THE EFFECT OF SPECIAL PROGRAMS ON MEAN GAINS IN READING

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THE EFFECT OF SPECIAL PROGRAMS ON MEAN GAINS IN READING

DISSERTATION

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For the Degree of

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By

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CHAPTER I

INTRODUCTION

Reading is a primary source of knowledge. Educators constantly concern themselves with the task of seeking methods to increase speed and comprehension in reading. Just as each individual is a result of the various complexities of different biological systems within himself, so is each individual different in his ability to learn and adapt himself to his environment.

Educators are aware that different students read at different rates and with different abilities to comprehend. Reading is being stressed in all subject-matter areas in order to increase the individual's ability to learn through this medium. It has been observed in a large metropolitan junior high school that there are large numbers of students who are reading at a level which is two or more grades higher than their present placement. These students need a program which will direct their superior abilities in such a way that they will be more able to take advantage of our present-day technology and which will develop mean gains in their reading levels.

The average child reading at grade level is expected to make a gain of one month of reading age per month of usual
classroom instruction. The important question, however, is whether a pupil who is reading at least two grade levels higher than average will maintain this rate of development if he elects to take a special course in creative writing, life science, or accelerated reading instead of the regular reading classes.

The need for additional evaluation of a program which will enable a student to increase his mean gain in reading, as well as increase his knowledge in an elective field, is becoming more apparent each year, as the scope of knowledge is increasing with such speed that man can no longer comprehend broad areas of study.

This study involved three experimental groups. There was one experimental group in each of the following special areas: creative writing, life science, and accelerated reading. Caldwell (4) has stated that most secondary teachers operate on the assumption that all students acquire sufficient reading techniques in the early grades, and their job is to teach facts, ideas, or appreciation. They do not know that only the first two or three years of schooling are primarily given over to the reading process; at about fourth grade all this slips underground and never surfaces again, unless the alert teacher sees that it does. Most of the secondary teachers do not realize that the acquisition of reading skills is a lifetime job.
Weiss (26, p. 119) believed that reading should be fun and purposeful for all students in all subjects. It can become a way of learning, if teachers consciously realize the personal nature and pleasures of reading. Students bring certain feelings to, and gain certain ideas and values from, their reading experiences. They need time to express these feelings and reactions. Our children face the challenges of the twenty-first century and need the resources and inspiration of good teachers and good learning, including good reading experiences.

In a study to discover what creative writing can tell a teacher about children, Miller (16, p. 273) stated that authorities generally agree that the writing of children reveals things about themselves. These would include the following:

1. Children's writing reflects their world and their interpretation of that environment.

2. Each written expression of the child is unique because it has come as a result of the individual child's own personality and experience and his reaction to all that is in his environment.

3. Creative writing is an expression of the child himself and of his thoughts and experiences.

4. The child's writing indicates his problems, needs, wishes, and fears.

5. Written expression serves a valuable purpose in the release of tensions and the resultant therapeutic effect.

6. Written expressions of children can indicate their mental health and can promote this health through catharsis and release of tension.
To Sister Margaretta (15) the key to creative writing is creative thinking and speaking. Words are signs; they are symbols which we employ to express those ideas, emotions, and experiences we wish to share with others. Every word we use has a distinct meaning for each separate use of it. It follows that the more carefully we use words, the more accurate and precise will be the ideas which we will convey to our listeners. Children are natural artists. They are instinctively creative. Encouraging them early to express themselves creatively will help them to think, speak, and write creatively, not only as children, but as adults.

In the area of science, Crumh and Douglas (5) have stated that considerable concern has been expressed that American youth are faced with an overwhelming wave of scientific and technological advances. The opposite view is that science and technical advances depend to a large extent upon the intellectual and cultural characteristics of society. With these different views prevailing, it is easy to realize the importance of both a course in science and the ability to read more to gain understandings of the different subject-matter areas.

Most people's attitude toward science is that it is a collection of facts and laws, a body of already codified knowledge that a teacher must pour into a pupil's head, whether he likes it or not. There has been a recent swing
away from collecting only facts, to learning and reasoning. But this is an oversimplification of the case, for one cannot reason unless he has something to reason about (27).

Statement of the Problem

This study was designed to determine the effect upon reading achievement of students who choose an elective course in either life science, creative writing, or accelerated reading in lieu of regular reading classes.

Purpose of the Study

The purposes of this study were threefold:

1. To determine the feasibility of offering a special program to be substituted for the regular reading classes.

2. To determine whether the supplementary devices for the teaching of reading—the Percepto Scope and the Rateometer—result in a significant gain in reading ability when used with students of high reading achievement, as compared with those students of similar achievement using the control reader.

3. To determine if students enrolled in an accelerated reading program will gain significantly more in reading than students enrolled in either of the special programs—including the controlled "rapid learning" groups in reading.
The hypotheses of this study are as follows:

1. There will be no significant difference in the reading gains between the average gain of the total control group and the average gain of the combined experimental groups.

2. The accelerated reading group will gain significantly more in mean reading achievement than will the control group in reading.

3. There will be no significant difference in the reading gains between the control group and the creative writing group.

4. There will be a significant difference in favor of the accelerated reading group, as compared with the life science group in mean gains in reading.

5. There will be no significant difference in the reading gains between the control group and the life science group.

6. There will be no significant difference in the reading gains between the life science group and the creative writing group.

7. The accelerated reading group will gain significantly more in mean reading achievement than will the creative writing group.
Background and Significance of the Study

Reading, like any discipline studied in our schools today, is learned more rapidly by some students than others. Reading should be a tool, a skill each pupil can use for his own needs, and a vehicle for self-realization and expression. The superior reader is rated high in responsibility, attention span, cooperation, interest in learning activities, independence, and verbal expression, in addition to many other specific characteristics that contribute to success in scholastic activities.

Those students who have made successful achievement in the art of reading would probably gain as much, or more, in reading achievement by taking a special program in science, creative writing, or even a course in accelerated reading, where their abilities can be cultivated to the utmost.

Bentley (2, p. 270) stated that it is unfortunate that the creative student is seldom rewarded for academic activity in the area in which he excels. If a child elects to study creative writing, his reading achievement will likely progress because he will begin reading more on his own to explore possible ideas. Buelke (3, p. 268) stated that writing and reading their own thoughts in natural speech patterns help children to read other materials in thought patterns and ideas, rather than in isolated and unrelated words. Wagner (25, p. 441) suggested that when schools foster creativity,
they are stirring the imagination, promoting inventiveness, encouraging originality, sparking innovations, and challenging ingenuity. Creativity is essential to a vigorous and meaningful school program.

The importance of a class in creative writing is further maintained by Nelson (18, p. 130), who believes that children must have time to explore, manipulate, build, and create. By being allowed sufficient space for creative activity, each child has an opportunity to develop those ideas that are personal to him in the privacy of his own world.

Creativity has been seen to exert a significant influence on aspects of critical thinking, academic aptitude, and abstract thinking ability. Values stressed and held in high regard in a creative writing program are the same values generally regarded as characteristic of the paragon of good citizenship in a democracy. A genuinely successful creative writing-reading program is marked by the day-to-day spontaneous, enthusiastic, excellent reading by the pupils who are taking part in it (3, p. 371).

With a note of hope for America's future development of her creative potentials, Taylor (24, p. 119) quoted Arnold Toynbee:

To give a fair chance to potential creativity is a matter of life and death for any society. This is all important, because the outstanding creative ability of a fairly small percentage of the population is mankind's ultimate capital asset. America must treasure and foster all creative ability that she has in her.
In the spring of 1962, the American Association for the Advancement of Science established the Commission on Science Education because of the necessity to look at the science curriculum from kindergarten through the college years. Mayor (14, p. 201) reported that the first recommendation of the group was that the commission should give its attention to the improvement of science at the junior high school level at the earliest possible time. Sawyer (21, p. 432) stated that teachers in the elementary grades, although little prepared in science, find that children are keenly interested in their surroundings and that science experiences are among the most fruitful in guiding the children to write, read, spell, and orally express themselves. This curiosity and eagerness continues on through the higher grades as demonstrated by the great variety of "how" and "why" questions asked by the children and their willingness to collect materials, create models, experiment, dissect and investigate objects of their environment.

In a special program in science educators often share the view of Levin (13, p. 139), who believes that pure discovery without some rediscovery is rare. This is not discouraging, however, because the history of science is full of examples where rediscovery of ideas, previously dormant, blossomed in new intellectual climates. A variety of rich, purposeful learning experiences for pupils can do
much to help pupils gain meaning and understanding from the reading that is done in the area of elementary school science. It is not the purpose of elementary science to identify and develop the scientist of tomorrow. It should be the purpose, however, to increase the ability of growing children to live better in an age influenced by science. The scientific method of investigation contributes skill in identifying, attacking, and solving problems. Attitudes, such as open-mindedness and intellectual honesty, are developed by experiences using the methods of science.

Reading is not done for the sake of reading, but there is a purpose involved on the part of children while reading, and that is to find answers to important questions. When pupils are motivated to read, they will have a desire to do more reading and to retain what has been read for a longer period of time, compared with pupils who are not motivated to read (8, p. 390).

This study was made to determine the mean gains in reading achievement of the experimental and control groups in order to determine the statistical significance of variation within the groups.

Basic Assumption

It was assumed that the gains in reading achievement would not be significantly affected because of the individuality of the teacher, but instead would be affected by the
type of program and general technique used by the teachers of the classes.

Limitations of the Study

1. This study was limited to seventh-grade students who were reading at, or higher than, grade level 8.8 at the end of the sixth grade.

2. The study included students from one metropolitan school system only.

3. Experimental classes were organized in one junior high at the seventh-grade level, while the control group was selected from this junior-high school plus two others in the school system.

4. This study was concerned with the structure, content, and methods of teaching in the respective special programs only as they affect the reading gains of students who are enrolled in them.

5. The experimental classes contained twenty-eight to thirty-five students. A minimum of twenty-five students were expected to complete the year in each of the experimental classes.

Definition of Terms

Special program: A term applied to the course of study in life science, creative writing, and accelerated reading that was taught in lieu of the regular reading program.
Regular reading classes: The regular reading classes were, in effect, rapid-learner classes because all students throughout the school system who attain the grade level of those students used for this study are normally placed in these rapid-learner classes.

Accelerated reading class: The accelerated reading class differed from the regular reading classes in that the Percepto Scope was used instead of the regular control-reading program.

Procedures for Collecting Data

During the spring semester the Gates-MacGinitie Reading Test, Survey D, Form 3, was given to the sixth-grade students in a large metropolitan school system. The sixth graders from four of these schools attended the junior high school from which the experimental classes for this study were selected.

The test was given to all sixth graders from the individual schools. A counselor and the researcher administered the tests, with the different sixth-grade teachers serving as proctors in order to maintain a maximum level of uniformity in the test's administration.

After scoring the tests, those students who were reading at, or higher than, the 8.8 grade level were determined. A letter (Appendix) was sent to the parents of the highest one-hundred-twenty students attending the school from which
the experimental classes were formed, explaining the choices which they and their children might make. These students were given opportunity to elect a special program in life science, creative writing, or accelerated reading. The letter gave the parents the choice of permitting their child to become a member of the experimental groups or to take the regular reading program, which in this case became a part of the control group. When there was insufficient response or when there were those who did not wish to participate, then the next highest names on the list were selected until sufficient response had been made to complete the enrollment of the experimental classes. All students were above the 8.8 minimum grade level.

There were three experimental groups and part of the control group in one junior high school, and there were two sections of the control group in each of two other junior high schools in the school system. In the other two junior high schools participating, those students with the qualifying scores were placed on a similar list to that of the experimental school, and a control group of at least thirty students each was selected. All experimental and control classes met regularly five days a week.

In the spring of the school year when the students were in the seventh grade, the students used in the study were administered the Gates-MacGinitie Reading Test. Survey E,
Form I. This was done in the respective junior high schools. The tests were administered in the school cafeterias so that all students included in the experiment would be tested simultaneously.

The California Reading Test--Junior High Level, Form W was administered to all students in the experimental and control groups at the beginning of school in the fall. The California Reading Test--Junior High Level, Form X was used as a retest in the spring in order to obtain the statistical information for this study.

The Gates-MacGinitie Reading Test was administered to organize the classes in the fall. The California Reading Test--Junior High Level was given to the experimental and control groups in the fall at the beginning of the school year, and again in the spring for the test-retest information.

The research design is a simple one-way analysis of variance. The "within-group" means were computed, as were the "between-groups" means. The first hypothesis was tested by first determining whether or not the ration between these gains lay below the value for F that corresponds to the .05 level of significance. The F ratio did not show a significant difference in gains, but the t test was applied to that difference to determine the amount of variation. Each of the other hypotheses were tested in the same manner.
CHAPTER BIBLIOGRAPHY


CHAPTER II

RELATED STUDIES OF READING APPLICABLE TO CREATIVE WRITING, SCIENCE, AND ACCELERATED READING AS REFLECTED IN AVAILABLE LITERATURE

New proposals and patterns continually emerge in the teaching of reading. Pupils in the middle school stand at the threshold of the stage of reading in which they will need to read widely for varied purposes. Our society is demanding more reading from everyone in order to keep up with studies, work, and technology. With this ever-increasing demand, the academic areas are seeking new ways of incorporating reading into their program, in order that more knowledge may be gained by this means. In reviewing the literature, however, it becomes evident that research in this area is limited, although gaining in popularity during the last few years. The studies reviewed herein present segments of information that are related to those avenues of reading applicable to creative writing, science, and accelerated reading.

Creative writing has occurred in classrooms throughout the centuries of formal and informal instruction. It has been the object of varied methods of research, and the attention given it has become evident in the literature. Much
of the literature pertains to creativity in writing as correlated with reading and intelligence. When Hogan (31) suggested a creative-writing course for one junior high school, many wondered what experience a junior high school pupil had which would provide him with the sources necessary for creative writing. They were convinced his efforts would result in the prosaic or the fantastic. Others felt that creative writing was far removed from the needs of pupils just beginning to master the mechanics of the language.

Mildred English (16, p. 13) concluded that creative work comes best when there is a situation or experience that inspires children to express themselves originally in poetry, in prose, or through dramatizations. It can never be forced. White (66) found that seventh-graders have an amazing amount of self-assurance and will launch enthusiastically into any new writing field. Once a seventh-grader decides something is good, that he likes it, and that the effort is worth his while, he remains staunch in his convictions and nothing short of a major catastrophe is likely to change him. He wants to write, to be able to express himself. He enjoys putting down his own ideas. He has found a new sense of power, and he is free to roam in vast unexplored realms which are now open to him. With enjoyment as the keynote, students gain confidence in their abilities to express themselves in writing.
May (40) gave twenty tests of creative writing and creative thinking to 718 seventh-grade pupils in Milwaukee and Racine, Wisconsin. These students were divided by sex and IQ scores into six separate populations. Two populations consisted of boys of superior intelligence; two, of superior girls; one, of average boys; and one, of average girls. All of the test scores, with the exception of the intelligence score, were factor analyzed for each population separately. In addition, correlations were computed between IQ scores and the other scores, and between a teacher rating and some of the scores. May found that some creative-writing aptitudes cannot be measured by general tests of creative thinking.

A major sex difference with respect to creative-thinking abilities was not demonstrated, with the possible exception of sensitivity to problems. Within populations that are fairly homogeneous with respect to intelligence, his research showed that IQ scores are probably not good predictors of thinking ability. Correlations between IQ scores and creative-thinking scores in this study were not significantly different from one another.

In another study, showing the relationship between creativity in writing and comprehension in reading among selected seventh-grade students, Pishco (17) administered the California Test of Mental Maturity and the Gates Basic Reading Test to all ninety-five seventh-grade students from the Northwestern Union School District of New Tripoli,
Pennsylvania. A creative writing sample was structured. The examiner constructed a creativity scale consisting of five major areas: sensitivity to the problem, flexibility, ideas, fluency, and evaluation. Using reading comprehension scores, he established quartile groupings according to sex. These data were then subjected to an analysis of variance in terms of the creative writing scores. The F-ratios were computed and differences at the .05 level or more were considered statistically significant. His findings indicated a significant difference in sex in favor of the female for creative writing. Chronological age and creativity in writing were not significantly different. Language IQ, nonlanguage IQ, total IQ, and creativity in writing were not significantly different. Differences in sex and reading comprehension and creativity in writing for the entire sample were significantly different. Reading comprehension did not appear as a significantly different main effect for creative writing scores.

Another study, by Baker (4), involved seventeen sixth-grade classrooms in Marion, Indiana. A creative exercise developed by the investigator was administered at two-week intervals for six times, at which times different stimuli were presented. The stimuli were as follows: movie, olfactory, pictures, record, tactile, and verbal. After each stimulus the pupils were given thirty minutes to write an original
composition. He noticed that all children do not respond equally to all six stimuli. The length of response is only a slight indication of the creativeness or uncommonness of the composition. He found that the ability to read is related to the ability to write creatively. The better the child reads, the stronger the possibility that he will score higher on the Analytical Creativity Scale. Indices of socio-economic status are the least reliable of all the variables in predicting either the length of response or the degree of creativeness or uncommonness or response to any of the stimuli.

Further amplification was given by De Boer (13), who found a significant positive relationship between creativity and intelligence, with $r$ of .55. He used three experimental groups consisting of high IQ, highly creative, and high IQ and highly creative. The "highly creative" students achieved higher mean achievement scores than the "highly intelligent" students. The "both" group obtained the highest mean IQ score and the highest mean achievement score.

Buelke (10, p. 270) declared that the exploration of certain scientific or sociological concepts can stimulate a child's imaginative creative thinking and help determine the intensity of his awareness and the depth of his perceptions. Children who have good feelings about themselves and their classroom relationships with each other; esteem and enjoy what others in their group say and write. When these expressions are made into displays, collections of stories
and poems, and books, illustrated by the young authors, they are read and re-read eagerly, with understanding, gratification, and appreciation.

A genuinely successful creative writing-reading program is marked by the day-to-day spontaneous, enthusiastic, excellent reading by the pupils who are taking part in it. Learning processes become more important than some vague end-product: they are life, itself, being lived now, dynamically and dramatically (10).

Ramsey (48, p. 353) stated that the interest of the pupils, in creating for themselves and in contributing to the original-activity program something that would be of interest to the group, led them to much broader reading than they otherwise would have attained. They learned to distinguish and to choose between different types of reading material. Evaluations were made by students who would never have thought along such lines in ordinary reading situations.

Banks (5, p. 40), in a study concerned with writing from reading, stated that emphasis in the middle grades should be on helping pupils express ideas—not on mechanics. The mechanics can be learned as they are needed to make the writing more clear and expressive.

Rees (49) computed an analysis of variance with 216 pupils, using three different procedures to develop creativity in written expression. The different methods were

Method A—Structured Systematic Method
Results revealed that Method A was better for developing creativity in written expression. Method C was the least effective of all methods. Method B was better for children in higher intelligence levels, and Method A for those in the middle and low levels. An analysis of pupil questionnaires indicated pupils wanted mechanics of writing corrected, wanted to select their own topics, and did not want a time limit imposed for writing.

Further correlation between creative writing and school achievement was pointed out in research performed by Yamamoto (69, p. 307), working with seventy-nine pupils of grades three through six of the University of Minnesota Elementary School. Form A of the Imaginative Stories task was administered to these subjects, and three creative writing scores—Composite, Originality, and Interest—were derived according to the manual. The interscore reliability for these scores ranged from .75 to .80 among three judges for Composite and from .82 to .88 for Originality and Interest. Intercorrelations among these three creative writing scores ranged from .70 to .81 for the group of seventy-nine subjects. Results showed that there were substantial relationships between creative writing scores and measures of achievement, intelligence, and creative thinking. Evidence would seem to support the general
position taken by Wallen and Stevenson that creative thinking "does not exist in a vacuum" (65).

In his study, Maybon (41) showed the relationship of creativity to achievement and other student variables by testing 265 ninth-grade students from eight randomly selected small (200 or fewer students in grades nine through twelve) high schools. For an achievement score, he administered the Iowa Tests of Educational Development; for IQ he administered the California Tests of Mental Maturity, Short Form; creative ability was determined by the Minnesota Tests of Creative Thinking, Abbreviated, Form VII; grades in subject matter were taken from school records; and sex and ethnic classification were taken from school records and school personnel. Pearson product-moment coefficients of correlation were used for the determination of relationships, and these coefficients were tested for significance by use of the Snedecor F Tables. The significance of the difference between means was determined by the application of the t test. The major findings revealed that the relationship between creativity and intelligence was slight, but significant, for the total sample and all but two of the groupings made from the total sample; the relationship between creativity test scores and achievement test scores was low, but significant. Generally negligible correlations were found between creativity and grade point averages; high-IQ students
scored significantly higher than highly creative students; there were no significant differences in creativity test means between the sex groupings; and there was no significant difference between grade point means of the highly creative students and the high-IQ students. The creativity measure failed to predict achievement as well as did IQ.

Althenhaus (1) wished to explore what relationship, if any, exists between measures of convergent and divergent thinking, using a large cross-sectional sample which was heterogeneous as to IQ. He used 262 sixth-grade students from Orange, New Jersey. In order to examine the relation between intelligence, creativity, and achievement, Pearson product-moment correlations were obtained for the ten variables used in this study. The five creativity sub-test scores from the Jackson and Getzels Battery, their summated score, the three IQ scores derived from the California Short Form Test of Mental Maturity, and the composite achievement score of the Iowa Test of Basic Skills were used. The implications of his study indicate a significant, linear relationship between measures of creativity and IQ. The use of a broad, unselected sample was found to yield significantly higher correlation between IQ and measures of creativity than the use of a restricted sample, such as Jackson and Getzels utilized. IQ tended to be a somewhat better predictor of school achievement for the total population of
this study than did the creativity measures. Since both
divergent and convergent thinking abilities appear to be im-
portant for excellence in school achievement, it was concluded
that school curricula should be so organized as to stress
both. It was further stated that the faddists that advocate
the reinforcement of one ability at the expense of the other
are clearly wrong.

The child attempting creative writing feels that his own
ideas and not mere technical correctness of expression are
the important thing. Approval causes even the grown-up to
desire to contribute more original thought, and certainly to
the child it is absolutely the best possible inspiration for
original thinking. Percival Lowell said, "A master-thought
lives always; it speaks forever in the echoes it invokes."
In a St. Cloud, Minnesota junior high school one pupil was
overheard while saying, "I don't know what other people think,
but I think the new green on onion shoots is beautiful."

Hunter (32, p. 370) remarked that rejecting comments,
boring vocabulary assignments, recopying papers, looking up
misspelled words, being told that someone else's work is
much better than one's own—these methods discourage, rather
than foster, creative writing and speaking. Creative ex-
pression is fostered when each child is encouraged to improve
at his own level, and when he is given enough time for his
ideas to be worked out. A teacher who gives children
specific assistance in plot ideas, language development,
and the processes of putting things together will be the kind of helping person who fosters the creative expression of children.

In a study of the relationship of extensive reading to certain writing skills of sixth-grade children, Wyatt (68) proposed to determine whether a significant relationship could be found to exist between the amount of voluntary reading done by a selected group and their abilities in six facets of writing. He worked with three groups. Group A contained twenty-one children with an IQ range from 126 to 140. Group B had a range from 111 to 125, and Group C ranged from 95 to 110. Each of four compositions written by each child was analyzed, and scores were determined for usage, spelling, capitalization, punctuation, vocabulary, and sentence structure. Rank-order correlations were computed for each group between scores on each of the writing factors and amount of reading done. The findings indicate there was no conclusive evidence of a significant relationship between the amount of reading which a child had done and his writing ability in the factors considered in the study.

In a comparative study of readability scores of children's written composition, Lowey (36) showed that a readability formula could be applied to children's writing to judge sophistication of certain components of juvenile composition. His findings indicate there were no significant
differences between readability scores of girls' and boys' compositions, nor was age alone a significant factor. The influence of intelligence in producing higher readability scores was conclusive at grade six only. There was a significant relationship between the level of reading achievement and the level of writing, as measured by the Dale-Chall Readability Formula at grades four, five, and six. The relationship between the level of reading achievement, as measured by achievement tests, and the level of children's written compositions, as measured by readability formulas, suggests that new consideration may need to be given to the teaching of reading and composition in complementary roles rather than in isolation.

Working with gifted children in a self-contained classroom at the Skylark School in Garden Grove, California, Rowe (56, p. 280) said of creative writing that no amount of teacher preparation or subject matter can guarantee original creations on the part of his pupils. Rather, in the final analysis, it is the relationship which exists between teacher and student that nurtures and brings forth those dreams and fantasies tucked away in the child's world, a world from which most adults have too long departed.

In reviewing the literature that correlates reading and science, Romano (55) mentioned that reading is never to be used as a substitute for experiences or experiments, but as an extension and reinforcement of the science experiences.
themselves. Readings in science, if motivated by experiences and experiments, will enlarge, extend, and illuminate the experiences. Reading is a research tool to be utilized in the study of science. Teachers can stimulate, provoke, and promote interest in science by providing children with fascinating, vicarious experiences in reading.

Readings in nonscientific areas also contribute immeasurably to fostering scientific attitudes. Through such reading, we can help youngsters discover a scientific approach to learning by requiring them to unearth facts for themselves, to weigh the evidence of materials read, to follow directions, to draw conclusions, and to vary the rate of their reading in accordance with the nature of the material. Furthermore, they learn to read for a specific purpose, to distinguish between fact and opinion, to discover specific details, to develop attitudes of critical thinking, to generalize from a series of specifics, and to understand themselves in relation to the world in which they live.

The relationship between reading and science is analogous to the symbiotic relationship of the oyster crab and the oyster, of the hermit crab and hydroids attached to its shell, living together in intimate, beneficial union. Reading and science at times can act catalytically on each other, one subject spurring study in the other. At other times under the aegis of a skillful teacher, they can coalesce in an effective symbiotic union (55).
Maurice (39, p. 43) stated that science is a subject which captivates a child. New horizons of thought immediately unfold in a student's mind at the mention of this broad term. Interest abounds, desire for further knowledge is keen, attitudes develop, and pupil efforts ensue without pressure during a science period. After a basic knowledge of phonics, a child can increase his reading vocabulary at an amazing speed if a teacher capitalizes on these science interests.

To develop reading in a science program, Parker (46, p. 43) has observed that a teacher will do two things. First, he will have a good program to develop skill-getting in the general reading skills of comprehension, vocabulary, word attack, and general reading efficiency. Such a program should be completely individualized so that each child may start where he is and move ahead as fast and as far as his learning rate and capacity will let him progress. Second, having discovered individual differences among his pupils during the training process, he will make sure that there are books at enough different levels to let each child start where he is in his ability to understand what he reads in science. He will allow him to cover as much ground—and in as much depth—as he can, whether he is a slow, average, or superior pupil.

Podendorf (47, p. 46) believed that the use of reading materials should follow other forms of activity—experimentation, observation, and discussion. Children would then
read to supplement information, verify information, or to find answers to specific information. Schiavone (58) said that the science class should serve as a stimulus to outside reading for learning and enjoyment. The science teacher should work with the librarian in selecting suitable material and references.

The principal intent of Bernhardt's (6, p. 322) study was to examine the value of IQ, reading comprehension, and arithmetic as predictors of 148 selected seventh-grade students' interest for and achievement in general science. He concluded that science achievement and science grades were positively and significantly correlated with reading comprehension, arithmetic and IQ. The best indicator of science achievement was reading comprehension, with arithmetic and IQ following in that order.

In studying the influence of certain factors in science materials on the reading comprehension of 240 seventh-grade pupils from a suburban Chicago community, Blue (7) prepared eight science selections of approximately 900 words, each based on Kepler's three laws of planetary motion. The selections varied in vocabulary difficulty and sentence length, style of writing, and use of author's definitions. There was no significant difference in science reading comprehension between seventh-grade students who read selections containing variations in readability difficulty which were
of at least three years, style of writing, and the use of author's definitions of certain technical science words. The science reading comprehension of selection variations for students of high and low intelligence was significantly different. It appears that a test of general reading comprehension is a better predictor of science achievement than a test designed to measure general science information. The data also suggest that seventh-grade pupils are consistently more interested in the expository style of science writing. However, there is no evidence that any one style of writing consistently ranks higher or lower in comprehension scores.

In discussing the place of literature in the teaching of science, Dougan (11, p. 92) stated there is a place for nonartistic writing in science. There are parodies, jingles, and rhymes that could never bear literary scrutiny; yet, if they contain only one scientific fact and be sufficiently intelligent, they may be used occasionally.

In a study of only four eighth graders—two boys and two girls—Greenbert (29) conducted a series of simple scientific experiments which were specifically planned to enliven and elucidate certain aspects of daily living which these students had always taken for granted. The method of having the students participate in, and actually perform, the experiments themselves provided the additional advantage of using the multisensory approach to reading. That is,
the students were able to feel, see, and smell the various materials before talking, writing, and reading about them.

Rowles (9), in a disproportionately stratified sample of 140 of the 1101 schools which contained one or more of grades seven, eight, and nine in the K-12 public school districts of Michigan, discovered that the content of science courses was most frequently determined at the school or district level in elementary and junior high schools, although in a considerable number of schools the individual teacher made these determinations. Teachers in the junior high schools were more prone to utilize pupil suggestions than were the teachers in elementary and senior high schools.

The recommendations following this study included activation of science curriculum committees, increased science supervisory-consultant service at the state and local levels, and increased provision of in-service education programs which are directly related to science education.

Sprague (60, p. 16) made the simple statement that because of their small, scientific efforts, a whole new field of reading was discovered, and all books of scientific nature were eagerly explored. Another way that science contributes to the reading program was pointed out by Dunlap (15) in an article describing the study of the Cecropia moth. As the children observed the various stages, they would eagerly seek science books telling about the moth and read them with an avid interest.
Munson (42, p. 63) asked, "So who does teach reading?"

Learning to read is a skill that is not very often mastered by the end of grade six. Unfortunately, the teaching of reading all too often ends at grade six. The subject-matter specialists we find in the junior and senior high schools fail to acknowledge that they, too, have a responsibility and, certainly, a contribution that they can make.

Keshian (33) conducted a study in three selected communities. Seventy-two pupils were selected from stratified sampling. There were twenty-four students in each community—eight of dull, eight of average, and eight of superior intelligence. Data on reading, intelligence, personality, and physical ability were systematically collected through the use of standardized tests. Significant findings indicated that children who read successfully came from homes which were wholesome, integrated units. The members engaged in various activities together. The children came from communities of varying socio-economic status; they were well-adjusted; and they came from homes where great value was placed on reading, and where the parents themselves were readers.

The primary purpose of Davis's (12, p. 3967) study was to determine the relative effectiveness of certain evaluative criteria in determining reading levels. He used twenty-five boys and twenty-five girls in the experiment. To determine their level, he included comparing standardized
test results with the independent, instructional, and frustration levels established by nonstandardized measures (i.e., Temple Informal Reading Inventory, Botel Reading Placement Test, teacher's evaluations—immediate and delayed, and pupils' self-evaluations based on story-type and science materials). The results reflected that comparisons of standardized and nonstandardized measures show great variation. When the latter were higher, differences were recorded as negative. He concluded that at the independent level, standardized tests

1. greatly overrated the levels established by informal inventories,
2. showed more agreement with teachers' evaluations than with informal measures,
3. rated students somewhat lower than students rated themselves,
4. showed more agreement with evaluations based on story-type materials than with those based on science.

At the instructional level, standardized tests

1. showed somewhat more agreement with informal tests, but not enough to be substituted for them,
2. rated some students lower than their teachers' evaluations,
3. rated students lower than they rated themselves.

At the frustration level, standardized tests

1. underestimated this level when compared with informal measures,
2. rated most students lower than their teachers did, and much lower than pupils rated themselves.

Pupils' self-evaluations were not influenced by intelligence, type of material, or sex.
In researching reading programs for the accelerated readers in grades four, five, and six in certain elementary schools in Texas, Park (45, p. 910) investigated the reading programs for accelerated readers in the seventy school districts of Texas with an enrollment of 5,000 and above. In the four larger school enrollment groups, 50 to 60 per cent of the schools provided special reading programs for accelerated readers, while in the smaller districts, 32 per cent did. Thirty-three per cent of instruction time was spent on both developmental and functional reading. There was little concurrence of practices specified for the recreational aspect of reading, although 30 per cent of instruction time represented the median. A wide range of content in the curriculum of the special reading program was found, including reading-study skills, creative interpretation, special work study, skills in the basal reading program, and research projects. The materials utilized in these programs were as follows: supplementary and basal readers, reference books, newspapers, literature materials, and reading laboratories.

In a comparative analysis of the results of two approaches to reading instruction upon seventh-grade students, Martin (38) compared the following groups: the control subjects; the high, middle, and low mental ability groups of both control and experimental pupils; and the pupils whose language IQ and nonlanguage IQ differed by at least ten points. Her
two approaches included instruction specifically emphasizing the reading skills, and instruction using the regular classroom activities approach. After the pre-testing period the experimental teachers were given a list of reading skills to be taught ten minutes or more daily. These skills were categorized under the major headings of (a) word-perception skills, (b) comprehension skills, (c) organization skills, and (d) application skills. The control teacher was asked to follow the regular classroom procedure and to write down on a separate pad what she did in reading from her lesson plans. The results indicated significant gains in references and charts in favor of the experimental groups. Story rate favored the control subjects, but was not significantly different. Comprehension was the only variable to reach a statistical significance for the experimental groups. Vocabulary and references reached the .05 level of significance.

In 1932, Tinker (63, p. 159) maintained there was a close relationship between speed and comprehension in reading. In 1951, Witty (67), in collaboration with David Kopel, warned against the conclusion that one is justified in assuming that phenomenal gains in rate of reading carry with them a correlated improvement in comprehension. A good reader acquires different techniques for reading different kinds of materials, and is able to apply the techniques as they are needed.
Saunders (57) compared the merits of enrichment versus rapid advancement for bright pupils. Sixty very bright pupils were selected from 320 sixth-grade pupils. One group was allowed to advance as rapidly as possible. The other group was given enrichment materials. When the two groups were tested on the Monroe Reading Test, it was found that the enrichment group had made the greater gains in both rate and comprehension. The rapid-advancement group gained in time, but failed to make a similar gain in power to reason.

A study of 1,127 seventh-, eighth-, and ninth-grade pupils from two junior high schools in Portland, Oregon, found that a true difference existed in reading growth among the grades from the use of a required six-weeks reading program. Using an analysis of covariance design, an F-value of 33.83 was found—much greater than the 6.91 needed at the .001 level of significance. The ninth-grade pupils showed considerably larger mean growth, probably due to the maturation level of these students, a higher degree of motivation for the program by grade-nine students, and greater consciousness of teacher evaluation as it affected their language-arts grade.

The major purpose of Zepp's (70, p. 218) study was to help teachers understand and apply teaching techniques and procedures which may help pupils improve their basic reading skill and reading-study skills and, at the same time,
achieve subject-matter objectives more completely. In the fall of the school year the Silent Reading tests, Work-Study Skills tests and Social Studies and Science Achievement tests were administered to all seventh-grade pupils in the Hanover, Pennsylvania, Junior High School. The pupils were tested again at the conclusion of the eighth grade. In Work-Study Skills, 73.4 percent of the pupils gained from one to seven deciles; 5 percent regressed from one to two deciles; and 21.6 percent showed no change. In Science Achievement, 79.1 percent gained from one to four deciles; 3.6 percent regressed from one to three deciles; and 17.3 percent neither gained nor lost. The study seemed to show the practicability of having regular seventh- and eighth-grade teachers apply basic principles and assumptions regarding directed reading activities to improve basic reading skills and reading-study skills, not only in the reading classes, but also in regular subject-matter classes. Study would suggest that junior high school teachers without specialized training in the teaching of reading can be helped by a curriculum coordinator through an in-service program to develop an understanding of basic reading skills and reading-study skills, together with techniques and procedures for teaching these skills in regular subject-matter classes.

In Lane's (35) description, analysis, and evaluation of the basic reading approach, the individualized reading
approach, and the language experience reading approach to the
teaching of reading, he obtained data from 1,274 pupils from
twelve different school districts in a large California
county. All pupils were measured three times during the study
to derive the following data: reading achievement, pupil
attitude toward reading, and pupil personal social adjustment.
Exceptional gains in achievement for the eight months of the
study were reported for all three approach groups. No clear-
cut superiority of any one of the approaches, whenever
compared in terms of pupil gains, is indicated by the findings
of this study.

Phrase reading training and reading achievement were
studied by Ambler (2) when he ranked 45 fifth and sixth
graders according to ability and allocated them to reading
levels. Within each level, students were alternately assigned
to one of two treatment groups. One group viewed films
presenting phrases (the 52 film series) continuously. The other group wrote each phrase after its exposure (the
film series). A four-factor analysis of variance
was used with the data. Results indicate that the changes
in comprehension were independent of changes in rate. Dif-
fences in rate and vocabulary were not significant.

Further study of the effect of an enriched reading pro-
gram in reading instruction was conducted by Gloria Fried
(18), who experimented with ninety-two fifth graders...
thirty-three boys and fifty-nine girls. The reading program was characterized by enrichment of background experiences, emphasis on particular reading skills, and integration of reading with all phases of the curriculum. Continuous in-service study was undertaken by the three teachers of this program. It was found that the enriched group made substantially greater gains than the control group. In addition to reading gains greater than expectancy, teachers noted improvement in behavior, in voluntary reading, and in parent-school relationships for the enriched groups.

The use of various mechanical devices to improve the rate of reading and comprehension has been attempted for many years. The effects of these instruments are debatable in many instances; consequently, research is constantly being performed to keep abreast of progress being reported in this area. Anderson (3, p. 172) took all pupils in the seventh grade to the auditorium each Monday morning for a thirty-five minute group-reading program. The program consisted of training with the Tachistoscope and Controlled Reader. The Tachistoscope exercise started with numbers at a low speed, then letters, words, and phrases. He reported that the last three months of the program were given at 1/150 of a second in speed. The controlled reading program started at 150 words per minute on fourth-grade level material and ended at 325 words per minute with hard sixth-grade reading material.
At the end of the program, 90 per cent of the accelerated class were reading at 400 words per minute, and the remaining 10 per cent were reading between 300 and 350 words per minute. Both rates were above the 250 words per minute, which is considered normal for a seventh-grade pupil. The following results were revealed with the comprehension test: 80 per cent made between 90 and 100, 10 per cent made between 80 and 90, and 10 per cent made between 75 and 80. The normal acceptable level for comprehension at the seventh-grade level is between 75 and 100.

Fry (19) expressed the opinion that a teaching machine is more a methodology than a piece of hardware. The machine can relieve the teachers of hours of the drudgery of correcting students' papers and preparing routine assignments, so that she can spend more of her time with individual pupils or in more creative aspects of teaching.

In observing the outcomes of controlled reading, Hoffman (30, p. 90) observed that the left-to-right movement of the Controlled Reader makes regressive movement of the eyes impossible, so that the students had to have time for acclimatization. Some students indicated that their eyes felt tired after using the machine, that they felt forced to read. They felt certain that they were taking in larger spans of recognition, however. With two classes that did not show any gains, the lab teacher frequently expressed concern for
this group's attitude, emotional instability, and progress. They felt that the very nature of the Controlled Reader group affected the final results.

Bottomly's (8) experience with the Controlled Reader indicated that the major use of the Controlled Reader should be in boosting reading speed, although it appears to have a beneficial, if delayed, effect on reading comprehension and vocabulary development. Its best use is with average or better achievers who do not at first read rapidly. It should not, perhaps, be used with pupils who already read rapidly. He stated further that it appears to have a more immediate effect upon reading speed in the fifth grade than in the eighth. It also appears to have a greater value in boosting reading speed among the pupils in the lower socio-economic area than among those in the upper socio-economic area.

McDowell (42, p. 369)—in his study of the effectiveness of the Controlled Reader in developing reading rate, comprehension, and vocabulary, as opposed to the regular method of teaching reading—indicated that it appears that the value of the machine has been overrated. Controlled reading needs little motivation. The children expressed pleasure in being selected to participate in the experimental group; the reactions at the end of the study, however, indicated that much of the interest had died. Many children expressed a preference for books. Others were disturbed by reading at a rate governed
Another observation was the lack of carry-over from reading large words appearing on a large screen to reading small letters appearing on the printed page. Controlled reading is an unnatural situation, due to the size of type.

Another study of the relative effectiveness of controlled reading versus regular classroom instruction was performed by Malone (37). He utilized four groups of eighth-grade students that were selected at random, with thirty-three in each section. Two teachers who were specifically trained in reading taught the sections. He found three major sub-problems in his study:

1. Whether scores made by students in the controlled reading groups differed significantly from scores made on the test following the speed of reading.

2. Whether there was a significant difference in scores made on the Iowa Silent Reading Test between students in controlled reading groups and those in regular reading classes.

3. Whether the use of the school and city libraries by students in the controlled reading groups has increased significantly during the period of controlled reading participation.

There were two specific training periods of eight weeks with pre- and post-testing. In the experimental condition, the use of a mechanical instrument was required. It was then assumed that the teachers would be able to operate the instruments without difficulty. Fisher's t was utilized as the statistical test of significance of differences. Analysis
of variance was used to determine if there was a difference between mean scores of the Iowa Tests on each of the two variables, rate and comprehension. Evidence from the study seems to support the theory that when groups are heterogeneous and not matched or balanced in IQ, the statistical effect is lessened.

In an experiment using three experimental groups of twenty-seven pupils each, and a control group of thirty-seven, Glock (22) sought to determine the relative value of improving reading by three methods—tachistoscope, films, and determined effort. He found that there was a greater statistical increase in reading with determined effort groups than with the other two. His assumption concerning reading improvement was that if a person made a concentrated effort to read faster and better, his eye movements would improve automatically and he would read faster and comprehend better. Improvement in reading was encouraged through the use of interesting reading materials, through vocabulary study, and through periodic talks by members of the high school staff emphasizing the importance of improvement. The determined-effort group showed a statistically more significant increase in reading rate than either of the other two experimental groups. While there was no significant change in the rate of comprehension, the determined effort group made significant gains in the amount comprehended per unit of time.
Probably no one would disagree with Glock's emphasis upon determined effort. This is the one ingredient which must precede any achievement of knowledge. From all studies surveyed, one quickly sees the necessity of viewing the findings in terms of the particular programs from which they were gathered. Yet, a continued study of the different programs of teaching reading, whether it be in a reading class, per se, or interwoven with another discipline, is a matter of necessity to keep abreast of the vast amount of knowledge available in our world of today.

After surveying the literature pertaining to different approaches to the study of reading and the enrichment of reading through the study of various disciplines, it was noticed that there had been no studies made concerning mean gains in reading growth by eliminating the reading program, per se, and replacing the reading period with the study of another subject. Thus, the following study was undertaken.
CHAPTER BIBLIOGRAPHY


15. Dunlap, Grace, "How Science Contributes to the Reading Program," National Elementary Principal, XXXV (September, 1955), 112-117.


42. McDowell, Nel A., "Effectiveness of the Controlled Reader in Developing Reading Rate, Comprehension, and Vocabulary as Opposed to the Regular Method of Teaching Reading," Journal of Experimental Education, 32 (Summer, 1964), 363-369.

43. Money, Howard, "So Who Does Teach Reading?" National Elementary Principal, XLVI (January, 1967), 63-64.


46. Parker, Don H., "Reading in Science: Training or Education?" Science Teacher, 30 (February, 1963), 43.


58. Schiavone, James, "Science Teacher's Contribution to the Improvement of Reading," Science Education, 44 (December, 1960), 400-401.


63. Tinker, Miles A., "The Relation of Speed to Comprehension in Reading," School and Society, 38 (July 30, 1932), 153-160.

64. Townsend, Agatha, "Published and Unpublished Studies in Reading," Reading Teacher, 19 (October, 1965), 47-49.


CHAPTER III

METHODS AND PROCEDURES

Description of the School System

This study incorporated three junior high schools and the respective elementary schools they serve in a large metropolitan school system in Texas. The system is in a transitional stage from a six-three-three plan to a five-three-four plan. Several elementary schools have kindergarten through the sixth grade presently. This study involved the traditional six-three-three plan. The metropolitan community in which these subjects live exceeds 400,000 population and has a diversified economic base.

Significant interest is being shown by the central administration in improving the instructional program for both the rapid learner and the educationally deprived. The reading consultant is interested in providing means of improving the reading program through the use of teaching machines, as well as an intensified in-service program for teacher improvement. Various programs are under her direct supervision in order that the needs of the individual student may be met and the reading program improved to the extent that all pupils will be served in a maximum capacity.
It was this combined interest on the part of the administration, consultant, research department, and teachers that enabled this experiment to be conducted. The further interest of one of the junior high school principals within the system provided the groundwork making possible the formation of special classes that were to be used as experimental groups. It was because of his interest and his willingness to set up special classes that all experimental classes were conducted within the one building.

Description of Tests

As has been mentioned previously, this study was concerned with those students who were at least two grade levels above average in reading ability at the completion of the sixth grade. In the spring of each year the students in all elementary schools within the system are administered the Gates-Hueyfield Reading Test, Survey D, Form A. This test was used as an instrument whereby the classes were organized for this study. The norms for this test are based upon a new nationwide standardization. The communities participating in the standardization were carefully selected on the basis of geographic location, size, and socio-economic level to assure a representative sample of pupils at all grade levels (9).

All students who were two grade levels or more above average, and who would attend the junior high school in which
the experimental classes were to be organized, were placed on
a list and selected in a manner previously described in the
study. Organization of the control group has also been
previously described.

In October, 1967, all students who were members of the
experimental and control groups were administered the
California Reading Test--Junior High Level, Form W. This
test was used as the pre-test instrument. Form X of this
series was given as a post-test in May, 1968, to determine
mean variations in reading for the experimental and control
groups.

Subjects were given the Science Research Associates
Primary Mental Abilities Test, revised 1962 form. This gave
each pupil an IQ score which would be used in correlation
with both the Gates-MacGinitie Reading Test and the California
Reading Test--Junior High Level for additional data to em-
phasize the results of this study. The 1963 norms for the
California Achievement Tests are based on modal-age groups
(eighteen-months age range per grade) drawn from a stratified
national sample of 15,351 pupils. To gauge the effects of
the remeasuring on the grade placement scores, the reviewer took
the raw score values that yielded grade placements of 4.9,
6.9, and 8.9, respectively, on the 1957 norms, and found their
corresponding grade placements on the 1963 norms. The Kuder-
Richardson formula 21 reliabilities are .83 for spelling,
.84 for arithmetic reasoning, and between .90 and .95 for the other parts. The reported reliabilities for the total reading are satisfactory, in general, falling in the range of .86 to .96. The content validity of these tests for a school system must be assessed in light of the instructional objectives of that system. This requires a careful analysis of the items of the tests for each grade level to be tested. Coefficients of correlation between subtests of this battery and the most nearly comparable subtests from the Stanford Achievement Test and the Metropolitan Achievement Tests are reported as evidence of "construct" validity. These coefficients are uniformly high, indicating that the skills sections from those batteries and the California Achievement Tests may be tapping similar skills (3).

The E. R. A. Primary Mental Abilities Test uses five "primary mental abilities" labels to designate the subtests. The presence of and emphasis given to each of the abilities in the various levels reflect the judgment of the authors with respect to the relative importance of these abilities at the indicated grade levels. There is a separate section of the technical supplement devoted to validity. Here the same reading readiness study is referred to and subtest correlations are given. The conclusion is, "the single P. M. A. total score was an effective predictor of reading scores." An inspection of the correlations themselves confirms the
lack of differential validity for the separate Primary Mental Abilities scores. A test-retest study was done in the public schools of Goldsboro, North Carolina (4). Test-retest reliability was used because many of the P.M.A. are timed; therefore, Kuder-Richardson estimates of reliability would not be suitable. The median reliability coefficient for the thirty determinations for the total score is .91. Validity data for the P.M.A. batteries were obtained through the cooperation of four schools—one each from Alabama, Massachusetts, Missouri, and Ohio. Of a total of 2,598 students, 1,734 were in grades one through eight and 824 were in high school. All had been part of the P.M.A. standardization sample of April, 1962. Course grades from the end of the following school year (1962-1963) were used for criterion data—fourteen months after testing (12).

Description of Groups

This study entailed three experimental groups and one control group. There was one experimental group in each of the following special areas: creative writing, life science, and accelerated reading. The control group contained three classes from three different junior high schools for a total of ninety-two students who completed the experiment. The three experimental groups attended one junior high school. Completing the experiment were thirty-one students in the life science class, twenty-nine students in the creative
writing class, and twenty-seven students in the accelerated reading class.

The creative writing class used three basal texts:

- Writing: Unit-Lessons in Composition, by Blickhann, Brown, and others; and a series by Leland B. Jacobs and Shelton I. Root, Jr., entitled Directions and Variations. Joyce Steward and Marian McKinney's book, Success in Writing, was used as a resource within the class.

The descriptive, narrative, argumentative, and expository forms of discourse—or types of prose writing—were discussed, with examples of each of these kinds of writings read and discussed. Film strips were used to clarify and inspire. Short exercises were used to develop skills, and then students produced original writings. The students' original writings were either put on transparencies, projected with the opaque projector, or read to the class. In these sharing periods, the teacher evaluated each student's work, and the students critiqued each other's work. During the first semester unit on poetry, the haiku and the limerick were emphasized. Fegan (8) stated that the haiku escapes the preconceived ideas with which the students meet lyric poetry. The students find haiku refreshingly brief, and yet this form affords all the ellipses and levels of thought that the best of our contemporary poetry does. It meets all three problems encountered in studying poetry. Haiku does
more than teach the student how to read lyric poetry, in that it gives him a simple frame, a disciplined form which can convey his own conceptions of irony and simple beauty.

A class publication, entitled Perceptions, was produced at the end of the first semester and contained selections of creative writing of the students. The publication which was produced at the end of the second semester was entitled Literary Lines.

The area of creative writing is one of the most challenging and, at the same time, the most disappointing to teachers of upper elementary children because good results are so difficult to achieve. Children are not apt to produce imaginative, fluent writing without some stimulation and, even then, they are able to express their thoughts and feelings well only if a rich background has been provided for them. To know words is not enough in itself; to know how to use them must also be possible. It must be apparent that writing cannot be divorced from reading. Writing easily and fluently is a talent which cannot be developed without an intensive program in reading, which will broaden the child's background so that he has material upon which he can draw. Creative expression cannot be an isolated subject if it is to thrive at all. It can't be at all, unless extensive reading is encouraged. Through wide reading and through much creative writing, words will become familiar and useful friends to any child (11).
The life science class was a special class which involved the teaching of the life-science division of the eighth-grade science program in the seventh grade. The class used the same adopted text that was used throughout the system in the life-science division of eighth-grade science, which is entitled *Life Science*, by John M. Mason and Ruth T. Peters. They also used the life-science student laboratory manual that was especially designed by the science department of the school system to be used normally in the eighth grade, entitled *Life Earth Science*. A weekly science newspaper entitled *Current Science*, published by the American Education Publications, was also used.

Classroom activities included some type of experiment every week. The class was conducted part of the time as a laboratory class and part of the time as a demonstration class—when the teacher would perform an experiment with the student writing up the results. Some of the demonstrations and experiments included typing blood, examination of cells, testing foods for starch, and a great amount of work with microscopes, using class-made slides. The binocular-scope was also used extensively. Each member of the class had his own frog for dissecting purposes. About two days were spent finding certain structures and showing them to the teacher. Another day was spent in doing what they wanted to with the frog. This included everything from removing the lens of
the eye to examining contents of the stomach, and looking at sections under the microscope.

At the beginning of the year, a book report was required on science fiction. Most of the students in the class were surprised at this, but it was incorporated into the class very easily. It provided an easy launching into the course and created a different interest in reading. The teacher spent some time each week reading to the class. For this reading period, newspaper and periodical articles pertaining to mechanics and science were brought to class by the students.

The school science fair was held May 4, 1968, in the school library. Required projects were displayed for the school to view, and judging was done by the ninth-grade science teachers. There was much interest created through this means, and the ribbons added to the pleasure of those who had worked so hard.

Topics that were studied throughout the year included the cell, protoplasm, photosynthesis, protists, plant kingdom, animal kingdom, human physiology, heredity and genetics, and current topics of interest. Current interest topics included the Apollo, LSD, heart transplants, aerospace, medicine, and reproduction.

The control group used the following basal readers: Discovery--Through Reading by Gunn, Sneadaker, and Russell,
New Horizons Through Reading and Literature by Breevton Ernst; and Advanced Skills in Reading by Joseph Gainsburg. Spelling is taught as an integral part of the reading program in this system. The basal readers were read throughout the year, being supplemented at different times by the Science Research Associates Reading Laboratory and the Controlled Reader. The orientation period for the Controlled Reader was approximately six weeks. Thereafter, the Controlled Reader was used as a supplemental aid, along with the S. R. A. Reading Lab. The Controlled Reader is a modified filmstrip projector that exposes a continuous story through a moving slot, which travels across the screen from left to right, covering and uncovering reading material as it goes, at speeds from 60 to 1000 words per minute. Students cannot look back.

The accelerated reading group used the same basal readers as the control group, as well as the S. R. A. Reading Lab. Spelling was integrated in the same manner. The difference between the accelerated reading group and the control reading group was the supplementary aids of the Percepto Scope Mark II, Model 5102-1, and the A.V.R. Rateometer by the experimental group instead of the Controlled Reader. The primary function of the Percepto Scope is to combine all major types of film projection—still, flash, animation, motion picture and paced projection—all on a single composite 16 mm. film. There is
automatic film cueing, which will stop the film at each learning point, and reverse the film at any point of review. The machine can use a back film to superimpose material on the front film, and to time the rate of projection of the front film. It has a remote control unit which enables all projection functions to be under the complete control of the instructor regardless of where she is in the room. It is designed to maximize perception and comprehension, develop increased word meaning, and teach skimming, scanning, intensive and critical reading techniques. It can project articles at forty-one different speeds from 120 to 4320 words per minute. Tachistoscopic material can be flashed at nineteen speeds from $1/24$ to one second.

The Rateomter is a device that guides a descending T-bar over any reading material at any selected rate in words per minute.

Treatment of Data

The tenability of the hypotheses of this study was determined by the analysis of the test results. The following statistical methods and research procedures were utilized.

Gains in reading level for each subject were determined by subtracting the fall reading grade level, as determined by the California Reading Test—Junior High Level, from the spring reading grade level, as determined by a different form of the same test. A grade level, as determined by the Gates—
The MacGinitie Reading Test was obtained in the spring of 1967. Both experimental and control groups were organized utilizing this criteria.

Hypotheses one through seven were tested by a simple analysis of variance as described by Downie (6, pp. 176-182). The null hypotheses to be tested for the simple analysis of variance were as follows:

1. There will be no significant difference in the reading gains between the average gain of the total control group and the average gain of the combined experimental groups.

2. The accelerated reading group will gain significantly more in mean reading achievement than will the control group in reading.

3. There will be no significant difference in the reading gains between the control group and the creative writing group.

4. There will be a significant difference in favor of the accelerated reading group, as compared with the life science group in mean gains in reading.

5. There will be no significant difference in the reading gains between the control group and the life science group.

6. There will be no significant difference in the reading gains between the life science group and the creative writing group.
7. The accelerated reading group will gain significantly more in mean reading achievement than will the creative writing group.

Concerning the assumption underlying analysis of variance, Hays says,

For experiments with relatively large numbers of observations per cell, the requirement of a normal distribution of errors seems to be rather unimportant. . . . When the data table represents an equal number of observations in each cell, the requirement of equal error variance in each treatment combination population may also be violated without serious risks (40, p. 40).

No significant F's were found, but a Fisher's t was used between the means to determine the relationship that existed between the male and female subgroups, as well as the combined groups, to provide data for further inquiries.

From this study, additional analyses were made of the data obtained in order to amplify what had been found, as well as encourage further inquiries. An analysis of variance was calculated from the grade levels obtained from the Gates-MacGinitie Reading Test, which was used as a pre-test instrument. This was done to determine whether or not there was a significant difference between and within the groups at the outset of the study. Similar data were obtained by sub-grouping into male and female.

A simple correlation was obtained between the California Reading Test—Junior High Level and the S.R.A. Primary Mental Abilities. A correlation was also calculated between the
California Reading Test—Junior High Level and the Gates-MacGinitie Reading Test, and between the Gates-MacGinitie Reading Test and S.R.A. Primary Mental Abilities. Their possible significance for further study seemed to warrant the collection and treatment of the data.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

PRESENTATION OF DATA AND RESULTS

In order to test the hypotheses of this study, a design involving a simple analysis of variance was used. The grade level for each subject was obtained from the Gates-MacGinitie Reading Test, Form D, to organize the different groups.

Subjects

Those students who were at least two grade levels above normal in reading achievement at the end of the sixth grade were given an opportunity to enroll in their choice of creative writing, life science, accelerated reading, or the regular reading classes. The creative writing, life science, and accelerated reading classes became the experimental groups and the regular reading class, as defined previously, became the control group. As organized, the average grade level for the combined experimental groups and the control group, as determined by the Gates-MacGinitie Reading Test, Form D, was 11.3372, with a standard deviation of .9585. The mean grade level for each group is illustrated in Table I.

The mean IQ for the combined experimental and control groups, as determined by the Science Research Associates Primary Mental Ability Test, was 115.0833, with a standard deviation of 12.8144.
TABLE I

MEAN GRADE LEVELS OF CREATIVE WRITING, LIFE SCIENCE, ACCELERATED READING, AND CONTROL GROUPS AS DETERMINED BY THE GATES-MACGRAW READING TEST, FORM D

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Grade Level</th>
<th>S. D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>11.5586</td>
<td>.7122</td>
</tr>
<tr>
<td>Life Science</td>
<td>31</td>
<td>11.1612</td>
<td>.9634</td>
</tr>
<tr>
<td>Accelerated Reading</td>
<td>28</td>
<td>11.3178</td>
<td>.8610</td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>11.3326</td>
<td>.0710</td>
</tr>
</tbody>
</table>

A simple analysis of variance was calculated between the means of the various experimental and control groups. The results of the analysis of the Gates-MacGraw Reading Test, Form II, are presented in Table II.

TABLE II

ANALYSIS OF VARIANCE DATA FOR GATES-MACGRAW READING TEST, FORM D, FORM I

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Variance Estimate</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between means</td>
<td>2.3930</td>
<td>3</td>
<td>.7976</td>
<td></td>
</tr>
<tr>
<td>Within groups</td>
<td>162.9820</td>
<td>176</td>
<td>.9260</td>
<td>.8613</td>
</tr>
<tr>
<td>Total</td>
<td>165.3810</td>
<td>179</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The F value secured by the analysis was .8613, while the value of F necessary for significance at the .05 level is 2.65. The hypothesis of no significant difference in mean grade level as determined by the Gates-MacGinitie Reading Test, Form D, is accepted.

A comparison of data for students from the life science, creative writing, accelerated reading, and control groups is shown in Table III. A Fisher t computed on each of the groups indicates there was no significant differences between any of the groups at the beginning of the study, as determined by the Gates-MacGinitie Reading Test, Form D, and resulted in the acceptance of the similarity of the two groups.

In October, 1967, each subject of the different experimental groups and the control group was administered the California Reading Test--Junior High Level, Form W, to be used as the pre-test instrument. The mean grade level for the total experimental and control groups combined was 9.80, with a standard deviation of 1.2441.

The California Reading Test, Junior High Level, Form X administered in May, 1968 and used as the post-test instrument, had a mean grade level of 10.7, with a standard deviation of 1.1707 for the combined control and experimental groups. This represents a growth of eight months in their reading level over a period of eight months (October-May), indicating a reading gain of one month for each month in school.
TABLE III

A COMPARISON OF DATA FOR STUDENTS FROM THE CREATIVE WRITING, LIFE SCIENCE, ACCELERATED READING, AND CONTROL GROUPS ON GRADE LEVEL PLACEMENT AS OBTAINED FROM THE GATES-MACGINITIS READING TEST, FORM D, USED AS A CRITERION FOR ORGANIZING CLASSES

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>S. D.</th>
<th>t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>11.5586</td>
<td>.7122</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>11.3326</td>
<td>1.0360</td>
<td>1.1028</td>
<td>NS</td>
</tr>
<tr>
<td>Life Science</td>
<td>31</td>
<td>11.1612</td>
<td>.9634</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>11.3326</td>
<td>1.0360</td>
<td>.8572</td>
<td>NS</td>
</tr>
<tr>
<td>Accelerated Reading</td>
<td>28</td>
<td>11.3178</td>
<td>.8610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>11.3326</td>
<td>1.0360</td>
<td>.0710</td>
<td>NS</td>
</tr>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>11.5586</td>
<td>.7122</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Science</td>
<td>31</td>
<td>11.1612</td>
<td>.9634</td>
<td>1.5982</td>
<td>NS</td>
</tr>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>11.5586</td>
<td>.7122</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerated Reading</td>
<td>28</td>
<td>11.3178</td>
<td>.8610</td>
<td>.9442</td>
<td>NS</td>
</tr>
<tr>
<td>Life Science</td>
<td>31</td>
<td>11.1612</td>
<td>.9634</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerated Reading</td>
<td>28</td>
<td>11.3178</td>
<td>.8610</td>
<td>.6240</td>
<td>NS</td>
</tr>
<tr>
<td>Experimental (Total)</td>
<td>88</td>
<td>11.3120</td>
<td>.8701</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>11.3326</td>
<td>1.0360</td>
<td>.0656</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table IV shows the mean grade level as indicated by the California Reading Test—Junior High Level, Form IV and Form X, and the mean gain in grade level for the creative writing, life science, accelerated reading, and control groups.
MEAN GAIN IN GRADE LEVELS OF CREATIVE WRITING, LIFE SCIENCE, ACCELERATED READING, AND CONTROL GROUPS AS DETERMINED BY THE CALIFORNIA READING TEST, JUNIOR HIGH LEVEL, FORM X (PRE-TEST): AND THE CALIFORNIA READING TEST, JUNIOR HIGH LEVEL, FORM X (POST-TEST)

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Grade Level Pre-test Form X</th>
<th>Grade Level Post-test Form X</th>
<th>Mean Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>9.8482</td>
<td>10.6517</td>
<td>.8035</td>
</tr>
<tr>
<td>Life Science</td>
<td>31</td>
<td>9.2773</td>
<td>10.0967</td>
<td>.8193</td>
</tr>
<tr>
<td>Accelerated Reading</td>
<td>28</td>
<td>9.4464</td>
<td>10.2250</td>
<td>.7786</td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>10.0793</td>
<td>11.0032</td>
<td>.9239</td>
</tr>
</tbody>
</table>

Analysis of Reading Gains

A simple analysis of variance was calculated between the mean gains of the creative writing, life science, accelerated reading, and control groups, as shown between the California Reading Test—Junior High Level, Form X, and the California Reading Test—Junior High Level, Form X. The results of the analysis are presented in Table V.

The F value secured by the analysis was .3892, while the value of F necessary for significance at the .05 level is 2.65. The hypothesis of no significant difference in mean gains in reading, as determined by the California Reading Test—Junior High Level, Form X and Form X, is accepted.

To test the first hypothesis of this study that there would be no significant difference in the average reading gain
TABLE V

ANALYSIS OF VARIANCE DATA FOR MEAN GRADE LEVEL GAINS AS SHOWN BETWEEN THE CALIFORNIA READING TEST—JUNIOR HIGH LEVEL, FORM W, AND FORM X, ADMINISTERED TO THE CREATIVE WRITING, LIFE SCIENCE, ACCELERATED READING, AND CONTROL GROUPS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Variance Estimate</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>102.73</td>
<td>3</td>
<td>.2342</td>
<td>.3897</td>
</tr>
<tr>
<td>Within Groups</td>
<td>106.4752</td>
<td>176</td>
<td>.6009</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>106.4752</td>
<td>179</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

between the total control group and the average gain of the combined experimental groups, a comparison of data was made for eighty-eight students from the experimental group and ninety-two students from the experiment's control group between the California Reading Test—Junior High Level, Form X, administered at the beginning of the experiment, and the California Reading Test—Junior High Level, Form X, administered at the close of the experimental period. Fisher's t technique was applied to the mean gains to test the tenability of this hypothesis. A value of 1.97 was required to be significant at the .05 level. This is shown in Table VI.

The data presented in Table VI seem to illustrate that children who are enrolled in a regular reading class, as defined in this study, show no significant gains in reading.
TABLE VI

A COMPARISON OF DATA FOR STUDENTS FROM THE COMBINED EXPERIMENTAL GROUPS OF CREATIVE WRITING, LIFE SCIENCE, AND ACCELERATED READING; AND THE CONTROL READING GROUP ON THE MEAN GAINS BETWEEN THE CALIFORNIA READING TEST, FORM W, AND THE CALIFORNIA READING TEST, FORM A

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>88</td>
<td>.8011</td>
<td>.7628</td>
<td>1.0680</td>
<td>NS</td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>.9239</td>
<td>.7702</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

achievement over similar children who substituted a course in creative writing, life science, or accelerated reading in lieu of the regular course in reading. The first hypothesis, that there is no significant difference between the average mean gain of the combined experimental group and the average mean gain of the total control group, is tenable, as indicated by the results of this comparison.

To test the second hypothesis, that the accelerated reading group will gain significantly more in mean reading achievement than will the control group in reading, a comparison of data was made for twenty-eight students from the accelerated reading group and ninety-two students from the control group between the California Reading Test—Junior High Level, Form W, administered at the beginning of the
experiment, and the California Reading Test--Junior High Level, Form X, administered at the close of the experimental period. Fisher's $t$ technique was applied to the mean gains to test the tenability of this hypothesis. A $t$ value of 1.98 was required to be significant at the .05 level. This is shown in Table VII.

**Table VII**


<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>$t$</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated Reading</td>
<td>28</td>
<td>.7726</td>
<td>.7952</td>
<td>.8086</td>
<td>NS</td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>.9239</td>
<td>.7702</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data presented in Table VII seem to indicate that children who are enrolled in a regular reading class, as defined in this study, show no significant gain in reading achievement over similar children who substituted a course in accelerated reading instead of the regular reading course. The second hypothesis that the accelerated reading group will gain significantly more in mean reading achievement than will the control group in reading is rejected.
To test the third hypothesis, that there is no significant difference in the reading gains between the control group and the creative writing group in reading, a comparison of data was made for twenty-nine students from the creative writing group and ninety-two students from the control group between the California Reading Test--Junior High Level, Form N, administered at the beginning of the experiment, and the California Reading Test--Junior High Level, Form X, administered at the close of the experimental period. Fisher's $t$ technique was applied to the mean gains to test the tenability of this hypothesis. A $t$ value of 1.98 was required to be significant at the .05 level. This is shown in Table VIII.

**Table VIII**


<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>$t$</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>.8035</td>
<td>.7720</td>
<td>.7296</td>
<td>NS</td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>.9239</td>
<td>.7702</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data presented in Table VIII seem to illustrate that children who are enrolled in a regular reading class, as defined in this study, show no significant gains in reading.
achievement over similar children who substituted a course in creative writing instead of the regular reading course. The third hypothesis, that there is no significant difference in the reading gains between the control group and the creative writing group, is tenable.

The fourth hypothesis, that there would be a significant difference in favor of the accelerated reading group as compared with the life science group in mean gains in reading, was tested by comparing data for twenty-eight students in the accelerated group and thirty-one students in the life science group between the California Reading Test--Junior High Level, Form W, administered at the beginning of the experiment, and the California Reading Test--Junior High Level, Form X, administered at the close of the experimental period. Fisher's \( t \) technique was applied to the mean gains to test the tenability of this hypothesis. A \( t \) value of 2.00 was required to be significant at the .05 level. This is shown in Table IX.

The data presented in Table IX seem to indicate that children who substituted an accelerated reading class show no significant gains in reading achievement over similar children who substituted a course in life science. The fourth hypothesis, that there is a significant difference in favor of the accelerated reading group as compared with the life science group in mean gains in reading, is rejected.
To test the fifth hypothesis, that there would be no significant difference in the reading gains between the control group and the life science group, a comparison of data was made for ninety-two students from the control group and thirty-one students from the life science group between the California Reading Test--Junior High Level, Form W, administered at the beginning of the experiment, and the California Reading Test--Junior High Level, Form X, administered at the close of the experimental period. Fisher's t technique was applied to the mean gains to test the tenability of this hypothesis. A t value of 1.98 was required to be significant at the .05 level. This is shown in Table X.

The data presented in Table X seem to indicate that children enrolled in a regular reading class, as defined in this study, show no significant gains in reading achievement.
over similar children who substituted a course in life science instead of the regular reading course. The fifth hypothesis, that there would be no significant difference in the reading gains between the control group and the life science group, is tenable.

**TABLE X**


<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science</td>
<td>31</td>
<td>0.8193</td>
<td>0.7143</td>
<td>1.54</td>
<td>NS</td>
</tr>
<tr>
<td>Control</td>
<td>92</td>
<td>0.9239</td>
<td>0.7702</td>
<td>1.39</td>
<td>NS</td>
</tr>
</tbody>
</table>

To test the sixth hypothesis, that there would be no significant difference in the reading gains between the life science group and the creative writing group, a comparison of data was made for thirty-one students from the life science group and twenty-nine students from the creative writing group between the California Reading Test--Junior High Level, Form M, administered at the beginning of the experiment, and the California Reading Test--Junior High Level, Form X, administered at the close of the experimental period. Fisher's t technique was applied to the mean gains to test the tenability of this hypothesis. A t value of 2.00 was
required to be significant at the .05 level. This is shown in Table XI.

The data presented in Table XI seem to indicate that children who substituted a creative writing class show no significant gain in reading achievement over similar children who substituted a life science class instead of the regular reading course. The sixth hypothesis, that there is no significant difference in the reading gains between the life science group and the creative writing group is tenable.

<table>
<thead>
<tr>
<th>TABLE XI</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Science</td>
<td>31</td>
<td>.8193</td>
<td>.7177</td>
<td>.0794</td>
<td>NS</td>
</tr>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>.8035</td>
<td>.7770</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To test the last hypothesis, that the accelerated reading group would gain significantly more in mean reading achievement than will the creative writing group, a comparison of data was made for twenty-eight students in the accelerated reading group and twenty-nine students from the creative writing group between the California Reading Test--Junior High Level, Form W, administered at the beginning of the
experiment, and the California Reading Test--Junior High Level, Form X, administered at the close of the experimental period. Fisher's t technique was applied to the mean gains to test the tenability of this hypothesis. A t value of 2.00 was required to be significant at the .05 level. This is shown in Table XII.

**Table XII**

A Comparison of Data for Students from the Accelerated Reading Group and the Creative Writing Group on the Mean Gains Between the California Reading Test, Form H, and the California Reading Test, Form X

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated Reading</td>
<td>28</td>
<td>.7756</td>
<td>.7952</td>
<td>.1211</td>
<td>NS</td>
</tr>
<tr>
<td>Creative Writing</td>
<td>29</td>
<td>.8035</td>
<td>.7770</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data presented in Table XII seem to indicate that children who substituted a class in accelerated reading instead of the regular reading class show no significant gain in reading achievement over similar children who substituted a course in creative writing instead of the regular reading course. The last hypothesis, that the accelerated reading group will gain significantly more in mean reading achievement than will the creative writing group, is rejected.
Analysis of Correlation Coefficients

The simple correlation coefficients were computed between the Science Research Association Primary Mental Abilities intelligence quotient, Gates-MacGinitie Reading Test, Survey E, and the California Reading Test--Junior High Level, Form X. Table XIII shows these correlations.

TABLE XIII

SIMPLE CORRELATION COEFFICIENTS BETWEEN INSTRUMENTS USED IN THE EXPERIMENT

<table>
<thead>
<tr>
<th>Instrument I</th>
<th>Instrument II</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.R.A. P.M.A.</td>
<td>Gates-MacGinitie Reading Test, Survey E</td>
<td>.4469</td>
</tr>
<tr>
<td>S.R.A. P.M.A.</td>
<td>California Reading Test, Junior High Level, Form X</td>
<td>.6613</td>
</tr>
<tr>
<td>Gates-MacGinitie Reading Test, Survey E</td>
<td>California Reading Test, Junior High Level, Form X</td>
<td>.6604</td>
</tr>
</tbody>
</table>

The California Reading Test--Junior High Level, Form X indicates a high correlation with the S.R.A. Primary Mental Abilities test and the Gates-MacGinitie Reading Test, Survey X, as administered for this research.
Analysis of Data from Male and Female Subgroups

The hypothesis that there would be no significant difference between the mean grade level gains of males and females, as shown between the California Reading Test, Form W, and Form X, administered to the creative writing, life science, accelerated reading, and control groups, was also tested in this research. The results of the simple analysis of variance between the means of the various groups are presented in Table XIV.

**TABLE XIV**

**ANALYSIS OF VARIANCE DATA FOR MEAN GRADE LEVEL GAINS AS SHOWN BETWEEN THE CALIFORNIA READING TEST, FORM W, AND FORM X, ADMINISTERED TO THE CREATIVE WRITING, LIFE SCIENCE, ACCELERATED READING, AND CONTROL GROUPS**

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Variance Estimate</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between means (male)</td>
<td>.3162</td>
<td>3</td>
<td>.1054</td>
<td>.1534</td>
</tr>
<tr>
<td>Within groups (male)</td>
<td>59.0686</td>
<td>86</td>
<td>.6968</td>
<td></td>
</tr>
<tr>
<td>Totals (male)</td>
<td>59.3848</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between means (female)</td>
<td>1.8456</td>
<td>3</td>
<td>.6152</td>
<td>4.1701</td>
</tr>
<tr>
<td>Within groups (female)</td>
<td>45.2153</td>
<td>86</td>
<td>.5257</td>
<td></td>
</tr>
<tr>
<td>Total (female)</td>
<td>47.0610</td>
<td>89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The F value secured by the analysis was .1534 for the males and 1.1701 for the females. The value of F necessary for significance at the .05 level is 1.98. The hypothesis of no significant difference is accepted.

There were ninety males and ninety females in the study. A comparison of data for this subgrouping from the creative writing, life science, accelerated reading, and control groups on mean grade level difference between the California Reading Test, Form W, and the California Reading Test, Form X, is shown in Table XV.

**TABLE XV**

A COMPARISON OF DATA FOR MALE AND FEMALE STUDENTS FROM THE CREATIVE WRITING, LIFE SCIENCE, ACCELERATED READING, AND CONTROL GROUPS ON MEAN GRADE LEVEL DIFFERENCE BETWEEN THE CALIFORNIA READING TEST, FORM W AND FORM X.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Writing (Male)</td>
<td>10</td>
<td>.6900</td>
<td>.8745</td>
<td>.5650 NS</td>
<td></td>
</tr>
<tr>
<td>Control (Male)</td>
<td>42</td>
<td>.8517</td>
<td>.8561</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing (Female)</td>
<td>19</td>
<td>.8631</td>
<td>.7131</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control (Female)</td>
<td>50</td>
<td>.9320</td>
<td>.6843</td>
<td>.6081 NS</td>
<td></td>
</tr>
<tr>
<td>Life Science (Male)</td>
<td>25</td>
<td>.8880</td>
<td>.6930</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control (Male)</td>
<td>42</td>
<td>.8547</td>
<td>.8564</td>
<td>.1587 NS</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>N</td>
<td>Mean Gain</td>
<td>S. D.</td>
<td>t</td>
<td>Level of Significance</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---</td>
<td>-----------</td>
<td>------</td>
<td>-------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Life Science (Female)</td>
<td>6</td>
<td>0.5333</td>
<td>0.7475</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control (Female)</td>
<td>50</td>
<td>0.9820</td>
<td>0.6843</td>
<td>1.4321</td>
<td>NS</td>
</tr>
<tr>
<td>Life Science (Male)</td>
<td>25</td>
<td>0.8800</td>
<td>0.6930</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing (Male)</td>
<td>10</td>
<td>0.6900</td>
<td>0.8745</td>
<td>6.335</td>
<td>NS</td>
</tr>
<tr>
<td>Life Science (Female)</td>
<td>6</td>
<td>0.5333</td>
<td>0.7475</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing (Female)</td>
<td>19</td>
<td>0.8631</td>
<td>0.7131</td>
<td>9.713</td>
<td>NS</td>
</tr>
<tr>
<td>Accelerated Reading (Male)</td>
<td>13</td>
<td>0.8923</td>
<td>0.8137</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Science (Male)</td>
<td>25</td>
<td>0.8800</td>
<td>0.6930</td>
<td>0.0157</td>
<td>NS</td>
</tr>
<tr>
<td>Accelerated Reading (Female)</td>
<td>15</td>
<td>0.6800</td>
<td>0.7652</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Science (Female)</td>
<td>6</td>
<td>0.5333</td>
<td>0.7475</td>
<td>4.197</td>
<td>NS</td>
</tr>
<tr>
<td>Accelerated Reading (Male)</td>
<td>13</td>
<td>0.8923</td>
<td>0.8137</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control (Male)</td>
<td>42</td>
<td>0.8547</td>
<td>0.8564</td>
<td>1.427</td>
<td>NS</td>
</tr>
<tr>
<td>Accelerated Reading (Female)</td>
<td>15</td>
<td>0.6800</td>
<td>0.7652</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control (Female)</td>
<td>50</td>
<td>0.9820</td>
<td>0.6843</td>
<td>1.4147</td>
<td>NS</td>
</tr>
<tr>
<td>Accelerated Reading (Male)</td>
<td>13</td>
<td>0.8923</td>
<td>0.8137</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing (Male)</td>
<td>10</td>
<td>0.6900</td>
<td>0.8745</td>
<td>5.803</td>
<td>NS</td>
</tr>
<tr>
<td>Accelerated Reading (Female)</td>
<td>15</td>
<td>0.6600</td>
<td>0.7652</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative Writing (Female)</td>
<td>19</td>
<td>0.8631</td>
<td>0.7131</td>
<td>7.313</td>
<td>NS</td>
</tr>
</tbody>
</table>
A simple analysis of variance was calculated between the mean gains of the males and females of the creative writing, life science, accelerated reading, and control groups, as shown between the California Reading Test—Junior High Level, Form W, and the California Reading Test—Junior High Level, Form X. The results of the analysis are presented in Table XVI.

**TABLE XVI**

ANALYSIS OF VARIANCE DATA FOR MALE AND FEMALE MEAN GRADE LEVEL GAINS AS SHOWN BETWEEN THE CALIFORNIA READING TEST—JUNIOR HIGH LEVEL, FORM X, AND FORM X, ADMINISTERED TO THE COMBINED EXPERIMENTAL CLASSES AS A SINGLE GROUP AND THE CONTROL GROUP

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>d.f.</th>
<th>Variance Estimate</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between means (male)</td>
<td>.0010</td>
<td>1</td>
<td>.0010</td>
<td>.0015</td>
</tr>
<tr>
<td>Within groups (male)</td>
<td>59.3838</td>
<td>88.</td>
<td>.6748</td>
<td></td>
</tr>
<tr>
<td>Total (male)</td>
<td>59.3848</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between means (female)</td>
<td>1.2482</td>
<td>1</td>
<td>1.2482</td>
<td>2.3976</td>
</tr>
<tr>
<td>Within groups (female)</td>
<td>45.8128</td>
<td>88</td>
<td>.5206</td>
<td></td>
</tr>
<tr>
<td>Total (female)</td>
<td>47.0610</td>
<td>89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To test the hypothesis that there would be no significant difference in mean gains in reading by the females of the
combined experimental groups and the control group, a comparison of data for forty females in the experimental groups and fifty females in the control group was made between the California Reading Test--Junior High Level, Form M, administered at the beginning of the experiment, and the California Reading Test--Junior High Level, Form X, administered at the close of the experimental period. Fisher's t technique was applied to the mean gains to test the tenability of this hypothesis. A t value of 1.99 was required to be significant at the .05 level. This is shown in Table XVII.

**Table XVII**

A comparison of data for females from the combined experimental groups and control group on the mean gains between the California Reading Test, Form M, and the California Reading Test, Form X, given as pre-test and post-test instruments.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>t</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>40</td>
<td>.7450</td>
<td>.7483</td>
<td>5.81</td>
<td>NS</td>
</tr>
<tr>
<td>Control</td>
<td>50</td>
<td>.9220</td>
<td>.6843</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data presented in Table XVII seem to indicate that girls who are enrolled in a regular reading class, as defined in this study, show no significant gain in reading achievement over similar children who substituted a course in creative writing, life science, or accelerated reading.
The hypothesis of no difference in gains between the two groups is accepted.

To test the hypothesis that there would be no significant difference in mean gains in reading by the males of the combined experimental groups and the control group, a comparison of data for forty-eight males in the experimental groups and forty-two males in the control group was made between the California Reading Test—Junior High Level, Form X, administered at the beginning of the experiment, and the California Reading Test—Junior High Level, Form X, administered at the close of the experimental period. Fisher's $t$ technique was applied to the mean gains to test the tenability of this hypothesis. A $t$ value of 1.99 was required to be significant at the .05 level. This is shown in Table XVIII.

**Table XVIII**

A comparison of data for males from the combined experimental groups and control group on the mean gains between the California Reading Test, Form M, and the California Reading Test, Form X.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Gain</th>
<th>S. D.</th>
<th>$t$</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>48</td>
<td>.8479</td>
<td>.7716</td>
<td>.0394</td>
<td>NS</td>
</tr>
<tr>
<td>Control</td>
<td>42</td>
<td>.8547</td>
<td>.8564</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data presented in Table XVIII seem to indicate that boys who are enrolled in a regular reading class, as defined
in this study, show no significant gain in reading achievement over similar children who substituted a course in creative writing, life science, or accelerated reading. The hypothesis of no difference in gains between the two groups is accepted.
CHAPTER BIBLIOGRAPHY


CHAPTER V

SUMMARY OF RESULTS, CONCLUSIONS, RECOMMENDATIONS

The major purpose of this study was to identify the reading achievement of pupils assigned to special classes in creative writing, life science, or accelerated reading and to analyze and compare the mean gains in reading with the control group as measured by the California Reading Test--Junior High Level, Form W and Form X. It was felt that such information could aid in the selection and assignment of pupils to special classes.

Specifically, the study was designed to determine the following:

1. The feasibility of offering a special program to be substituted for the regular reading classes.

2. Whether the supplementary devices for the teaching of reading—the Percepto Scope and the Rateometer—result in a significant gain in reading ability when used with students of high reading achievement as compared with those students of similar achievement using the control reader.

3. If students enrolled in an accelerated reading program will gain significantly more in reading than students enrolled in either of the other special programs—
including the controlled "rapid learning" groups in reading.

Summary of Results

Data from reading achievement and IQ were obtained about a sample of eighty-eight subjects assigned to special classes and ninety-two subjects assigned to the control group. The data were analyzed by a simple analysis of variance.

As a result of this analysis, the null hypothesis for hypotheses one, three, five, and six were held tenable, since the F ratios were not significant at the .05 level of confidence.

By the use of the simple analysis of variance, hypotheses two, four, and seven were rejected, since the F value did not reach the .05 level of confidence.

The analyses of the experimental and control groups and of the total mean gains were tested by finding the significance of difference between mean gains. In neither case was a significant difference found.

A simple correlation was calculated between reading achievement as indicated on two separate instruments administered at the end of the study and the IQ. There was a high correlation (.66) between IQ and the California Reading Test, used as the post-test instrument for this study. There was a low correlation (.44) between IQ and Gates-MacGinitie.
Reading Test administered at the end of the study. The correlation between the two reading instruments was .66.

Findings

Findings in this study included the following:

1. The mean gain in reading for the combined experimental and control groups was eight months for the seven-months length of the experiment.

2. Students who are reading two grade levels above normal show no significant difference in reading gains, whether taking reading or another subject in lieu of reading.

3. There was no significant difference in mean gains in reading between the life science group and the creative writing group.

4. Sex subgroups showed no significant difference in mean reading gain in either of the experimental groups or the control group.

5. The mean gain of pupils assigned to experimental classes indicated no significant difference in reading gains over those in regular reading classes.

6. There was an equal mean gain in reading between the males of the combined experimental groups and the males of the control group.

Conclusions

From the data analysis it seems reasonable that the following conclusions could be drawn:
1. Students who complete elementary school with reading achievement two or more grade levels above normal will progress as much in reading by pursuing a dissimilar course embracing reading as an appurtenant skill as they will by enrolling in the conventional reading course in which the primary aim is achievement in reading.

2. Students who read two or more grade levels above normal need not subrogate the regular reading course with a special accelerated reading program to effect gains in their reading comprehension.

3. All teachers should assume responsibility for the inculcation of critical reading skills in content courses for those students who are reading two or more grade levels above normal.

4. The use of the Percepto Scope as a superior teaching aid for students who read two grade levels or higher than normal is of doubtful advantage.

5. It is acceptable for students who possess above-average comprehension in reading, yet prefer a regular reading course to that of a special course in a content area, to take the regular reading course, even though they are reading two or more grade levels above normal.

Recommendations

1. A study should be undertaken to determine achievement in the areas of science and creative writing by those involved
in the experimental and control groups of a study similar to
this to compare achievement made in reading.

2. A study using intelligence tests should be made to
determine the use of IQ as a criteria for admission to classes
formulated for the purposes outlined in this study.

3. A study of matched subjects with experimental and
control groups should be made to help determine the real
effectiveness of the special classes as compared with the
regular reading program.

4. Subsequent research should be carried out in other
schools and at different grade levels to ascertain the effect
of special courses, similar to the ones used in this study,
on reading gains.

5. A longitudinal study based on this research design
should be made to determine reading gains over an extended
period of time, and to correlate this gain with gains made
in the various subjects chosen by the student.
Dear Parent:

Recently, the sixth-grade pupils of Fort Worth completed a test which evaluated their reading ability. Your child, , made a score high enough to be considered for an enrichment program that will be offered next year at Meadowbrook Junior High, on a pilot basis, instead of the regular reading program.

If you are interested in such a program, will you please list the first, second, and third choice which your child and you select. This will enable us to organize our classes as close as possible to your wishes. It may be necessary to use your second choice in order to balance our classes so that each will have sufficient enrollment.

Please place the numbers "1", "2", "3" in order of your preference in the space at the beginning of each choice:

1. ( ) I would like for my child to take the enrichment program in Accelerated Reading.

2. ( ) I would like for my child to take the enrichment program in Creative Writing.

3. ( ) I would like for my child to take the enrichment program in Life Science.

4. ( ) I would like for my child to take the Regular Reading program.

Please fill out and return to us at 2001 Ederville Road immediately in order that organizational procedures may begin. If you have any questions, call us at JE 6-2808.

Sincerely yours,

Principal
BIBLIOGRAPHY

Books


Periodicals


Buelke, Eleanor, "Drama of Teaching Reading through Creative Writing," Reading Teacher, 19 (January, 1966), 267-272.


Dell, William C., "Let's Get the I into Student Compositions," Creative Writing, XV (February, 1964), 4-7.


Dunlap, Grace, "How Science Contributes to the Reading Program," National Elementary Principal, XXXV (September, 1935), 112-115.


English, Mildred, "Creative Writing in the Middle Grades," Education, 53 (November, 1932), 133-137.


Fry, Edward, "Teaching Machines and Reading Instruction," Reading Teacher, 15 (September, 1961), 43-45.


Hogan, Charles A., "Creative Writing in the Junior High School," *English Journal*, 27 (February, 1933), 119-123.


Munsen, Howard, "So Who Does Teach Reading?" *National Elementary Principal*, XLVI (January, 1967), 63-64.


Olshin, G. N., "Relationship among Selected Subject Variables and Level of Creativity," *Exceptional Child*, XXI (May, 1965), 488-489.

Parker, Don H., "Reading in Science: Training or Education?" *Science Teacher*, 30 (February, 1963), 43+. 


Rideout, Irma, "Writing is Fun for Seventh Graders," *Elementary English*, XXVII (October, 1950), 386-398.


Tinker, Miles A., "The Relation of Speed to Comprehension in Reading," *School and Society*, 36 (July 30, 1932), 152-160.


Weiss, M. J., "What about Reading after Grade Six?" *Grade Teacher*, 84 (March, 1967), 119.


Yamamoto, Kaoru, "Creative Writing and School Achievement," *School and Society*, 91 (October, 1963), 307-308.

Unpublished Materials


Spieth, Phillip E., "Intelligence as It Relates to Three Creativity Categories: Science, Art, and Literature," unpublished doctoral dissertation, School of Psychology, University of Michigan, Ann Arbor, Michigan, 1963, as abstracted in Dissertation Abstracts, 25 (September, 1964), 1759-1760.
