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A Functional-Recognition Experiment in Spelling to Determine Extent of Use and Mastery

James W. Hughes

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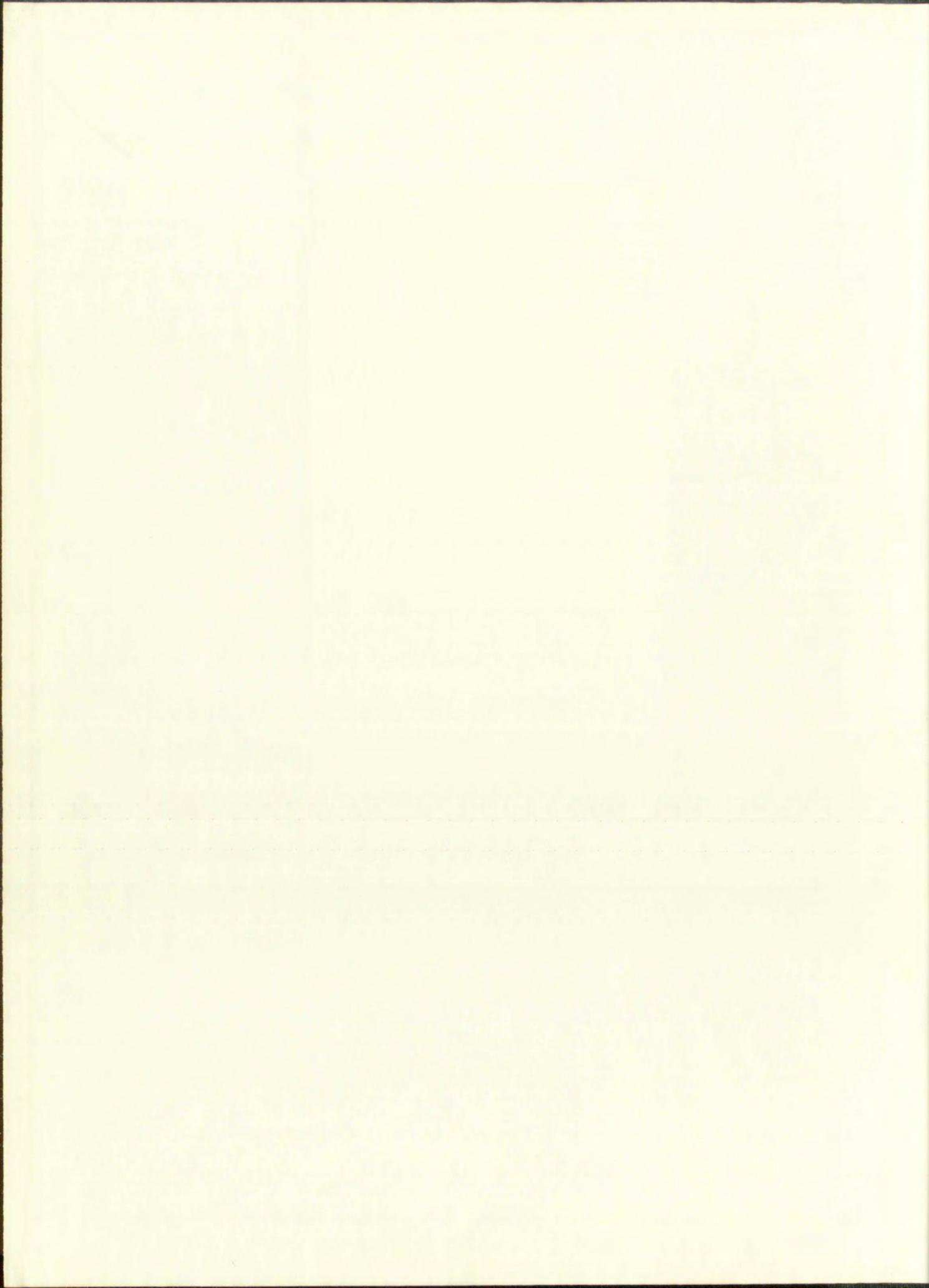
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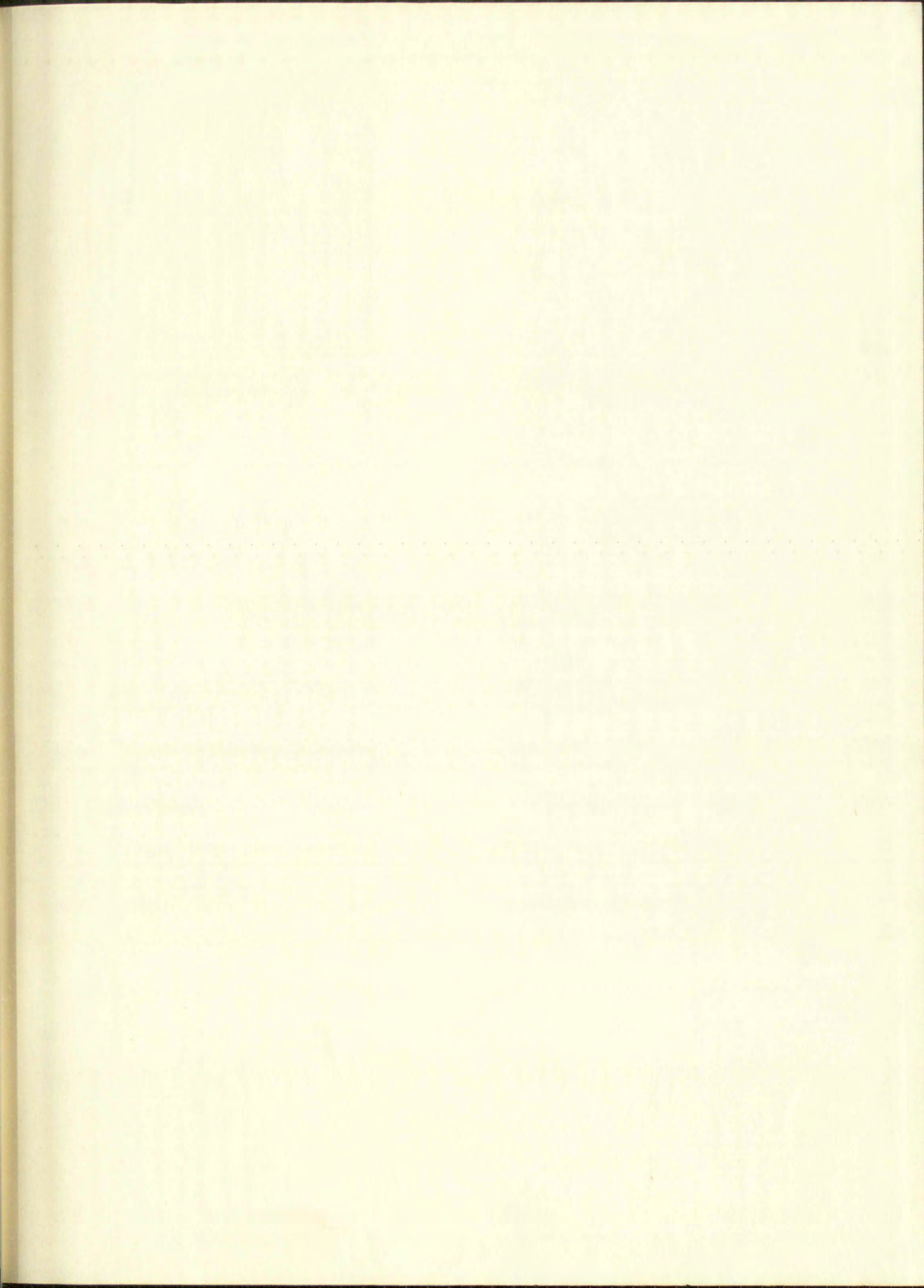
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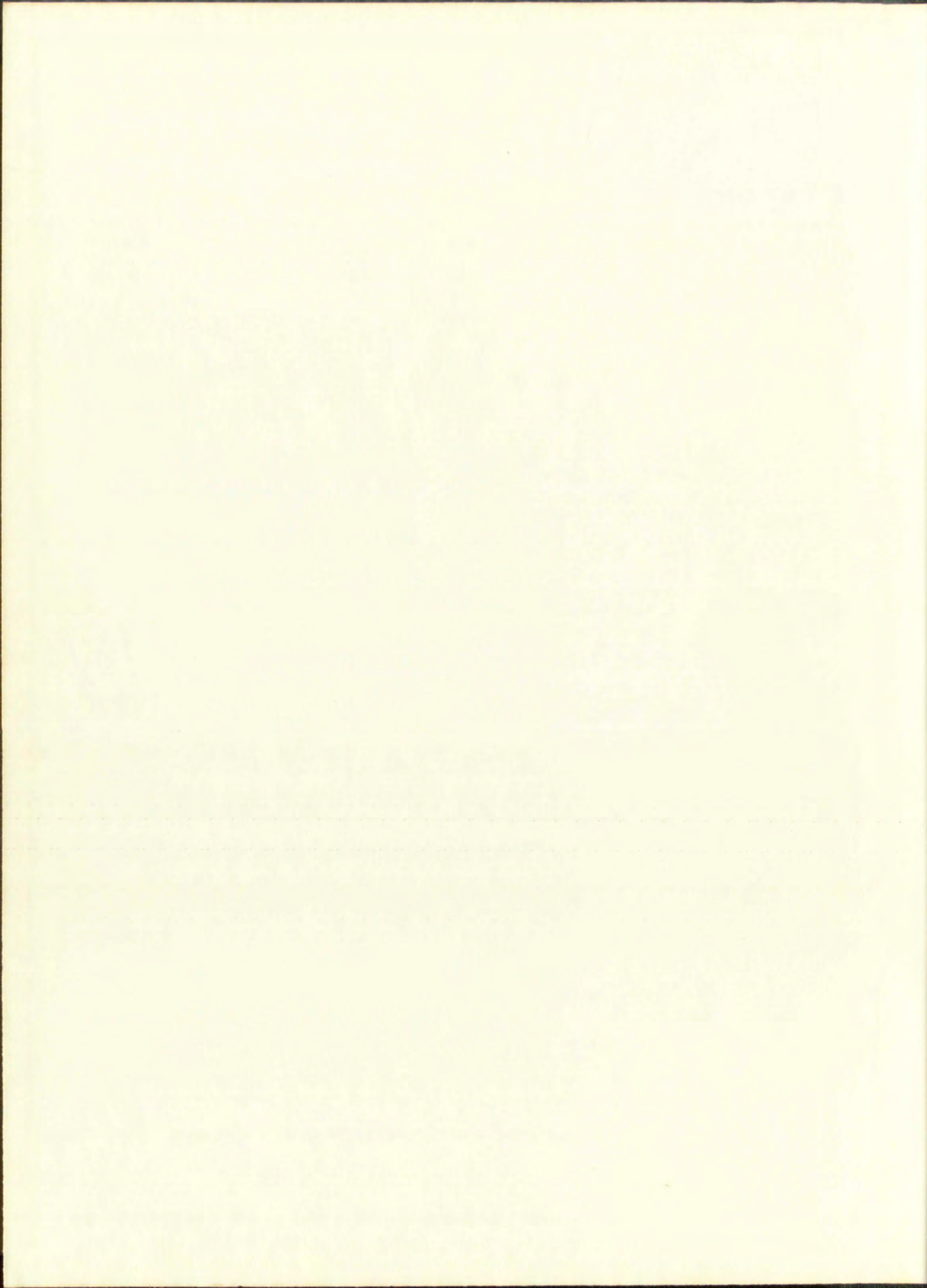
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A FUNCTIONAL-RECOGNITION EXPERIMENT IN SPELLING
TO DETERMINE EXTENT OF USE AND MASTERY

By

James W. Hughes

A Thesis

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts in Education

The University of New Mexico

1962

A FUNCTIONAL-RECOGNITION EXPERIMENT IN SPELLING

TO DETERMINE EXTENT OF USE AND MASTERY

By

James W. Rogers

A Thesis

Submitted in Partial Fulfillment of the

Requirements for the Degree of

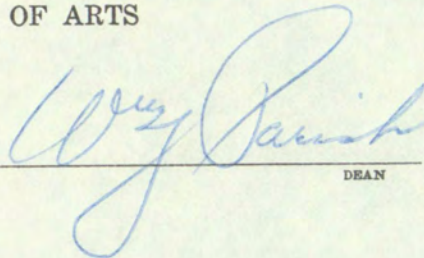
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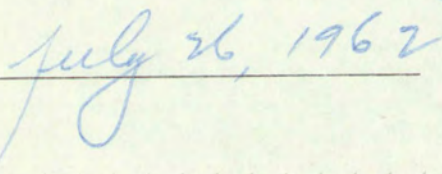
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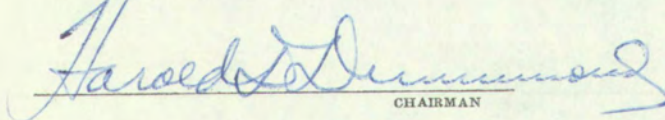
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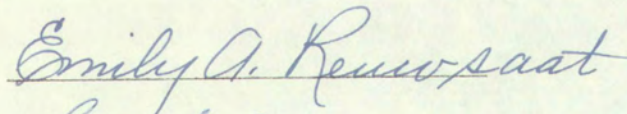

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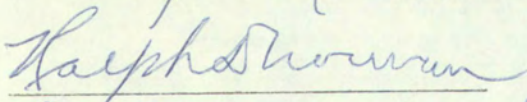
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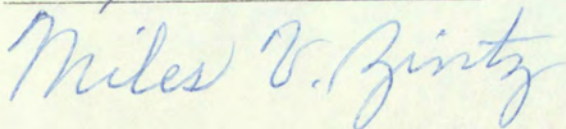


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The writer is indebted to Dr. Patrick D. Lynch for his advice regarding the statistical design of the study.

ABSTRACT

The writer wishes to acknowledge the assistance of Stanley Caplan for permission to conduct this study. Alphonse, the school principal, and Mrs. John Brown and Mrs. John Brown, fifth-grade teachers, at St. Mary's School, for their active participation in the experimental phase of this study.

Special appreciation is extended to members of the thesis committee, Dr. Harold W. Brown, Chairman, Dr. Helen Walters, Dr. Milton V. Brown, and Dr. John Brown, for their suggestions, criticisms, and assistance.

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CHAPTER I

THE PROBLEM AND ORGANIZATION OF THE STUDY

I. INTRODUCTION

Spelling programs based on standard word lists are commonly used in many schools today. Critics of this method of teaching spelling question the effect that teaching words in isolation from communication has upon their mastery and utilization. According to Hildreth:

Spelling is hard to learn when it becomes an academic subject bearing little relation to any recognized purposes of the learner. The subject becomes meaningless when it is treated chiefly as a matter of saying over the letters of a list of words and then trying to record the results of this stereotyped practice in writing the practiced words.¹

Success of a spelling program cannot be measured by the number of words which a student can spell orally. Rather, its success must be evaluated by the effectiveness with which the ordinary child writes in the situations that call for written expression.² Bringing spelling into focus as a functional tool of writing is a problem that confronts many teachers today.

¹Gertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company, 1955), p. 9.

²James A. Fitzgerald, Teaching of Spelling (Milwaukee: The Bruce Publishing Company, 1951), p. 2.

THE THEORY AND PRACTICE OF THE STUDY

I. INTRODUCTION

Spelling programs based on sound principles are commonly used in many schools today. The purpose of this study is to explore the question of the effect of spelling upon the development of communication and upon the development of the individual.

Spelling is said to be a part of the language. It is a subject bearing little relation to any particular subject of the learner. The subject is not a part of the language. It is created chiefly as a means of giving the learner a list of words and then trying to write them. The purpose of this study is to explore the question of the effect of spelling upon the development of the individual.

Success of a spelling program depends upon the number of words which a student can spell correctly. The success must be evaluated by the ability of the student to write ordinary child writing in the classroom. This study will attempt to bring up the question of the effect of spelling upon the development of the individual.

¹ Carlisle, H. W., *Spelling* (New York: Holt and Company, 1902), p. 1.

² James A. McGuffey, *Spelling* (New York: The Bruce Publishing Company, 1902), p. 1.

II. THE PROBLEM

Statement of the Problem

The purpose of this study is to determine if there is any significant difference in spelling achievement on a fifth-grade level between an experimental group using a functional-recognition approach to weekly spelling lists for a period of four weeks, as compared with a control group which does not apply the functional-recognition approach, but which has equal time for study and writing. Therefore, the following hypotheses are presented:

1. Functional-recognition of words used in context, which have been previously learned in spelling lessons, produces no significant differences in frequency usage of the words when equated experimental and control groups devote equal time to formal study and have equal opportunities for writing.
2. There are no significant differences between the experimental and control groups in initial mastery of weekly spelling words.
3. There are no significant differences between the experimental and control groups in retention of the words studied during the four weeks of the investigation.
4. There are no significant differences after a two-month period between the experimental and control groups in retention of the words studied.

Statement of the Problem

The purpose of this study is to determine if there is any significant difference in spelling achievement on a dictation test between an experimental group using a functional approach to weekly spelling lists for a period of four weeks, as compared with a control group which does not use the functional spelling-recognition approach, but which has equal time for study and writing. Therefore, the following hypotheses were suggested:

1. Functional-recognition of words when the words are written have been previously learned in spelling lessons, there will be significant differences in frequency usage of the words when equated experimental and control groups receive equal time for study and have equal opportunities for writing.

2. There are no significant differences between the experimental and control groups in initial mastery of words spelling words.

3. There are no significant differences between the experimental and control groups in retention of the words studied during the four weeks of the investigation.

4. There are no significant differences in the frequency of use of the words between the experimental and control groups in the retention of the words studied.

III. DEFINITIONS OF TERMS USED

In order to assure continuity of thought during this study, terminology used will conform to the following definitions.

Context

The term "context" in this study is used to denote the written work, other than specific assignments relating to spelling, which involves the usage of a spelling word. Context shows how the word helps explain a desired thought, thus illustrating its function.

Formal Study

The term "formal study" refers to that portion of the day devoted to instruction in spelling. In this investigation, the time allowed was fifteen minutes per day, five days a week.

Frequency of Use

The term "frequency of use" denotes the actual number of times a spelling word has been used by a child in writing during portions of the day other than the fifteen-minute spelling period.

Functional-Recognition

The term "functional-recognition" means a child's observing and recording the frequency of use of weekly spelling words based on an analysis of his own writing.

Initial Mastery

The term "initial mastery" is used to refer to the ability to spell correctly the words which have been presented in weekly

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The term "functional recognition" means a child's identifying and recording the frequency of use of spelling words based on an analysis of his own writing.

Initial Mastery

The term "initial mastery" is used to refer to the ability to spell correctly the words which have been presented in mastery.

word lists. Initial mastery is to be determined by using a teacher-constructed test after the completion of one week's study of the words.

Retention

The term "retention" denotes the ability, after a two-month interval, to retain spelling mastery of the words studied during the four weeks.

Spelling Achievement

The term "spelling achievement" is used to refer to the attained growth in spelling abilities.

Teacher-Constructed Tests

"Teacher-constructed tests" refers to the spelling tests administered weekly by the classroom teachers. The tests are based on the words that are presented to the classes each week in the word lists of the text.

Word Lists

The term "word lists" refers to the new words presented weekly from the Silver Burdett fifth-grade text, Using Words With Meaning.³ These words were derived from a compilation of studies conducted by Rinsland,⁴ Horn,⁵ and Fitzgerald.⁶

³Lillian E. Billington, Using Words With Meaning, Grade 5 (New York: Silver Burdett Company, 1950).

⁴Henry D. Rinsland, A Basic Vocabulary of Elementary School Children (New York: Macmillan Company, 1945).

⁵Ernest Horn, "A Basic Writing Vocabulary," Monograph in Education, No. 4 (Iowa City: University of Iowa, 1926).

⁶Fitzgerald, loc. cit.

word lists. Initial mastery is to be determined by using a word-
connected test after the completion of each week's study of the
words.

Retention

The term "retention" denotes the ability, after a passage
of time, to retain spelling mastery of words which have been
the four weeks.

Spelling Achievement

The term "spelling achievement" is used to refer to the
attained growth in spelling abilities.

Teacher-Constructed Tests

"Teacher-constructed tests" refers to all spelling tests
administered weekly by the classroom teacher. These tests are
based on the words that are presented to the class each week
in the word lists of the text.

Word Lists

The term "word lists" refers to the new words presented
weekly from the Silver Burdett fifth-grade text, Spelling
With Meaning. These words were derived from a compilation of

studies conducted by Bineland, Horn, and Finkelman.

²William E. Bineland, Spelling Words for Reading, (New York: Silver Burdett Company, 1937).

³Henry B. Bineland, A Basic Vocabulary of American English, (New York: Macmillan Company, 1937).

⁴Ernest Horn, "A Basic Writing Vocabulary," Journal of Education, No. 4 (New City: University of Iowa, 1937).

⁵Bineland, loc. cit.

Writing Opportunities

The term "writing opportunities" refers to the weekly assignments and activities of the class which require writing, but excluding specific assignments which refer to the spelling lesson. Specifically, such assignments were given weekly to include opportunities for one theme or letter, as well as for written expression in the other content areas such as social studies or science.

IV. LIMITATIONS OF THE PROBLEM

The selection of a school within which this study could be conducted was determined by the Guidance Department of the Albuquerque Public Schools. The cooperating school selected for this research project was the Stronghurst Elementary School.

The fifth-grade level was selected by the experimenter. The cooperating school has two fifth grades. The class population of each grade had been pre-assigned by the principal in September on the basis of reading ability, in order that each class would have a relatively equal distribution of range of reading ability. The separation of groups was accomplished by a split-half method. Teacher recommendations concerning maturity and achievement in other academic and social areas were also considered when this grouping was established. In January a comprehensive spelling pre-test was administered by the investigator to both groups in order to establish further the degree of comparability in spelling.

The term "writing composition" refers to the activity of writing and activities of the class which relate to the writing process. Specific assignments which relate to the writing process, such as assignments were given which were designed to develop the student's ability to write, as well as for the student to be able to write in the other content areas such as social studies or science.

IV. LIMITATIONS OF THE STUDY

The selection of a school which was able to participate in the study was determined by the distance between the school and the researcher. The researcher was not able to visit the school for the study project was the researcher's first year of teaching. The fifth-grade level was selected for the study. The cooperating school was the fifth grade. The class composition of each grade had been presented to the principal in September on the basis of reading ability. The principal stated that the class would have a relatively equal distribution of students of reading ability. The separation of groups was made on the basis of a split-half method. Teacher recommendations were also considered when this grouping was made. In January a comprehensive spelling test was administered to the students to both groups in order to determine whether the groups of comparability in spelling.

In order to eliminate teacher differences in lesson presentation as much as possible, the cooperating teachers agreed to adhere to the teacher's manual accompanying the spelling text because of its uniformity in methods and procedures. A study-test method was used in presenting lessons. The degree of teaching enthusiasm and attitudes concerning spelling which the teachers already possessed were not controlled in this study.

The word lists and their context presentation were of such a general range and variety that it was considered neither appropriate nor advisable in this study to control the topics of units studied in other subject areas. No attempt was made in any way to control effects of incidental learning which could have taken place within both groups to some degree.

In the writing opportunities which were permitted to both groups, no maximum nor minimum time or space limits were prescribed. However, teachers were urged to encourage maximum student potential in the individual efforts exerted. The experimental group using the functional-recognition approach was not encouraged to write around their spelling lists. The functional-recognition approach in reviewing written opportunities was a retrospective look at the spelling word lists, rather than a word-outline for creating a story.

Attendance of both classes was recorded. Opportunities for make-up were allowed those students who were present for initial presentation of word lists and who had completed the week's written assignments, but who were absent when the functional-recognition approach was used. Students who were absent when

written assignments were given had an equal opportunity for make-up work, unless they were also absent when the initial presentation of the word list was made.

V. THEORETICAL BACKGROUND

Encouraging pupils to observe the frequency with which they individually use weekly spelling words brings about an awareness of the functionality of the words studied. It is an attempt to arouse a consciousness regarding the importance and usefulness of spelling by emphasizing the complete picture of the spelling process.

The theory of Gestalt psychology emphasizes seeing the "whole picture" of the purpose and use of spelling, rather than just looking at one mechanical aspect of it. Studying spelling words, using them in writing, and seeing them effectively used to convey meaning, all allow a child the opportunity to grasp the full value of the word. In the theories relating to Gestalt psychology, more than just isolated aspects, or a sum of the parts, is observed. The configuration of the entire process involved may be viewed.⁷

A purposeful approach to acknowledge the individual's use of words in writing illustrates one of Thorndike's theories concerning the laws of use for a learning situation. His law of use

⁷Henry C. Lindgren, Educational Psychology (New York: John Wiley and Sons, Inc., 1956), pp. 208-210.

written assignments were given in a way which made it possible for the student to work, unless they were also assigned a written assignment of the very first kind.

V. THEORETICAL BACKGROUND

Encountering pupils as objects of study in the classroom is a very complex process. Inductively, we usually begin with a general statement about the nature of the process, and then we try to explain it by describing the complex picture of the learning process.

The theory of Gestalt psychology emphasizes the idea of "whole picture" of the process and not of isolated parts. It is just looking at one particular aspect of the learning process, using terms in writing, and seeing that the whole picture is conveyed meaning, all at once, and not in a series of parts. The full value of the word, in the theory of Gestalt psychology, more than just isolated words, is a part of the whole. The configuration of the whole picture is observed. The configuration of the whole picture is observed. The configuration of the whole picture is observed.

A purposeful approach to learning is a very important part of the learning process. It is a part of the learning process. It is a part of the learning process. It is a part of the learning process.

states that when a modified connection is made between a situation and response, that connection's strength is, other things being equal, increased.⁸

Observance of one's use of words in writing is an educational method which relies upon sense realism. Pestalozzi believed that sense perceptions were most important in the development of the mind of a child. In relating this theory to educational methods, he found it necessary to rely at the earliest stages upon observation of actual things and natural objects.⁹

Observing actual word usage illustrates the functionality of the words being studied. By attempting to have each individual identify himself with the action performed through his own writing usage, greater interest in spelling hopefully will be developed.

Dewey believed:

Interest provides the moving or driving force, whereas effort comes into play in the degree to which the achievement of the activity is postponed or made remote by obstacles.¹⁰

Interest cannot be superimposed upon an activity. It must be inherently contained in the activity in which the child engages.¹¹

⁸E. L. Thorndike, Educational Psychology (New York:Teacher's College, Columbia University Press, 1913), pp. 2-4.

⁹R. Freeman Butts, A Cultural History of Education (New York: McGraw-Hill Book Company, 1947), pp. 435-436.

¹⁰Ibid., pp. 521-525.

¹¹Lester Crow and Alice Crow, Introduction to Education (American Book Company, 1950), p. 482.

states that when a modified comparison is made, the difference is not
and response, that comparison is not made, and the difference is not
equal, increased.

Observance of one's use of words in writing is an important
method which relies upon actual observation. It is important to note that
some perceptions are not observed in the same manner as others.
kind of a child. In relation to the child's use of words, it is
found it necessary to rely on the child's use of words in writing
tion of actual things and actual objects.

Observing actual words used in writing is the most important
of the words being studied. It is important to note that the use
identically himself with the actual words used in writing. It is
usage, greater interest in spelling, and the use of words.
Dewey believed:

Interest provides the basis for the child's learning, and the
effort comes into play in the child's use of words. It is
part of the activity in the child's use of words. It is
Interest cannot be taught, but it can be encouraged. It is
inherently contained in the activity of the child's use of words.

⁸ E. L. Thorndike, Experimental Psychology (New York: Holt,
College, Columbia University Press, 1911), pp. 1-2.

⁹ E. Freeman Butler, A Child's Psychology (New York: Holt,
McNair-Hill Book Company, 1917), pp. 1-2.

¹⁰ Ibid., pp. 1-2.

¹¹ E. L. Thorndike and Alice Woodworth, Psychology (New York: Holt,
(American Book Company, 1901), p. 1.

Many appeals to children for correct spelling are based on the fact that spelling is important in later life. Since some children will be unable to spell accurately, such motivation is likely to be a waste of time. Motivation must have an immediate appeal to contemporary interests and to the mainsprings of action.¹² The advantage of observing words in context is based upon the belief that the best test of a word is the use of it in written expression, both in and out of school.¹³

VI. IMPORTANCE OF THE STUDY

A problem that perplexes many teachers concerns the student who can learn all the words in a spelling list but who cannot spell the same words correctly in context usage. This lack of transfer to writing has been recognized as a problem by many people in the field of the language arts. Fernald recommended language-related spelling because children learn better when they are interested in writing something, and when meanings of words are known before a child attempts to spell them.¹⁴

In 1902, Cornman experimented with the teaching of spelling as an integrated study in two elementary schools in Philadelphia.

¹²Thomas G. Foran, The Psychology and Teaching of Spelling (Washington: The Catholic Education Press, 1934), p. 152.

¹³Fitzgerald, op. cit., p. 35.

¹⁴Grace Fernald, Diagnostic and Remedial Work in the Basic Skills (New York: McGraw-Hill, 1943), p. 47.

Many appeals to children are covered in this book. The fact that spelling is important in many ways. Children will be unable to spell accurately, and this is likely to be a waste of time. Most children would have a hard time appealing to contemporary interests and to the needs of the nation. The advantage of observing words in context is that it is believed that the best test of a word is how it is used in expression, both in and out of school.

VI. THEORETICAL OF THE THEORY

A problem that perplexes many teachers concerns the student who can learn all the words in a spelling list but who cannot spell the same words correctly in actual usage. This is a problem in transfer to writing has been recognized as a problem in many people in the field of the language. The language-related spelling problems often occur when they are interested in writing something, and they are often not known before a child attempts to spell. In 1962, Gorman reported that the problem of spelling as an integrated study in the elementary school is still a problem.

¹² Thomas G. Gorman, *The Language and Learning of Spelling* (Washington: The Catholic Education Press, 1962), p. 102.

¹³ Fitzgerald, op. cit., p. 10.

¹⁴ Grace Fernald, *Elementary and Secondary Spelling* (New York: McGraw-Hill, 1962), p. 10.

The results following his three-year study show that spelling was just as effective as when it had been taught in isolated lessons.¹⁵

More recent research attempts have been made to integrate spelling into a unified language arts program for the purpose of bringing spelling and writing closer together. The Minneapolis schools discovered that a functional approach resulted in higher spelling accuracy in children's daily writing at school than did the traditional method.¹⁶ Such studies indicate that significant results are achieved when spelling is brought into a more functional approach through writing. The present investigation attempts to utilize aspects of the traditional methods of using weekly word lists with some of the more modern methods referring to function in writing. It is hoped that results of this study will be utilized by classroom teachers in an effort to improve their spelling programs.

VII. METHODS AND PROCEDURES

Prior to the actual initiation of this research study in the Stronghurst Elementary School, the experimenter met with the principal and the cooperating teachers. Complete methods of procedure were discussed, and all facets of classroom responsibility were elaborated upon to assure that no discrepancies would arise as to procedures, record keeping, and handling of the independent

¹⁵Oliver P. Cornman, Spelling in the Elementary School: An Experimental and Statistical Investigation (Boston: Ginn and Company, 1902), p. 98.

¹⁶Helen K. Mackintosh and Wilhelmina Hill, How Children Learn To Write, Bulletin No. Two (Washington: Office of Education, 1953), p. 43.

variable. A pre-test was administered to both groups to aid in the evaluation of existing spelling achievement within the groups. Words in the pre-test were taken from the basic word list of the text series to include a difficulty level ranging from second grade through eighth grade.¹⁷

Both cooperating teachers concurrently presented the same weekly lessons in spelling. The Silver Burdett spelling series for the fifth grade was used by both teachers.¹⁸ Unit lessons 19, 20, 21 and 22 were presented to both groups in the manner suggested by the accompanying teacher's manual to insure uniformity of procedure within groups. Equal time limits of fifteen minutes per day, five days a week, were devoted to spelling instruction.

Both experimental and control groups were given three opportunities for written work not included as part of the spelling period. No topic was specified, so that students could choose from areas of basic interests, although other subject areas could be drawn upon as a source of purposeful writing activities. There were no restrictions on length of written work, but each teacher encouraged the individual's maximum effort.

At the end of each week, students in the control group were tested on the complete list of words which had been presented to them that week. Initial mastery was recorded by the teacher for

¹⁷ See Appendix A.

¹⁸ Billington, loc. cit.

variable. A pre-test was administered to determine the range of scores on the evaluation of existing spelling achievement within the two groups. Words in the pre-test were taken from a list of words used in the series to include a difficulty level ranging from second grade through eighth grade.¹⁷

Both cooperative learning treatment groups received weekly lessons in spelling. The teacher presented the words for the fifth grade was used by both teachers. Words 20, 21 and 22 were presented to both groups for the treatment suggested by the accompanying teacher's manual in terms of difficulty of procedure within groups. Equal time limits of fifteen minutes per day, five days a week, were devoted to spelling instruction.

Both experimental and control groups were given the spelling unit for written work in the form of a spelling list. No topic was specified, so that students could choose from areas of basic information, although a list of words would be drawn upon as a source of suggested spelling material. There were no restrictions on length of written work, and each student encouraged the individual's spelling effort.

At the end of each week, students in the control group were tested on the complete list of words which had been presented to them that week. Initial marking was recorded by the teacher for

¹⁷ See Appendix A.

¹⁸ Spelling, pp. 217.

every student. The three samples of written work were also collected by the teacher at the end of each week. Following the four-week study period, all material collected by the teacher was turned over to the experimenter.

In the experimental group, identical procedures for daily lessons and writing opportunities were followed, except for the final day of the week. Following the final test of each week's word list, the out-of-class written work completed that week was returned to the students. They were given a chart which listed the words studied for that week.¹⁹ Each student then proceeded to make a frequency count of his own written work in order to determine the frequency of use of the spelling words in his writing opportunities. He also recorded the number of times he correctly spelled each spelling word in context, as well as the number of misspellings. No direct incentive to use weekly word lists in writing was made by the teacher. Students maintained their own frequency counts, and their cumulative records were maintained in this way for the four-week study period. Final weekly test grades were also recorded for each student by the teacher.

At the close of the four-week study period, all functional-recognition charts were collected by the teacher, as well as the writing samples which had been the source of the frequency counts. These data, along with initial mastery grades, were then turned over to the experimenter. The written work submitted by the control group

¹⁹See Appendix B.

every student. The first sample of the work was also collected by the teacher at the end of each week. Following the first study period, all material collected by the teacher was turned over to the experimenter.

In the experimental room, detailed preparation for daily lessons and writing opportunities was maintained. During the final day of the week, collected and transcribed words were word lists, the out-of-class written work was collected and returned to the students. They were given a chance to study the words studied for that week. Each student then proceeded to make a frequency count of his own written work in order to determine the frequency of use of the specific words in his writing opportunities. He also recorded the number of writing opportunities each spelling word is repeated. He will be the first to misspellings. He should indicate on his word list in writing was made by the teacher. A separate manuscript book was frequency counts, and their cumulative records were maintained in this way for the four-week study period. These individual records were also recorded for each group by the teacher.

At the close of the four-week study period, all individual recognition charts were collected by the teacher, as well as the writing samples which had been the subject of the frequency counts. These data, along with initial assessment records, were then turned over to the experimenter. The written work collected by the control group

was examined by the experimenter for frequency usage of weekly word lists in the same manner in which the experimental group evaluated its written work according to the functional-recognition approach.

In an attempt to measure retention ability between the groups, a comprehensive post-test was given both groups at the end of the four-week study period.²⁰ The same post-test was administered again in April to both groups, following a two-month lapse of time in order to determine retention.

Only students who had participated in the study program from the beginning were given these post-tests. The test itself was a composite of the words studied during the original four-week session.

VIII. STATISTICAL DESIGN

In the initial development of this study, a pre-test was administered to both groups to aid in the identification of existing differences, or the lack of differences, between groups in spelling ability. A comprehensive spelling test was administered which produced 'raw score data. The mean score for each group was determined. The standard deviation of each mean score was found, as well as the standard error of the mean. With this information, results were compared for existing differences using the "t" test.²¹

²⁰See Appendix C.

²¹Quinn McNemar, Psychological Statistics (New York: John Wiley and Sons, Inc., 1960), pp. 107-108.

was examined by the physician for the purpose of determining the cause of the illness. In the case of the patient, the physician found that the patient had been exposed to a large amount of radiation during the last few days of his life.

In the case of the patient, the physician found that the patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life.

from the beginning, were given the same treatment. The patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life.

was a composite of the two different types of radiation. The patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life.

In the patient's case, the physician found that the patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life.

of the mean. With this assumption, the patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life.

difference being the only one. The patient had been exposed to a large amount of radiation during the last few days of his life. The patient had been exposed to a large amount of radiation during the last few days of his life.

In order to evaluate whether significant differences existed in frequency usage of words between the two groups, it was necessary to use the data of actual frequency use as well as the number of students using the words. The data for each group were converted into percentages, and then compared for differences. Formulas used were based on Guilford's statistical treatment of differences between proportions, frequencies, and percentages.²²

In determining whether significant differences existed between both groups in their initial mastery of spelling words studied, weekly test scores were utilized. The mean mastery score of each group was found as well as the standard deviation and standard error of the mean. These scores were then compared for significance by the "t" test. In order to view each week's results separately, this operation was performed four times. The post-tests for evaluation of retention of spelling mastery produced raw test scores. The mean score of each group was determined and compared for significance by the "t" test.

In addition to analyzing the data for differences between groups, the extent of relationship within each group between the pre-test data and the post-test data was determined. A rank-order correlation was secured between the pre-test and the four-week post-test as well as between the pre-test and the eight-week post-test.

²² J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, 1956), pp. 191-193.

The nature of the data used in this statistical interpretation mainly involved test scores which were considered as continuous data due to their divisible nature. However, the original frequency counts were considered as discrete data because of their quality of either total presence or total absence. The confidence level of significance for this study has been determined at the one per cent level, with the possibility of Type II error present.

IX. ORGANIZATION OF REMAINDER OF STUDY

A review of the literature is presented in Chapter II. The analysis of the data obtained as a result of the study is discussed in Chapter III. The final chapter contains a summary, conclusions, and speculations.

The purpose of the data used in this study was to determine the effect of the treatment on the response of the subjects.

Results of the study showed that the treatment had a significant effect on the response of the subjects.

It was found that the treatment had a significant effect on the response of the subjects.

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It was found that the treatment had a significant effect on the response of the subjects.

IV. ORGANIZATION OF THE STUDY

A review of the literature is given in Chapter II.

The analysis of the data obtained as a result of the study is given in Chapter III.

The results of the study are discussed in Chapter IV.

Conclusions and suggestions are given in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

I. EARLY HISTORY OF SPELLING IN AMERICAN EDUCATION

In order to realize the rapid progress spelling programs have been making of late, it is necessary to delve into the history of the American elementary school curriculum and to see the position spelling had held for so many years.

Elementary education in the colonial period was a relatively simple matter. Instruction included reading and writing of the vernacular tongue, arithmetic, and the rudiments of religious faith, along with some attempts at the shaping of manners and morals along the lines of the common virtues.¹ The "dame school" and the separate schools for reading and writing were the organizational patterns followed by many early schools. As the elementary schools became more formalized in the eighteenth century, the quantity and quality of teaching improved over the rudimentary and informal methods of the seventeenth century.

A description of an early eighteenth-century Pennsylvania elementary school spelling program has been provided by Christopher

¹R. Freeman Butts and Lawrence Cremin, A History of Education in American Culture (New York: Henry Holt and Company, 1953), p. 118.

REVIEW OF THE LITERATURE

I. EARLY HISTORY OF THE ELEMENTARY SCHOOL SPELLING PROGRAM

In order to realize the significance of the present study, it is necessary to review the history of the American elementary school curriculum and to see the position spelling has held for as long a time. Elementary education in the United States has been a comparatively simple matter. Instruction has been given in the reading of the vernacular, the history, the geography, and the principles of religion, along with some elements of the science of mathematics and morals along with the study of the natural sciences. "The school" and the separate schools for boys and girls were the organizations responsible for the education of the child. As the elementary schools became more numerous in the nineteenth century, the quantity and quality of teaching improved over the rudimentary and informal methods of the nineteenth century.

A description of the early history of the elementary school spelling program has been given by the following authors:

¹ E. Freeman Smith and Lawrence Smith, *The History of the Elementary School Spelling Program* (New York: Holt and Company, 1917), p. 13.

Dock, who kept a diary describing his teaching experiences.

The smallest children began with spelling and were put in the spelling class. Spelling and pronunciation of words were practiced in groups so that the slow learner would profit from the oral work of the others. When the beginners had learned to spell and to read, they were advanced to the Testament class where they worked further on reading the Bible, newspapers, and on arithmetic.²

Another method of teaching spelling was to have the children come up to the teacher one by one. At this time the child was expected to exercise his basic manners prior to his actual lesson. Then the teacher would place the spelling book before the child, and she would point to each letter and ask the student to name it. Basically, though, spelling was considered as a part of the reading program.³

One of the most predominantly used texts was the New England Primer. This book appeared in 1690 and was used widely for more than a century. Also used were Dillworth's New Guide to the English Tongue and the Bible itself.⁴ Many of the teaching methods involved rote and imitation exercises.

It was not until the late eighteenth century that spelling appeared as an independent subject apart from reading. This movement to separate spelling into a place of its own was stimulated

²Martin Brumbaugh, The Life and Works of Christopher Dock (Philadelphia: Lippincott, 1908), p. 47.

³Edgar W. Knight, Education in the United States (New York: Ginn and Company, 1951), p. 421.

⁴Lester Crow and Alice Crow, Introduction to Education (New York: American Book Company, 1950), p. 7.

book, who kept a diary describing his teaching experiences.

The manual children began with spelling and were put in the spelling class. Spelling and pronunciation of words were practiced in groups so that the slow learners would profit from the oral work of the others. When the learners had learned to spell and to read, they were advanced to the Testament class where they worked further on reading the Bible, newspaper, and on arithmetic.²

Another method of teaching spelling was to have the children come up to the teacher one by one. At this time the child was expected to recite his basic sentence prior to his actual lesson. Then the teacher would place the spelling book before the child, and she would point to each letter and ask the student to name it. Eventually, though, spelling was considered as a part of the reading program.³

One of the most predominantly used texts was the New England Primer. This book appeared in 1690 and was used widely for more than a century. Also used were Willis's New Guide to the English Tongue and the Bible Lesson.⁴ Many of the teaching methods involved rote and imitation exercises.

It was not until the late eighteenth century that spelling appeared as an independent subject apart from reading. This move-
ment to separate spelling into a place of its own was stimulated

² Martin Brundage, The Bible and Works of Christopher Dock (Philadelphia: Lippincott, 1908), p. 61.

³ Edgar W. Butler, Education in the United States (New York: Ginn and Company, 1911), p. 221.

⁴ James Crow and Alice Crow, Instruction in the English Language (New York: American Book Company, 1910), p. 1.

by the publication in 1782 of Noah Webster's First Part of a Grammatical Institute of the English Language, or, as it is more commonly referred to, "the blue-back speller." With the appearance of the "blue-back speller," spelling suddenly became a fad, and the spelling bee became a popular school practice. This book was usually the first book put into the hands of a child, and often it was the only book studied by many children. The reading lessons were intended to combine with familiar objects, useful truths, and practical principles. A moral catechism on humility, revenge, pride, honesty, industry, and sobriety was utilized in the short stories.⁵

Another widely used speller was Hazen's Symbolical Speller and Definer. The purpose of the text was to supplant certain spellers in which difficult words occurred before the pupils could acquire sufficient knowledge of letters to read them with ease. This book utilized pictorial representations to connect pictures and rhymes of the object represented by words. Accordingly, in this method, sounds of letters and forms of the word were the chief object of recollection.⁶

By the mid-nineteenth century, the growth of cities fostered a type of centralization which meant a change in the school organization from the one-room type to a graded structure. This change had much to do with changing methods and materials used in teaching many of the elementary subjects.

⁵Knight, op. cit., p. 425.

⁶Ibid., p. 438.

by the publication in 1932 of Washburn's First Steps in
Grammar, Journal of the English Language, 1932, 1, 1, 1.
commonly referred to, the first-step method.
of the "first-step method", Journal of the English Language, 1932, 1, 1, 1.
the spelling has become a problem and method.
was usually the first step, Journal of the English Language, 1932, 1, 1, 1.
often it was the only step, Journal of the English Language, 1932, 1, 1, 1.
lessons were intended to contain all the material possible, Journal of the English Language, 1932, 1, 1, 1.
civility, and practical grammar, Journal of the English Language, 1932, 1, 1, 1.
revenge, pride, honesty, industry, and other virtues, Journal of the English Language, 1932, 1, 1, 1.
the short method, Journal of the English Language, 1932, 1, 1, 1.

Another widely used method was the "first-step method", Journal of the English Language, 1932, 1, 1, 1.
and method. The purpose of the first step is to teach the student to write the first step, Journal of the English Language, 1932, 1, 1, 1.
appears in which difficult words are used in the first step, Journal of the English Language, 1932, 1, 1, 1.
acquire difficult words in the first step, Journal of the English Language, 1932, 1, 1, 1.
This book utilized pictorial representations to teach the first step, Journal of the English Language, 1932, 1, 1, 1.
and rhymes of the object represented by the rhymes, Journal of the English Language, 1932, 1, 1, 1.
this method, rhymes of the object represented by the rhymes, Journal of the English Language, 1932, 1, 1, 1.
object of recollection, Journal of the English Language, 1932, 1, 1, 1.

By the mid-nineteenth century, the method of teaching the first step, Journal of the English Language, 1932, 1, 1, 1.
a type of contraction which was used in the first step, Journal of the English Language, 1932, 1, 1, 1.
ration from the one-step type to a two-step type, Journal of the English Language, 1932, 1, 1, 1.
much to do with changing method and method, Journal of the English Language, 1932, 1, 1, 1.
of the elementary subject, Journal of the English Language, 1932, 1, 1, 1.

The influx of European educational philosophy after 1860 also created atmosphere for change. The ideas of Pestalozzi concerning sense impression as the absolute foundation of all knowledge were quite a change from the "old ideas" held by his contemporaries. Pestalozzi also believed that cooperation and sympathy would achieve discipline far more rapidly than physical punishment.⁷

Froebel's concept of early childhood education and group activity as a natural means of expression had much to do with the disintegration of the traditional rigidity and formality of school atmosphere. As the century progressed, textbooks noted significant context changes toward a distinctive nationalistic sentiment. Also, economic individualism and the values of a free capitalistic economy permeated the readers as well as other forms of texts.⁸ From the spelling bee to the report card, competition was the dominant theme of the classroom. Another great influence upon the educational field after 1860 was Johann Frederick Herbart with his philosophy of associationism and interest patterns which became known as the five formal steps of teaching and learning.⁹

The concept of a child-centered education began to grow out of some of the basic ideas of these philosophers.¹⁰ The growth of

⁷James Monroe Hughes, Education in America (Evanston, Illinois: Row, Peterson and Company, 1960), p. 172.

⁸Butts and Cremin, op. cit., p. 274.

⁹Charles DeGarmo, Herbart and the Herbartians (New York: Scribner, 1895).

¹⁰R. Freeman Butts, A Cultural History of Education (New York: McGraw-Hill Book Company, Inc., 1947), pp. 521-525.

The influx of European immigrants into the United States also created a demand for a new type of literature. The demand was for a literature that was not only entertaining but also educational. The literature of the time was largely in the form of novels and stories. These were often written by authors who had been educated in Europe. They brought with them a knowledge of the latest literary trends and a sense of the importance of literature in a civilized society. The literature of the time was also characterized by a strong sense of social responsibility. The authors of the time were often concerned with the problems of the poor and the oppressed. They wrote about the conditions of the working class and the struggles of the oppressed. They also wrote about the importance of education and the role of the individual in society. The literature of the time was a reflection of the social and cultural conditions of the time. It was a literature that was both entertaining and educational. It was a literature that was both a product of its time and a reflection of its time.

1. James M. Smith, *The American Novel*, (New York: The McGraw-Hill Book Company, 1908), p. 12.

2. Smith and Green, *The American Novel*, (New York: The McGraw-Hill Book Company, 1908), p. 12.

3. Charles Johnson, *The American Novel*, (New York: The McGraw-Hill Book Company, 1908), p. 12.

4. E. W. Brown, *The American Novel*, (New York: The McGraw-Hill Book Company, 1908), p. 12.

educational psychology opened the doors for many new ideas and attitudes. Virtually every subject in the school curriculum was examined, analyzed, and tested in order to find satisfactory methods of teaching these subjects.

The results upon content areas in curriculum can be noted. Reading tended to move away from the rote memorization toward concern with understanding. Textbooks were written in a manner which would be interesting as well as comprehensible to children. Arithmetic texts developed a greater concern for practical problems and principles and less for mental discipline. Despite these changes in other subjects, it was not uncommon to find spelling books consisting of nothing more than a list of words with reading passages discussing things and events totally outside a child's experiences and comprehension.¹¹

II. EARLY TWENTIETH-CENTURY CHANGE

Around the turn of the century, educational experimentation was stimulated in many laboratory schools and individual school systems. Parker introduced many Pestalozzian methods into the Quincy, Massachusetts, schools, and functionalism became an important criterion in the schools there.¹² Such aspects of functionalism were noted in Pestalozzi's emphasis upon proceeding from the particular to the general, and from the concrete to the abstract.

¹¹Butts and Cremin, op. cit., p. 434.

¹²Butts, op. cit., pp. 435-437.

In the laboratory school at the University of Chicago, John Dewey began to formulate his ideas of an activity program. In addition to experimentation in theory and practice, significant developments arose in the field of testing. From the work of Cattell, Binet, Simon, Terman, and Goddard, to mention a few pioneers in this field, the intelligence testing movement made rapid headway in the United States.¹³ From this movement, men such as Thorndike and Judd began to develop schemes for measurement, and quantitative investigations were made into every phase of the school curriculum. Achievement tests were developed for spelling, handwriting, arithmetic, and composition. By the end of World War I, the mass testing movement had permeated every aspect of education. Such evaluative attempts made educators aware of the deficiencies and needs of many subjects in the school curriculum.

It was through this mass overhauling of curriculum that educational researchers began to take note of the spelling problem. One of the first factors investigated was the relationship between time spent in teaching spelling and efficiency. Rice showed that achievement in spelling by 30,000 children was not in direct proportion to the amount of time spent studying the subject.¹⁴

¹³ Anne Anastasi, Psychological Testing (New York: The Macmillan Company, 1960), p. 10.

¹⁴ Joseph Rice, "The Futility of the Spelling Grind," Forum, 23:163-172, 409-419, 1897.

In the laboratory school at the University of Chicago, James

Dewey began to formulate the theory of an educational process.

In addition to experimentation in theory and practice, Dewey's

developments arose in the field of practice. From the work of

Binet, Simon, Thorndike, and Loeb, the scientific method was

applied to the study of the child. The scientific method was

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applied to the study of the child. The scientific method was

¹² Anna Анастази, *Psychology and the Child*, New York: The Macmillan Company, 1908, p. 10.

¹³ Joseph Kline, *The Psychology of the Child*, New York: The Macmillan Company, 1908, p. 10.

Another study conducted by Nifenecker, concerning the relationship between time and efficiency, revealed that all degrees of proficiency were observed for all amounts of time.¹⁵ Horn conducted a study which showed that much time spent on spelling was wasted.¹⁶ Schools which provided large time allotments for spelling lessons were accomplishing no more than those spending little time on formal study. Results of such studies encouraged educators to reduce spelling time allotments from daily one-hour periods to more realistic fifteen-minute sessions per day.

Along with the recognition of an inconsistency of the time spent on spelling with spelling accomplishments, educators began to be concerned with the words which children were expected to master. Word lists used in Webster's "blue-back speller" had dominated the spelling instruction for the previous century. These word lists were difficult words selected primarily for practice in word pronunciation as preparation for reading.¹⁷ Such exercises required the student to memorize lists of words and to repeat the correct letter sequence of the words orally. The relationship that such study had with its usefulness in written work was doubtful, since the unusual words used and studied bore little relation to children's needs in writing.

¹⁵A.E. Nifenecker, Measurements in Spelling (New York: New York Public Schools, 1918).

¹⁶Ernest Horn, "Spelling," Encyclopedia of Educational Research (New York: The Macmillan Company, 1950), pp. 1246-1264.

¹⁷Gertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company, 1955), p. 8.

Another study conducted by Hirschman and Hirschman (1959) found that

between the two studies, Hirschman and Hirschman (1959) found that

were observed for all subjects of the study. The results of the study

showed that each time spent on spelling was recorded. The results of the

provided large time differences for spelling. The results of the study

the no more than three spelling errors per word. The results of the study

of each student's concentration on spelling. The results of the study

were from daily one-hour periods. The results of the study

sessions per day.

Along with the recognition of the importance of the study

spent on spelling with spelling accuracy. The results of the study

be concerned with the study which children were expected to write.

Word lists used in Hirschman's "Word-and-sound" study and Hirschman's

spelling instruction for the "Word-and-sound" study. The results of the

were different: words spelled correctly. The results of the study

instruction as preparation for writing. The results of the study

the student to generate lists of words and to repeat the content

letter sequence of the words. The results of the study

study had with its usefulness in writing. The results of the study

the unusual words used and spelled. The results of the study

needs in writing.

15. A. E. Hirschman, Memory and Cognition (New York: Holt

and Company, 1959).

16. Hirschman, Memory and Cognition (New York: Holt

and Company, 1959).

17. Spelling Instruction (New York: Holt and Company, 1959).

The use of such difficult word lists was based upon the theory that formal discipline for learning hard words strengthened and developed one's power to spell. This idea of providing hard tasks in order to develop mental character was a popular pre-1900 concept. However, when this theory was finally exploded, a cold-storage theory was substituted to justify hard word lists. According to this belief, it was necessary to present adult words in the word lists as a preparation for the eventual usage by the child when he would grow into adulthood and would find need for their use.

III. DEVELOPMENT OF BASIC WORD LISTS

With the desire to improve and reorganize courses of study, spelling lists began to attract the further attention of educational research workers. Not only were they faced with the problems of choosing what words should be taught, but a method of selecting such words for more appropriate word lists was also needed.

Most educators by this time had agreed upon the major purposes of the teaching of spelling, that is, to enable children and adults to spell correctly the words which they employ in their written discourse. To determine what these words might be, it was necessary to tabulate the frequency of occurrence of each word, and thus determine the relative importance of the word. It was at this point that two distinct methods of deriving word lists arose.

The two basic philosophies behind how to select words for a frequency count have been discussed by Breed. He called one

the "psychological school." This group derived its frequency counts solely from the writings of children. The opposite method Breed called the "sociological school," which based its frequency counts entirely from the writings of adults.¹⁸

Such researchers as Jones, Bauer, Tidyman, McKee, Dolch, and Fitzgerald compiled word lists based upon the writings of children. Ayers, Burke, Anderson, Houser, and Horn have been prominent in developing word lists based on adult writings.¹⁹

Attempts to combine many of these words into a compilation had been done by Ayers as early as 1915.²⁰ Until 1930, the most extensive compilation was probably that done by Horn.²¹ This list is known as the "Commonwealth List." Not long after Horn released his list, he developed a compilation of over 10,000 words, which has become widely used in spelling materials.²² Breed combined the studies of children's words with those of adult usage. One of the most extensive lists of this kind, however, was assembled by Coleman.²³ A more recent compilation by Rinsland emphasized the need

¹⁸Fredrick Breed, How To Teach Spelling (Dansville, New York: F. A. Owens Publishing Company, 1930), p. 6.

¹⁹Thomas Foran, The Psychology and Teaching of Spelling (Washington: The Catholic Education Press, 1934), pp. 13-14.

²⁰Leonard Ayers, A Measurement Scale for Ability in Spelling (New York: The Russell Sage Foundation, 1915), p. 58.

²¹Ernest Horn, "The 3,000 Commonest Words Used in Adult Writing," The Fourth Yearbook of the Department of Superintendence of the NEA (Washington: Government Printing Office, 1926), pp. 146-172.

²²Horn, "A Basic Writing Vocabulary," Monograph in Education, No. 4 (Iowa City: University of Iowa, 1926), p. 225.

²³W. H. Coleman, "A Critique of the Spelling Vocabulary Investigations," Colorado State Teachers College (Greeley: Colorado State Teachers College, 1931), p. 119.

the "psychological school." This group derived its name from the fact that its members were primarily concerned with the study of the child. The opposite school, called the "ecological school," which based its primary concern entirely on the study of the adult.

Such researchers as Jones, Harker, Harker, Harker, and Harker, and Fitzgerald compiled lists based upon the writings of children. Ayers, Harker, Anderson, Harker, and Harker have been prominent in developing word lists based on adult writings. Attempts to compile many of these words into a compilation had been done by Ayers as early as 1911. In 1930, the most extensive compilation was probably that done by Harker. This list is known as the "Commonwealth List." For long after Harker's list, his list, he developed a compilation of over 10,000 words, which has become widely used in spelling materials. Harker's studies of children's words with those of adult words. One of the most extensive lists of this kind, however, was compiled by Harker. A more recent compilation by Harker appeared in 1930.

¹⁸ Frederick Street, New York City, New York.
F. A. Owen Publishing Company, 1930, p. 1.

¹⁹ Thomas Fox, The Psychology and Reading of the Child (Washington: The Catholic Education Press, 1934), pp. 13-14.

²⁰ Harker, A Measurement Scale for Spelling in English (New York: The Macmillan Company, 1911), p. 13.

²¹ Harker, The 1000 Commonest Words Used in Adult Writing, The Fourth Yearbook of the Department of Psychological Studies of the WPA (Washington: Government Printing Office, 1934), pp. 13-14.

²² Harker, A Basic Spelling Vocabulary, Published in Education No. 4 (New York: University of Iowa, 1938), p. 13.

²³ E. H. Coleman, A Dictionary of the Spelling Vocabulary, Published in Education No. 4 (New York: University of Iowa, 1938), p. 13.

for a basic core of words for children beginning to write.²⁴ In his concern for determining word lists from frequency counts in writing, Foran suggested that educational researchers consider the following in choosing a method for selection:

It is necessary to teach them the words which they as children use to express their thoughts in written work. Many of the words which belong to their vocabulary may disappear from their writings as they become older and as their interests change. But training in composition assumes a knowledge of the means of expression, and undue emphasis on adult's writing needs may interfere seriously with the preparation of children for adult life.²⁵

IV. CHANGES IN THE TEACHING OF SPELLING

In the transition away from rote memory in spelling, attention has been devoted to new approaches and methods. Fitzgerald believed that, in motivating a child to want to spell correctly, we must equip him with a practical approach which is meaningful and productive.²⁶ The need for an individual, systematic procedure for learning to spell a word has been emphasized. Most researchers agree upon variations of the following: meaning and pronunciation, imagery, recall, writing the word, and final mastery.²⁷

²⁴Henry D. Rinsland, A Basic Vocabulary of Elementary School Children (New York: The Macmillan Company, 1945).

²⁵Foran, op. cit., p. 25.

²⁶James A. Fitzgerald, Teaching of Spelling (Milwaukee: The Bruce Publishing Company, 1951), p. 30.

²⁷Fitzgerald, "Learning to Spell," A Research Report (New York: Bureau of Elementary Curriculum, New York City Department of Education, 1960), p. 27.

for a basic core of words for children beginning to write.²⁴ The
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It is necessary to know how the words which they use
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IV. CHANGES IN THE TEACHING OF WRITING

In the transition away from rote memory to spelling, attention
 has been devoted to new approaches and methods. It is believed
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 equip him with a practical approach which is meaningful and product-
 The need for an individual, systematic procedure for learning to
 spell a word has been emphasized. This procedure is known as the
 steps of the following: search and pronunciation, analysis, recall,
 writing the word, and final mastery.²⁶

²⁴ Henry D. Richards, A Basic Vocabulary of Elementary School
Children (New York: The National Council, 1925).

²⁵ Foran, op. cit., p. 27.

²⁶ James A. Thompson, Teaching of Spelling (Chicago: The
 Bruce Publishing Company, 1925), p. 31.

²⁷ Pictorial, Spelling as Spelling, a General Report
 (New York: Bureau of Elementary Curriculum, New York City
 Department of Education, 1926), p. 21.

With the initial guidance of a teacher, such a method of study allows a student the means of independent direction to follow when studying. As a student sees that the application of such a method has practical and immediate results, renewed interest and enthusiasm may be injected into spelling emphasis. Such a study skill is necessary for children if they are to master successfully the spelling of words which are important to them.

In an attempt to maintain continuity and consistency in a spelling program, educators have derived systematic plans of study which teachers may follow in a classroom. One approach to this is known as the teach-study-test method.²⁸ By this method, the entire class is taught one standard list of words each week. Initial instruction allows time for word-meaning study and pronunciation. Instruction is followed by use in writing exercises and periodic check-tests to determine progress. Difficulties of the individuals may be studied after trial tests, and a final test at the end of the week is the evaluation of mastery.

Another approach to the teaching of spelling is known as the test-study method.²⁹ This method seeks to save an individual's time by making it unnecessary for him to study words that he already knows. Such words are eliminated at the beginning of the week by a pre-test of the week's word list. The student then concentrates on

²⁸Edward W. Dolch, Better Spelling (Chicago, Illinois: The Garrard Press, 1942), p. 174.

²⁹Ibid., p. 180.

With the initial guide of a teacher, such a method of study allows a student the means of independent direction to follow when studying. As a student sees that the application of such a method has practical and immediate results, renewed interest and enthusiasm may be expected into spelling exercises. Such a study skill is necessary for children as they are to master knowledge fully the spelling of words which are important to them.

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the test-study method.²⁹ This method seems to save an individual's time by making it unnecessary for him to study words that he already knows. Such words are eliminated at the beginning of the weekly pre-test of the week's word list. The student then concentrates on

²⁸ Edward W. Dolch, *Spelling* (Chicago: Rand McNally, 1942), p. 174.

²⁹ *Ibid.*, p. 183.

the specific word list which has been determined by errors on the pre-test. Studying individual word lists can be accomplished by students working together in pairs. Students test each other, and positive results of tests eliminate known words from a child's study list. Such a group approach may result in an effort that is directed toward individualized spelling.

One of the first school-wide programs for individualized spelling was developed in the Winnetka, Illinois, public schools in 1925.³⁰ In this plan, review tests were administered at the beginning of each semester. Such tests consisted of all the words studied the previous semester not crossed off as already known. Partners dictated to each other during this testing process, and words correctly spelled were not included later in the tests for mastery. Students continued to work in pairs. Each studied his own word list, and partners aided in dictation for testing purposes. Students also included previously misspelled words in written work. The teacher circulated among the groups overseeing the work. After a student had mastered all the words in the speller for that term, he was released from spelling period to devote effort to other skills.

An adaptation of this plan was outlined by Salisbury of the Los Angeles schools.³¹ Salisbury's method does not rely on the use

³⁰Carleton Washburne, "A Spelling Curriculum Based on Research," The Elementary School Journal, 23:751-762, 1923.

³¹Ethel Salisbury, "The Weekly Spelling List," Elementary English, 25:208-216, 1948.

the specific word list which has been determined by error on the pre-test. Studying individual word lists can be accomplished by students working together in pairs. Students read each other's positive results of tests and make a record of each word. Such a group approach may result in an effort to be directed toward individualized spelling.

One of the first school-wide programs for individualized spelling was developed in the University of Illinois, Urbana-Champaign in 1935.³⁰ In this plan, revised tests were administered at the beginning of each semester. Each class consisted of all the words studied the previous semester not covered on the pre-test. Teachers dictated to each other during this testing period, and words correctly spelled were not included later in the tests for mastery. Students continued to work in pairs, each spelling his own word list, and partners acted in alternation for spelling purposes. Students also included previously misspelled words in written work. The teacher circulated among the groups overseeing the work. When a student had mastered all the words in the spelling list for that term, he was released from spelling practice to devote effort to other subjects. An adaptation of this plan was utilized by an observer at the Los Angeles schools.³¹ Spelling's method does not rely on the use

³⁰Carlson, Washington, "A Spelling Overhaul as Based on Research," The Elementary School Journal, 35:321-322, 1935.

³¹Ethel Ballinger, "The Weekly Spelling List," English, 22:208-210, 1943.

of pre-tests to determine word lists, but rather concentrates on selection of words on which a child needs to practice. Such words may result from errors in written work as well as words which a child thinks he needs to learn to spell. Effort is directed toward development of skills to recognize such words. Recognized word lists are referred to in determining the practicality for the inclusion of words selected for study. The success of this type of program depends upon the teacher's skill in organizing work programs, interesting the pupils in the method, and training them for it.³²

An adaptation of the Salisbury Plan was used in the New York City schools.³³ After a survey test was used to locate words to study, pupils developed word lists from misspellings in written work. Students worked in pairs. After a student could correctly master the spelling of a word in his list three weeks in succession, it was then checked off as learned.

It is interesting to note that, although educators today are very conscious of individual differences in children, little of this theory has been applied to methods in spelling instruction, and what has been applied has been very slow in coming about.

³² Hildreth, op. cit., p. 185.

³³ A Manual to Guide Experimentation with Spelling Lists, A, B, C. (New York: Division of Curriculum Development, Department of Education, 1951).

of pre-tests to determine word lists, but not of comparison of
 selection of words on which a child needs to practice. Such words
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 type of program depends upon the teacher's skill in organizing
 work programs, interesting in pupils in the method, and learning
 them for it.³²

An adaptation of the Baltimore plan was used in the New York
 City schools.³³ After a survey had been made to locate words to
 study, pupils developed word lists from newspapers in the
 work. Students worked in pairs. After a student found correctly
 master the spelling of a word in the list, the teacher in succession
 it was then checked off as learned.
 It is interesting to note that, although educators today
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 of this theory has been applied to methods in spelling instruction,
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³² Blinn, op. cit., p. 122.

³³ A Manual to Guide Spelling Instruction with Spelling Lists,
 A. B. C. (New York: Division of Curriculum Development, Depart-
 ment of Education, 1931).

VI. SPELLING IN THE LANGUAGE ARTS

If words are used as spelling is learned and the meanings are understood, then learning may be permanent. Useful words should be written correctly in real situations, both in and out of school. Breed believed that:

Knowledge of the meanings of a word seems to lead to its use, and when incorrectly written, its correction.³⁴

It is clear that a child should learn to spell words he needs in writing. Tidyman pointed out that spelling has no significance apart from the use of words in sentences.³⁵

Integration of the language arts, that is, oral usage, reading, writing, and spelling, must be properly related in order to develop interesting and challenging situations. Seegers concluded that children should be given abundant opportunities for and practice in transmission of their thoughts through both oral and written language.³⁶ This emphasis should be brought into focus in our language arts as an objective and made evident in curriculum practices. Some of the proponents of a unified language arts program emphasize such points for consideration.

³⁴ Breed, op. cit., p. 70.

³⁵ W. F. Tidyman, The Teaching of Spelling (New York: World Book Company, 1919), p. 47.

³⁶ J. Conrad Seegers, "Language in Relation to Experience, Thinking, and Learning," Teaching Language in the Elementary School, Forty-third Yearbook of the National Society for the Study of Education, Part II (Chicago: University of Chicago, 1944), p. 50.

VI. SPELLING IN THE LANGUAGE ARTS

If words are used as spelling in language arts and the sciences are understood, then learning may be permanent. The first words should be written correctly in each lesson, both in and out of school. Good habits then:

Knowledge of the meanings of a word leads to its use, and when incorrectly written, the correction.

It is clear that a child should learn to spell words as words in writing. Teachers pointed out that spelling has no significance apart from the use of words in language.

Integration of the language arts, that is, oral speech, reading, writing, and spelling, must be properly related in order to develop interesting and challenging situations. Teachers concluded that children should be given abundant opportunities for oral expression in examination of their thoughts through oral and written language.³⁴ This emphasis should be placed on the use of language as an objective and made evident in curriculum practices. Some of the phenomena of a written language are given emphasis such points for consideration.

³⁴ Bress, op. cit., p. 73.

³⁵ W. F. Tidyman, *The Teaching of English* (New York: Holt Book Company, 1919), p. 41.

³⁶ L. Conrad Seeger, "Language in Relation to Thinking, and Learning," *Teaching Language in the Elementary School*, Forty-third Yearbook of the National Society for the Study of Education, Part II (Chicago: University of Chicago, 1934), p. 69.

Eichert suggested that a word must be in a child's listening, speaking, and reading vocabularies before it can become a functional part of his writing vocabulary.³⁷ She suggested that opportunities be provided for the child to use such words frequently enough so that he will retain them and make them an integral part of his spelling vocabulary. She felt that a knowledge of vocabulary is a more significant determinant of spelling success than is intelligence in elementary grades.³⁸

In addition to oral opportunities, it has been suggested that numerous writing opportunities be provided for students which would be unified into the language arts program. Richmond suggested that writing opportunities be provided in a natural setting. He also proposed that spelling instruction be on a grouped basis with the instructional level synchronized with reading level. In this way, he believed that the spelling words can be presented in a contextual setting as a reading lesson, with skill development exercises completed in the same way. Spelling ability is one of a constellation of language arts abilities, he stated, that tend to reinforce each other.³⁹

³⁷ Magdalen Eichert, "Let's Spell," Grade Teacher, 77:68+, September, 1959.

³⁸ Ibid., p. 69.

³⁹ Arnie Richmond, "These Methods Were Used," Journal of Experimental Education, 29:3-21, September, 1960.

Richard suggested that a word which is not a child's word, speaking, and reading vocabulary before it is a child's word, part of his writing vocabulary. 37 The suggestion that a word be provided for the child to use such words there might be that he will retain them and make them an integral part of his spelling vocabulary. The fact that a knowledge of words is a more significant determinant of spelling success than is intelligence in elementary grades. 38

In addition to oral opportunities, it has been suggested that numerous writing opportunities be provided for students who would be unified into the language arts program. Richmond suggested that writing opportunities be provided in a natural setting. He also proposed that spelling instruction be on a group basis with the instructional level synchronized with reading level. In this way, he believed that the spelling words can be presented in a contextual setting as a reading lesson, with skill development exercises completed in the same way. Spelling ability is one of a constellation of language arts abilities, he stated, that tend to mature with other. 39

37 Margaret Richard, "Let's Spell," *Grade Teacher*, 1959, September, 1959.

38 *Ibid.*, p. 60.

39 Arnie Richmond, "These Methods Work Best," *Journal of Experimental Education*, 29:3-21, September, 1959.

Today, educators are becoming more conscious of the value of the educational opportunities which include listening as a part of language arts exercises. Regarding listening and sound, Bradford believed that there is a significant relationship between speech sounds and their spelling symbols which suggests more emphasis in that direction for methods of teaching spelling.⁴⁰ Such a study was conducted by Russell entitled "Auditory Abilities and Achievement in Spelling in the Primary Grades."⁴¹ Russell found that some auditory abilities are significantly related to spelling ability; however, these involved word parts more than the whole word. He also found that listening to paragraphs with comprehension was not closely related to spelling ability. He suggested that his study indicated a greater need for complete exploration of different kinds of phonetic and auditory abilities and their relationship to spelling achievement.

Russell also suggested that:

Knowing when similar sounding syllables are alike and different and knowing the various ways a syllable may be spelled once it has been recognized, makes the apparently simple process of spelling more complex than it first seems.⁴²

Spelling is not an elementary school concern alone. Stone advocated that high schools and colleges involve themselves more

⁴⁰ Frank Bradford, "Afraid To Write? Or Afraid To Spell?" American School Board Journal, 141:27+, December, 1960.

⁴¹ David H. Russell, "Auditory Abilities and Achievement in Spelling in the Primary Grades," Journal of Educational Psychology, 49:315-319, December, 1958.

⁴² Ibid., p. 318.

Today, educators are becoming more conscious of the value of the educational opportunities which language provides as a part of language arts education. Regarding language and sound, teachers believed that there is a significant relationship between the two and their spelling symbols which suggests that perhaps in that direction for methods of teaching spelling. Such a study was conducted by Russell entitled "Auditory Ability and Achievement in Spelling in the Primary Grades." Russell found that auditory ability is significantly related to spelling ability; however, those involved word parts more than the whole word. He also found that listening to paragraphs with comprehension was not directly related to spelling ability. He suggested that his study indicated a greater need for complete exploration of different kinds of practice and auditory ability and their relationship to spelling achievement.

Russell also suggested that:

Knowing when a letter sounds different and when it does not is a different and knowing the various ways a letter may be spelled once it has been recognized, makes the spelling process of spelling more complex than it first seems.⁴⁰

Spelling is not an elementary school concern alone. It is advocated that high schools and colleges involve themselves in

⁴⁰ Frank Bradford, "A Study of the Relation of Auditory Ability to Spelling in the Primary Grades," American School Board Journal, 1937, December, 19-20.

⁴¹ David H. Russell, "Auditory Ability and Achievement in Spelling in the Primary Grades," Journal of Educational Research, 1938, 49:315-319, December.

⁴² Ibid., p. 316.

with the basic improvement of spelling deficiency in their students.⁴³ He felt that schools should use both formal spelling lessons as well as informal spelling procedures as ways to improve the spelling proficiency of their students. He suggested that:

Spelling of basic words and specialized terms in those courses must be attended to simultaneously with basic instruction of subject matter.⁴⁴

Advantages of a subject-matter teacher's devoting time to spelling can result in the development of a student's spelling consciousness, as well as providing for practice in basic spelling. Allowing time for spelling practice also focuses attention upon course terminology and aids some students in reviewing course content. Inasmuch as written expression is basically a part of every subject, there is no reason why most teachers cannot justify making spelling an integral part of their course work and including provisions for some attention to it, no matter what the grade level.

Bardon brought to our attention the fact that youth has no monopoly on spelling deficiency. It is an adult problem as well, with teachers included. He questioned why it is not possible to have our good teachers be good spellers as well. Certainly it is important for the "example setters" to set that example by a conscious effort to overcome any spelling deficiencies which they might have.⁴⁵

⁴³Vernon W. Stone, "Every Course Is A Spelling Course," The Balance Sheet, 42:60+, October, 1960.

⁴⁴Ibid., p. 85.

⁴⁵Kenneth Barden, "But--Can They Spell?" The Clearing House, 35:406, March, 1961.

with the basic improvement of spelling handwriting in their handwriting. He felt that schools should not only teach spelling but also as well as informal spelling procedures as well as to improve the spelling proficiency of their students. He suggested that:

Spelling of words and specialized terms in the course must be related to the subject matter. Instruction of subject matter.

Advantages of a subject-matter approach to spelling can result in the development of a student's spelling consciousness, as well as providing for learning in basic spelling. Allowing time for spelling exercises also to draw attention upon course terminology and also some students' individual content. Instruction as written expression is teaching a part of every subject, there is no reason why not a subject matter approach making spelling an integral part of their entire work and teaching provisions for some attention to it, no matter what the grade level. Gordon brought to our attention the fact that some teachers monopoly on spelling handwriting. It is a small problem as well with teachers included. He questioned why it is not possible to have our good teachers do good spelling as well. Certainly it is important for the "average teacher" to get their students by a consistent effort to overcome any spelling difficulties which they may have.

⁴³Vernon W. Stone, "Spelling Course is a Spelling Course," Business Speech, 42:106, October, 1948.

⁴⁴Ibid., p. 82.

⁴⁵Kenneth Gordon, "Can They Spell? The Spelling Lesson," 35:406, March, 1961.

Since some teachers may readily see a need for improving their spelling programs, and others may be faced with the concern for maintaining an already adequate program, other problems may enter the scene. Such concern often centers around the motivational aspects of a good spelling program as well as the retention of interest.

Grant suggested that we can brighten the whole picture by being willing to be creative in our approach to the learning situation in the study of spelling. She also suggested that students be given more freedom in the selection of the number of words they are to study, be helped in determining sources for their new words, and be allowed opportunities to try out various individual study methods with more self-testing practices. Such an approach will enhance the pupil's self image, she indicated, and allow him to work to his individual maximum ability.⁴⁶

An interesting approach in team-learning has been attempted in the teaching of spelling.⁴⁷ This program allowed for students to work together in pairs, threes, and small groups. Individual students maintained their own progress records, word lists, and concentrated on their own special deficiency areas. Results of this study showed that the better students could complete a year's spelling program in a quarter of the school year. The extra time not

⁴⁶Gertrude S. Grant, ". . . with vast delight, he spells . . . " National Elementary Principal, 36:24-26, May, 1959.

⁴⁷Donald Durrell, "Team Learning," Grade Teacher, 77:20, June, 1960.

Since some teachers may wonder how to maintain the spelling program, and others may be faced with the problem of maintaining an already existing program, the following suggestions are offered. Such concepts often center around the individual aspects of a good spelling program as well as the retention of interest. Grant suggested that we can brighten the whole program by being willing to be creative in our approach to the learning situation in the study of spelling. She also suggested that students be given more freedom in the selection of the words they wish to study, be helped in determining sources for their own words, and be allowed opportunities to try out various individual study methods with more self-testing questions. Such an approach will enhance the pupil's self image, and, incidentally, allow him to work to his individual maximum ability.

An interesting approach in team-learning has been suggested in the teaching of spelling.⁴⁵ This program allowed for students to work together in pairs, triads, and small groups. Individual students maintained their own progress reports, word lists, and concentrated on their own special difficulties. Results of this study showed that the better students could complete a spelling program in a quarter of the time of the slower students.

⁴⁵Gertrude S. Wynn, "The Team Approach to Spelling," National Elementary Educational Journal, 50:2-3, May, 1942.

⁴⁶Donald Kottrell, "Team Learning," Reading Teacher, 15:10, June, 1960.

used for spelling lessons was utilized by devoting efforts to creative writing and special readings in literature, science, and social studies. However, Durrell noted that such a program was not effective for the poorer spellers, and teacher direction was needed. With such a program in progress, the teacher was allowed the time to work closer with the poorer spellers and to give them greater individual attention than would have been possible under a total class-group approach to spelling instruction.

Another study concerning the individual approach to spelling has been reported by Blake. He stated:

Spelling programs which rely solely upon group instruction for teaching of spelling inhibit optimum spelling development for many children.⁴⁸

Concerning grouping for spelling instruction, Blake felt that whenever children show evidence as a group of needing such instruction, then, by all means, it should be given them.⁴⁹ Another author stated that whatever method a teacher uses for grouping children, it should be done in such a way that allows the teacher the opportunity of seeing each child as an individual.⁵⁰

Elementary teachers have also used such procedures as the development of individual notebook-dictionaries, individual card-file techniques, and numerous investigations to adapt and adopt

⁴⁸Howard Blake, "Studying Spelling Independently," Elementary English, 37:29-32, January, 1960.

⁴⁹Ibid.

⁵⁰Harold D. Drummond, et al., "Teaching Spelling--Have You Tried These Techniques?" National Elementary Principal, 38:31-32, May, 1959.

used for spelling lessons was utilized by teaching efforts to creative writing and special reading in literature, science, and social studies. However, Durrell noted that such a program was not effective for the poorer children, and another direction was needed. With such a program in progress, the teacher was allowed the time to work closely with the poorer children and to give them greater individual attention than would have been possible under a total class-group approach to spelling instruction. Another study concerning the individual approach to spelling

has been reported by Hilder. He stated

Spelling programs which rely solely upon group instruction for teaching of spelling tend to retard spelling development for many children.⁴⁹

Concerning groups for spelling instruction, Hilder felt that whenever children were organized in a group of reading such instruction, then, by all means, it should be given. Another author stated that whatever method a teacher uses for teaching spelling, it should be done in such a way that allows the teacher the opportunity of seeing each child as an individual.⁵⁰

Elementary teachers have also used such procedures as the development of individual notebook-dictionaries, post-vocal cards, this technique, and numerous variations to meet and adapt

⁴⁹Howard Hilder, "Revisiting Spelling Instruction," Elementary English, 37:2-3, January, 1957.

⁵⁰Ibid.

⁵⁰Harold G. Brunson, et al., "Teaching Spelling--Have You Tried These Techniques?" Elementary English, 36:2-3, May, 1956.

suitable study methods. Some interesting spelling procedures have been developed for high schools and colleges, especially in the business education areas. Perkins initiated a spelling session along with his transcription classes. He believed that we must teach students how to study spelling, and thus he set aside a few minutes each week for spelling instruction.⁵¹ A transcription course has the natural motivational setting for showing students the immediate value of proficiency in spelling.

Another study concerning business courses and spelling was discussed by Dilorito.⁵² She combined the use of dictionaries and typewriters as learning tools for her students in the mastery of spelling words used in their shorthand courses. She offered help in developing study methods in spelling and dictionary usage. After a year's work, she found that her students had not only developed better pronunciation of words and correct sentence usage, but, best of all, they became better spellers.⁵³

In attempting to summarize the many motivational attempts made in high schools and colleges, Christ proposed that the following steps be considered by the students:

⁵¹Edward Perkins, "Develop Good Spellers With This Transcription Plan," Business Education World, 41:21-23, May, 1961.

⁵²Antoinette Dilorito, "Teach Spelling At the Typewriter," Business Education World, 41:23-24, May, 1961.

⁵³Ibid., p. 23.

suitable study methods. Some interesting spelling procedures have
 been developed for high schools and colleges, especially in the
 business education areas. Perkins introduced a spelling lesson
 along with his transcription class. He believed that to teach
 teach students how to study spelling, and then to test them
 few minutes each week for spelling tests. A transcription
 course has the natural motivational setting for teaching students
 the immediate value of proficiency in spelling.
 Another study concerning business courses and spelling was
 discussed by Dilworth.²¹ She compared the use of dictation
 and typewriters as learning tools for her students in the study
 of spelling words used in their shorthand courses. She found
 help in developing study methods in spelling and dictation usage.
 After a year's work, she found that her students had not only
 developed better pronunciation of words, but correct spelling words,
 but, best of all, they became better typists.
 In attempting to summarize the new motivational techniques
 made in high schools and colleges, Dilworth proposed that the
 following steps be considered by the student:

²¹ Evelyn Perkins, "Develop Good Spelling Habits with the
 Transcription Plan," Business Education World, 41:21-22, May,
 1951.

²² Antoinette Dilworth, "Teach Spelling as the Typewriter,"
Business Education World, 41:22-23, May, 1951.

1. Concede that English spelling is the result of a melting pot of languages. Thus, study its history.
2. Despite some rules, English spelling demands strong visual imagination and good memory.
3. Insist that poor spelling is the result of carelessness. Proofread!
4. Rediscover the dictionary and use it when in doubt. Explain that all professionals use it.
5. Poor spelling often results in poor class grades.
6. The world will estimate one's degree of literacy by one's spelling.⁵⁴

In summarizing much of the research and study in spelling, regardless of level, Artley's principles concerning the improvement of spelling ability seem most pertinent and appropriate.

These principles state:

1. Each child must develop at his own rate and must be differentiated in terms of rate of growth.
2. Spelling vocabulary grows out of need for expression rather than a prepared spelling list.
3. Spelling must be taught.
4. Spelling is effectively taught to the extent that learners have been made independent in spelling ability.
5. Spelling instruction is most effective when the child has a favorable attitude toward spelling, and when he has the desire to spell effectively.⁵⁵

⁵⁴ Frank L. Christ, "Motivating Your Students to Spell," The Clearing House, 35:173, November, 1960.

⁵⁵ A. Sterl Artley, "Principles Applying to the Improvement of Spelling Ability," Elementary School Journal, 49:137-148, November, 1958.

1. Conclude that English spelling is the result of a meeting of an Englishman, French, and a Latin.
2. Despite more rules, English spelling is a visual invention and good memory.
3. Invent that poor spelling is the result of careless mess, poor memory.
4. Redefine the dictionary and use it when in doubt. Explain that all professions are so.
5. Poor spelling often results in poor class standing.
6. The world will estimate one's degree of literacy by one's spelling.

In summarizing much of the research and study in spelling, regardless of level, Arden's principles concerning the importance of spelling ability seem most pertinent and appropriate. These principles are:

1. Each child must develop at his own rate and must be differentiated in terms of rate of growth.
2. Spelling vocabulary grows out of need for expression rather than a prepared spelling list.
3. Spelling must be taught.
4. Spelling is effectively taught to the extent that learners have been made independent in spelling ability.
5. Spelling instruction is most effective when the child has a favorable attitude toward spelling, and when he has the desire to spell independently.

VI. SUMMARY

Until the late nineteenth century, theories of teaching spelling underwent insignificant changes from spelling's initial development in American education. In the later part of that century, the development of many new educational ideas began to initiate changes in various aspects of the curriculum. The mass testing movement of the early twentieth century helped educators focus their attention upon curriculum deficiencies and results of new experimentation.

Research indicates that the type of words studied should be of a more practical nature as determined by frequency usage, rather than the outdated words advocated by the ever-popular "blue-back speller." Investigation into the research also indicates that similar achievement in spelling results when less time is allocated to its formal study. Such research trends created interest in the development of new word lists based on the writings of both children and adults. Formal study time was also reduced from daily hour lessons to periods of only fifteen minutes per day.

More recent developments in the area of spelling align this isolated subject to its related disciplines of the language arts. In bringing together listening, reading, writing, and spelling into a more unified language arts program, it is hoped that each skill will reinforce mastery of the other. There have also been recent attempts to bring about individualization in spelling programs. Advocates of this plan recognize the individual differences possessed by students in spelling ability, and attempt to develop specific programs suited to the interests and abilities of the individual.

CHAPTER III

ANALYSIS OF THE DATA

I. PRE-TEST

At the onset of this study, a pre-test was administered to both the experimental and control groups.¹ The test score data were used as an aid in determining the extent of differences between groups in spelling ability.

Results of the test with the experimental group show a range of 93 points. The mean score of the group is 67.08, with a standard deviation of 22.99 and a standard error of the mean of 3.94. The control group shows a range of 81 points. Mean score for the group is 68.93, with a standard deviation of 26.25 and a standard error of the mean of 4.71.

The "t" test is used to determine the extent of difference between means of both groups. The ratio obtained is .53, which is not significant at the one per cent level of confidence. The raw scores for each group are also ranked in order from the highest to the lowest score (see Table I). These data are later used to determine rank-order relationships between the pre-test and the post-test.

¹See Appendix A.

ANALYSIS OF THE DATA

1. PRE-TEST

At the onset of this study, a pre-test was administered to both the experimental and control groups. The test results were used as an aid in determining the amount of difference between groups in spelling ability.

Results of the test with the experimental group show a range of 93 points. The mean score of the group is 5.50, with a standard deviation of 12.99 and a standard error of 1.25. The control group shows a range of 87 points, with a mean score of 5.50, a standard deviation of 12.99, and a standard error of 1.25.

The "t" test is used to determine the extent of difference between means of both groups. The results obtained are 1.15, which is not significant at the one per cent level of confidence. The raw scores for each group are also ranked in order from the highest to the lowest score (see Table I). These data are used to determine rank-order relationship between the pre-test and the post-test.

TABLE I
RANK-ORDER OF SPELLING PRE-TEST
ADMINISTERED JANUARY, 1962

EXPERIMENTAL GROUP			CONTROL GROUP		
Rank	Student	Score	Rank	Student	Score
1	AC	100	1	LH	96
2	GI	96	2.5	JB	94
4	DP	94	2.5	MG	94
4	BI	94	4.5	PA	92
4	LM	94	4.5	LU	92
6.5	RN	92	7	GM	90
6.5	PE	92	7	AG	90
8	CV	90	7	LG	90
9	MN	86	9	JF	78
10	HO	84	10	DK	76
11	GB	78	12	GS	74
12.5	GN	76	12	HR	74
12.5	BE	76	12	GP	74
14.5	VR	70	14	PM	72
14.5	DM	70	16	OS	70
16	LR	68	16	BT	70
17	JF	64	16	MF	70
18	LA	58	18	BR	66
19	MO	56	19	GM	64
20	ER	52	20	RE	60
21	MC	48	21	LF	54
22	AT	42	22	HV	52
23	BD	40	23	RC	40
24.5	NA	38	24	LS	28
24.5	MA	38	25	JS	18
26	MR	32	26	AR	16
27	ED	8			

Range = 93
Mean = 67.08
SD = 22.99
SE_m = 3.94

Range = 81
Mean = 68.93
SD = 26.25
SE_m = 4.71

TABLE 1
RANK-ORDER OF SCILLING TEST
EXPERIMENTAL GROUP

EXPERIMENTAL GROUP		CONTROL GROUP	
Rank	Student	Score	Student
1	AO	100	CH
2	GI	98	LM
4	DP	96	HO
4	BI	96	JA
4	LM	94	ED
6.5	HN	92	DS
6.5	PE	92	AC
8	CV	90	JA
9	HN	88	JA
10	HO	86	JA
11	GB	84	GB
12.5	GN	82	GN
12.5	BS	82	BS
14.5	VR	80	VR
14.5	LM	80	LM
16	LR	78	LR
17	JA	76	JA
18	JA	74	JA
19	MO	72	MO
20	ER	70	ER
21	MO	68	MO
22	AT	66	AT
23	ED	64	ED
24.5	NA	62	NA
24.5	NA	62	NA
26	NR	60	NR
27	ED	58	ED

$\bar{R}_E = 3.94$
 $\bar{R}_D = 23.99$
 $\bar{R}_M = 67.08$
 $\bar{R}_C = 93$
 $\bar{R}_N = 3.94$
 $\bar{R}_D = 23.99$
 $\bar{R}_M = 67.08$
 $\bar{R}_C = 93$

II. FOUR-WEEK STUDY PERIOD

Following the analysis of the pre-test data secured from both groups in January, 1962, the four-week investigation was initiated. The methods and procedures used are discussed in Chapter I. A detailed analysis of the data received pertaining to Hypotheses I and II follows.

Hypothesis I: Functional-recognition of words used in context, which have been previously learned in spelling lessons, produces no significant differences in frequency usage of the words when equated experimental and control groups devote equal time to formal study and have equal opportunities for writing.

Results of First Week. To evaluate this hypothesis, a percentage relationship is established between the number of students involved and their frequency of word usage (see Table II). The percentage of use by the control group is .0533, and in the experimental group, the percentage is .0727. The difference between percentages is .0194, and the standard error of a difference between percentages is .0616.

When these data are analyzed using the "t" test ratio, the result is .31, which is not significant at the one per cent level of confidence.

Results of Second Week. In the second week of the experiment, the control group's percentage of usage is .0628, while the experimental group's percentage score is .0837. The difference between percentages is .0109, with a standard error of difference between percentages at .0038.

The obtained "t" test ratio in this case is 2.7, which is significantly different at the one per cent level of confidence.

II. FIRST-STEP STUDY

Following the analysis of the pre-test data secured for both groups in January, 1963, the four-week investigation was initiated. The methods and procedures used are discussed in Chapter III. A detailed analysis of the data relative to hypotheses I and II follows.

Hypothesis I: Functional-relationship of words used in context, which have been previously learned in spelling lessons, produced no significant differences in frequency of use between the experimental and control groups.

Results of First Step.

The relationship is established between the number of students involved and their frequency of word usage (see Table II). The percentage of use by the control group is .0323, and in the experimental group, the percentage is .0327. The difference between percentages is .0004, and the standard error of a difference between percentages is .0016.

When these data are analyzed using the t -test ratio, the result is .31, which is not significant at the one per cent level

of confidence.

Results of Second Step.

In the second work of the experiment, the control group's percentage of usage is .0632, while the experimental group's percentage score is .0837. The difference between percentages is .0205, with a standard error of difference between percentages of .0035.

The obtained t -test ratio in this case is 2.1, which is

significantly different at the one per cent level of confidence.

TABLE II
COMPARISON OF PERCENTAGE OF FREQUENCY USAGE
OF SPELLING WORDS IN WRITING OPPORTUNITIES

Week	Experimental Group	Control Group	Difference Between Percentages	"t" Test Ratio	Significance at One per cent level
1	.0727	.0533	.0194	.31	Not Significant
2	.0837	.0628	.0109	2.7	Significant
3	.2317	.1629	.0688	8.39	Significant
4	.1008	.0882	.0126	2.68	Significant

Results of Third Week. The percentage of usage by the control group during the third week is .1629. In the experimental group, the percentage is .2317, with the difference between percentages being .0688. The standard error of a difference between percentages is .0082.

The obtained "t" test ratio is 8.39, which indicates significant differences at the one per cent level of confidence.

Results of Fourth Week. The percentage of frequency usage in the final week for the control group is .0882, while the experimental group's percentage of use is .1008. The difference between percentages is .0126, with a standard error of difference between percentages of .0047.

COMPARISON OF PERCENTAGE OF PERSONS WITH OF RETENTION POWER IN TESTING APPROPRIATE

Week	Experimental Group	Control Group	Difference Between Percentages	T-Test Ratio	Significance
1	.0727	.0733	.0006	.11	Not Significant
2	.0837	.0828	.0009	2.17	Significant
3	.2317	.1132	.1185	8.38	Significant
4	.1006	.0882	.0124	2.48	Significant

Results of Third Week. The percentage of persons in the control group during the third week is .1023, in the experimental group the percentage is .2317, with the difference between percentages being .0882. The standard error of a difference between percentages is .0182.

The obtained T-test ratio is 8.38, which indicates significant differences at the one per cent level of confidence.

Results of Fourth Week. The percentage of persons in the control group for the final week is .0882, while the experimental group's percentage of use is .1006. The difference between percentages is .0124, with a standard error of difference between percentages of .0047.

The "t" test ratio is 2.68--evidence of significant differences between groups at the one per cent level of confidence.

Summary. During the four weeks this experiment was conducted, there existed significant differences between groups in the frequency of usage of weekly spelling words in out-of-class writing after the initial week of the investigation. Therefore, Hypothesis I is rejected.

Hypothesis II: There are no significant differences between the experimental and control groups in initial mastery of weekly spelling words.

In testing this hypothesis, a test of each week's word list was administered to both groups at the end of each week's study. Test scores for each group were recorded and analyzed, and mean scores are presented in Table III.

Results of First Week. The mean score for the control group, consisting of 33 students, is 95.33. The standard deviation is 21.13, with a standard error of the mean of 3.72. The mean score for the experimental group, consisting of 30 students, is 98.66. The standard deviation is 4.69, with a standard error of the mean of .89.

When these data are compared by the "t" test, the ratio obtained is .87. This result is not significant at the one per cent level of confidence.

Results of Second Week. The mean score for the control group, consisting of 26 students, is 91.3, with a standard deviation of 8.68,

TABLE III
COMPARISON OF WEEKLY TEST RESULTS FOR
INITIAL MASTERY OF SPELLING LISTS

Week	Group	Number	Mean	SD	SE _m	"t" Test Ratio	Significance at One Per Cent Level
1	Experimental	30	98.66	4.69	.89	.87	Not Significant
	Control	33	95.33	21.13	3.72		
2	Experimental	28	97.57	4.82	.94	3.18	Significant
	Control	26	91.3	8.68	1.74		
3	Experimental	29	95.17	8.09	1.53	1.28	Not Significant
	Control	27	97.44	4.53	.88		
4	Experimental	29	95.86	8.37	1.58	.23	Not Significant
	Control	25	95.44	4.07	.83		
TOTAL	Experimental		97.06	6.49	3.34	.76	Not Significant
	Control		94.88	9.6	1.79		

and a standard error of the mean of 1.74. The mean score for the experimental group, consisting of 28 students, is 95.57. The standard deviation is 4.82, with a standard error of the mean of 9.27.

When the "t" test is applied to these data, the result is 3.18, which shows significant differences at the one per cent level of confidence.

TABLE III

COMPARISON OF WEEKLY TEST RESULTS FOR
INITIAL MASTERY OF SWELLING TEST

Week	Group	Number	Mean	SD	SE _m	t _{test}	Significance
1	Experimental	30	96.66	4.69	.85	3.87	Significant
	Control	33	95.33	21.13	3.72		
2	Experimental	28	97.37	4.82	.86	3.18	Significant
	Control	36	91.3	8.68	1.74		
3	Experimental	29	95.17	8.09	1.52	1.33	Not Significant
	Control	27	97.44	4.23	.80		
4	Experimental	29	95.66	8.37	1.56	1.27	Not Significant
	Control	25	95.44	4.07	.82		
TOTAL	Experimental		97.00	6.69	1.34	1.02	Not Significant
	Control		94.88	9.8	1.93		

and a standard error of treatment of 1.56. The mean score for the experimental group, consisting of 28 students, is 97.37. The standard deviation is 4.82, with a standard error of treatment of 0.86. When the "t" test is applied to these data, the result is 3.18, which shows significant differences at the one per cent level of confidence.

Results of Third Week. The mean score for the 29 students in the experimental group at the end of the third week is 95.17, with a standard deviation of 8.09, and a standard error of the mean of 1.53. In the control group, there were 27 students participating during this week. The mean score of this group is 97.44, with a standard deviation of 4.53, and a standard error of the mean of .88.

The "t" test ratio result is 1.28. This result is not significant at the one per cent level of confidence.

Results of the Fourth Week. In the final week of the study, the experimental group's mean score is 95.86. Twenty-nine students participated. The standard deviation is 8.37, with a standard error of the mean of 1.58. In the control group, consisting of 25 students, the obtained mean score is 95.44. The standard deviation is 4.07, with a standard error of the mean of .83.

In determining the extent of difference between means by the "t" test ratio, the result is .23, which is not significant at the one per cent level of confidence.

Summary. The obtained mean score for the experimental group during the total four-week period is 97.06, with a standard deviation of 6.49 and a standard error of the mean of 3.34. In the control group, the mean score for the four-week period is 94.88. The obtained standard deviation on the distribution of scores is 9.6, with a standard error of the mean of 1.79.

Results of Third Week. The mean scores for the 15 subjects

in the experimental group at the end of the third week were 1.53, with a standard deviation of 1.5, and a standard error of the mean of 1.53. In the control group, the mean score was 1.53, with a standard deviation of 1.5, and a standard error of the mean of 1.53. The mean score of this group was 1.53, with a standard deviation of 1.5, and a standard error of the mean of 1.53.

The "t" test ratio was 1.53. This ratio is not

significant at the one per cent level of confidence.

Results of the Fourth Week. In the first week of the study

the experimental group's mean score was 1.53, with a standard deviation of 1.5, and a standard error of the mean of 1.53. In the control group, the mean score was 1.53, with a standard deviation of 1.5, and a standard error of the mean of 1.53. The obtained mean score in the experimental group was 1.53, with a standard deviation of 1.5, and a standard error of the mean of 1.53. In determining the extent of difference between means in the "t" test ratio, the result is 1.53, which is not significant at the one per cent level of confidence.

Summary. The obtained mean scores for the experimental

group during the total four-week period is 1.53, with a standard deviation of 1.5 and a standard error of the mean of 1.53. In the control group, the mean score for the four-week period is 1.53. The obtained standard deviation of the experimental group is 1.53, with a standard error of the mean of 1.53.

When the "t" test is used to determine the extent of differences between mean scores, the ratio result is .75. This indicates no significant differences at the one per cent level of confidence.

Even though the second week's results show significant differences between groups in initial mastery of weekly spelling list words, no significant differences occurred in the first, third, and fourth weeks. Cumulative results for the study period also indicate no significant differences. On this basis, Hypothesis II is accepted.

III. POST-TEST

A comprehensive post-test of 50 words was administered to both groups immediately following the close of the fourth week of the study period.² The test was comprised of 50 words taken from the 100 words presented during the four-week study. The words were selected on a split-half basis. See Tables IV and V for results.

A detailed analysis of data pertaining to Hypotheses III and IV follows.

Hypothesis III: There are no significant differences between the experimental and control groups in retention of the words studied during the four weeks of the investigation.

For the experimental group, consisting of 29 students, the mean score is 81.10. The standard deviation is 19.14, with a standard error of the mean of 2.58. In the control group of 29 students, the mean score is 90.68, with a standard deviation of 13.67 and a standard error of the mean of 3.61.

²See Appendix C.

When the "t" test is used to determine the extent of differences between mean scores, the ratio results is 1.75. This indicates no significant differences at the one per cent level of confidence.

Even though the second word's retention shows significant differences between groups in initial mastery of word spelling lists, words, no significant differences occurred in the first, third, and fourth words. Cumulative results for the study period also indicate no significant differences. On this basis, Hypothesis II is accepted.

III. POST-TEST

A comprehensive post-test of 20 words was administered to both groups immediately following the close of the fourth week of the study period.² The test was comprised of 20 words taken from the 100 words presented during the four-week study. The words were selected on a split-half basis. See Table IV and V for results. A detailed analysis of data pertaining to Hypothesis III

and IV follows.

Hypothesis III: There are no significant differences between the experimental and control groups in retention of the words studied during the four weeks of the investigation.

For the experimental group, consisting of 25 students, the mean score is 81.10. The standard deviation is 12.14, with a standard error of the mean of 2.32. In the control group of 25 students, the mean score is 90.60, with a standard deviation of 13.07 and a standard error of the mean of 2.61.

² See Appendix C.

TABLE IV

RANK-ORDER CORRELATION BETWEEN PRE-TEST AND FOUR-WEEK
POST-TEST FOR THE EXPERIMENTAL GROUP

Student	Scores		Ranking	
	Pre-Test	Post-Test	Pre-Test	Post-Test
AC	100	98	1	6
GI	96	94	2	9
DP	94	100	4	2.5
BI	94	100	4	2.5
LM	94	98	4	6
RN	92	98	6.5	6
PE	92	100	6.5	2.5
CV	90	100	8	2.5
MN	86	90	9	13
HO	84	90	10	13
GB	78	94	11	9
GN	76	90	12.5	13
BE	76	82	12.5	16
VR	70	92	14.5	11
DM	70	76	14.5	18
LR	68	84	16	15
JF	64	94	17	9
LA	58	56	18	24
MO	56	76	19	18
ER	52	60	20	22
MC	48	76	21	18
AT	42	74	22	20.5
BD	40	56	23	24
NA	38	52	24.5	26
MA	38	74	24.5	20.5
MR	32	56	26	24
ED	8	20	27	27

Rho Correlation = .93

TABLE IV

RANK-ORDER CORRELATION BETWEEN PRE-TEST AND POST-TEST
POST-TEST FOR THE EXPERIMENTAL GROUP

Student	Scores		Ranking	
	Pre-Test	Post-Test	Pre-Test	Post-Test
AC	100	98	1	6
CI	96	94	2	9
DP	94	100	4	2.5
BI	94	100	4	2.5
IM	94	98	4	6
NI	92	98	6.5	8
PI	92	100	6.5	2.5
CV	90	100	8	2.5
MN	86	90	9	13
HO	84	90	10	13
GB	78	94	11	9
GN	76	90	12.5	13
EE	76	82	12.5	16
VR	70	92	16.5	11
IN	70	76	16.5	18
LR	68	84	18	15
JV	64	94	17	9
LA	58	56	19	24
MO	56	76	19	16
EE	52	60	20	22
MC	48	76	21	16
AT	42	74	22	20.5
BD	40	56	23	24
MA	38	52	24.5	28
MA	38	74	24.5	20.5
NR	32	56	25	34
ED	8	20	27	27

No Correlation = .93

TABLE V

RANK-ORDER CORRELATION BETWEEN PRE-TEST AND FOUR-WEEK
POST-TEST FOR THE CONTROL GROUP

Situdent	Scores		Ranking	
	Pre-Test	Post-Test	Pre-Test	Post-Test
LH	96	100	1	5
JQ	94	100	2.5	5
MG	94	100	2.5	5
PA	92	100	4.5	5
LU	92	100	4.5	5
GM	90	100	7	5
AG	90	100	7	5
LG	90	100	7	5
JF	78	100	9	5
DK	76	94	10	15
GS	74	94	12	15
HR	74	90	12	21
GP	74	96	12	12.5
PM	72	98	14	10.5
OS	70	98	16	10.5
BT	70	90	16	21
MF	70	90	16	21
BR	66	92	18	18
GM	64	94	19	15
RS	60	86	20	22
LF	54	96	21	12.5
HV	52	92	22	18
RC	40	80	23	23
LS	28	92	24	18
JS	18	46	25	24
AR	16	54	26	25

Rho Correlation = .86

TABLE 7

RANK-ORDER CORRELATION BETWEEN PRE-TEST AND POST-TEST
POST-TEST FOR THE CONTROL GROUP

Student	Rankings		Difference	Rankings
	Pre-Test	Post-Test		Post-Test
LA	92	100	8	
LB	94	101	7	
MC	94	105	11	
MA	93	103	10	
LI	92	100	8	
GM	90	100	10	
AG	93	100	7	
LG	93	103	10	
JE	78	100	22	
DE	76	96	20	
CE	74	94	20	
HE	74	93	19	
OP	74	88	14	
YN	72	93	21	
OS	70	93	23	
BT	70	90	20	
ME	70	93	23	
SE	68	93	25	
GM	64	94	30	
ES	60	86	26	
LE	54	86	32	
HT	52	82	30	
EC	48	80	32	
LS	48	82	34	
JS	48	84	36	
AR	46	84	38	

Rho Correlation = .90

In comparing the final mean results by the "t" test, the ratio of 2.16 is obtained. This is not significant at the one per cent level of confidence. Therefore, Hypothesis III is accepted.

In order to determine the extent of relationship within each group from the pre-test results to the post-test results, a rank-order correlation is determined from the data for both the experimental and control groups. In the experimental group, a high positive correlation of +.93 is obtained between the two tests. In the control group, a high positive correlation of +.86 is obtained between the pre-test and post-test results.

Hypothesis IV: There are no significant differences after a two-month period between the experimental and control groups in retention of the words studied.

The post-test, which was administered to both groups at the conclusion of the four-week period, was again administered after an interval of eight weeks. In the experimental group, consisting of 25 students, the mean score is 81.9, with a standard deviation of 17.25, and a standard error of the mean of 3.4. In the control group, consisting of 28 students, the obtained mean score is 87.42. The standard deviation is 15.55, with a standard error of the mean of 2.95.

The mean results are compared for differences by the "t" test. The obtained ratio is 1.22, which is not significant at the one per cent level of confidence. Therefore, since no significant differences appeared between groups in retention of words studied, Hypothesis IV is accepted. (See summary Tables VI and VII.)

to comparing the two groups...
ratio of 1.16 is obtained...
test level of significance...
In order to determine...
group from the post-test...
order correlation is...
mental and control groups...
positive correlation of...
In the control group...
obtained between the pre-test and post-test results.

Hypothesis IV: There is no significant difference in the mean scores of the two groups in the retention of the word list.

The post-test, which was administered to both groups at the conclusion of the two-week period, was a word list retention test. It was administered at an interval of about 10 days after the experimental group was exposed to the word list. The mean score of the experimental group was 17.22, and a standard deviation of 1.12. In the control group, consisting of 12 subjects, the mean score was 17.50. The standard deviation was 1.12, and a standard error of the mean of 0.33.

The mean scores were compared for significance by the t-test. The obtained t-value was 1.12, which is not significant at the 5% level of significance. This indicates that there is no significant difference between the two groups in the retention of the word list. Hypothesis IV is accepted. (See Table IV and V).

TABLE VI

RANK-ORDER CORRELATION BETWEEN PRE-TEST AND FINAL
POST-TEST SCORES FOR THE EXPERIMENTAL GROUP

Student	Scores		Ranking	
	Pre-Test	Post-Test	Pre-Test	Post-Test
AC	100	94	1	7
GI	96	98	2	4
DP	94	100	4	1.5
BI	94	80	4	15
LM	94	92	4	8.5
RN	92	98	6.5	4
PE	92	100	6.5	1.5
CV	90	98	8	4
MN	86	96	9	6
HO	84	*	10	*
GB	78	86	11	11.5
GN	76	84	12.5	13.5
BE	76	88	12.5	10
VR	70	92	14.5	8.5
DM	70	76	14.5	16
LR	68	84	16	13.5
JF	64	86	17	11.5
LA	58	60	18	20
MO	56	66	19	18.5
ER	52	*	20	*
MC	48	48	21	22
AT	42	*	22	*
BD	40	30	23	23
NN	38	66	24.5	18.5
MA	38	56	24.5	21
MR	32	68	26	17
ED	8	*	27	*

* = Not present

Rho = .81

N = 25

M = 81.9

SD = 17.25

SE_m = 3.4

POST-TEST SCORES FOR THE LABORATORY GROUP RANK-ORDER CORRELATION BETWEEN PRE-TEST AND POST-TEST

Student	Pre-Test	Post-Test	Rank-Order	Correlation
AC	100	94	1	1
CI	96	88	2	2
IP	94	100	3	3
BI	94	80	4	4
IM	94	92	5	5
KN	92	90	6	6
PI	92	100	7	7
CV	90	90	8	8
KN	88	88	9	9
HO	84	*	10	10
GS	78	80	11	11
GN	76	84	12	12
ES	74	84	13	13
VR	70	72	14	14
EM	70	72	15	15
LE	68	84	16	16
JA	64	80	17	17
JA	58	60	18	18
MO	58	88	19	19
ER	52	*	20	20
MC	48	50	21	21
AT	48	*	22	22
HD	40	50	23	23
HN	36	60	24	24
HA	36	50	25	25
MR	32	40	26	26
ED	8	*	27	27

* = Not Present

Rho = .31

TABLE VII

RANK-ORDER CORRELATION BETWEEN PRE-TEST AND FINAL
POST-TEST SCORES FOR THE CONTROL GROUP

Student	Scores		Ranking	
	Pre-Test	Post-Test	Pre-Test	Post-Test
LH	96	98	1	8
JB	94	100	2.5	2.5
MG	94	96	2.5	12
PA	92	100	4.5	2.5
LU	92	100	4.5	2.5
GM	90	98	7	8
AG	90	98	7	8
LG	90	98	7	8
JF	78	98	9	8
DK	76	98	10	8
GS	74	90	12	16
HR	74	90	12	16
GP	74	100	12	2.5
PM	72	98	14	8
RS	70	94	16	13.5
BT	70	94	16	13.5
MF	70	84	16	19
BR	66	84	18	19
GM	64	*	19	*
RS	60	70	20	22
LF	54	80	21	21
RV	52	90	22	16
RC	40	84	23	19
LS	28	*	24	*
JS	18	42	25	24
AR	16	66	26	23

* = Not present

N = 28

M = 87.42

SD = 15.55

SE_m = 2.95

Rho = .85

TABLE VII

RAKE-ORDER CORRELATION BETWEEN PRE-TEST AND FINAL
POST-TEST SCORES FOR THE CONTROL GROUP

Student	Scores		Rankings	
	Pre-Test	Post-Test	Pre-Test	Post-Test
LA	90	90	1	8
LB	94	100	2.5	2.5
MG	94	90	2.5	10
PA	92	100	4.5	2.5
LS	92	100	4.5	2.5
GM	90	90	7	8
AS	90	90	7	8
LG	90	90	7	8
JP	78	90	9	8
DK	78	90	10	8
GS	74	90	12	10
HR	74	90	12	10
CP	74	100	12	2.5
PH	72	90	14	8
RS	70	94	16	13.5
BT	70	94	16	13.5
MY	70	84	16	13
MR	68	84	16	19
EM	64	*	19	*
RS	60	70	30	23
LP	54	80	21	21
RV	52	90	23	16
HC	40	84	23	19
LS	38	*	24	*
LS	18	42	25	24
AR	16	60	26	23

* = Not present

N = 28

$r = .87$
 $SD = 12.32$
 $SE = 1.95$

Rank order of the final post-test results are again compared with the rank order of the original pre-test to examine the relationship of these tests within each group. The Rho correlation formula is used to analyze the data.

For the experimental group, the obtained correlation between the pre-test rank order and the post-test rank order is a positive $+.81$. Much less of a relationship is found to exist between the rank order of the pre-test and the rank order of the final post-test in the experimental group. (The four-week correlation was $+.93$.)

In the control group, the correlation between the pre-test and the eight-week post-test is a high $+.85$. This correlation differs only slightly from the relationship that existed at the conclusion of the four-week period ($+.86$).

IV. SUMMARY OF THE CHAPTER

The purpose of this chapter was to present the data obtained in the study, and its analysis and interpretation which permit acceptance or rejection of the four hypotheses originally stated.

Results of the analyses of the data permitted rejection of Hypothesis I and acceptance of Hypotheses II, III, and IV. The following chapter will discuss the summary, conclusions, and speculations based on these results.

Rank order of the final post-test results is again compared

with the rank order of the original pre-test to examine the relationship of these tests within each group. The correlation formula is used to analyze the data.

For the experimental group, the correlation coefficient between the pre-test rank order and the post-test rank order is a positive +.81. Much less of a relationship is found in the control group. Rank order of the pre-test and the rank order of the post-test test in the experimental group. (The four-week correlation was +.93.)

In the control group, the correlation between the pre-test and the eight-week post-test is a high +.82. This correlation differs only slightly from the relationship that existed at the conclusion of the four-week period (+.82).

IV. SUMMARY OF THE CHAPTER

The purpose of this chapter was to present the data obtained in the study, and the analysis and interpretation of the acceptance or rejection of the four hypotheses originally stated. Results of the analysis of the data pertaining to the acceptance or rejection of Hypotheses I and acceptance of Hypotheses II, III, and IV. The following chapter will discuss the summary, discussion, and speculations based on these results.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND SPECULATIONS

The purpose of this study was to determine if there are any significant differences in spelling achievement on a fifth-grade level between an experimental group using a functional recognition approach to weekly spelling lists for a period of four weeks, and a control group which does not apply the functional-recognition approach, but which has equal time for study and writing.

Methods and procedures used in this study are discussed in Chapter I. A detailed analysis of the statistical treatment of the data pertaining to each hypothesis is elaborated upon in Chapter III. A brief summary of these results, as well as conclusions and speculations, follows in this chapter.

I. SUMMARY

According to the statistical evidence which is derived from the data accumulated as a result of this study, the hypotheses have been accepted or rejected as discussed in the following section.

Hypothesis I: Functional-recognition of words used in context, which have been previously learned in spelling lessons, produces no significant differences in frequency usage of the words when equated experimental and control groups devote equal time to formal study and have equal opportunities for writing.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine if there are any significant differences in spelling achievement on a spelling level between an experimental group using a functional approach to weekly spelling lists for a period of four weeks, and a control group which does not apply the functional-approach approach, but which has used the functional-approach in the past. Methods and procedures used in this study are described in Chapter I. A detailed analysis of the data pertaining to each hypothesis is given in Chapter II. A brief summary of these results is given in Chapter III. A brief summary of these results is given in Chapter IV. Conclusions and recommendations follow in Chapter V.

According to the statistical evidence which is given in the data summarized in a table at the end of the study, the hypotheses have been accepted or rejected as indicated in the following section.

Hypothesis I: Functional-approach of words used in weekly spelling lists has been previously learned in spelling lessons, resulted in a significant difference in spelling achievement of the experimental and control groups during the four week period.

During the four weeks which this experiment was conducted, there existed significant differences between groups in the frequency of usage of weekly spelling words in all except the initial week of the study. Therefore, Hypothesis I is rejected on the basis of the statistical evidence received.

Hypothesis II: There are no significant differences between the experimental and control groups in initial mastery of weekly spelling words.

The mean score for the experimental group during the total four-week period is 97.06, with a standard deviation of 6.49 and a standard error of the mean of 3.34. The mean score for the control group for the four-week period is 94.88, with a standard deviation of 9.6 and a standard error of the mean of 1.79.

When these results are compared for differences by the "t" test ratio, the obtained result is .75, which indicates no significant differences at the one per cent level of confidence. Since no significant differences are detected between groups in the initial mastery of weekly spelling list words, Hypothesis II is accepted.

Hypothesis III: There are no significant differences between the experimental and control groups in retention of the words studied during the four weeks of the investigation.

When comparing the mean scores of both groups by the "t" test, the ratio result is 2.16. This indicates no significant differences between groups at the one per cent level of confidence. On this statistical basis, Hypothesis III is accepted.

During the four weeks which this experiment was conducted, there existed significant differences between groups in the frequency of usage of weekly spelling words in all except the initial week of the study. Therefore, Hypothesis I is rejected on the basis of the statistical evidence received.

Hypothesis II: There are no significant differences between the experimental and control groups in initial mastery of weekly spelling words.

The mean score for the experimental group during the four-week period is 37.66, with a standard deviation of 8.48 and a standard error of the mean of 3.34. The mean score for the control group for the four-week period is 34.66, with a standard deviation of 9.5 and a standard error of the mean of 1.97.

When these results are compared for differences by the t -test ratio, the obtained result is .75, which indicates no significant differences at the one per cent level of confidence. Hence, no significant differences are detected between groups in the initial mastery of weekly spelling list words. Hypothesis II is accepted.

Hypothesis III: There are no significant differences between the experimental and control groups in retention of the words studied during the four weeks of the investigation.

When comparing the mean scores of both groups by the t -test, the ratio result is 2.16. This indicates no significant differences between groups at the one per cent level of confidence. On this statistical basis, Hypothesis III is accepted.

Hypothesis IV: There are no significant differences after a two-month period between the experimental and control groups in retention of the words studied.

When the mean scores obtained by the experimental and control groups are compared for differences by the "t" test, the obtained ratio is 1.22, which is not significant at the one per cent level of confidence. Therefore, since no significant differences occurred between groups in retention of words studied, Hypothesis IV is accepted.

II. CONCLUSION

On the basis of the data gathered and upon application of standard statistical analyses, the following conclusions are warranted:

1. The functional-recognition approach used by the experimental group in this study has resulted in an increased usage of these words in the independent writing opportunities provided.
2. Although the members of the experimental group tended to use their spelling list words to a greater extent in their independent writing opportunities than did the members of the control group, the increased usage produced no significant differences between groups in the initial mastery of the spelling of these words.
3. In the experimental group, neither the attempt to identify words through the functional-recognition approach nor the actual increased usage had any effect, statistically, upon retention of words studied.

Hypothesis IV: There was no significant difference between the experimental and control groups in retention of the words studied.

When the mean scores obtained by the experimental and control groups are compared for differences by the F test, the obtained ratio is 1.13, which is not significant at the one per cent level of confidence. Therefore, there is no significant difference between the experimental and control groups in retention of words studied. Hypothesis IV is accepted.

II. CONCLUSION

On the basis of the data gathered and upon application of standard statistical analysis, the following conclusions are warranted:

1. The functional-recognition approach used by the experimental group in this study has resulted in an increased usage of these words in the independent writing opportunities provided.
2. Although the members of the experimental group tended to use their spelling list words to a greater extent in their independent writing opportunities than did the members of the control group, the increased usage produced no significant differences between groups in the initial memory of the spelling of these words.
3. In the experimental group, neither the attempt to identify words through the functional-recognition approach nor the actual increased usage had any effect, statistically, upon retention of words studied.

4. In this study, weekly word-lists are not necessarily indicative of the words which a child will need or want to use in his independent writing opportunities. This fact is illustrated by the low percentage of actual word usage based upon the word-lists.
5. Words used by students in their out-of-class writing in both the experimental and control groups represent a variety of individual interests and abilities which are not always provided for in the weekly word-lists.
6. According to the data of the groups involved in this study, a high degree of initial mastery of weekly word-lists does not insure the same degree of proficiency in the retention of these words.

III. SPECULATIONS

In considering the results of this study, as well as the research data already available on this topic, the following speculations are presented:

1. Teachers need to develop desirable attitudes and appreciations which will help direct students in furthering a spelling consciousness.
2. More recognition needs to be given to the fact that students differ in ability and interest in most subject areas, and attempts probably need to be made to identify such differences within each child. The unique aspects

4. In this study, weekly word-lists are not necessarily indicative of the words which a child will need or want to use in his independent writing opportunities. This fact is illustrated by the low percentage of actual word usage based upon the word-lists.
5. Words used by students in their out-of-class writing in both the experimental and control groups represent a variety of individual interests and abilities which are not always provided for in the weekly word-lists.
6. According to the data of the groups involved in this study, a high degree of initial mastery of weekly word-lists does not insure the same degree of proficiency in the retention of these words.

III. SPECULATIONS

- In considering the results of this study, as well as the research data already available on this topic, the following speculations are presented:
1. Teachers need to develop desirable attitudes and expectations which will help direct students in furthering a spelling consciousness.
 2. More recognition needs to be given to the fact that students differ in ability and interest in word subject areas, and a variety probably need to be made to identify each difference within each child. The unique aspects

of each individual should be capitalized upon in such a way as to promote maximum educational experiences.

3. A basic spelling word list may be useful as a guide in the spelling program, but should not be the sole determinant of words to be studied in the program.
4. A child's written work should be utilized as a source of spelling words for each child. Such individualization can be achieved at any level with the guidance of the teacher.
5. Teachers should present study methods for spelling which allow the students opportunities for adoption and adaptation to suit their personal needs.
6. A unified language arts program should be established which encourages:
 - a. Oral vocabulary building with opportunities for discussion and oral expression so that words may become part of the student's speaking vocabulary.
 - b. Providing opportunities for the child to see these new words and to meet them in reading from a variety of sources, so that they become part of his reading vocabulary.
 - c. Planning many meaningful writing opportunities so that a student will have reason to use his new words in

of each individual should be considered upon its merits

way as to promote maximum student and teacher interest.

3. A basic spelling word list may be useful as a guide in

the spelling program, but should not be the sole deter-

minant of words to be studied in the program.

4. A child's written work should be utilized as a source

of spelling words for each child. Each individual

can be selected at any level within the guidance of the

teacher.

5. Teachers should present study methods for spelling

which allow the students opportunities for adaptation and

adaptation to suit their personal needs.

6. A unified language arts program should be established

which encourages:

a. Oral vocabulary building with opportunities

for discussion and oral expansion so that

words may become part of the student's

spelling vocabulary.

b. Providing opportunities for the child to see

these new words and to read them in reading

from a variety of sources, so that they become

part of his reading vocabulary.

c. Providing many meaningful writing opportunities so that

a student will have reason to use his new words in

written expression, thus creating a purposeful setting and need for spelling mastery.

7. The functional-recognition approach did not seem to create a sincere need to use the words in writing. The observed increased usage, accompanied by no increased mastery or retention achievement, may indicate the results of an artificially created need, although not pertinent to the students' interests and abilities.
8. Additional research investigations should be pursued to explore further possibilities of this study.
 - a. Since the functional-recognition approach used in this study resulted in significant differences in usage between groups, it would be interesting to see the results when a longer period of time was devoted to the study. One might also consider using a larger number of students in the study. If this experiment were carried on over a six-month period or longer, it is possible that results in initial mastery and retention might differ from the results achieved in this four-week study.
 - b. In determining the rank-order relationships of pre-test scores and post-test retention scores within each group, this study noted a decrease in the experimental group in the correlation from the rank-order correlation of the four-week retention test to the eight-week retention test. If this decrease

written apparatus, and even the physical setting

and need for spelling materials.

7. The functional-reading apparatus and the physical setting

a. Almost none of the functional-reading apparatus

increased usage, especially in the functional reading

functional apparatus, and especially the functional reading

artificially created need, although the functional

the students' behavior and motivation.

8. Additional research investigations are needed to

explore further possibilities in this study.

a. Since the functional-reading apparatus was used in

this study resulted in a significant increase in

usage between groups, it was not surprising to

see the results with a longer period of time and

devoted to the study. The results were consistent

using a larger number of students in the study.

If this experiment was repeated in over a six-

month period of time, it is possible that results

in initial usage and retention might be higher than

the results obtained in this study.

b. In determining the functional-reading apparatus of pro-

cess and speed of functional-reading apparatus within

each group, this study found a significant increase in

functional-reading apparatus in functional-reading apparatus

order correlation of the functional-reading apparatus

to the functional-reading apparatus. It is possible that

in rank-order relationship continued, further study could determine which students were changing rank-order positions, and whether such changes were favorable. It might be possible that the functional-recognition approach has a definite effect upon a certain type of student.

- c. This experimental study used two classrooms, with the regular classroom teachers presenting the spelling lessons to their own classes. However, since individual differences within teachers could not be controlled in this study, it might be interesting to see the results of the study if one teacher presented the lessons to both groups.
 - d. There are aspects of this study which could be elaborated upon in order to study teacher-attitude toward individualized spelling and possible changes in attitude, if neutral or negative attitudes are present.
9. When the functional-recognition approach is used, a student could also be made aware of errors in spelling words not a part of his weekly word list. If such a variety of errors persisted in actual word usage, and if their existence were made obvious to both teacher and student, one might wonder if changes would occur in spelling programs.

In rank-order relationship continued, further study could determine which students were showing rank-order positions, and whether such changes were favorable. It might be possible that the functional recognition approach has a facilitative effect upon a certain type of stimulus.

c. This experimental study used two classrooms, with the regular classroom teacher presenting the spelling lessons to their own classes. However, since individual differences within a class could not be controlled in this study, it might be interesting to see the results of the study if one classroom presented the lessons to both groups.

d. There are reports of this study which could be elaborated upon in order to study teacher-attitudes toward individualized spelling and possible changes in attitudes. It would be an interesting situation to present.

9. When the functional-recognition approach is used, a student could also be made aware of errors in spelling words not a part of the weekly word list. If such a variety of errors paralleled the actual word usage, and if their references were made directly to both teacher and student, one might assume that changes would occur in spelling program.

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APPENDICES

GILBERT
SUPERASE BC
25% COTTON FIB

ANNEX 2

1997

APPENDIX A

SPELLING PRE-TEST

ADMINISTERED JANUARY, 1962

- | | | |
|--------------|--------------|----------------|
| 1. about | 19. daisy | 37. multiply |
| 2. had | 20. kept | 38. journey |
| 3. party | 21. sack | 39. gulf |
| 4. babies | 22. zero | 40. dying |
| 5. ice | 23. village | 41. awful |
| 6. raining | 24. rush | 42. tacks |
| 7. yard | 25. notebook | 43. eagle |
| 8. yet | 26. known | 44. lame |
| 9. cage | 27. hymn | 45. fact |
| 10. just | 28. fur | 46. machine |
| 11. quickly | 29. curly | 47. unhappy |
| 12. wrote | 30. act | 48. typewriter |
| 13. surprise | 31. family | 49. garbage |
| 14. own | 32. kettle | 50. narrow |
| 15. lunch | 33. radio | |
| 16. its | 34. unless | |
| 17. except | 35. upstairs | |
| 18. button | 36. quit | |

APPENDIX A

CHINESE-ENGLISH

ADMINISTRATIVE LANGUAGE, 1902

1. about	10. 大约	27. 估计
2. had	28. 曾经	38. 旅程
3. party	29. 会	39. 会
4. ladies	30. 女	40. 女
5. ice	31. 冰	41. 冰
6. raining	32. 雨	42. 雨
7. yard	33. 院子	43. 院子
8. yet	34. 还	44. 还
9. cage	35. 笼	45. 笼
10. feet	36. 脚	46. 脚
11. quickly	37. 快	47. 快
12. wrote	38. 写	48. 写
13. surprise	39. 惊奇	49. 惊奇
14. own	40. 自己的	50. 自己的
15. lunch	41. 午饭	51. 午饭
16. fit	42. 合适	52. 合适
17. except	43. 除了	53. 除了
18. button	44. 扣	54. 扣

APPENDIX B

FUNCTIONAL-RECOGNITION CHART
FIRST WEEK*

Words	Number of times word was used	Number of times word was spelled correctly	Number of times word was misspelled
thousand			
seemed			
lose			
save			
inch			
losing			
saving			
slowly			
rise			
rising			
break			
lead			
led			
cloud			
leader			
written			
flood			
creep			
crept			

*From: Lillian E. Billington, Using Words with Meaning, Grade 5
(New York: Silver Burdett Company, 1950), p. 44.

FUNCTIONAL-BEHAVIORAL CHART
FIRST WEEK

Words	Number of times word was used	Number of times word was used correctly
thousand		
second		
lose		
save		
inch		
leading		
saving		
slowly		
rise		
rising		
break		
lead		
led		
cloud		
leader		
written		
flood		
creep		
crept		

From: Lillian E. Milington, Editor, *Journal of Learning*, 1950
(New York: Silver Burdett Ginn, 1950), p. 10

FUNCTIONAL-RECOGNITION CHART
SECOND WEEK*

Words	Number of times word was used	Number of times word was spelled correctly	Number of times word was misspelled
horseback			
happened			
tore			
notebook			
instead			
torn			
chalk			
tablet			
harder			
broke			
unless			
easier			
note			
muddy			
eraser			
rung			
broken			
patch			
tardy			

*From: Lillian E. Billington, Using Words with Meaning, Grade 5
(New York: Silver Burdett Company, 1950), p. 46.

EXERCISES - RECOGNITION TEST
SECOND WEEK

Words	Number of times word was given	Number of times word was spelled correctly	Number of times word was mis spelled
haya-back			
happened			
tone			
notebook			
lented			
town			
chain			
capital			
harder			
broken			
unless			
easier			
note			
rudely			
error			
trug			
broken			
patch			
early			

From: William F. Millington, Using Words with Meaning, Grade 2
(New York: Silver Burdett Company, 1930), p. 46.

FUNCTIONAL-RECOGNITION CHART
THIRD WEEK*

Words	Number of times word was used	Number of times words was spelled correctly	Number of times word was misspelled
cardboard			
valentine			
says			
kindness			
art			
sending			
guess			
hardly			
joke			
heart			
bleeding			
yourself			
send			
silly			
true			
sent			
forget			
forgot			
blind			

*From: Lillian E. Billington, Using Words with Meaning, Grade 5
(New York: Silver Burdett Company, 1950), p. 48.

PHONETIC-ALPHABETIC CHART
 LIST WORDS

Words	Number of Lines with one word	Number of Lines with two words	Number of Lines with three words
cardboard			
valuation			
baggy			
kindness			
etc			
aching			
guess			
hardly			
join			
heart			
bleeding			
yourself			
and			
ally			
time			
sent			
forget			
forget			
blind			

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 (New York: Silver Burdett Company, 1900) 2-12

FUNCTIONAL-RECOGNITION CHART
FOURTH WEEK*

Words	Number of times words was used	Number of times word was spelled correctly	Number of times word was misspelled
pudding			
outdoors			
felt			
banana			
feeling			
rush			
neat			
comb			
chew			
beef			
cheese			
hurried			
rice			
least			
body			
feel			
bacon			
sugar			
pint			

*From: Lillian E. Billington, Using Words with Meaning, Grade 5
(New York: Silver Burdett Company, 1950), p. 50.

THIRTIETH-SECOND-CLASS CHART

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Words	Number of times words are used	Number of times word is used correctly	Number of times word is used incorrectly
pudding			
author			
felt			
bananas			
foaling			
rush			
nest			
comb			
chew			
best			
chance			
hurried			
rice			
least			
body			
leaf			
beacon			
sugar			
pink			

From: William E. Hallinger, Being Words with Meaning, Grade 2
(New York: Silver Burdett Company, 1930), p. 20.

APPENDIX C

SPELLING POST-TEST

ADMINISTERED MARCH AND MAY, 1962

1. thousand	19. tablet	37. true
2. written	20. harder	38. blind
3. rise	21. broke	39. pudding
4. flood	22. unless	40. outdoors
5. creep	23. muddy	41. banana
6. seemed	24. eraser	42. feeling
7. leader	25. broken	43. comb
8. finger	26. patch	44. chew
9. inch	27. cardboard	45. cheese
10. crept	28. valentine	46. hurried
11. slowly	29. kindness	47. least
12. rising	30. guess	48. bacon
13. horseback	31. hardly	49. sugar
14. happened	32. joke	50. pint
15. tore	33. heart	
16. notebook	34. bleeding	
17. instead	35. yourself	
18. chalk	36. silly	

APPENDIX C

ALPHABETICALLY

ALPHABETICALLY

1. Abundant	20. Abundant	39. Abundant
2. Abundant	21. Abundant	40. Abundant
3. Abundant	22. Abundant	41. Abundant
4. Abundant	23. Abundant	42. Abundant
5. Abundant	24. Abundant	43. Abundant
6. Abundant	25. Abundant	44. Abundant
7. Abundant	26. Abundant	45. Abundant
8. Abundant	27. Abundant	46. Abundant
9. Abundant	28. Abundant	47. Abundant
10. Abundant	29. Abundant	48. Abundant
11. Abundant	30. Abundant	49. Abundant
12. Abundant	31. Abundant	50. Abundant
13. Abundant	32. Abundant	51. Abundant
14. Abundant	33. Abundant	52. Abundant
15. Abundant	34. Abundant	53. Abundant
16. Abundant	35. Abundant	54. Abundant
17. Abundant	36. Abundant	55. Abundant
18. Abundant	37. Abundant	56. Abundant



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