materials had been utilized to teach prediction strategies.

Suggestions for Further Research

The suggestions from the researcher for further study are as follows:

1. A similar study should allow more time for the instruction of the prediction strategies. The time available for this study may have been insufficient to prove the effectiveness of the teaching of prediction.
2. A similar study should separate the treatment group and the control groups when instructing prediction strategies. The methods of brain storming and discussion appear to be highly motivating to students.

3. In a similar study, the researcher should develop materials which utilize language arts materials rather than social studies materials to teach prediction strategies.
4. In a similar study, the researcher should use motivation as a dependent variable to check the effects of motivation since this study suggests motivation was a variable.

Prediction strategies are being mentioned more and more in the literature as an aid to comprehension. Another study should be done to compare results.

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APPENDIXES

APPENDIX A

RAW DATA OF EXPERIMENTAL STUDY

RAW DATA OF EXPERIMENTAL STUDY
CONTROL GROUP

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
1	10	18	28
2	18	11	29
3	6	10	16
4	3	13	16
5	10	13	23
6	28	9	27
7	16	27	43
8	12	4	16
9	9	10	19
10	11	16	27
11	20	11	31
12	25	18	43
13	19	12	31
14	14	16	30
15	16	9	25
16	16	14	30
17	15	12	27
18	20	8	28
19	8	13	21
20	14	10	24
21	22	32	54
22	17	22	39
23	15	11	26
24	24	33	57
25	18	27	45
26	21	21	42
27	4	8	12
28	15	22	37
29	23	23	46
30	19	33	52
31	10	20	30
32	15	20	35
33	20	27	47
34	15	27	42
35	24	27	51
36	9	13	22
37	21	27	48
38	12	10	22
39	21	32	53
40	12	11	23
41	24	28	52
42	8	12	20
43	14	9	23
44	6	12	18
45	22	25	47
46	25	34	59

RAW DATA/EXPERIMENTAL STUDY/CONTROL GROUP
(Continued)

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
47	12	7	19
48	21	28	49
49	14	10	24
50	11	13	24
51	24	31	55
52	19	25	44
53	24	28	52
54	23	33	56
55	8	13	21
56	26	39	65
57	9	15	24
58	18	24	42
59	26	35	61
60	9	11	20
61	22	33	55
62	20	26	46
63	25	33	58
64	10	16	26
65	14	18	32
66	12	19	31
67	7	9	16
68	20	27	47
69	12	13	25
70	19	26	45
71	21	21	42
72	21	19	40
73	20	31	51
74	17	8	25
75	8	10	18
76	8	23	31
77	24	38	62
78	29	31	60
79	23	33	56
80	17	29	46

$\bar{x} = 16.37$
S.D. 6.14

$\bar{x} = 19.93$
S.D. 9.15

$\bar{x} = 36.41$
S.D. 14.22

RAW DATA OF EXPERIMENTAL STUDY
TREATMENT GROUP

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
81	9	8	17
82	8	8	16
83	16	13	29
84	26	29	45
85	15	12	27
86	8	14	22
87	15	22	37
88	18	19	37
89	16	9	25
90	25	5	30
91	15	20	35
92	15	23	42
93	8	6	14
94	6	11	17
95	7	7	14
96	14	7	21
97	15	13	28
98	9	7	16
99	15	22	37
100	10	12	22
101	12	18	30
102	24	29	53
103	20	24	44
104	8	15	23
105	5	16	21
106	9	23	32
107	12	22	34
108	20	33	53
109	22	35	57
110	13	12	25
111	20	29	49
112	18	16	34
113	18	30	48
114	12	18	30
115	15	16	31
116	8	9	17
117	20	27	47
118	17	26	43
119	7	13	20
120	25	29	54
121	13	8	21
122	18	13	32
123	10	11	21
124	22	26	48
125	21	28	49
126	8	12	20

RAW DATA/EXPERIMENTAL STUDY/TREATMENT GROUP
(Continued)

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
127	16	28	44
128	20	27	47
129	17	20	37
130	12	24	36
131	14	13	27
132	26	29	55
133	14	21	35
134	12	11	23
135	22	25	57
136	10	10	20
137	25	30	55
138	23	34	57
139	17	20	37
140	11	15	26
141	13	10	23
142	13	5	18
143	19	22	41
144	13	16	29
145	15	18	33
146	25	35	60
147	12	13	25
148	24	26	50
149	27	39	66
150	26	34	60
151	24	28	52
152	25	34	49
153	13	18	31
154	19	22	51
155	12	16	28
156	20	31	51
157	16	18	34
158	20	27	47
159	20	25	45
160	25	34	59

$\bar{x} = 16.01$
S.D. 5.72

$\bar{x} = 19.79$
S.D. 8.76

$\bar{x} = 35.80$
S.D. 13.62

RAW DATA FOLLOW-UP TESTING
CONTROL GROUP

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
1	11	14	25
2	13	17	30
3	12	11	23
4	7	12	19
5	7	20	27
6	18	28	46
7	19	29	48
8	8	12	20
9	21	26	47
10	18	26	44
11	21	17	38
12	23	20	43
13	14	22	36
14	14	16	30
15	18	23	41
16	15	22	37
17	18	17	35
18	20	17	36
19	6	13	19
20	16	27	43
21	23	36	59
22	17	26	43
23	8	15	23
24	20	27	47
25	18	25	43
26	20	25	45
27	6	9	15
28	15	27	42
29	18	25	43
30	11	12	23
31	15	23	38
32	21	21	42
33	26	35	61
34	21	29	50
35	27	30	57
36	11	15	26
37	21	33	54
38	16	14	30
39	21	32	53
40	22	29	51
42	10	13	23
43	9	17	26
44	9	17	26
45	19	26	45
46	18	32	50
47	17	15	32

RAW DATA/FOLLOW-UP/CONTROL GROUP
(Continued)

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
48	24	29	53
49	13	20	33
50	19	16	35
51	26	31	57
52	21	17	38
53	24	28	52
54	20	33	53
55	19	19	38
56	26	37	63
57	16	12	28
58	17	31	48
59	26	35	61
60	12	9	21
61	27	34	61
62	26	29	55
63	27	33	60
64	12	22	34
65	16	24	40
66	15	25	40
67	15	9	24
68	15	23	38
69	21	32	53
70	19	22	41
71	25	29	54
72	17	30	47
73	24	30	54
74	19	26	45
75	12	13	26
76	16	28	44
77	29	36	65
78	30	36	66
79	26	35	61
80	20	29	49
	$\bar{x} = 17.85$ S.D. 5.76	$\bar{x} = 23.50$ S.D. 7.77	$\bar{x} = 41.23$ S.D. 12.86

RAW DATA FOLLOW-UP TESTING
TREATMENT GROUP

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
81	16	15	31
82	9	7	16
83	15	24	39
84	18	30	48
85	22	23	45
86	7	4	11
87	15	14	29
88	19	24	43
89	15	17	32
90	23	21	44
91	15	30	45
92	15	22	37
93	13	16	29
94	11	8	19
95	11	9	20
96	10	5	15
97	16	21	37
98	5	14	19
99	25	32	57
100	6	8	14
101	12	13	25
102	-	-	-
103	-	-	-
104	13	17	30
105	-	-	-
106	14	29	43
107	17	25	42
108	-	-	-
109	-	-	-
110	-	-	-
111	-	-	-
112	14	14	28
113	-	-	-
114	12	22	34
115	21	26	47
116	12	8	20
117	15	15	30
118	21	29	50
119	9	27	26
120	-	-	-
121	14	24	38
122	20	25	45
123	12	12	24
124	25	30	55
125	20	34	54
126	10	15	25

RAW DATA/FOLLOW-UP/TREATMENT GROUP
(Continued)

Student Number	Vocabulary Raw Score	Comprehension Raw Score	Total Raw Score
127	21	29	50
128	26	34	60
129	20	26	46
130	8	20	28
131	23	35	58
132	27	34	61
133	19	26	45
134	15	24	39
135	19	32	51
136	21	14	35
137	26	31	57
138	26	37	63
139	20	17	37
140	12	10	22
141	20	24	44
142	20	11	31
143	25	26	51
144	12	21	33
145	23	14	37
146	26	37	63
147	15	17	32
148	24	18	42
149	29	37	63
150	26	37	63
151	22	25	47
152	27	36	63
153	16	30	46
154	21	26	47
155	19	23	42
156	25	33	58
157	14	26	40
158	25	32	57
159	21	24	45
160	28	32	60
	$\bar{x} = 17.61$ S.D. 6.31	$\bar{x} = 22.49$ S.D. 8.88	$\bar{x} = 40.31$ S.D. 13.90

APPENDIX B

EVALUATION OF TEACHER TRAINING
SESSION

EVALUATION OF TEACHER TRAINING SESSION

1. Before the training session did you understand what you were expected to do during the treatment session? yes
2. Do you now understand what is expected of you as the teacher in this experiment? yes
3. Is this the first time this instructional method has ever been taught to you? no - it's been a while
4. Do you need more help understanding what you are expected to do? yes
5. Did the training session answer your questions about the project? yes
6. Do you feel comfortable directing similar sessions with your class? yes

1. Before the training session did you understand what you were expected to do during the treatment session? yes
2. Do you now understand what is expected of you as the teacher in this experiment? yes
3. Is this the first time this instructional method has ever been taught to you? no
4. Do you need more help understanding what you are expected to do? no - If I do, I'll ask for help.
5. Did the training session answer your questions about the projects? yes
6. Do you feel comfortable directing similar sessions with your class? yes

1. Before the training session did you understand what you were expected to do during the treatment session? yes
2. Do you now understand what is expected of you as the teacher in this experiment? yes
3. Is this the first time this instructional method has ever been taught to you? yes
4. Do you need more help understanding what you are expected to do? no
5. Did the training session answer your questions about the projects? yes
6. Do you feel comfortable directing similar sessions with your class? yes

1. Before the training session did you understand what you were expected to do during the treatment session? yes
2. Do you now understand what is expected of you as the teacher in this experiment? yes
3. Is this the first time this instructional method has ever been taught to you? yes
4. Do you need more help understanding what you are expected to do? no
5. Did the training session answer your questions about the projects? yes
6. Do you feel comfortable directing similar sessions with your class? yes

APPENDIX C

STEPS FOR TEACHING PREDICTION

STEPS FOR TEACHING PREDICTION

They All Served

1. Introduce the concept you wish to teach:

Freedom

- a. Divide the group into pairs. In 2 minutes I would like for you to write as many words as you can correct in some way with the word, "Freedom".
- b. Count the number of words on your lists.
- c. Identify the winning list.
- d. The teacher records on the blackboard the winning list.
- e. Each group reports the words on their list which did not appear on the winning list.
- f. Discuss the meaning of the words:
 1. independence - freedom from the control of another.
 2. freedom - a very general term, may imply at one extreme total absence of restraint and at the other an unawareness of being hampered in any way.

Have the students expound on what they believe freedom and independence to mean.

2. Prediction statements:

- a. Read each statement to see if you can personally agree with these statements.
- b. Discuss with the group the statements you agreed with.
- c. Make sure each student has an opportunity to contribute.

3. Abstract:

You will be reading a passage that describes how different races, nationalities and beliefs helped the colonies to gain independence.

4. Predict about the statements:

From the information I have given you predict what you feel the author will state or infer.

5. Check and prove your accuracy:

Place an asterisk by the statements the author did support.

Discuss your decisions with other members of the group and with your teacher.

THEY ALL SERVED

"What?" shouted General Thomas Gage, commander of English troops in Boston. "But we must hold those hills with English troops!" On the morning of June 17, 1775, General Gage had just been told that American patriots had moved onto Breed's Hill and Bunker Hill, overlooking Boston harbor where the English fleet was anchored.

"Occupied it, have they! Then we'll just bombard them." When the shelling didn't drive the patriots back, General Gage ordered his troops to charge. About 2500 well-trained English troops started up Breed's Hill, where 1500 untrained men and boys stood ready.

Twice the English charged, and twice they were thrown back. As the English grouped for a third charge, the patriots had to retreat, their gunpowder almost gone. By then more than 1000 of Gage's men lay dead or wounded, among them Colonel James Abercromby and Major Pitcairn.

One of the patriots who fought that day was young Peter Salem, a Negro from Framingham, Massachusetts. In 1775 Salem joined the Minutemen, soldiers who were ready to take up arms at a minute's notice. When the first shots of the War for Independence were fired at Lexington and Concord in April, 1775, Salem was there with the Minutemen. After the Battle of Bunker Hill, many soldiers said that Peter Salem had fired the shot that killed Major Pitcairn. Later, Salem fought in the Battle of Saratoga. After the war, he returned to Massachusetts to live.

Women also helped to win the War for Independence. One of these women was Mary Hays. When the war began, Mary's husband enlisted in Washington's army to find some way of being near him.

One June day in 1778 General Washington's forces attacked the English at Monmouth, New Jersey. In the midst of the battle, Washington's soldiers saw a strange sight. A woman with pitchers in her hands was moving across the battlefield, offering cool water to the thirsty and exhausted soldiers. It was Mary Hays.

As she worked, Mary saw that her husband had been wounded and was lying beside his cannon. The others in the gun crew were starting to retreat. Knowing that they needed someone to ram the staff for the cannon, Mary stepped in. Shouting for the men to stay at their posts, she grabbed the rammer from her fallen husband. There she stood, in the thick of the battle, and kept the cannon firing. Before long, Washington rallied his men and turned back the English troops. After the battle, Mary Hays became known as Molly Pitcher.

THEY ALL SERVED (continued)

There were others, too, who helped the American cause. Haym Salomon had come to America just three years before the War for Independence. Because he was a Jew, his native land of Poland had given him little freedom. He hoped to find more in America. When the colonists declared their independence, he wanted to help the patriots' cause. Twice he was arrested by the English and charged with spying. In 1778 he was sentenced to death. Haym Salomon managed to escape and to go on helping the American cause.

The cost of the war was high, and Congress had no power to raise money by taxes. Haym Salomon helped raise money, and even loaned his own money, to carry on the war. When he died, Haym Salomon left almost no money for his family, although he had raised hundreds of thousands of dollars for his country.

Another of the people who helped the patriots to victory was Thaddeus Kosciuszko, a Polish officer. As a young man, he had graduated from the Royal College in Warsaw, Poland, and was trained in military engineering. When the Revolution began, he came to America and served as a colonel of engineers.

The turning point in the war was the Battle of Saratoga in October, 1777. It was Kosciuszko who set up fortifications for the colonial army before the battle. These fortifications helped the Americans to defeat General Burgoyne and his army.

After the Revolution, Kosciuszko was returned to Poland, where he worked to gain freedom for his own people.

So it was that people of different races, nationalities, and beliefs helped the colonies to gain independence. After independence was won, these same people would help to make the new nation strong.

PREDICTION STATEMENTS FOR
FREEDOM

- _____ 1. You don't have to work for freedom.
- _____ 2. Separating people makes them equal.
- _____ 3. Being independent is a product of a
person's mind.
- _____ 4. Freedom isn't free.
- _____ 5. Freedom is the American dream.
- _____ 6. Your freedom ends where my nose begins.
- _____ 7. Freedom is won by war.

STEPS FOR TEACHING PREDICTION

Great Moments from Our Past

1. Introduce the concept you wish to teach:
Protest
 - a. Discuss among yourselves what the word protest means to you.
 - b. What is the prefix of the word? Pro
 - c. What is the root word? test
 - d. What other words do you know that have test as a root word? testimony
 - e. Test comes from the word testare which means "to witness"
 - f. For 90 seconds, all of you brainstorm. One of you act as the recording secretary and write down the suggestions. We are looking for words which in your mind represent Types of Protests.
 - g. Discuss the words written.
2. Prediction statements:
 - a. Read each statement to see if you can personally agree with these statements.
 - b. Discuss with the group the statements with which you agreed.
3. Abstract:

You will be reading a passage about a historical event in which a new kind of protest was invented and applied. It brought about new benefits for workers in the United States.
4. Predict about the statements:

Do you think the author will agree with you? From the little information I have told you, predict what the author is going to say by circling the number of statements you feel he will state or infer.
5. Check and prove your accuracy:

Place an asterisk by the statement the author did support.

Discuss your decisions with other members of the group and with your teacher.

GREAT MOMENTS FROM OUR PAST

When they tie the can to a
 union man,
 Sit down! Sit down!
 When the speed-up comes,
 just twiddle your thumbs,
 Sit down! Sit down!
 When the bosses won't talk,
 don't take a walk,
 Sit down! Sit down!

This is a song that thousands of workers were singing in 1937. They were taking part in a new kind of strike -- the sit-down. These workers would not leave the factories when they went on strike. Instead, they just sat down. They stayed inside the factories until the strike ended. Her is the story of the first one.

Workers at the General Motors factories in Michigan were angry. They earned only about \$1,000 a year. and there was a speed-up ont he assumblly lne. Workers had to work very quickly. It put them under a great strain.

Soon the workers began to join a new union. It was the United Auto Workers. But officers of General Motors would not meet with the union. In Januayr, 1937, the union called a strike. The workers just put away their tools and sat down.

At night they slept on the floors of new cars. Food was passed to them through windows. They carefully guarded the company's property. And no drinking was allowed.

General Motors officers said the workers had no right to stay on company property. Union officers said they had a right to suport their families.

General Motors shut off the heat in the factories. It was winter, and the men were cold. But they wouldn't leave. Police tried to rush into on factory. Workers drove them back. The police came back with tear gas. The workers drove them back again by turning fire hoses on them.

The strike went on for weeks. Finally, a court ordered the strikers to leave the factories by three o'clock on February 3. The National Guard was called in to back up the court order. But the workers said they would not leave. Then Governor Frank Murphy ordered General Motors and the union to hold peace talks. Meanwhile, the workers got ready to fight.

Three o'clock came on February 3. But there was no battle. Governor Murphy would not order the National Guard to attack. He did not want any blood spilled. President Roosevelt also asked for a peaceful settlement. A week later the settlement came. General Motors agreed to bargain with the United Auto Workers. It agreed to do something about the speed-up. It was a big victory for the auto union, and for unions everywhere.

PREDICTION STATEMENTS FOR
PROTEST

- _____ 1. If you don't work, you don't eat.
- _____ 2. Violence gets you what you want.
- _____ 3. People working together have more power.
- _____ 4. People should not have the right to
speak against something or someone.
- _____ 5. People in authority listen.
- _____ 6. Organized disagreements can be peaceful
and violent at the same time.
- _____ 7. Protests always bring results.
- _____ 8. People have the right to live in peace.

STEPS FOR TEACHING PREDICTION

NEW LIFE FOR A DYING TOWN

1. Introduce the concept you wish to teach:

Survival

- a. To survive requires some basic needs, put your heads together and come up with 3 basic needs man requires to survive. (food, shelter and clothing)
- b. How can these basic needs be obtained? I'll give you 2 minutes to decide on 3 ways. Put your heads together and draw some conclusions. (money, goods and services)

2. Prediction statements:

- a. Read each statement to see if you can personally agree with these statements.
- b. Discuss with the group the statements with which you agreed.
- c. Make sure each student has an opportunity to contribute.

3. Abstract:

You will be reading a passage about the strengths of man's instincts. Also, the passage will show how man will find ways to overcome adversity no matter what form it takes.

4. Predict about the statements:

From the information I have given, predict what the author is going to say by circling the number of statements you feel he will state or infer.

5. Check and prove your accuracy:

Place an asterisk by the statements the author did support.

Discuss your decisions with other members of the group and with your teacher.

NEW LIFE FOR A DYING TOWN

Craigsville, Virginia, was a little town with a big problem. Craigsville was dying.

Until the late 1960's, the only important industry in Craigsville was a large cement factory. Many of the townspeople worked there. But the cement factory began to run into trouble. The factory owners began to lose money. They closed the factory down. Suddenly, many people were out of work. What could they do? Where would they find new jobs?

Many of the unemployed workers had to travel as far as one hundred miles away to find new jobs. Although they wanted to live in Craigsville, they had no choice. They had to live close to their jobs. Soon, more and more workers and their families began to move away as they found new jobs in other places.

Everyone who stayed in Craigsville suffered when their neighbors left. Some stores had to close because they did not have enough customers. The movie theater closed. So did the railroad station. Craigsville was dying. People wondered what they could do to bring their town back to life.

"Garbage is our only hope," announced the mayor. And it was garbage that brought Craigsville its new life. The townspeople voted to convert the old cement factory into a garbage recycling center. "We can put up with a little smell if it means saving our town," said one resident. Many neighbors agreed.

Today, garbage is shipped from nearby towns and cities to Craigsville. The recycling plant turns this garbage into useful products, such as fertilizer and large solid blocks used for landfill. Some people doubt whether the project will work. But Craigsville now has a major industry again, and her citizens have jobs. Craigsville is once again alive and well.

Many small towns in America face the same problem that nearly ruined Craigsville. Many people in Roundup, Montana, had worked for years in nearby coal mines. Then the mines ran out of coal and shut down. The people of Roundup felt hopeless until the high school principal studied the old mines. He found out that they were ideal for growing mushrooms. Today, the new companies are making a good profit by growing and selling mushrooms. Many former miners are making a good living again by working for the mushroom growers.

A country - or a town - can never really stand still. As people's needs change, industry and jobs must change too. Sometimes these changes hurt people by affecting their way of life or by leaving them jobless. Big cities offer many different jobs to the people who live there. But many people do not want to leave their homes in small towns. They like to know their neighbors, and say hello as they pass on the street. These people are working hard to keep the small town an important part of American life. They are learning new skills through job training. They are finding ways of helping their home towns to keep up with the changing times.

PREDICTION STATEMENTS FOR
SURVIVAL

- _____ 1. You can not live if you do not have money.
- _____ 2. Change always hurts somebody.
- _____ 3. Some people would rather run from a problem than try to solve it.
- _____ 4. Something that is a problem for you can be an answer for someone else.
- _____ 5. Man's cleverness helps him survive.
- _____ 6. If at first you dont succeed, try, try again.
- _____ 7. Appearance can be deceiving.

STEPS FOR TEACHING PREDICTION

SLAVERY -- YES OR NO?

1. Introduce the concept you wish to teach:

Conflict

- a. Even though conflict takes many forms, there is a similarity in principle with respect to causes, effects and evidence.
- b. Divide into pairs, discuss the cause of slavery in the United States as you understand it. After 5 minutes of discussion, report to the group what your group believed to be the cause of slavery.
- c. Discuss the effect of slavery on the history of the United States. Report to the group the consensus of the group.
- d. What evidence do we have that slavery caused conflict in the United States.

2. Prediction statements:

- a. Read each statement to see if you can personally agree with these statements.
- b. Discuss with the group the statements with which you agreed.
- c. Make sure each student has an opportunity to contribute.

3. Abstract:

You will be reading some excerpts from letters, books, newspapers and diaries which reported how people who lived in the 1800's felt about slavery.

4. Predict about the statements:

From the information I have given, predict what the author is going to say by circling the number of statements you feel he will state or infer.

5. Check and prove your accuracy:

Place an asterisk by the statements the author did support.

Discuss your decisions with other members of the group and with your teacher.

SLAVERY -- YES OR NO?

Living in the 1970's, we know how wrong slavery of any kind is. But what about the people who lived in the early 1800's? What did they think of slavery? We do not have to guess, for we have good records. People wrote letters, printed books and newspapers, and kept diaries. Out of all this has come a fairly clear picture of the times.

Here is an account written by an Irishman about a shipload of slaves being sent from Africa to Brazil in 1829.

"I went on board with the officers . . . We found the ship full of slaves -- She was a very broad-decked ship and had taken in on the coast of Africa 336 males and 226 females, making in all 562, and had been out seventeen days, during which they had thrown overboard 55. The slaves were all enclosed under grated hatchways, between decks . . .

"They were all branded like sheep, as the mate informed me, burnt with a red hot iron. How was it possible for such a number of human beings to exist, packed up and wedged together as tight as they could cram in low cells, three feet high?"

What the Irishman wrote was certainly saying that slavery was bad. Do you think that what he wrote influenced others? Maybe. But the accounts written in those days weren't all alike. Here is another description, written in 1841 by an English scientist visiting the United States.

"The Negroes. . . appear cheerful and free from care, better fed than a large part of the workers of Europe. We asked a woman in Georgia whether she was the slave of a family we know. She replied merrily, 'Yes, I belong to them and they belong to me.' We heard the Negroes singing loudly and joyously in chorus after their day's work was over. . . After the stories I had read of the sufferings of slaves, I was agreeably surprised to find them, in general, so remarkably cheerful and lighthearted."

Do you think he got a true picture of what these slaves really felt?

Another person wrote about a slave auction in the South. This account was published in the New York Tribune in 1859.

SLAVERY -- YES OR NO? (continued)

"The slaves were brought in early, that buyers who desired to inspect them might enjoy that privilege. The Negroes were examined as though they were animals. The buyers pulled their mouths open to see their teeth. They pinched their limbs to find how muscular they were. They made them stoop and bend in different ways, that they might be certain that there was no concealed wound. All these humiliations were submitted to without a murmur.

"The expression on the faces of all who stepped on the blocks was always the same and told of more anguish than it is in the power of words to express. Crushed hopes and broken hearts was the sad story to read in all the anxious faces.

"A man in the prime of life, worth \$1600, can have little hope of ever being able to purchase his liberty. But, let him be injured and his value is reduced and he may hope eventually to purchase his liberty. Freedom without health is much sweeter than health without freedom."

How do you think people felt after reading that article in the Tribune?

It's hard for us to realize that many Americans in the 1800's never saw any slaves. Most people outside the South had to go by what they read or heard from travelers. Perhaps they felt confused. This is what one person wrote about slaves in 1832.

"The slaves of a good master are his warmest, most constant and most devoted friends; they have been accustomed to look up to him as their supporter and defender. Everyone who knows southern slaves, knows that the slave is happy when his master prospers."

Would you have believed that? Why do you suppose the writer painted such a rosy picture?

How would you have felt about slavery if you had lived 150 years ago? Probably your feeling now is that you would have thought it to be very wrong. Maybe you would have helped runaway slaves or worked against the whole slave system. Today, all Americans agree that slavery was evil. Times change the way people think and act and feel. We believe that these changes lead us closer to liberty, justice, and equality for all people.

PREDICTION STATEMENTS FOR
CONFLICT

- _____ 1. Right is might and might is right.
- _____ 2. An unresolved conflict may be the most dangerous and long lasting.
- _____ 3. When you help to improve one group, another group suffers.
- _____ 4. Conflict can make things better and worse at the same time.
- _____ 5. You fight harder when you think you are right.
- _____ 6. The causes of conflict are the same as they have been for years and years.
- _____ 7. It is easier to tear down than to build up.
- _____ 8. Life is never free of conflicts.

APPENDIX D

EVALUATION OF TREATMENT LESSONS

EVALUATION OF "SURVIVAL" TREATMENT

		Low				High
1.	Did the teacher follow the lesson plans?	1	2	3	4	⑤
2.	Did the students follow directions?	1	2	3	④	5
3.	Did the students seem to be aware they were in a special project?	1	2	3	4	⑤
4.	Was the control group working in another project?	1	2	3	④	5
5.	Did the treatment group seem interested in the lesson?	1	2	3	4	⑤
6.	Did the treatment group enteract with each other during the lesson?	1	2	3	④	5
7.	Was the teacher prepared and interested in the lesson and activities?	1	2	3	4	⑤

EVALUATION OF "CONFLICT" TREATMENT

	Low			High	
1. Did the teacher follow the lesson plans?	1	2	3	4	⑤
2. Did the students follow directions?	1	2	3	4	⑤
3. Did the students seem to be aware they were in a special project?	1	2	3	4	⑤
4. Was the control group working in another project?	1	2	3	4	⑤
5. Did the treatment group seem interested in the lesson?	1	2	3	④	5
6. Did the treatment group enteract with each other during the lesson?	1	2	3	4	⑤
7. Was the teacher prepared and interested in the lesson and activities?	1	2	3	4	⑤

EVLAUATION OF THE "FREEDOM" TREATMENT

		Low			High	
1.	Did the teacher follow the lesson	1	2	3	④	5
2.	Did the students follow directions?	1	2	3	4	⑤
3.	Did the students seem to be aware they were in a special project?	1	2	3	④	5
4.	Was the control group working in another project?	1	2	3	4	⑤
5.	Did the treatment group seem interested in the lesson?	1	2	3	④	5
6.	Did the treatment group enteract with each other during the lesson?	1	2	3	④	5 5
7.	Was the teacher prepared and interested in the lesson and activities?	1	2	3	④	5

EVALUATION OF "PROTEST" TREATMENT

		Low			High
1.	Did the teacher follow the lesson	1	2	3	4 (5)
2.	Did the students follow directions?	1	2	3	(4) 5
3.	Did the students seem to be aware they were in a special project?	1	2	3	(4) 5
4.	Was the control group working in another project?	1	2	3	4 (5)
5.	Did the treatment group seem interested in the lesson?	1	2	3	(4) 5
6.	Did the treatment group enteract with each other during the lesson?	1	2	3	4 (5)
7.	Was the teacher prepared and interested in the lesson and activities?	1	2	3	4 (5)

VITA²

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Doctor of Education

Dissertation: Prediction: An Aid to Comprehension

Major Field: Curriculum and Instruction

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Personal Data: Born in Shawnee, Oklahoma August 27, 1932, the daughter of Mr. and Mrs. Art Brundage. Married Jack McElroy, December 30, 1950 and to this union Robert, Vicki and Mark were born.

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Professional Experience: Employed as an elementary teacher 1969-1975; employed as high school reading teacher, 1975-1977; employed as reading consultant, 1977-1979; employed as visiting lecturer at Oklahoma State University, 1979-1980; employed as data consultant, 1980-1981; employed as high school curriculum coordinator 1981-1982; employed as a middle school assistant principal, 1982.

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