A study of the effects of positive suggestion and directed imagination of the reading achievement of sixth grade students.

Marguerite Bumpus

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A STUDY OF THE EFFECTS OF POSITIVE SUGGESTION AND DIRECTED IMAGINATION ON THE READING ACHIEVEMENT OF SIXTH GRADE STUDENTS

A Dissertation Presented

By

Marguerite Bumpus

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of DOCTOR OF EDUCATION

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Major Subject Educational Administration
A STUDY OF THE EFFECTS OF POSITIVE SUGGESTION AND DIRECTED IMAGINATION ON THE READING ACHIEVEMENT OF SIXTH GRADE STUDENTS

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Approved as to style and content by:

[Signatures and dates]
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CHAPTER I
CHAPTER I
STATEMENT AND DEFINITION OF THE PROBLEM

Introduction

Society today abounds with individuals of all ages whose lives have been and are being adversely affected by an inability to read at a socially acceptable or even functional level. Furthermore, few students, if any, ever attain their true potential as readers. Educators have been and continue to be duly concerned with this unfortunate situation.

Volumes of research in the field of reading appear annually covering seemingly every conceivable phase of this complex process. However, major emphasis seems to have been placed on such external factors as grouping procedures, methods of instruction, and innovative materials. This writer feels that the emphasis would be more meaningful and more appropriate if placed on the learner himself and his self-image as a reader.

Theoretical Basis

In his early work dealing with self-image theory, Lecky concluded that students may be trapped by unconscious performance standards which were formed as a result of early experiences. For example, students who

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experienced early failures in reading learned to view themselves as poor readers and subsequently continued to perform according to the accepted definition.

Recently, brain-computer analogies have revealed the possibility that such unconscious standards may indeed exist and may actually be physiologically established within the mid-brain in the form of memories. Operating on the feedback principle, the human nervous system theoretically strives to maintain the learned standard making appropriate adjustments in performance as the need arises.

Maltz\(^2\) refers to such controlling standards as goal-images maintaining that although they were formed originally as the result of actual experiences, new goal-images can be successfully established through vividly imagined experiences in the form of mental images.

The experimental procedures of this study are based on a combination of Maltz's mental-image theory and Lecky's belief that in order to improve performance, students must first be made aware of their predicament and subsequently convinced that they can succeed. These theories are directly reflected in the procedures in the following ways: an introductory lesson was designed and presented by the investigator to make the students aware of the possible self-image trap; students practiced successful reading performances daily in the form of mental images.

Statement of the Problem

The purpose of this study was to compare the effect on reading achievement in Grade 6 of a traditional approach to reading instruction (as defined) with a combination of the traditional approach and experimental procedures involving directed imagination of successful reading performance and positive suggestion.

In accordance with this purpose, the following major null hypothesis was tested:

There will be no significant difference between the gains made in reading achievement of the total control group and the gains made by the total experimental group.

In addition to this major purpose, the following secondary objectives were also considered:

1. Comparing the effects of the two procedures on the reading achievement of children of different levels of ability

2. Comparing the effects of the two procedures on the overall performance of the total control and total experimental groups as determined by composite achievement scores representing an average of grade scores attained in Vocabulary, Reading Comprehension, Language Skills, Work Study Skills, and Arithmetic Skills

3. Comparing the effects of the two procedures on the composite achievement of children of different levels of ability
4. Observing attitude changes in the experimental group

5. Examining changes in reading self-evaluations by members of the experimental group

In accordance with the secondary objectives, the following null hypotheses were formulated:

1. There will be no significant difference between gains made in reading achievement by the low achievers in the experimental group and those made by the low achievers in the control group.

2. There will be no significant difference between gains made in reading achievement by average achievers in the experimental group and those made by average achievers in the control group.

3. There will be no significant difference between gains made in reading achievement by the high achievers in the experimental group and those made by high achievers in the control group.

4. There will be no significant difference between gains made in composite achievement by the total experimental group and those made by the total control group.

5. There will be no significant difference between gains made in composite achievement by low achievers in the experimental group and those made by low achievers in the control group.
6. There will be no significant difference between gains made in composite achievement by average achievers in the experimental group and those made by average achievers in the control group.

7. There will be no significant difference between gains made in composite achievement by high achievers in the experimental group and those made by high achievers in the control group.

Definition and Delineation of the Problem

The study and solution of these problems involved the following steps:

1. Administering a group intelligence test to those students who had not been tested in the spring of 1968 for the purpose of obtaining a measure of mental ability.

2. Administering standard achievement tests to 320 Grade 6 students for the purpose of attaining achievement scores in reading comprehension and composite achievement.

3. Selecting one control group and one experimental group of 145 students each equated on the basis of mental age, chronological age, intelligence quotients, and reading achievement.

4. Selecting matched sub-groups of low achievers, average achievers and high achievers.

5. Introducing and supervising for approximately twelve school weeks the experimental procedures used by the experimental group while the control group continued to operate according to a more traditional approach to reading instruction as defined.
6. Retesting at the end of the twelve week period with alternate forms of the achievement tests to determine gains in reading comprehension and composite achievement of both the control and the experimental groups.

7. Analyzing the data obtained as follows:
   a. Comparing the gains attained by the experimental and the control groups to determine the extent of difference in growth in reading achievement between the two groups.
   b. Comparing the gains attained by the experimental and the control groups to determine the extent of difference in growth in composite achievement between the two groups.
   c. Comparing the gains attained by the low achievers in the experimental group with those attained by the low achievers in the control group to determine the extent of growth in reading comprehension and composite achievement.
   d. Comparing the gains attained by the average achievers in the experimental group with those attained by the average achievers in the control group to determine the extent of growth in reading comprehension and composite achievement.
   e. Comparing the gains attained by the high achievers in the experimental group with those attained by the high achievers in the control group to determine the extent of growth in reading comprehension and composite achievement.
f. Examining teacher and librarian comments concerning observed attitude changes

g. Examining students' initial, middle, and end-of-study self-evaluations as readers

8. Drawing conclusions in light of the major and secondary objectives as stated

Definition of Terms

The following terms are defined in the specific context of this study:

**Approach Response**

An action that indicates a moving toward the subject (an object, activity, or situation) about which you are interested in making a tendency statement.³

**Arithmetic Skills**

Number concepts, operational skills, and problem solving

**Average Achievers**

Those students whose grade equivalent score on the reading achievement pre-test was between 5.5 and 7.4 inclusively

**Basal Reading Series**

A graded reading series used regularly for the sequential teaching of reading skills in the classroom

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Composite Achievement Scores

The average of grade scores attained in Vocabulary, Reading Comprehension, Language Skills, Work Study Skills, and Arithmetic Skills sub-tests of the Iowa Tests of Basic Skills

Cybernetics

The science of communication and control in self-regulating systems

Directed Imagination

The reading by the teacher to the students of the detailed steps for forming mental pictures

Experimental Procedures

The special procedures used by the experimental group including:

1) Introductory explanatory lesson; 2) daily directed imagination; 3) positive suggestion

Feedback

The partial reversion of the effects of a given process to its source or to a preceding stage so as to reinforce or modify it.

Goal-image

The student's hidden image of himself as a reader or his accepted standard of performance which theoretically acts as unconscious goal which the central nervous system strives to maintain.

Hidden Reading Self-image

The student's unconscious image of himself as a reader.

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High Achievers

Those students whose grade equivalent score on the reading achievement pre-test was 7.5 or above

Language Skills

Spelling, capitalization, punctuation, and usage

Low Achievers

Those students whose grade equivalent score on the reading achievement pre-test was 5.4 or below

Mental Pictures

Pictures made by the students in the imagination under the direction of the teacher

Negative gains

The difference between pre-test, post-test scores when pre-test scores are higher

Positive gains

The difference between pre-test, post-test scores when post-test scores are higher

Positive Reinforcement

Praise or rewards used to strengthen learning

Positive Suggestion

Suggestion to the students by significant educators that they were becoming better readers

Reading

Interpretation of the printed page, or the process through which
the reader relates graphic symbols to his own fund of experience

Traditional Procedures

Daily instruction using a basal reading series, skills workbook, and supplementary materials

Work Study Skills

Map reading, graph and chart reading, use of reference materials

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CHAPTER II
CHAPTER II
RELATED LITERATURE AND RESEARCH

The review of related literature and research presented in this chapter includes three major categories, each of which is considered by the writer to be pertinently related to the present study. These categories are: 1) Self-Image; 2) Mental Images; and, 3) Suggestion.

Self-Image

Self-image, or the way in which a person views himself, has long been recognized as bearing a direct relationship to many aspects of behavior. While some writers refer to such an image as a very generalized concept, others such as Brookover deal with a more specialized version. For example, he defines self-concept of ability as:

...the perception a student has of his ability to achieve generally in school, and in specific school subjects. As such, it is a specialized conceptualization of the more general term.¹

Since a student's view of himself as a reader is often reflected in his total school performance, it seems highly likely that his self-image, or self-concept, in general will also be

affected. For this reason, the author has included references to both generalized and specialized concepts of self-image. Research and literature has been reviewed in the following categories: 1) Unconscious Factors; 2) Self-Image and School Achievement; 3) Relationship of Self-Report to Self-Image; 4) Changing the Self-Image.

Unconscious Factors

Since this study is based on the theory that students may be performing in reading according to images of themselves that are unconscious, that is, below the level of conscious awareness, some consideration must be given to this factor.

In accordance with this theory, Snygg in Hamachek2 hypothesizes that when the individual decides what kind of a person he is, he proceeds to move through life not consciously aware that he is behaving in a way that reinforces this image. Once this psychological self-image has been formed, he states, behavior seems to become compulsive.

Lecky3 reports that in a study of the spelling behavior of poor spellers, a definite standard of poor spelling seems to be unconsciously maintained. Spelling tests cut in half were found to contain approximately the same number of misspelled words in each half. A similar consistency in number of words misspelled was apparent in compositions. Lecky relates this deficiency, not to lack of ability,
but to acceptance by the student of a definition or image of himself as a poor speller.

Maltz\(^4\) feels that response patterns that are unconsciously maintained can be altered through conscious thought. Substituting the term 'automatic mechanism' for the Freudian 'unconscious', he describes this mechanism as reacting appropriately according to the individual's beliefs about himself and his interpretations concerning his environment.

Weiner\(^5\) points out that even the simplest motor task is actually executed automatically by unconscious processes. The forebrain is used only in the initial goal setting and for feedback purposes.

The author feels, in accordance with Brierley, that

...each individual should be helped to know himself better, his unconscious tendencies as well as those of which he is aware, so that he may arrive at integrative practicable decisions.\(^6\)

Self-Image and School Achievement

In recent years, many investigators have hypothesized and found positive relationships between self-concept and school achievement.


Wattenberg and Clifford, for example, in a study relating self-concept to achievement in beginning reading, tested 185 kindergarten children and retested the 128 of these who remained at the end of Grade 2. Statistical analysis of the data indicated that: 1) self-concept was randomly related to intelligence; and 2) self-concept was more predictive of reading achievement than the mental abilities tests.

Students who resist learning, observes Jersild may actually be trying to safeguard pictures of themselves, or their self-concepts. These illusions concerning themselves have been built in through experience and are often very troublesome.

Once a child develops the idea that he is a poor reader, his experience, his belief, and his teachers corroborate it. Furthermore, according to Combs:

...Just to make sure that the lesson is well learned.... we may also send home a failing grade on his report card so that his parents can tell him too.

In an unpublished doctoral dissertation, Reeder found that

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children who have low, or negative, self-concepts achieve lower in terms of their potential than children whose self-concepts are more favorable.

Studying a similar relationship but including level of aspiration as an additional factor, Caplin\(^\text{11}\) found that elementary school children with more positive self-concepts and/or higher levels of aspiration had higher academic achievement.

Self-concepts of kindergarten children, according to the findings of Giuliani\(^\text{12}\), are positively related to reading readiness. Verbal-mental ability as ascertained by the Van Alstyne Picture Vocabulary Test was also found to be positively related to reading readiness.

Zuk, using projective instruments and observance of actual behavior of sixth graders, found that behavior was governed not only by tendencies to perceive life in certain ways, but also by the interaction of situations and self. He states:

Self-theory proposes that feelings of inadequacy, insecurity, self-rejection, and the like would lower

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motivations, level of aspiration, and actual performance.\footnote{13}

In his study of ninth grade retarded readers, Scluyhart\footnote{14} used four different techniques for obtaining descriptions of self-concepts in addition to individual interviews. He found that many of these students had developed such a fear of failure and ridicule that they often refrained from responding or asking directions. He stresses the need for treating each student individually.

Examining interrelationships among the various self-concept factors, Stillwell\footnote{15} provides evidence of a core self-concept. Since role self-concepts, such as self-concept as a reader, did differ at times from the global, the use of the specific seems favorable for further research.

In relating the importance of self-concept to education, Perkins states:

Specifically, the self-concept can be used in education: (a) as a psychological construct which enables teachers, counselors, parents, and others to achieve with training, deeper understandings and insights into the behavior and development of children, and (b) as a vital and important aspect of learning and development which the school through


its educational processes seeks to promote and foster in each child.

Relationship of Self-Report to Self-Concept

Using self-reports as a direct measure of self-concept has been a common practice in research. Combs and his associates strongly object to this practice, pointing out that the self-concept is an internal organization of one's perceptions about himself, whereas, the self-report is actually a behavior representing what the individual is willing to say about himself. Self-concept, they insist, must be approached through some form of inference based on the behavior of the individual.

Snygg summarizes:

Introspection is not a valid way of reconstructing the field, which can only be reconstructed through behavior.

In a study designed to test whether or not self-report can be justifiably used as a direct measure of self-concept, Combs, Soper, and Courson predicted that children's self-reports would show no significant relationship to self-concepts inferred by trained ob-

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servers. Fifty-nine Grade 6 students reported their feelings about themselves on a special self perception report. No significant relationship was found between the self-reports and the inferred self-concepts.

Parker\textsuperscript{20} studied the relationship between self-report and self-concept under conditions of reduction of the effects of social expectancy and emphasis of social expectancy. The results suggest that changes do occur as a result of emphasis on social expectancy.

Experiments are reported by Wolff\textsuperscript{21} which indicate that the conscious evaluation of the self does not necessarily agree with the unconscious. He found that individuals tended to overvalue or undervalue their own products when confronted with recordings of their own voices, samples of handwriting, and other records of expressive movements when mixed in with samples of other individuals. This tendency, he feels, is in direct response to unconscious factors.

Changing the Self Concept

The behavior associated with self-concept has been learned and can, therefore, according to Gillham\textsuperscript{22} be modified. She states that

\begin{itemize}
  \item \textsuperscript{22}Isabel Gillham, "Self-concept, and Reading," \textit{The Reading Teacher}, XXI (December, 1967), pp. 270-273.
\end{itemize}
the individual is enslaved by his self-concept, but that some significant person(s) in his life may help him to change it.

Gowan in reference to altering undesirable self-concepts of exceptional children suggests that the teacher or counselor choose the right time to express his trust in the student inspiring him to make efforts which he might not otherwise attempt.

Further suggestions for improving unfavorable self-concepts are made by Walsh:

1) Prevention
2) Establishing oneself as a 'significant other' who in truth does see something worthwhile in what the student can do
3) Encouraging exploration
4) Recognizing defenses
5) Encouraging emotional expression in socially acceptable and unharmful ways.

Mental Images

Introduction

Reference to the use of mental images appears in the literature as early as the times of the ancient philosophers. Actual research,

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however, has been reported only since the 1930's. Richardson lists several names under which practice of a response through mental imagery has been investigated. Among others are: mental practice, implicit practice, mental rehearsal, symbolic rehearsal, and conceptualizing practice. The investigator of the present study has adopted the term 'directed imagination' since the mental imagery sessions were directed by teachers.

The literature and research dealing with mental images covers a wide range of tasks from the breaking of the stuttering habit to the learning of a complex motor skill. The present study differs from those reported in that an entire successful reading experience is practiced rather than a specific clearly defined response. The element of successful performance during mental practice, however, is common to all.

Mental Images and Motor Skills

While the present study does not actually involve motor skills, such experiments have often involved similar procedures and are actually based on the same general idea that mental practice of a response pattern can be as effective as actual practice. Furthermore, Morrisett reports that mental practice is most effective in tasks


involving a symbolic component requiring more intervening associative processes between perception of stimuli and response than for simple motor or perceptual tasks.

Most of the studies reviewed support the general hypothesis that mental practice can be as effective if not more effective than actual practice in the acquisition, retention, and improvement of motor skills. In a study by Jones\textsuperscript{27}, for example, different conditions of mental practice were employed in the learning of an unfamiliar motor skill. Following mechanical analysis of the skill and reading of general directions, Ss were able to learn the unfamiliar task effectively supporting the view that initial learning of gross motor skills does not require physical practice.

In controlled experiments involving dart throwing, Vandell\textsuperscript{28} found that in the cases of both Junior High School and college students, aim was improved as much through daily mental practice as through actual practice.

In separate though similar studies involving basketball free throws, the findings of Vandell\textsuperscript{29} and Clark\textsuperscript{30} were essentially the same,

\begin{itemize}
\item Ibid.
\end{itemize}
that is, that mental practice can be as effective as physical practice. In Vandell's study, practice conditions were varied for three groups of students. Group 1 actually practiced for twenty days with initial and final scoring. Group 2 was similarly scored, but had no practice. Group 3, after initial scoring, imagined themselves throwing the ball at the goal for twenty minutes daily making appropriate corrections when they missed. Results showed the following improvements:

Group 1—--------24%
Group 2—------None
Group 3—-------23%

Clark's study differed in that he used novices, junior varsity and senior varsity groups. While he found that physical practice was more effective than mental practice with novices, with more experienced groups, mental practice appeared to be just as effective as physical practice. This seems to suggest that as familiarity with the task increases the advantages of physical practice decrease.

Harby\textsuperscript{31} reduced the imagery variable by utilizing a short repetitive film involving basketball free throws. One group of college physical education men were given physical practice of twenty free throws daily for twenty days. Each practice session was preceded by a one minute demonstration by an instructor. The mental

practice groups viewed the film six times daily for a total of fifteen minutes while they practiced mentally, one group for seven days, one for fourteen days and one for twenty days. They engaged in no physical practice. On the final performance, the fourteen day mental practice group scored as many free throws as the twenty day physical practice group.

The findings of many other studies involving a variety of perceptual motor skills support the general hypothesis that mental practice can be as effective as physical practice. In a review of mental practice studies, Richardson lists eleven studies with significant positive findings, seven with a positive trend, and only three with negative findings.

Mental Images and Tasks with High Symbolic Components

As was previously mentioned, Morrisett defines tasks with high symbolic components in terms of the importance of intervening associative processes between stimulus perception and response. In a card sorting study, he varied the rule connecting particular cards with particular slots thereby defining tasks of high and low symbolic strength. He found that under low symbolic conditions, that is, the task being more nearly motor, there was no statistical significance


33 Morrisett, loc. cit.
between mental practice and no practice group scores. However, under high symbolic conditions, the mental practice group was significantly superior.

Thompson, as reported by May\textsuperscript{34}, using demonstration films found that mental practice was effective in the assembly of mechanized puzzles by fifth grade students.

In an article concerning the game of chess, Phillips\textsuperscript{35} reports an unprecedented chess upset in which an obscure player defeated the great chess champion, Capablanca, by practicing for three months only in his mind.

Variables Related to Mental Images

\textbf{Length of Sessions}. Since practicing any skill through the use of mental images requires a certain degree of concentration, the length of time which Ss can concentrate represents a variable that is difficult to control. A study by Twining\textsuperscript{36} suggests that mental practice sessions should not exceed 5 minutes in order to minimize effects of distraction. The investigator of the present study adopted this suggestion in the experimental procedures.

\textsuperscript{34}Mark May, "The Psychology of Learning from Demonstration Films," \textit{Journal of Educational Psychology}, XXXVII (1949), pp. 1-12.


Relationship of Ability to Form Images and Success. Many investigators have recognized the degree of ability to engage in imagery as another difficult to control variable. "Tests such as those of Betts\(^37\) and Gordon\(^38\) have been developed to measure vividness and control of imagery respectively. Start and Richardson\(^39\) used such tests in a study designed to measure the relationship of vividness and control and gains on a simple gymnastic skill. They found that those Ss with vivid controlled imagery made the greatest gains.

Harris\(^40\) assumes that children who possess the ability to create vivid images have a distinct advantage in reading over children who are unable to perform this task.

The works of Pear\(^41\) and Susukita\(^42\) suggest that the ability to create images can be increased through practice.


\(^40\) Albert J. Harris, How To Increase Reading Ability (New York: Longmans Green and Co., 1947).


Introduction. Suggestion usually involves two psychological aspects: 1) the stimulus, or suggestion; and 2) the susceptibility to response, or suggestibility. In engaging in self-suggestion, the individual stimulates himself usually through sub-vocalizing or imagery to some kind of response. Heterosuggestion, or suggestion by others, may be either prestige or non-prestige in form.

The present study has employed self-suggestion in the daily vocalizing and writing procedures suggesting to each student that he could become a much better reader. In addition, prestige suggestion, or influence by important people, was employed in the final phases of the study at which time educators well-known to the children suggested to them that improvement was occurring.

Self-Suggestion and Suggestibility. Using eleven different tests for ascertaining suggestibility, Messerschmidt found an increase in suggestibility in Ss between the ages of 6 and 7 years, then a slight but consistent decrease thereafter. Girls were found to be more subject to suggestion than boys in eight of the eleven ages. In addition, those Ss who showed greatest suggestibility for one situation tended to show it in others indicating that suggestion may be a general trait.

Manzer\(^44\) studied the effects of suggestion on work output when Ss were told that the same task was hard, medium, or easy. Both men and women increased output when told the job was hard, but only the men decreased in output when told that the job was easy or medium. All three suggestions resulted in an increase of variability in output.

Working with twenty-six alcoholics, Anant\(^45\) found that verbal negative suggestion without drugs or electrical impulses resulted in abstinence for all Ss. The abstinence was still in effect at the time of the report which was 15 months after completion of the study.

In an ego-involved study, Wolf\(^46\) and others told one group of college students that intelligent people see fewer reversals on perception of Necker Cubes. Group 2 was told that intelligent people see more reversals. A third group received no suggestion. While Groups 2 and 3 reported about the same number of reversals, Group 1 reported reliably fewer.


Roach found a low positive relationship between self or autosuggestion and intelligence. In addition, he found that autosuggestion exhibits high individual variations.

**Prestige Suggestion.** One form of suggestion is very prevalent in the advertising field in which famous athletes or movie stars are pictured endorsing certain products. While some of this advertising is intended for adults, much of it is aimed directly at children.

In an interesting study dealing with children's art preferences, Ausubel found that girls were more susceptible to suggestion than boys although both were affected. While 9.5% of the fourth and fifth grade boys preferred abstract rather than conventional art slides before prestige suggestion, 30.8% preferred abstract art after the suggestion. The percentages for girls were 4.7% before to 37.2% after. According to the investigator:

The least common denominator of the personality variable associated with resistance to other's influence appears to be a temperamental factor of self-sufficiency, self-assertiveness, and ability to maintain self-respect in the absence of external support or approbation.\(^48\)

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Summary

Research and literature was reviewed in the categories of: 1) self-image; 2) mental images; and 3) suggestion.

While some studies deal with a general or global self-image, others involve a specific or role self-image. In most cases, a positive relationship was found between self-image and school achievement, that is, negative self-image is associated with low achievement. Some theorists contend that self-image is actually impossible to report since they feel it exists below the level of consciousness. Furthermore, since social emphasis also affects self-report, self-image should be inferred through behavior. Since self-image has been learned, some feel that it can be changed. Several authors suggest the importance of some significant person to aid in such a change.

Mental image studies deal with practicing motor skills, breaking habits and school subjects such as spelling. Many of these studies support the general hypothesis that mental practice can be as effective as actual practice. A positive relationship seems to exist between success of mental practice and the degree of the symbolic element of the task. Mental practicing involves several difficult to control variables including vividness of imagery and ability to concentrate.

Suggestion involves two psychological aspects: 1) the stimulus, or suggestion; and 2) the susceptibility to response, or suggestibility.
Studies support the idea that girls are more subject to suggestion than boys. Both, however, are affected by prestige suggestion, or suggestion by important people. Personality factors such as self-sufficiency and self-assertiveness seem to be associated with resistance to suggestion by others.
CHAPTER III

PLAN OF THE STUDY

Restatement of the Problem

The purpose of this study was to compare the effect on reading achievement of Grade 6 students using a traditional approach to reading instruction with an approach combining the traditional with experimental procedures involving positive suggestion and imagination.

In order to make comparisons, total experimental and control groups were identified, as well as sub-groups of high, average and low achievers.

Selecting the School System

The author was most fortunate in receiving the permission of the administration and the school committee in the town of Marshfield, Massachusetts to conduct this study in the Grace E. Ryder School in that town. Since this was the second year of the investigator's employment within this system, acceptance and support of teachers was also readily attained and gratefully received.

Range of Teaching Experience

The six teachers in the control group and the six teachers in the experimental group (three men and three women in each) were quite well matched in terms of experience in that three members of each team were relatively inexperienced being either first or second year
teachers, while the remaining three had taught for five or more years.

Selection of Tests

Since the students in the sample had been given the Otis Quick Scoring Mental Abilities Tests, Beta for Grades 4 through 9 at the end of the fifth grade, this information was used. New students were given the tests in October in order to supply the missing information.

Besides the fact that this test had recently been given and was acceptable to the Marshfield School System, much evidence exists as to the test's reliability. The coefficient of correlation between Forms A and B for Grades 4 through 9 is .96. The reliability coefficients for the odd and even items corrected by the Spearman-Brown formula average .86. Furthermore, in the case of 465 pupils in Grades 4 through 9 the probable error of a score was found to be only 2.7 points in 50% of the cases.

Validity for the Otis was obtained by determining the validity of each item by comparing the number of passes of each item by a group of pupils who were making rapid progress through school with the number of passes of the item by a group making slow progress. Only those items were used which showed a distinct gain in number of passes of the rapid-progress pupils over the number of passes of the slow-progress pupils.

The Iowa Tests of Basic Skills, Forms 3 and 4 were used for pre-test, post-test purposes to obtain scores in reading comprehension, language skills, work study skills, and arithmetic skills.
Two methods of estimating reliability were used to obtain data for these tests: 1) the split-halves (odds-evens) method; and 2) the equivalent forms method. Using the first method, the composite reliability co-efficient is .98 while the standard error of measurement is a raw score of 1.3 with a grade equivalent of 1.9. The equivalent forms method reveals the following reliabilities and weighted average standard errors of measurement: Reading, .83 and .84; Language Skills, .94 and .94; Work Study Skills, .88 and .88; Arithmetic Skills, .85 and .87.

The standardization of the Iowa Tests of Basic Skills (October and November of 1963) was a cooperative enterprise and involved the publishers and authors of the Lorge-Thorndike Intelligence Tests, the Iowa Test of Basic Skills, and the Tests of Academic Progress as well as a large number of public and parochial schools. A base sample of approximately 20,000 students per grade (3 through 9) was used. Eight community size categories were employed.

Administration of Tests

During the month of October, 1968, all new students in Grade 6 and others who for one reason or another had not been tested in the spring of 1968 were given the Otis Quick-Scoring Tests of Mental Abilities, Beta From EM.

In addition, during the third week of October, 1968, all twelve sixth grade teachers in the Ryder School administered the Iowa Tests of Basic Skills, Form 3, to all sixth grade students. From the 320 pupils tested, selection of the total control and total experimental groups was made.
Selection of Control and Experimental Groups

An initial problem in this study was the establishment of Control and Experimental groups. In view of the fact that the students in the twelve sixth grades in the Grace E. Ryder School were randomly divided according to last names into two teams of six sixth grades and subsequently housed in separate wings of the building, the investigator was hopeful that matched groups could easily be identified. Such was the case with the matching variables including mental ages, chronological ages, intelligence quotients, and reading achievement scores. In order to equate the groups more closely, necessary adjustments were made by eliminating students who scored either very high or very low. After this elimination, the total number of students involved in the study was 280. The control group was comprised of 145 students while the experimental group was comprised of 145 students.

In order to eliminate possible investigator bias in the designation of one wing as the experimental group, each wing was identified as either Team 1 or Team 2. Team 1 and Team 2 were then written on separate slips of paper and placed in a deep container. The principal of the school then drew a slip from the container, thus identifying the experimental group.

Matching the Total Experimental and Total Control Groups

In order to verify the equating of control and experimental groups on the basis of mental ages, chronological ages, intelli-
gence quotients, and reading achievement scores, the following data is presented in table form.

Table 1 presents the data concerning the mean mental ages of the total experimental and total control groups.

**TABLE 1**

**DATA FOR MATCHING TOTAL CONTROL AND TOTAL EXPERIMENTAL GROUPS ON THE BASIS OF MENTAL AGE**

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>M.A.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>12.456</td>
<td>1.084</td>
<td>.0899</td>
<td>.130</td>
<td>.066</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>12.390</td>
<td>1.127</td>
<td>.0935</td>
<td>.130</td>
<td>.066</td>
</tr>
</tbody>
</table>

According to the above table, the control and experimental groups were quite closely matched on the basis of mental ages. The critical ratio of .507 demonstrates that the difference in mental age between the two groups is statistically not significant.

Table 2 presents data concerning the matching of the total control and the total experimental groups on the basis of chronological ages.

**TABLE 2**

**DATA FOR MATCHING TOTAL CONTROL AND TOTAL EXPERIMENTAL GROUPS ON THE BASIS OF CHRONOLOGICAL AGE**

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>M.A.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>11.349</td>
<td>.435</td>
<td>.036</td>
<td>.047</td>
<td>.618</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>11.367</td>
<td>.367</td>
<td>.031</td>
<td>.047</td>
<td>.618</td>
</tr>
</tbody>
</table>
As indicated by this table, the control group and the experimental group were quite evenly matched on the basis of chronological age. The critical ratio of .382 shows that no statistically significant difference exists between the two groups.

Table 3 presents data for matching the total control and the total experimental groups on the basis of intelligence quotients.

**TABLE 3**

DATA FOR MATCHING TOTAL CONTROL AND TOTAL EXPERIMENTAL GROUPS ON THE BASIS OF INTELLIGENCE QUOTIENTS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>I. Q.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>109.772</td>
<td>9.92</td>
<td>.823</td>
<td>1.225</td>
<td>.510</td>
<td>.416</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>109.262</td>
<td>10.92</td>
<td>.906</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table shows that the control and experimental groups were closely matched on the basis of intelligence quotients. The critical ratio of .416 indicates that the difference is not significant statistically.

Table 4 deals with data for matching the total control and the total experimental groups on the basis of reading achievement.
TABLE 4

DATA FOR MATCHING TOTAL CONTROL AND TOTAL EXPERIMENTAL GROUPS ON THE BASIS OF READING ACHIEVEMENT

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean No.</th>
<th>R.A.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E. Diff. C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>6.474</td>
<td>1.406</td>
<td>.1166</td>
<td>.1676 0.013 0.078</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>6.461</td>
<td>1.446</td>
<td>.1200</td>
<td></td>
</tr>
</tbody>
</table>

The above table indicates that the total control and total experimental groups were quite closely matched according to reading achievement. The critical ratio of .078 signifies that no significant statistical difference existed between the two groups at the beginning of this study.

Summary

On the basis of the data relating to mental age, chronological age, intelligence quotients, and reading achievement scores, it appears for all practical purposes that the total control and the total experimental groups were well matched at the onset of this study. Thus, any differences in gains in reading achievement between the two groups at the end of the study could be assumed to be due to factors other than these.

Formulation of Sub-Groups from Total Control and Total Experimental Groups

In order to be able to compare the high achievers, the average achievers, and the low achievers in the control group and the high achievers, the average achievers, and the low achievers in the
experimental group, it was necessary to identify these sub-groups at the beginning of the study. Therefore, the following criteria were established to determine membership in these sub-groups:

1. In the low-achievement group were placed those students whose performance in reading according to the reading achievement test scores was below a grade score of 5.5.

2. In the average-achievement group were placed those students whose performance in reading according to the reading achievement test scores was between the grade scores of 5.5 and 7.4.

3. In the high-achievement group were placed those students whose reading performance according to the reading achievement test scores was a grade score of 7.5 or above.

Data for matching high achievers in the control and experimental groups. The high-achievement group was comprised of forty-one pupils in the control group and forty-one pupils in the experimental group. The data in Tables 5 and 6 are submitted as evidence of the matching of the high achievers in the control group with the high achievers in the experimental group.

Table 5 deals with data concerning the matching of high achievement groups on the basis of mental age.
TABLE 5
DATA FOR MATCHING HIGH ACHIEVERS IN THE CONTROL AND EXPERIMENTAL GROUPS ON THE BASIS OF MENTAL AGE

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>M.A.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>41</td>
<td>13.508</td>
<td>.785</td>
<td>.229</td>
<td>.178</td>
<td>.059</td>
<td>.331</td>
</tr>
<tr>
<td>Experimental</td>
<td>41</td>
<td>13.449</td>
<td>.824</td>
<td>.128</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table clearly shows that there was no significant difference in mental age between the high achievers in the control group and the high achievers in the experimental group. The critical ratio was .331.

Table 6 presents data for matching the high achievers of both groups on the basis of reading achievement.

TABLE 6
DATA FOR MATCHING HIGH ACHIEVERS IN THE CONTROL AND EXPERIMENTAL GROUPS ON THE BASIS OF READING ACHIEVEMENT

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Comp. Reading G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>41</td>
<td>8.173</td>
<td>.5857</td>
<td>.0914</td>
<td></td>
<td>.1352</td>
<td>.034</td>
</tr>
<tr>
<td>Experimental</td>
<td>41</td>
<td>8.207</td>
<td>.6371</td>
<td>.0995</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the critical ratio of .251 indicates, as far as reading achievement was concerned, at the beginning of the study, the high achievers in the control group were quite evenly matched with the high achievers in the experimental group.
Therefore, the data in Tables 5 and 6 demonstrate that at the beginning of the study the high achievers in the control group and the high achievers in the experimental group were evenly matched on the basis of mean mental age and mean reading achievement.

Data for matching average achievers in the control and experimental groups. The average achievement group was comprised of sixty-seven students in the control group and sixty-seven students in the experimental group.

The data in Tables 7 and 8 are submitted in evidence of the matching of the average achievers in the control group with the average achievers in the experimental group.

Table 7 deals with data for matching the average achievement groups on the basis of mental age.

**TABLE 7**

DATA FOR MATCHING AVERAGE ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS ON THE BASIS OF MENTAL AGE

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>M.A.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E. Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>67</td>
<td>12.371</td>
<td>.813</td>
<td>.099</td>
<td>.128</td>
<td>.023</td>
</tr>
<tr>
<td>Experimental</td>
<td>67</td>
<td>12.394</td>
<td>.663</td>
<td>.081</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the critical ratio of .180 indicates, on the basis of mental age, there was no significant difference between the average achievers in the control group and the average achievers in the experimental group.
Table 8 shows data for matching the average achievers of both groups on the basis of reading achievement.

**TABLE 8**

**DATA FOR MATCHING AVERAGE ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS ON THE BASIS OF READING ACHIEVEMENT**

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E. Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>67</td>
<td>6.435</td>
<td>.5666</td>
<td>.0692</td>
<td>.013</td>
<td>.013</td>
</tr>
<tr>
<td>Experimental</td>
<td>67</td>
<td>6.422</td>
<td>.5273</td>
<td>.0644</td>
<td>.013</td>
<td>.013</td>
</tr>
</tbody>
</table>

As the critical ratio of 0.013 indicates, at the beginning of the study there was no significant difference in reading achievement between the average achievers in the control group and the average achievers in the experimental group.

Therefore, the data in Tables 7 and 8 demonstrate that at the beginning of the study, the average achievers in the control group were evenly matched with the average achievers in the experimental group on the basis of mean mental age and mean reading achievement.

Data for matching low achievers in the control and experimental groups. The low achievement group was comprised of thirty-seven pupils in the control group and thirty-seven pupils in the experimental group. The data in Tables 9 and 10 are submitted as evidence of the matching of low achievers.

Table 9 shows data for matching the low achievement groups on the basis of mental age.
TABLE 9

DATA FOR MATCHING LOW ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS ON THE BASIS OF MEAN MENTAL AGE

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean M.A.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E. Diff. C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>37</td>
<td>11.443</td>
<td>.686</td>
<td>.113</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>37</td>
<td>11.211</td>
<td>.920</td>
<td>.151</td>
<td>.190 .232 1.221</td>
</tr>
</tbody>
</table>

As the critical ratio of 1.22 indicates, there was no significant difference in mental ages between the low achievers.

Table 10 shows data for matching the low achievement groups on the basis of reading achievement.

TABLE 10

DATA FOR MATCHING LOW ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS ON THE BASIS OF READING ACHIEVEMENT

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Reading G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E. Diff. C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>37</td>
<td>4.662</td>
<td>.524</td>
<td>.0861</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>37</td>
<td>4.595</td>
<td>.662</td>
<td>.0990</td>
<td>.151 .067 .511</td>
</tr>
</tbody>
</table>

As the critical ratio of .511 indicates at the beginning of the study there was no significant difference in reading achievement between the low achievers in the control group and the low achievers in the experimental group.

Therefore, the data in Tables 9 and 10 demonstrate that at the beginning of the study the low achievers in the control group were evenly matched with the low achievers in the experimental group on the basis of mean mental age and mean reading achievement.
Teaching Plans and Procedures for the Experimental Group

**Introductory Lesson.** At the onset of the study, the investigator entered each of the six experimental classrooms for the purposes of:

1) explaining the possible causes and effects of the hidden reading self-image

2) obtaining students' pre-study self-evaluations in reading according to seven point scale marked on a paper reading thermometer (The seven points were: very poor; poor; fair; good; very good; excellent; and superior.)

3) explaining the experimental procedures

4) practicing the formation of mental images

The details of this introductory lesson can be found in Appendix B.

**Daily Experimental Procedures.** Every morning at the beginning of the language arts time block, the classroom teachers in the experimental group asked, "What are you going to remember today?" The students responded in unison, "I can be a much better reader by January 10th, 1969!" On January 10th, following informal testing of paragraph reading the date was changed to February 10, 1969, the date of post-testing. Following the informal testing, a second self-evaluation was obtained from each student.

It is the hope of the investigator that the verbalizing procedures will not be misconstrued as those of Coute, the French psychotherapist who originated the proverbial formula, "Every day
in every way, I am becoming better and better."¹ Coué's procedures, not commonly accepted within psychological circles, were characterized by vagueness in that becoming 'better and better in every way' was not defined in terms of behavior. The experimental procedures, on the other hand, suggested to the students that they could become better readers, implying a specific behavioral change, and were followed immediately by mental practice of the desired result.

Following the verbal reminders, the teachers then asked the students to close their eyes and to picture themselves as vividly as possible according to the directions which were read verbatim. Two specific pictures were imagined every morning, the first dealing with a successful reading assignment and the second dealing with a successful workbook or other written assignment. These pictures were designed to simulate as closely as possible actual successful experiences and included appropriate imagined reinforcements. (The exact details of the mental pictures can be found in Appendix B.)

Students were instructed to think of any actual performance that was not satisfactory as only temporary.

Following the directed imagination, students wrote the words, "I can be a much better reader by January 10, 1969!" on small slips of paper which were distributed daily by an assigned student. Following informal paragraph reading tests, the date was changed to February 10, 1969. These slips were intended to serve as further

reminders of each student's potential for improvement. While the disposition of these slips was optional, students were encouraged to carry them throughout the day.

Following these procedures, teachers took out a special notebook and asked students to report any improvements in actual performances in any subject. In this notebook, other pertinent information was also recorded such as incidental student or parent comments.

Before every science, math and social studies class, the verbalizing procedures were repeated.

Prestige Visits. During the final weeks of the study, educators who were deemed to be of importance to the students visited each experimental classroom. Following guidelines provided by the investigator, each visitor asked pertinent questions regarding students' progress. In addition, each suggested to the students that they continue the experimental procedures because progress was apparent.

In addition to the experimental procedures, a traditional approach to reading instruction was used.

The Control Group Procedures

The control group procedures consisted of traditional daily instruction and maintenance of basic reading skills using basal readers, skills workbooks, and supplementary materials. Other specialized reading skills were taught in appropriate content areas. For example, map and chart reading was taught in social studies
classes, problem reading was taught in math classes, and reading in the classification pattern was taught in science classes.

Demonstration lessons were given periodically by the reading consultant. A sample lesson can be found in Appendix C.

The Hawthorne Effect

In order to control for the Hawthorne Effect, materials used for demonstration lessons were carried into all classrooms in a large box clearly marked, "EXPERIMENTAL MATERIALS". The control group was told that they were taking part in an experiment using special materials. Actually, these materials were used by all groups.

Experimenter Bias

In order to avoid bias on the part of the experimenter in selecting an experimental group, Teams 1 and 2 were printed on small slips of paper and placed in a container. The principal of the Grace Ryder School drew one of the slips thus designating Team 1 as the experimental group.

Furthermore, since the writer is employed in the selected school system as a reading consultant and teaches demonstration lessons in the classrooms, great care was taken to teach identical lessons to experimental and control groups.

Limitations of Study

Possible Side Effects. The investigator clearly recognized the possibility that the experimental procedures could cause frustration in the case of some students. In order to avoid such a situation,
several precautions were taken as follows:

1) Teachers were informed as to the possibility of frustration and were instructed to report any unusual symptoms immediately. Since the control group was housed in the south wing of the same building, a student could be easily moved from the experimental group for the duration of the study should the need arise.

2) A consultation was held with the school adjustment counselor who generously offered his support and services if necessary.

3) Students' goals were completely individualized and private making adjustments possible at any time. For example, "I can be a much better reader," allowed each student to decide for himself how much better he wished to become. Furthermore, during the directed imagination, students were instructed to picture themselves reading a much more difficult book than usual. No particular grade level was indicated, and the choice was discretionary.

4) In order to avoid extinguishing of the effects of imagined successful experience when reality was not supporting, students were instructed to view all unsatisfactory performances as only temporary.

5) Students were told that the changing of the hidden reading self-image would take time, the length of which could be expected to vary with individuals.

While the investigator recognized the potential negative side
effects, she is in agreement with Campbell's belief:

Teachers and counselors must continue to use their own good judgment in dealing with students' feelings about themselves, realizing that a specific approach may possibly be harmful, but also that no approach at all, from anyone, will probably be more so.  

**Uncontrolled Variables.** In view of the fact that this study was conducted under existing conditions, a compromise was made as to which variables would remain uncontrolled. These variables were:

1) teaching methods; and 2) daily time schedule.

Since the experimental and control groups each consisted of six classrooms with six teachers, the writer felt that very likely a similar range of teaching methods existed.

While all classrooms in both groups received the same amount of time for daily instruction, the language arts time block for the experimental group was scheduled for mornings while the control group's language arts' time block was scheduled for afternoon.

While such a situation would be of great concern with younger subjects, the writer felt as a result of past experience, that at the Grade 6 level, the effects would be considerably less meaningful. This seemed particularly true in the given situation since much emphasis at the Grace Ryder School is placed upon reading skills throughout the total curriculum. In addition, relatively few new skills are introduced at this level with the primary concern being maintenance and broadening of previously taught skills.

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Method variables as discussed in Chapter 2, page 25 were also considered to be limitations of this study. These difficult to control variables include: 1) Ss ability to form clear mental images; 2) Ss ability to concentrate.

In addition, teacher enthusiasm which has been found to be important in other studies, represents another difficult to control variable.

Post Self-rating and Post-testing

Immediately prior to post-testing, the investigator again entered each experimental classroom for the purpose of obtaining from the students a final self-evaluation in reading according to the seven point scale.

During the week of February 10, 1969, at the end of the twelve week study, both the experimental and control groups were retested by the classroom teachers with an alternate form of the Iowa Tests of Basic Skills. The results of these tests will be found in the appropriate tables in Chapter IV.
CHAPTER IV

ANALYSIS OF THE DATA

The major purpose of this study was to compare the effect on reading achievement of two different procedures:

1. A traditional plan of instruction in which the basal reader approach was used in combination with reading skills instruction in the content areas

2. A traditional plan combined with experimental procedures involving positive suggestion and directed imagination

To achieve this purpose, the data were analyzed in the following ways:

1. A comparison of gains in reading achievement of the total experimental and total control groups was made to secure a comparative evaluation of the two procedures employed in this study.

2. A comparison of gains in reading achievement was made between the following sub-groups for the purpose of determining whether any significant difference in reading growth had occurred and of determining the relative merits of the two plans when used with children of different capabilities:
   a. High achievers in the control group versus high achievers in the experimental group
   b. Average achievers in the control group versus average achievers in the experimental group
   c. Low achievers in the control group versus low achievers in the experimental group.
Statistical Procedures Employed in the Analysis of Data on Achievement Gains

Analysis of the data that are presented in this chapter pertains to the comparison of gains in reading achievement attained by the total control group and the total experimental group as well as those attained by matched sub-groups. In addition, comparisons were made of gains in composite achievement by the total control group and the total experimental group as well as those made by the matched sub-groups.

Differences between means were obtained and statistical measures were then used to determine the degree of significance of these differences. In presenting these findings, the 1% level of confidence was adopted which means that unless "t" equals at least 2.58, the null hypothesis will be accepted that no true difference probably exists between the means. However, if "t" is as large as 2.58, then there is only one chance in a hundred that the null hypothesis will be falsely rejected.

Smith substantiates this interpretation as follows:

The probability that a "t" as large as 2.58 could occur from sampling variations is only 1 in 100 or 1%; and null hypotheses continually rejected at this 1% level of confidence would be falsely rejected only about 1% of the time. A rough rule of thumb that will serve for most investigations is: (a) to accept the null hypothesis (that is, to regard the difference as not significant) when "t" is less than 1.96 (5% level of confidence) (b) to reject the null hypothesis (that is, to regard the difference as significant) when "t" is greater than 2.58 (1% level of confidence) and (c) neither to accept or reject the null hypotheses (that is, to regard the
difference as one of doubtful significance) when "t" lies between 1.96 and 2.58.¹

Comparison of Gains in Reading Achievement of Total Control and Total Experimental Groups

In order to determine whether or not the directed imagination and suggestion used with the experimental group produced significantly better results than the traditional approach used with the control group, it was necessary to make a comparison of the growth in reading achieved by the two groups during the 12 week period of the experiment.

Table 11 shows the amount of gain in reading achievement of these two groups as measured by standardized achievement tests administered at the beginning and at the conclusion of the experiment.

<table>
<thead>
<tr>
<th>GROUP</th>
<th>Initial Mean Grade Score</th>
<th>Final Mean Grade Score</th>
<th>Gain in Mean Grade Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>6.474</td>
<td>6.558</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>6.461</td>
<td>6.593</td>
</tr>
</tbody>
</table>

As can be noted in the above table, the experimental group made a gain of .132 grade level as compared to a gain of .084 grade level by the control group.

In Table 12 the mean gain in reading achievement of the total control group is compared with the mean gain of the total experimental group to determine the significance of the difference of these gains.

**TABLE 12**

**COMPARISON OF MEAN GAINS IN READING ACHIEVEMENT OF TOTAL CONTROL AND TOTAL EXPERIMENTAL GROUPS**

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Gain in G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>.084</td>
<td>1.445</td>
<td>.120</td>
<td>.168</td>
<td>.048</td>
<td>.285</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>.132</td>
<td>1.421</td>
<td>.118</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As Table 12 shows, the growth in reading achievement of the total experimental group exceeded the growth made by the total control group by .048 grade level. A statistical comparison of these gains yielded a critical ratio of .285 which is not statistically significant. Thus, the growth in reading achievement of the total experimental group was not significantly greater than the growth made by the control group.

Therefore, the null hypothesis that no statistical difference would exist between gains made in reading achievement by the total experimental group and those made by the total control group was accepted.
Comparison of Gains in Reading Achievement of High Achievers in the Experimental and Control Groups

In order to determine whether or not the experimental procedures of directed imagination and suggestion used with the experimental group produced significantly better results than the traditional procedures used by the control group, a comparison was made of the growth in reading achievement made by the high achievers in the experimental group with the growth in reading achievement made by high achievers in the control group.

Table 13 shows the amount of gain in reading achievement of these two groups as measured by standard achievement tests administered at the beginning and close of the 12 week study.

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Initial Mean Grade Score</th>
<th>Final Mean Grade Score</th>
<th>Mean Gain in Grade Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>41</td>
<td>8.173</td>
<td>8.024</td>
<td>-.149</td>
</tr>
<tr>
<td>Experimental</td>
<td>41</td>
<td>8.207</td>
<td>7.970</td>
<td>-.237</td>
</tr>
</tbody>
</table>

As Table 13 shows, the high achievers in the Control Group gained -.149 grade levels, the high achievers in the experimental group gained -.237 grade levels. The difference was -.088.

In Table 14 the mean gain in reading achievement of the high achievers in the control group is compared with the mean gain of the high achievers in the experimental group to determine the significance of the difference of these gains.
### TABLE 14

**COMPARISON OF MEAN GAINS IN READING ACHIEVEMENT OF THE HIGH ACHIEVERS IN THE CONTROL GROUP WITH THE HIGH ACHIEVERS IN THE EXPERIMENTAL GROUP**

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Gain in G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>41</td>
<td>-.149</td>
<td>.910</td>
<td>.142</td>
<td>.215</td>
<td>-.088</td>
<td>.409</td>
</tr>
<tr>
<td>Experimental</td>
<td>41</td>
<td>-.237</td>
<td>1.034</td>
<td>.161</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the above table shows, the growth in reading achievement of the high achievers in the control group exceeded the growth made by high achievers in the experimental group by -.088 grade level. A statistical comparison of these gains yielded a critical ratio of .409 which is not statistically significant.

Therefore, the null hypothesis that there would be no difference between gains made in reading achievement by the high achievers in the control group and those made by the high achievers in the experimental group was accepted.

**Comparison of Gains in Reading Achievement of Average Achievers in Experimental and Control Groups**

In order to determine whether or not the experimental procedures used with the average achievers in the experimental group produced significantly better results than the traditional procedure used by the average achievers in the control group it was necessary to make a comparison of the growth in reading achieved by the two groups during the period of the experiment.
Table 15 shows the amount of gain in reading achievement of these two groups as measured by standardized achievement tests administered before and at the close of the study.

**TABLE 15**

**GAINS IN READING ACHIEVEMENT OF AVERAGE ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS**

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Initial Mean Score</th>
<th>Final Mean Score</th>
<th>Mean Gain in Grade Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>67</td>
<td>6.435</td>
<td>6.566</td>
<td>.131</td>
</tr>
<tr>
<td>Experimental</td>
<td>67</td>
<td>6.422</td>
<td>6.537</td>
<td>.115</td>
</tr>
</tbody>
</table>

As Table 15 shows, the average achievers in the control group made a gain of .131 grade level, and the average achievers in the experimental group made a gain of .115 grade level. The difference was .016.

In Table 16 the mean gain in reading achievement of the average achievers in the control group is compared with the mean gain of the average achievers in the experimental group to determine the significance of the difference of these gains.

**TABLE 16**

**COMPARISON OF MEAN GAINS IN READING ACHIEVEMENT OF THE AVERAGE ACHIEVERS IN THE CONTROL GROUP WITH THE AVERAGE ACHIEVERS IN THE EXPERIMENTAL GROUP**

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Gain</th>
<th>No. in G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff. C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>.131</td>
<td>67</td>
<td>.876</td>
<td>.107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>.115</td>
<td>67</td>
<td>.898</td>
<td>.109</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As the above table shows, the growth in reading achievement made by the average achievers in the control group exceeded the growth made by the average achievers in the experimental group by .016 grade level. A statistical comparison of these gains yielded a critical ratio of .104 which is not statistically significant. Thus, the growth in reading achievement of the average achievers in the experimental group was not significantly greater than the growth made by the average achievers in the control group.

Therefore, the null hypothesis that no significant difference would exist between gains made in reading achievement by average achievers in the control group and those made by average achievers in the experimental group was accepted.

Comparison of Gains in Reading Achievement of Low Achievers in Experimental and Control Groups

In order to determine whether or not the experimental procedures used with the low achievers in the experimental group produced significantly better results than the traditional approach used with the low achievers in the control group, it was necessary to make a comparison of the growth in reading achievement of the two groups during the 12 week period of the experiment.

Table 17 shows the amount of gain in reading achievement of these two groups as measured by standardized achievement tests administered at the beginning and close of the experiment.
TABLE 17

MEAN GAINS IN READING ACHIEVEMENT OF LOW ACHIEVERS IN
CONTROL AND EXPERIMENTAL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Initial Mean</th>
<th>Final Mean</th>
<th>Mean Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>37</td>
<td>4.662</td>
<td>4.922</td>
<td>.260</td>
</tr>
<tr>
<td>Experimental</td>
<td>37</td>
<td>4.595</td>
<td>5.168</td>
<td>.570</td>
</tr>
</tbody>
</table>

As will be noted in the table above, the low achievers in the experimental group made a gain of .570 grade level, and the low achievers in the control group made a gain of .260 grade level.

In Table 18 the mean gain in reading achievement of the low achievers in the control group is compared with the mean gain in reading achievement of the low achievers in the experimental group to determine the significance of the difference of these gains.

TABLE 18

COMPARISON OF MEAN GAINS IN READING ACHIEVEMENT OF
LOW ACHIEVERS IN THE CONTROL GROUP WITH LOW ACHIEVERS
IN THE EXPERIMENTAL GROUP

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Gain in G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>37</td>
<td>.260</td>
<td>.917</td>
<td>.151</td>
<td></td>
<td>.233</td>
<td>.313</td>
</tr>
<tr>
<td>Experimental</td>
<td>37</td>
<td>.573</td>
<td>1.077</td>
<td>.177</td>
<td></td>
<td>.233</td>
<td>.313</td>
</tr>
</tbody>
</table>

As the above table shows, the growth in reading achievement made by the low achievers in the experimental group exceeded the growth made by the low achievers in the control group by .313 grade level. A statistical comparison of these gains yielded a critical ratio of 1.34 which is not statistically significant. Thus, the growth in reading
achievement of the low achievers in the experimental group was not significantly greater than the growth made by the low achievers in the control group.

Therefore, the null hypothesis that there would be no significant difference between gains made in reading achievement by the low achievers in the experimental group and those made by the low achievers in the control group was accepted.

Comparison of Gains in Composite Achievement of Total Control and Total Experimental Groups

In order to determine whether or not the directed imagination and suggestion used with the experimental group produced significantly better results than the traditional approach alone which was used with the control group, a comparison was made of the growth in composite achievement made by the two groups during the three month study.

Table 19 shows the amount of gain in composite achievement of these two groups as measured by standardized achievement tests administered at the beginning and at the conclusion of the study.
TABLE 19
GAINS IN COMPOSITE ACHIEVEMENT OF TOTAL CONTROL AND TOTAL EXPERIMENTAL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Initial Mean Grade</th>
<th>Final Mean Grade</th>
<th>Gain in Mean Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>6.463</td>
<td>6.937</td>
<td>.474</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>6.434</td>
<td>6.702</td>
<td>.268</td>
</tr>
</tbody>
</table>

As can be noted in the above table, the experimental group made a gain of .268 grade level as compared to a gain of .474 made by the control group.

In Table 20, the mean gain in composite achievement of the total control group is compared with the mean gain of the total experimental group to determine the significance of the difference of these gains.

TABLE 20
COMPARISON OF MEAN GAINS IN COMPOSITE ACHIEVEMENT OF TOTAL CONTROL AND TOTAL EXPERIMENTAL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Gain in Grade</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E. Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>145</td>
<td>.474</td>
<td>1.268</td>
<td>.105</td>
<td>.143</td>
<td>1.44</td>
</tr>
<tr>
<td>Experimental</td>
<td>145</td>
<td>.268</td>
<td>1.166</td>
<td>.096</td>
<td>.206</td>
<td>1.44</td>
</tr>
</tbody>
</table>

As Table 20 shows, the growth in composite achievement of the total control group exceeded the growth made by the total experimental group by .206 grade level. A statistical comparison of these gains yielded a critical ratio of 1.44 which is not statistically significant.
Therefore, the null hypothesis that there would be no significant difference between gains made in composite achievement by the total control group and those made by the total experimental group was accepted.

Comparison of Gains in Composite Achievement of High Achievers in the Experimental and Control Groups

In order to determine whether or not the experimental procedures of directed imagination and suggestion used with the high achievers in the experimental group produced significantly better results than the traditional procedures used with the high achievers in the control group, a comparison was made of the growth of the two groups in composite achievement.

Table 21 shows the amount of gain in composite achievement of these two groups as measured by the standard achievement tests.

**TABLE 21**

<p>| GAINS IN COMPOSITE ACHIEVEMENT OF HIGH ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS |
|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------------|</p>
<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Initial Mean Grade Score</th>
<th>Final Mean Grade Score</th>
<th>Mean Gain in Grade Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>41</td>
<td>7.785</td>
<td>8.190</td>
<td>.405</td>
</tr>
<tr>
<td>Experimental</td>
<td>41</td>
<td>7.698</td>
<td>7.844</td>
<td>.146</td>
</tr>
</tbody>
</table>

As Table 21 shows, the high achievers in the control group made a gain of .405 grade level as compared to a gain of .146 grade level made by the experimental group.
In Table 22, the mean gain in composite achievement of the high achievers in the experimental group is compared with the mean gain in composite achievement of the high achievers in the control group.

**TABLE 22**

**COMPARISON OF MEAN GAINS IN COMPOSITE ACHIEVEMENT OF HIGH ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS**

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Gain in G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>41</td>
<td>.405</td>
<td>.734</td>
<td>.114</td>
<td></td>
<td>.164</td>
<td>.259</td>
</tr>
<tr>
<td>Experimental</td>
<td>41</td>
<td>.146</td>
<td>.756</td>
<td>.118</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the above table shows, the growth in composite achievement of the high achievers in the control group exceeded the growth in composite achievement of the high achievers in the experimental group by .259 grade level. A statistical comparison of these gains yielded a critical ratio of 1.579 which is not statistically significant.

Therefore, the null hypothesis that there would be no statistical difference between gains made in composite achievement by the high achievers in the control group and those made by the high achievers in the experimental group was accepted.

Comparison of Gains in Composite Achievement of Average Achievers in Experimental and Control Groups

In order to determine whether or not the experimental procedures used with the average achievers in the experimental group produced
significantly better results than the traditional procedures used by
the average achievers in the control group, a comparison was made
of the growth in composite achievement of the two groups made during
the period of the study.

Table 23 shows the amount of gain in composite achievement of
these two groups as measured by the standard achievement tests adminis-
tered at the beginning and at the end of the study.

TABLE 23

GAINS IN COMPOSITE ACHIEVEMENT OF AVERAGE ACHIEVERS
IN CONTROL AND EXPERIMENTAL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Initial Mean Score</th>
<th>Final Mean Score</th>
<th>Mean Gain in Grade Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>67</td>
<td>6.393</td>
<td>6.954</td>
<td>.561</td>
</tr>
<tr>
<td>Experimental</td>
<td>67</td>
<td>6.425</td>
<td>6.690</td>
<td>.265</td>
</tr>
</tbody>
</table>

As Table 23 shows, the average achievers in the control group
made a gain of .561 grade level, and the average achievers in the
experimental group made a gain of .265 grade level. The difference
was .296.

In Table 24, the mean gain in composite achievement of the
average achievers in the experimental group is compared with the mean
gain in composite achievement of the average achievers in the control
group.
TABLE 24

COMPARISON OF MEAN GAINS IN COMPOSITE ACHIEVEMENT OF AVERAGE
ACHEIVERS IN CONTROL AND EXPERIMENTAL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean Gain in C.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>67</td>
<td>.561</td>
<td>.847</td>
<td>.103</td>
<td>.142</td>
<td>.296</td>
<td>2.08</td>
</tr>
<tr>
<td>Experimental</td>
<td>67</td>
<td>.265</td>
<td>.795</td>
<td>.097</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the above table indicates, the growth in composite achievement of the average achievers in the control group exceeded the growth in composite achievement of the experimental group by .296 grade level. A statistical comparison of these gains yielded a critical ratio of 2.08 which is not statistically significant at the adopted .01 level of confidence.

Therefore, the null hypothesis that there would be no statistical difference between gains made in composite achievement by the average achievers in the control group and those made by the average achievers in the experimental group was accepted.

Comparison of Gains in Composite Achievement of
Low Achievers in the Experimental and
Control Groups

In order to determine whether or not the experimental procedures used with the low achievers in the experimental group produced significantly better results than the traditional procedures used by the low achievers in the control group, a comparison was made of the growth in composite achievement of the two groups during the three month
period of the study.

Table 25 shows the amount of gain in composite achievement of these two groups as ascertained by the standard achievement tests administered at the onset and at the conclusion of the study.

**TABLE 25**

GAINS IN COMPOSITE ACHIEVEMENT OF LOW ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Initial Mean Score</th>
<th>Final Mean Score</th>
<th>Mean Gain in Grade Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>37</td>
<td>5.124</td>
<td>5.519</td>
<td>.395</td>
</tr>
<tr>
<td>Experimental</td>
<td>37</td>
<td>5.051</td>
<td>5.460</td>
<td>.409</td>
</tr>
</tbody>
</table>

As Table 25 shows, the low achievers in the control group made a gain of .395 grade level, and the low achievers in the experimental group made a gain of .409 grade level. The difference was .014.

In Table 26, the mean gain in composite achievement of the low achievers in the experimental group is compared with the mean gain in composite achievement of the low achievers in the control group.

**TABLE 26**

COMPARISON OF MEAN GAINS IN COMPOSITE ACHIEVEMENT OF LOW ACHIEVERS IN CONTROL AND EXPERIMENTAL GROUPS

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Gain in G.S.</th>
<th>S.D.</th>
<th>S.E.</th>
<th>S.E.</th>
<th>Diff.</th>
<th>C.R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>.395</td>
<td>.810</td>
<td>.133</td>
<td></td>
<td>.183</td>
<td>.014</td>
</tr>
<tr>
<td>Experimental</td>
<td>.409</td>
<td>.764</td>
<td>.125</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As the above table indicates, the growth in composite achievement of the low achievers in the experimental group exceeded the growth in composite achievement of the low achievers in the control group by .014 grade level. When compared statistically, these gains yielded a critical ratio of .076 which was not significant.

Therefore, the null hypothesis that there would be no difference between gains made in composite achievement by the low achievers in the experimental group with those made by the low achievers in the control group was accepted.

Changes in Attitude

No objective measurements were used in this study to ascertain changes in attitude. According to Mager\(^2\) such changes can at best be assumed through observing approach responses, or tendencies on the part of the student to approach the subject in question.

In this case, teachers, as well as the librarian reported a definite increase in interest on the part of the experimental group in reading, books, and the library itself. This was especially true in the case of the low achievers and many of the average achievers.

In addition, many times throughout the study, students in the experimental wing approached the investigator to report progress. These reports were always unsolicited and without exception enthusiastic.

One boy, for example, excitedly reported that until now he had always believed that he couldn't do anything. Now, for the first time, he believed that he could. His gain in reading achievement was two years and one month.

On several other occasions, students related the experimental procedures with observations of their own. For example, following the nationally televised movie "Heidi", students asked the investigator, "Do you know why Clara couldn't walk?" Upon receiving a negative reply, they quickly responded, "It was because she didn't believe that she could!"

Another incident involved the winning of the Super Bowl football game by the New York Jets. Students recognized that Joe Namath, the brilliant superstar, really believed that they would win. In a newspaper article, one of Namath's team-mates was quoted as saying:

"He made me believe we'd win. He made us all believe."

Shortly after the close of the study, one group of students noticed an article in a children's newspaper. The story concerned another athlete, Dick Fosbury, who, despite his most unorthodox form became an Olympic champion high jumper. Before attempting to jump he stands facing the crossbar, eyes closed, rocking back and forth, sometimes for almost two minutes. According to the article, he is saying to himself, "Go over the bar. I CAN DO IT!"

In addition to changes in attitudes of students toward reading, the investigator clearly observed a change in the attitudes of several teachers toward readers as they became more and more aware of the importance of self-images.
Changes in Reading Self-concepts

The author would like to make it clear that she is in agreement with Combs and Snygg who contend that self-report cannot justifiably be used as a direct measure of self-concept, but can only be inferred through behavior. However, as a point of interest, self-evaluations of the students' concepts of themselves as readers were obtained three times during the study: 1) November (beginning of study); 2) January (mid-study); and 3) February (end-of-study).

Table 27 shows how the low achievers in the experimental group viewed themselves at these three times.

TABLE 27
READING SELF-CONCEPTS OF LOW ACHIEVERS ON A SEVEN POINT READING SCALE

<table>
<thead>
<tr>
<th>Ratings</th>
<th>November</th>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY POOR</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>POOR</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>FAIR</td>
<td>21</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>GOOD</td>
<td>9</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>VERY GOOD</td>
<td>2</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>EXCELLENT</td>
<td>0</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>SUPERIOR</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
</tbody>
</table>

As can be seen in Table 27, at the onset of the study most low achievers viewed themselves as fair or good readers, while only one student viewed himself as a very poor reader. At mid-study and again at end-of-study the most frequently selected categories were GOOD and VERY GOOD. While no extreme evaluations were reported in January, in February one student rated himself as a superior reader.

Table 28 shows the views which the average achievers in the experimental group had of themselves as readers in November, January, and February.

| TABLE 28 |
| READINIG SELF-CONCEPTS OF AVERAGE ACHIEVERS ON A SEVEN POINT READING SCALE |

<table>
<thead>
<tr>
<th>Ratings</th>
<th>November</th>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY POOR</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>POOR</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>FAIR</td>
<td>26</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>GOOD</td>
<td>27</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>VERY GOOD</td>
<td>6</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>EXCELLENT</td>
<td>2</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>SUPERIOR</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Totals</td>
<td>67</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>

As can be seen in Table 28, at the beginning of the study most of the average achievers viewed themselves as fair or good readers. One student viewed himself as a very poor reader. At mid-study, the most frequently reported evaluations were GOOD and VERY GOOD.
while two Ss reported themselves as superior readers. While GOOD and VERY GOOD continued to be popular choices in February, EXCELLENT was also frequently selected. Three students now viewed themselves as superior readers.

Table 29 shows how the high achievers in the experimental group viewed themselves as readers at three different times.

**TABLE 29**

READING SELF-CONCEPTS OF HIGH ACHIEVERS ON A SEVEN POINT READING SCALE

<table>
<thead>
<tr>
<th>Ratings</th>
<th>November</th>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>VERY POOR</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>POOR</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FAIR</td>
<td>7</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>GOOD</td>
<td>22</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>VERY GOOD</td>
<td>10</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>EXCELLENT</td>
<td>0</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>SUPERIOR</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>41</strong></td>
<td><strong>41</strong></td>
<td><strong>41</strong></td>
</tr>
</tbody>
</table>

Table 29 reveals that many high achievers considered themselves good or very good readers in November. One student rated himself in the extreme category of VERY POOR. At mid-study, the most frequently selected ratings were VERY GOOD and EXCELLENT, with only one extreme rating of VERY POOR reported. In February, VERY GOOD and EXCELLENT remained the most often selected evaluations, while two extremes, one VERY POOR and one SUPERIOR, were reported.
Table 30 indicates the direction of reported improvement from November to February on the seven point reading scale as compared to the direction of scored improvement in reading achievement, as determined by pre-test, post-test comparisons.

TABLE 30

A COMPARISON OF REPORTED IMPROVEMENTS IN READING SELF-CONCEPTS AND SCORED IMPROVEMENTS IN READING ACHIEVEMENT

<table>
<thead>
<tr>
<th>Reported Self-Concept Improvement</th>
<th>Scored Reading Improvement</th>
<th>High Achievers</th>
<th>Average Achievers</th>
<th>Low Achievers</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEGATIVE</td>
<td>NEGATIVE</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>NEGATIVE</td>
<td>NONE</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NEGATIVE</td>
<td>POSITIVE</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NONE</td>
<td>NEGATIVE</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>NONE</td>
<td>NONE</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NONE</td>
<td>POSITIVE</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>POSITIVE</td>
<td>NEGATIVE</td>
<td>21</td>
<td>24</td>
<td>7</td>
</tr>
<tr>
<td>POSITIVE</td>
<td>NONE</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>POSITIVE</td>
<td>POSITIVE</td>
<td>9</td>
<td>35</td>
<td>26</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>41</strong></td>
<td><strong>67</strong></td>
<td><strong>37</strong></td>
</tr>
</tbody>
</table>

As can be seen in Table 30, 2 of the high achievers in the experimental group who lowered their self-evaluation as readers (negative improvement) actually scored lower on the reading achievement post-test. Nine of the high achievers who raised their self-ratings (positive improvement) actually scored higher on post-testing. These 11 Ss represent 27% of the high achiever sub-group.
The average achievers' self-evaluations were in agreement with actual reading achievement scores in 36 cases or 54% of the total average-achiever sub-group.

The reading self-evaluations of the low achievers were in agreement with actual reading achievement scores in 70% of the cases. Twenty-six of the low achievers who reported higher self-evaluations at the study's end actually made gains in reading achievement.

Further analysis of the self-evaluation data revealed that 20 low achievers rated themselves higher after prestige visits, 10 did not change their self-evaluations, while 7 rated themselves lower.

In addition, 22 average achievers raised their self-evaluations as readers, 36 did not change their evaluations, while 9 lowered their ratings following prestige visits.

Of the high achievers, 11 reported higher self-evaluations following prestige visits, while 24 reported no change and 2 rated themselves lower on the seven point scale.
Further Analysis

Although the difference between gains made by the low achievers in the experimental group and those made by the low achievers in the control group yielded no significant difference statistically, the investigator felt that the mean gain of .570 of one grade level, or approximately six months, made by the experimental group over the 12 week period of the study warranted further examination. This closer examination of the data yielded the following additional information.

Of the 37 low achievers, 25 made positive gains in reading achievement, 2 remained the same, and 10 made negative gains. Of the 25 who made positive gains, 15 scored one year or more higher on post-testing than they had on pre-testing, while 4 of these gained two years or more.

The low achievers of the control group, on the other hand, made a mean gain of .260 of one grade level during the 12 week study. Of the 37 Ss, 23 made positive gains, none remained the same, while 14 made negative gains. Of the 23 who made positive gains, 8 scored one year or more higher on post-testing than on pre-testing, while no one gained more than two years.

Recalling from the related research that other investigators, for example, Start and Richardson, had found a relationship between the ability to visualize clearly and success of mental practice,

---

the writer decided to interview the low achievers in an effort to explain the data.

While all 25 positive gain Ss reported no difficulty in forming mental images, such was not the case with the no-gain and negative gain Ss. Three of these 12 Ss reported difficulty in the mental image procedures, while in addition, six confessed that they had not faithfully participated during the daily procedures.

Furthermore, one boy reported that he had been absent at the time of the introductory lesson and was somehow overlooked during make-up sessions. He, therefore, never understood what the procedures were all about. This information indicates that some of the negative gains may be in part due to uncontrolled method variables.

Another factor of interest was the predominance of negative gains made in reading achievement by the high achievers in both the control and experimental groups. Possible explanations include:

1) lower motivational level

Since these students were already good readers, they may not have experienced a desire to become much better.

2) test factors

High scores on the reading achievement test tend to be easily affected by slight differences in numbers of correct items.

3) regression toward the mean

A tendency seems to exist for scores to approach the mean on the second of two tests.
CHAPTER V

SUMMARY AND CONCLUSIONS

The Problem

The major purpose of this study was to compare the effects on reading achievement of the following two procedures:

1. The traditional approach utilizing basal readers, skills workbooks, and supplementary materials

2. An experimental plan in which the traditional approach was supplemented with directed imagination and positive suggestion

In addition to the major purpose the following secondary objectives were also considered:

1. To compare the effects of the two procedures on composite achievement growth

2. To compare the effects of the two procedures on changes in attitude

Procedures

In order to carry out the problem of the investigation, control and experimental groups were established for the purpose of providing evidence for comparing the two procedures. These groups were matched on the basis of intelligence quotients, mental age, chronological age, and reading achievement.
Scores attained on the standardized achievement tests which were used in formulating the control and experimental groups were also used as initial measures for determining gains in reading achievement at the conclusion of the study.

In the experimental group which consisted of 145 students from Grade 6, the special experimental procedures involving directed imagination and positive suggestion were used. The control group which also consisted of 145 sixth graders used the traditional approach.

At the beginning of the study, three matched sub-groups were selected in both experimental and control groups in order to compare the effect of the two procedures on the reading growth of children of different levels of achievement. These matched sub-groups consisted of high achievers, average achievers and low achievers.

Both groups received 30 minutes of daily reading instruction using basal readers of appropriate levels of difficulty, skills workbooks, and supplementary materials. The experimental group in addition, spent approximately ten minutes daily in carrying out the experimental procedures. These procedures consisted of having the students verbalize and write, "I can be a much better reader by ______ date ______." In addition, they were directed by the teacher to mentally picture themselves performing successfully in reading.

At the conclusion of the study, which ran for a period of approximately twelve school weeks, alternate forms of the standar-
dized achievement tests used at the beginning of the study were administered to the experimental and control groups for purposes of measuring gains in reading achievement. These gains were used as a basis for comparing the relative effectiveness of the two procedures and for comparing various sub-groups.

Conclusions

On the basis of the evidence gathered and the comparison of the control and experimental groups and the various sub-groups, the following conclusions were reached regarding the relative merits of the two procedures and their effect on children of different achievement abilities.

1. In comparing the reading gains attained by the total experimental group with the gains achieved by the total control group, there was a difference of .048 of one grade level in favor of the experimental group. Since this difference was not statistically significant, one must conclude that neither of the two procedures could be considered superior to the other. However, the total effect of the two procedures could not be determined by total group data alone.

2. Both the high achievers of the experimental group and the high achievers in the control group made slight negative gains in reading achievement. Since the difference between gains of -.089 was found to be not significant statistically, one must conclude that the experimental procedures had little effect on students of this level of ability.
3. The gains made in reading achievement by the average achievers in the control group was slightly greater than those made by the average achievers in the experimental group. The difference of .016 yielded a critical ratio of .104 which was not statistically significant. On the basis of these findings, one must conclude that the effects of the experimental procedures on the reading achievement of average achievers is negligible.

4. The difference between gains made in reading achievement by low achievers in the control group was .313. This difference yielded a critical ratio of 1.34 which was not statistically significant. Therefore, one must conclude that the experimental procedures had little effect on the reading achievement of students of this ability level.

5. The experimental procedures apparently had little effect on the overall performance of students as measured by composite achievement scores. A possible influencing factor is the fact that it is not uncommon for students to consider reading as an isolated subject in itself failing to recognize its importance as a tool in every subject.

6. While the experimental procedures apparently had little effect on the reading achievement of the low achievers as a total group, closer analysis indicated that the procedures may have been effective with some individuals.

7. Low achievers seem to be better able to assess their own reading improvement than students of other ability levels.
8. Low achievers seem to be more affected by prestige suggestion than students of other ability levels.

9. Attitudes toward reading can apparently be favorably affected by directed imagination and suggestion as was observed by teachers, the librarian, and the investigator. This was especially true in the case of low achievers and certain individuals of other levels of ability.

Implications

While statistical analysis of the data yielded no positive objective basis on which to make generalized implications, the investigator feels that other observed outcomes warrant consideration. The following implications have been derived accordingly:

1) Teachers should continually seek ways in which to encourage students to believe in themselves and their own capabilities.

2) More concern should be given to early reading experiences in order to avoid formation of negative reading self-concepts.

3) Teachers should be made aware of the importance of self-image.

4) No student should be considered hopeless.

5) Practices such as homogeneous grouping which might reinforce negative self-images should be carefully re-examined.
Suggestions for Further Research

Although all of the null hypotheses were accepted in this study on the basis of statistical analysis, a closer examination of all outcome leads the investigator to believe that further research under various conditions would be of value.

1. Following similar experimental procedures to those of this study, it would be interesting to observe the effects on reading achievement of a small group of students. Under these conditions, the investigator would have greater control over the procedures.

2. A similar study of longer duration would be of interest.

3. A study in which a variety of mental pictures involving other academic subjects could be done.

4. It would be interesting to experiment with similar procedures, but with parental involvement. For example, the parents could read through the mental pictures to the child just before he went to sleep.

5. Involving younger children in a similar study would be desirable.

6. Conducting a similar study with individuals of high school or college age would be of interest.

7. Conducting a similar study in which children designed their own mental pictures according to individual needs would be advisable.

8. A study could be designed in which mental pictures of successful performance could be combined with deliberately planned opportunities for actual successful performance.

9. Following similar experimental procedures, mental pictures could be designed to include only one specific reading skill such as
word analysis, or figuring out new words.

10. A study could be done in which an individual's successful reading performance was recorded on video-tape. This tape could be used daily in place of the mental imagery thus reducing the associated method variables.

11. A study could be done at the primary grade level in which a deliberately positive approach was used. All practices which might be harmful to the student's image of himself as a reader could be eliminated. For example, papers and workbooks with many items marked wrong, negative teacher comments, competitive practices, negative stamps such as frowning clowns, and comparative-competitive marking procedures.

In short, such a study would theoretically represent an effort to establish favorable goal-images during primary learning in order to eliminate the need for later attempts to change them.
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BOOKS


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Messerschmidt, R. "The Suggestibility of Boys and Girls Between the Ages of Six and Sixteen Years," *Journal of Genetic Psychology* XLIII (1933), 422-437.


APPENDIX A

1. Otis Quick-Scoring Mental Ability Test
   Beta, Form E for Grades 4-9

2. Sample from Reading Comprehension Sub-test of
   the Iowa Test of Basic Skills, Form 3 for
   Grade 6
1. The opposite of weak is — (1) weak (2) strong (3) heavy (4) heavy (5) weak

2. Which of the five words below comes first in the dictionary? (1) blue (2) black (3) brown (4) brown (5) blue

3. Which answer tells best what a teapot is? (1) a tool (2) a weapon (3) a utensil (4) a thing (5) a machine

4. An eggshell is to an egg as the same as orange skin is to (1) leek (2) onion (3) an orange (4) an orange seed (5) a beach

5. Ruth is prettier than Sadie but not as pretty as Mabel. Therefore, Mabel is (1) as pretty as Sadie. (2) not so pretty as Sadie. (3) prettier than Sadie. (4) The mayor to the city as the governor to the state. (5) a president

6. A stove is to a heater as a refrigerator is to — (1) a kitchen (2) cold (3) electricity (4) gas (5) food

7. Three of the four designs at the right are alike in some way. Which one is not like the other three? (1) north (2) higher (3) northeast (4) down (5) under

8. The opposite of clockwise is — (1) backward (2) counterclockwise (3) right (4) left (5) round

9. Which of the five words below comes first in the dictionary? (1) times (2) two (3) stand (4) ruled (5) grand

10. Which of the five persons below is most like a carpenter, a plumber, and a bricklayer? (1) a postman (2) a lawyer (3) a truck driver (4) a doctor (5) a painter

11. Which of the five following sentences tells best what an arm is? (1) It goes in the coat sleeve. (2) It carries the hand. (3) It is part of the body attached to the shoulder. (4) We have two of them. (5) You can put it around something.

12. Four of the following things are alike. Which one is different from the other four? (1) a secret (2) a peach (3) a radish (4) an onion (5) a potato

13. What is to portion as an eye is to sight? (1) a glass (2) voices (3) a sound (4) an ear (5) an earphone

14. Three of the four designs at the right are alike in some way. Which one is not like the other three? (1) sky (2) cloud (3) a marble (4) an airplane (5) a toy

15. Fur is to a rabbit as feathers are to — (1) a pillow (2) a bird (3) a hair (4) an animal (5) a nest

16. What is the most important reason for using screens at windows? (1) They are easy to paint. (2) They improve the looks of the window. (3) They keep out flies but let in the breeze. (4) They keep out burglars. (5) They are easier to keep clean than windows are.

17. Which of the five words below comes last in the dictionary? (1) front (2) local (3) lemon (4) floor (5) knoll

18. The moon (7) around the earth. (1) front (2) local (3) lemon (4) floor (5) knoll (6) moves (7) moves (8) revolves (9) spins

19. Printing is to a book as writing is to — (1) talking (2) a letter (3) a pen (4) a friend (5) reading

20. Which of the five things below is most like a chimney, a roof, and a door? (1) a chair (2) a bed (3) a stove (4) a window (5) a desk

21. The ground is to an automobile as water is to — (1) a train (2) gasoline (3) the engine (4) a ship (5) a river

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Otsi Quick-Scoring Mental Ability Tests: New Edition

BETA TEST: FORM E

by Arthur S. Otsi

Do not open this booklet, or turn it over, until you are told to do so.

Fill these blanks, giving your name, age, birthday, etc.

Write plainly.

Name: 
Grade: 
Boy or Girl: 
Date of birth: 
School: 
City and state: 

Read these directions. Do what they tell you to do.

This is not as easy as you might think. It contains questions of different kinds. Under each question there are four or five possible answers. You are to read each question and decide which of the choices below it is the right answer. Do not spend too much time on any one question. There are three sample questions.

Sample A: Which of the figures below is the same as Box A?

I II III IV

1. 1 2 3 4 5 6 7 8 9

2. (a) (b) (c) (d) (e)

3. (c) (d) (a) (b) (e)

The right answer, of course, is (d). The next question in Series A is: Look at the picture below and answer this question, "If the figure "a" in the row above is continued in the series would the figure be "b" in the row below?"

Answer: look at the picture and choose the right answer. Here, the answer is "yes".
50. Which of these would be the best heading for paragraph 4?
   1) "What the bellows are used for"
   2) "From fire to anvil"
   3) "The blacksmith's work"
   4) "Shaping the shoe"

51. Why did the shoeing seem finished too soon?
   1) The smith was in a hurry.
   2) The owner enjoyed watching the smith at work.
   3) The horse was hard to hold.
   4) The owner hated to go back to work.

52. Why was the process repeated three times (last paragraph)?
   1) In order to get a good fit
   2) To make sure the shoe would stay on
   3) To shoe the other three hoofs
   4) Four of the little heels were needed on each shoe.

When Anne and I visited Uncle David in New York City, he took us to see the Queen Mary. It is one of the biggest and fastest ships in the world.

55. Which is the best guess of how many people live in the writer's town?
   1) Less than 1,000
   2) About 1,500
   3) About 2,200
   4) About 10,000

56. What does "quick as lightning" mean?
   1) It refers to a ship named Lightning.
   2) The Queen Mary's speed seems extremely fast.
   3) The Queen Mary actually travels as fast as lightning.
   4) The Mayflower needed lightning power.

57. How long was the Queen Mary's ocean crossing?
   1) Exactly three days
   2) Almost four days
   3) About one week
   4) 70 days

58. Which is true about the Queen Mary?
   1) It is the biggest ship in the world
Some Indian tribes on the northwestern coast of
our country had a curious custom that was known as
the “potlatch.” A potlatch was a feast or gathering
at which presents were given.

These Indians were rich compared with most
others. Fish from the ocean were plentiful, moun-
tain game were abundant, and berries and seeds
grew everywhere. The nearby forests gave the In-
dians wood for houses, canoes, and other uses. They
thought it was a good thing to be rich, and each
one tried to become richer. That was the purpose
of the potlatch.

A potlatch might be given by a chief or other
wealthy Indian brave, or even by a boy of ten or
twelve if he belonged to a rich family. The boy
would invite a number of boys his own age for a
feast. After the feast, he gave everyone gifts. Usu-
ally these were blankets made of cedar bark. The
more blankets he gave away, the greater would be
his name. Also, the greater would be his gain, for
each boy who was given blankets at the feast must
return two, three, or more blankets for each one he
received. If a boy could not do this, he showed him-
self to be less important than the boy who had given
the potlatch.

When a chief gave a potlatch, it was usually for
the chief of another tribe. The gift he had for the
visitor was often a copper plate, one of the greatest
treasures among these tribes. For such a gift the
rival chief had to return many blankets or something
else of greater value than the plate. Often the mem-
ers of the tribe helped their chief to make the re-
turn gift great enough.

Anyone who returned at least as much as he was
given at a potlatch could then himself give a pot-
latch and become richer and greater.

61. What is the best description of these Indians?
1) They loved to give parties and have fun.
2) They liked to be rich and important.
3) They were good hunters and fishermen.
4) They wanted everyone to be rich.

62. Who was supposed to benefit the most from a
potlatch?
1) The Indian giving the potlatch
2) The guests at the potlatch
3) Everyone in the tribe
4) One cannot tell from this story.

63. Why were these Indian tribes rich?
1) They held potlatches.
2) They had much copper.
3) They raised big crops.
4) They had many natural resources.

64. Where did the Indians get material for blan-
kets?
1) From sheep
2) From goats
3) From trees
4) From grasses

65. Why would a chief give a potlatch for a chief
of another tribe?
1) To show honor or respect
2) To demonstrate his power and importance
3) To become even richer and more important
4) To exchange copper for useful articles

66. Where did these Indians fish?
1) In the Atlantic Ocean
2) In the Pacific Ocean
3) In the Gulf of Mexico
4) In the Indian Ocean

67. What does the story show about women and
small children of the tribes?
1) They did not give potlatches.
2) They lived in separate villages.
3) They did all the work for a potlatch.
4) None of them belonged to wealthy families.

68. Which word best describes the Indians who
gave potlatches?
1) Stingy
2) Unselfish
3) Loving
4) Greedy

69. Which of these common expressions best de-
scribes the custom of the potlatch?
1) “Running around in circles”
2) “Biting off more than you can chew”
3) “Keeping up with the Joneses”
4) “Hitching your wagon to a star”
APPENDIX B

Materials Used in the Experimental Procedures

1. General Instructions Given to Teachers in the Experimental Group

2. Specific Instructions Given to Teachers in the Experimental Group
   a. Daily Procedures
   b. Directions for verbalizing
   c. Directions for writing
   d. Directions for Mental Pictures

3. Introductory Lesson Given in the Experimental Classrooms by the Investigator
General Instructions Given to Teachers in the Experimental Group

1. Follow daily procedures exactly. If changes need to be made, please see me first.
2. Be faithful in carrying out the procedures daily.
3. Try to maintain enthusiasm in spite of the routine.
4. Provide opportunities for actual success whenever possible.
5. When students receive poor marks, remind them that these are only temporary. When the new goal-image is formed, grades will improve.
6. Watch for any unusual signs of frustration. Notify me IMMEDIATELY.
7. Record in the provided notebook any reactions, behavioral changes, comments, etc. that seem related to the study.
8. Do not pressure anyone or try to convince him that he can do something that is obviously inappropriate for him at this time.
9. Try to take a positive approach toward the study.
Instructions for Teachers in the Experimental Group

Daily Procedures

1. Student passes paper slips during homeroom period.
2. Start procedures when the 8:40 bell rings. If you have a consultant at that time, start procedures at the beginning of the Language Arts time block.
3. Verbalize according to directions.
4. Visualize according to directions.
5. Write according to directions.
6. Before each math, social studies, and science class, verbalize again according to directions.
7. Record any changes in attitudes, behavior, habits as well as relevant comments both positive and negative.

Directions for Verbalizing

Teacher: What are you going to remember today?

Students: (Responding in unison) I can be a much better reader by January 10, 1969.

*On January 10, 1969, change the date to February 10, 1969, the date of post-testing.

Directions for Writing

On the slips of colored paper distributed during homeroom period, students write: "I can be a much better reader by January 10, 1969!"

*Change date as above.
Directions for Mental Pictures

Before reading the following instructions, ask the students to close their eyes and get ready to concentrate.

Picture #1

1. Picture yourself in reading class.
2. Picture a much more difficult book than usual on your desk.
3. You know your assignment and now you're opening your book to the right page.
4. You're concentrating on your work because you're a very good student.
5. Picture yourself beginning to read.
6. You know all the words and you're understanding what you're reading because you are thinking about it.
7. Hear the pages turning as you read.
8. Picture yourself closing the book. You have finished the assignment.
9. You know what you have read.
10. You really feel good!
Picture #2

1. Now you have a workbook (or written) assignment to do.
2. Picture your workbook or paper on your desk.
3. Picture yourself reading the directions carefully the way good students do.
4. Picture yourself writing the answers neatly.
5. You keep right on working until you have finished.
6. Now it is later.....Your work has been corrected.
7. Picture those good marks!
8. Hear the teacher saying, "Your work is really improving!"
9. You feel very happy.
INTRODUCTORY LESSON

Upon entering each experimental classroom, the investigator told the students that she had something exciting to tell them, that is, that they were about to take part in a reading experiment. She then told them that the lesson that she was about to give would help them to understand what we were going to do.

A construction paper scene of an ocean liner approaching an iceberg was taped to the blackboard. Students were asked whether the ship could easily sail around such an obstacle. After obtaining several responses, generally affirmative, the 'ocean' was removed from the picture revealing that more than two-thirds of the iceberg had been hidden. An analogy was drawn between the iceberg and the human mind. Only a relatively small portion of the mind, they were told, was actually conscious, while much of the mind lies beneath the level of consciousness.

A large construction paper picture of a human brain was then attached to the blackboard. The investigator explained that while scientists have never been able to look at a human mind, they have seen human brains and have been able to determine much about how they operate. The investigator then pointed out the various parts of the brain that have to do with sensory input. Memory was then discussed. With appropriate visual aids and investigator-student interaction,
the following information was elicited:

1) Memory lies beneath the level of consciousness.

2) Experiences and impressions of various kinds are stored in memory. These include:
   a) visual images (trees, animals, friends, etc.)
   b) auditory impressions (gun shots, airplanes, etc.)
   c) smells (onions, skunks, etc.)
   d) tactile impressions (softness, roughness, etc.)
   e) Personal experiences of all types especially those of an emotional nature
   f) ideas and beliefs.

3) Some memories can be evoked by verbal stimuli.

The investigator then explained to the students that there is something very important to each of them stored in their memories -- a picture or a belief about themselves as readers. The term 'self-image' was introduced and the ways in which such an image was probably formed through early experiences were discussed. Each student was then asked to look at the ratings on a paper reading thermometer and to choose the one that best described how he pictured himself as a reader. These seven ratings were: very poor; poor; fair; good; very good; excellent; and superior. They recorded the information on slips of paper with name, date and rating. These were then collected for future reference.

In order to help the students understand how the self-image trap might be operating, an imp-like figure was created and reproduced on bright yellow cardboard. This imp was called 'Dimmy' (because he dino
images) and was used in the following way:

Students were told that obviously they had no such imp in their brain, but that we would use Dimmy to help us in understanding what might be happening. The investigator explained that some psychologists now believe that once a boy or girl has accepted a picture of himself as a certain kind of reader, something in the brain, which we'll refer to as Dimmy, guards that image very carefully. Anytime reading performance starts to get better than the hidden image, Dimmy says, 'Oh, no you don't! Remember, you are a poor reader! Now make some mistakes!' (Other ratings might be substituted when appropriate.) Sometimes he might keep you from concentrating so that you won't be able to improve too much. He has all kinds of tricks to safeguard your belief about yourself as a reader.

This point was then illustrated. A volunteer was asked to come to the blackboard to write his name. As the student took the chalk in his hand, the investigator said, "Oh, I forgot to tell you. I want you to do it with your hands tied behind your back." As he attempted futilely to write his name, the investigator asked, "What's the matter? Can't you reach the blackboard?"

Student: Yes, I can.

Investigator: Do you know how to hold the chalk?

Student: Yes, I do.

Investigator: Do you know how to write?
Student: Yes.

Investigator: Can you spell your name?

Student: Yes, I can.

Investigator: Well, then what's the matter? You don't need to know anything else!

Student: But my hands are tied behind my back! The string is keeping me from doing it!

Investigator: Exactly! And that's just how Dimmy works. You may have all the information needed to become a much better reader already stored in your brain, but Dimmy won't let you use it! What we need to do then is to get rid of Dimmy, or give him a better reading image to guard.

The investigator then explained that Dimmy probably came into being through early reading experiences. If those experiences were accompanied by failure, then Dimmy was guarding an image of poor performance, but now maybe the reasons for those early failures had gone. Actual experiences, they were told, might not be necessary for forming a new image, but vividly imagined experiences may work in the same way.

The experimental procedures were then explained and a practice session in forming mental images was conducted. Students were told that changing an image might not be easy and might take longer for some of them than for others. They were told that it was very important that they believe that they could improve just as the investigator believed that such was true.

High achievers were told that since psychologists believe that most people use only a very small percentage of the brain that they too could
improve even though they were already very good readers. All students were told that when actual performance did not support the new image, they should not become discouraged, but view such performances as only temporary.

Large and colorful 'I CAN DO IT!' posters were left in each experimental classroom along with the frowning imp-like Dimmy to serve as visual reminders of the experiment throughout the day.
APPENDIX C

1. Sample Demonstration Lesson Given by the Investigator
2. Materials Used for Reading Instruction by Both Groups
3. List of Prestige Visitors
4. General Suggestions for Prestige Visits
INTRODUCTION

Very often in our reading, we come upon words which are unfamiliar to us. There are several ways in which we can handle these words: 1) We can skip them.

Sometimes this doesn't really matter, but at other times the story loses its meaning without them; 2) We can look them up in a glossary or dictionary, but this is not always possible and not always desirable. The story would be spoiled if there were too many of these words; 3) We can use the CONTEXT, or the words around the new word. In this lesson, we will find out the different ways in which writers tell us the meanings of unfamiliar words.

FOUR MAIN METHODS

Writers usually use one of four main methods of presenting word meanings through context. These are: 1) DEFINITION; 2) EXAMPLE; 3) COMPARISON; and 4) CONTRAST.

In addition, many writers use special signals to tell the reader, "Be on the lookout! I'm going to tell you what the difficult word means."

These signals may be punctuation marks, special words, or both. the punctuation signals are: 1) a comma or commas; 2) dashes---; 3) parentheses ( ); and 4) the semi-colon ;.

The special word signals will be discussed as we take a closer look at the four main methods.
Sometimes the writer actually defines the new word for us. This, of course, is the easiest of the context methods.

Examples of Definition Method

1. Selenography is the science of the physical features of the moon.
2. Panniers, or large baskets, are often carried on the backs of animals.
3. The ptarmigan — a grouse of northern regions — has completely feathered feet.
4. There was no ebullience, no lively enthusiasm, at the farewell dinner.

Examples of the Example Method

1. Some legumes, peas for example, can be easily frozen for later use.
2. Mollusks, such as snails and clams, have soft bodies enclosed in shells.

Examples of the Comparison Method

1. Some storms begin by moving in a large spiral, like a whirlpool.
The Contrast Method (Word signals: but, although, on the other hand, no, not)

Sometimes writers define new words by using opposites.

Examples of the Contrast Method

1. Some people live in hovels, but others live in very beautiful homes.

2. When a house is left alone, it looks desolate; on the other hand, when it is lived in, it is cheerful and filled with people.

Other Methods

While more considerate writers provide clues and signals to new word meanings, there are many times when no specific clue is given. When this happens, we need to think carefully about the rest of the sentence and sometimes look beyond that sentence.

Example

1. The swimming pool and gymnasium were located in a new annex to the school. This modern addition was ready for use in September.

Materials Used by Both Groups

**Basal Readers** published by Houghton Mifflin Company, Boston.
- High Roads ... Level 4
- Sky Lines ... Level 5
- Bright Peaks ... Level 6
- Adventure Bound. Level 7
- Journeys Into America ... Level 8

**Basal Readers** published by J. B. Lippincott Company, Philadelphia.
- Basic Reading...Book 5
- Basic Reading...Book 6
- Basic Reading...Book 7

**Supplementary Materials**
- Modern Reading Skilltexts published by Charles Merrill Co.
- Be a Better Reader...Foundations A,B,and C published by Prentice Hall
- SRA Elementary Reading Lab published by SRA, Chicago
- SRA Reading for Understanding Kits published by SRA, Chicago

Workbooks to accompany the basal readers were also used.
Prestige Visitors

Mr. Leo Dauwer--------Principal, Daniel Webster School, Marshfield, Mass.

Mr. Richard Devitt------Reading Consultant, South River School, Marshfield, Mass.

Mr. Frederick Hubbard-----Principal, South River School, Marshfield, Mass.

Mr. William Marshall------Principal, Martinson Junior High School, Marshfield, Mass.

Mr. Peter Noyes---------Principal, Grace Ryder School, Marshfield, Mass.

Mr. Wayne Thomas---------Principal, Eames Way School, Marshfield, Mass.

Suggested Procedures for Prestige Visitors

1. Please carry a notebook and jot down some notes during each visit. This may help to convince the children that you are really interested in what is happening.

2. Please tell the children that you have made a special trip to visit them because you are interested in knowing more about the improvement that is being made in reading.

3. Ask if anyone in the class would like to tell you about his improvement.

4. Ask if anyone in the class has improved in any subjects other than the one mentioned in #3.

5. Ask if they think other children could improve if they pictured themselves as better readers.

6. Tell them that they should continue to think of themselves as better readers and to believe that they can improve because it really seems to be working.
APPENDIX D

Test Data for Experimental and Control Groups
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**HIGH ACHIEVERS**

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**Reading Composite**

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**Heading**

HIGH ACHIEVERS

**Experimental Group**