



1959

An inquiry concerning the practical value of selecting third-grade spelling words from the developmental reading program

Virgil William Estes
University of the Pacific

Follow this and additional works at: https://scholarlycommons.pacific.edu/uop_etds



Part of the [Educational Assessment, Evaluation, and Research Commons](#), [Educational Methods Commons](#), [Elementary Education Commons](#), and the [Language and Literacy Education Commons](#)

Recommended Citation

Estes, Virgil William. (1959). *An inquiry concerning the practical value of selecting third-grade spelling words from the developmental reading program*. University of the Pacific, Thesis.
https://scholarlycommons.pacific.edu/uop_etds/1431

This Thesis is brought to you for free and open access by the University Libraries at Scholarly Commons. It has been accepted for inclusion in University of the Pacific Theses and Dissertations by an authorized administrator of Scholarly Commons. For more information, please contact mgibney@pacific.edu.

AN INQUIRY CONCERNING THE PRACTICAL VALUE OF SELECTING
THIRD-GRADE SPELLING WORDS FROM THE
DEVELOPMENTAL READING PROGRAM

A Thesis
Presented to
the Faculty of the Department of Education
College of the Pacific

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

by
Virgil William Estes
June, 1959

TABLE OF CONTENTS

| CHAPTER | PAGE |
|--|------|
| I. THE PROBLEM AND DEFINITIONS OF TERMS USED . . . | 1 |
| The Problem | 3 |
| Statement of the problem | 3 |
| Importance of the study | 3 |
| Limitations of the problem | 4 |
| Definitions of Terms Used | 4 |
| Developmental reading program | 4 |
| Upper-primary children | 5 |
| Delayed-recall | 5 |
| Immediate-recall | 5 |
| Formal spelling method | 6 |
| Familiar words | 6 |
| Unfamiliar words | 6 |
| II. REVIEW OF RELATED LITERATURE | 7 |
| The Teaching of Spelling | 7 |
| Application of available research | 7 |
| Use of phonics | 9 |
| Formal versus informal method | 10 |
| Selection and Grade Placement of Spelling | |
| Words | 12 |
| Readiness for Spelling | 13 |
| Beginning spelling | 13 |

| CHAPTER | PAGE |
|---|------|
| | 111 |
| | 14 |
| | 16 |
| | 16 |
| | 18 |
| | 19 |
| III. THE IMMEDIATE-RECALL PROJECT | 22 |
| Procedure Followed | 23 |
| Selecting the participants | 23 |
| Selecting the spelling lists | 23 |
| Conducting the experiment | 33 |
| Statistical Treatment of the Data | 35 |
| Data from the entire sample | 36 |
| Summary | 38 |
| IV. THE DELAYED-RECALL STUDY | 40 |
| Procedure Followed | 40 |
| Selecting and equating the spelling lists | 41 |
| Collecting the data | 45 |
| Statistical Treatment of Data | 45 |
| Data from the entire sample | 47 |
| Data from upper half of sample | 47 |
| Data from lower half of sample | 49 |
| Summary | 54 |

| CHAPTER | PAGE |
|--|------|
| V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . . | 56 |
| Summary | 56 |
| Conclusions | 58 |
| Recommendations for Further Study | 60 |
| BIBLIOGRAPHY | 61 |

LIST OF TABLES

| TABLE | PAGE |
|---|------|
| <p>I. Range and Mean Scores on Intelligence, Spelling, and Vocabulary for Forty-two Third-Grade Pupils Used in The Immediate- Recall Project</p> | 24 |
| <p>II. Spelling Grade Placement of the Fifty Words According to California State Speller and Composite Opinion of Spelling Authorities. .</p> | 27 |
| <p>III. Primary Grade Placement of the Familiar Words as Used in <u>Bond Basic</u>, in Three Supplementary Readers, and in the California State- Adopted Speller</p> | 28 |
| <p>IV. Primary Grade Placement of the Unfamiliar Words as Used in <u>Bond Basic</u>, in Three Supplementary Readers, and in the California State- Adopted Speller</p> | 29 |
| <p>V. Number of Familiar and Unfamiliar Words Appearing in Pupils' Supplementary Readers Prior to the Spelling Experiment</p> | 31 |
| <p>VI. Use Frequency of Words Appearing in The Immediate-Recall Project and The Delayed- Recall Study According to Fitzgerald's Study</p> | 32 |

| TABLE | PAGE |
|---|------|
| VII. Use Frequency of Words Appearing in The Immediate-Recall Project and The Delayed-Recall Study According to Hildreth's Study (Smaller Number Denotes More Frequent Use) | 34 |
| VIII. Significance of Mean Gains Made on Familiar and Unfamiliar Words Studied by Forty-two Third-Grade Children | 37 |
| IX. Range and Mean Scores on Intelligence and Reading Comprehension for One Hundred Second-Grade Pupils Used in The Delayed-Recall Study | 42 |
| X. Range and Mean Scores on Intelligence, Spelling, Reading Vocabulary, and Reading Comprehension for One Hundred Fourth-Grade Pupils Used in The Delayed-Recall Study | 43 |
| XI. Number of Familiar and Unfamiliar Words Appearing in The Basic and Three Most Popular Supplementary Readers in Grades One, Two, and Three | 46 |
| XII. Significance of the Mean Gains Made on Familiar and Unfamiliar Words Studied by One Hundred Third-Grade Pupils | 48 |

| TABLE | PAGE |
|--|------|
| XIII. Range and Mean Scores of the Fifty Fourth-Grade Pupils Who Scored Highest on the Familiar-Unfamiliar Spelling Word Test . . . | 50 |
| XIV. Significance of Mean Gains Made on Familiar and Unfamiliar Spelling Words Studied by the Upper Half of One Hundred Third-Grade Pupils | 51 |
| XV. Range and Mean Scores of the Fifty Fourth-Grade Pupils Who Scored Lowest on the Familiar-Unfamiliar Spelling Test | 52 |
| XVI. Significance of Mean Gains Made on Familiar and Unfamiliar Spelling Words Studied by the Lower Half of One Hundred Third-Grade Pupils | 53 |

CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

The selection and grade placement of spelling words have caused much concern during the last half century. Although much progress has been made toward common agreement, there remain areas in need of further investigation.

Although there seems to be general agreement that the upper-primary child learns much of his spelling through his developmental reading program, there is some question as to how this is accomplished. How much spelling proficiency can be attributed to visual memory, and how much to phonetic skills learned in reading? What other elements enter into the learning process?

The chief interest of the present study lies in the hypothesis that a child will more easily learn to spell a word if that particular word has previously appeared in his developmental reading program. For example, let us assume that a third-grade child has had a word in his developmental reading program, but has not yet learned to spell it correctly. Will he learn to spell that word more easily than a word of equal spelling difficulty which has not yet appeared in his developmental reading program? Specific studies dealing with this particular question are very difficult to find; however, several writers in the field of

language arts have made rather definite statements regarding the problem.

Wolf and Woolf maintain that "when possible, spelling drill should be closely related to reading and writing."¹ According to Betts, "The teacher who attempts to teach the child to spell words he cannot even pronounce in a reading context is doomed to failure /Italics not in the original/."²

Hanna strengthens this viewpoint when he states that

. . . Undoubtedly, the experience with the printed forms of words which children get in their reading, contributes to the ease with which they learn to spell those particular words /Italics not in the original/³

Hildreth makes a very significant statement concerning the effect of the reading program upon the spelling achievement of the upper-primary child.

The upper-primary child is certain to learn to spell some words incidentally in the modern reading method, which stresses whole words and word meanings, and provides a great deal of repetition of a small vocabulary of commonly used words. . . . Spelling and reading can be taught so as to enrich each other if a common

¹Maurice D. and Jeanne A. Woolf, Remedial Reading (New York: McGraw-Hill Book Company, 1957), p. 180.

²Emmett A. Betts, "Inter-relationship of Reading and Spelling," Elementary English Review, 22:13-23, January, 1945.

³Paul R. Hanna and James T. Moore, "Spelling from Spoken word to Written Symbol," Elementary School Journal, 53:329-37, February, 1953.

vocabulary is used, based on what the children need to write and on what they are reading. Primary pupils easily learn to spell the common words of the reading vocabulary they have learned to date */italics not in the original/*.⁴

The reader's particular attention is directed to the statements made by Hanna and Betts, and to the statement made in the last sentence of the quotation from Hildreth. These statements are highly significant to the problem which is under study.

I. THE PROBLEM

Statement of the problem. The purpose of this study was to determine the practical value of selecting upper-primary spelling words from the developmental reading program. Two major aspects of the study were: (1) Will upper-primary children more easily learn to spell words which have previously appeared in their developmental reading program? (2) Will they retain the spelling of those words longer than other words of similar spelling difficulty?

Importance of the study. If it be true that children learn more easily to spell the words which they have had previously in reading, perhaps a child should not be asked

⁴Gertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company, 1955), p. 83.

to learn to spell words which are beyond his reading command, unless they are necessary to his current writing needs.

In view of existing evidence it seems reasonable to state that the spelling program in any elementary school is, of necessity, limited by the reading program. If this be true, then it seems reasonable to assume that any study is important which strengthens this viewpoint, and which tends to restrain teachers from overwhelming children, especially slow learning children, with a deluge of spelling words which they cannot pronounce and for which they have no immediate concern.

Limitations of the problem. Although beginning fourth-grade pupils were used as a part of this study, the data obtained were the result of learning in the primary grades. Therefore, for practical purposes, the study was limited to the upper-primary level.

II. DEFINITIONS OF TERMS USED

Developmental reading program. In 1955 the Stockton Unified School District approved the policy of uniform reading texts throughout the system. Funds were made available for the purchase of workbooks to accompany these readers. As a result every teacher was expected to use the state-adopted reading series by Guy L. Bond as a basic

reading text. Every teacher was also expected to use the corresponding workbook concomitantly with the teacher. The use of a reading manual accompanying this series, was encouraged in order to insure proper method in presenting each new lesson. As a result of this policy Stockton school children were assured of continuity in their reading progression. This represents the developmental reading program in Stockton which has been in use since September of 1955, and which constitutes an important facet of this study.

Upper-primary children. For purposes of this study upper-primary children are those children in grades two and three who have completed the first basic second reader, Down Our Way, a California state textbook, by Guy L. Bond.

Delayed-recall. For purposes of this study the term "delayed-recall" represents a time lapse of three months or more. For example: The words used in the long-term project of this study were presented in the regular third-grade spelling program, but the recall test was not given until the opening of school the following term.

Immediate-recall. For purposes of this study immediate-recall represents a time lapse of one month or less. For example: The words used in the short-term

projects were presented in spelling over a two-week period. At the end of an additional week the entire list of words was presented in the form of a recall-test.

Formal spelling method. As used in this study, formal teaching of spelling occurs when the teacher uses a basic word list not derived from the particular needs of her particular class. These spelling words are usually, though not necessarily, presented weekly in some systematic manner.

Familiar words. For purposes of convenience and brevity in writing this study the investigator has used the term "familiar" to identify the spelling words taken from the developmental reading program. The reader should not interpret the term "familiar" as literal in its meaning.

Unfamiliar words. Here again the terminology is merely expedient and must not be taken literally. "Unfamiliar" is used for the sake of brevity in identifying the spelling words used in the study which have not occurred in the developmental reading of the participant.

CHAPTER II

REVIEW OF RELATED LITERATURE

A great deal of the spelling research which has taken place in recent years has been in such areas as the teaching of spelling, the selection and grade placement of spelling words, readiness for spelling, and interrelationships of reading and spelling. Reported research devoted to the particular problem under consideration was difficult to find.

I. THE TEACHING OF SPELLING

Application of available research. There is a world of material on how to teach spelling at the finger tips of every classroom teacher who has the interest to avail herself of this aid. In spite of this fact, poor spellers continue to be prevalent. Furness has called this condition the spelling sickness. In an article, "Who Can Cure The Spelling Sickness?" he deplors our continued failure to produce good spellers.¹ He states that according to the evidence our teachers "because of indifference, lack of preparation, or failure to apply research in spelling," are not doing as good a job as could be expected in the teaching

¹E. L. Furness, "Who Can Cure The Spelling Sickness?" American School Board Journal, 134:33, 34, May, 1957.

of spelling. He continues by saying that if all school levels would concentrate on the teaching of this subject, using proper methods backed by research, the spelling evil would disappear. In a previous article he conveys a similar impression when he says:

The evidence seems to indicate that lack of emphasis, pressure of time, lack of prestige of spelling, conflict with reading methods, and lag in research and theory are responsible for the "deplorable" situation in spelling.²

Horn strengthens this contention when he attributes the shortcomings of teaching spelling, not to lack of available research but rather to "the lack of knowledge of existing evidence, to the failure to apply it intelligently, or to erroneous interpretations."³

Hanna takes a different view, however, when he makes the following statement:

Spelling as a subject of instruction is in need of re-examination. In spite of many experiments in methods of teaching this subject and in spite of extensive research into the nature of the spelling problem, we still have not found the answers we need. Children continue to display difficulty in learning to spell in spite of concentrated efforts to build "spelling power."⁴

²E. L. Furness, "Why Can't John Spell?" School and Society, 82:199-202, December 24, 1955.

³Ernest Horn, "Research in Spelling," Elementary English Review, 21:6-13, January, 1944.

⁴Paul R. Hanna and James T. Moore, "Spelling From Spoken Words to Written Symbol," Elementary School Journal, 53:329-37, February, 1953.

Use of phonics. Phonics is a very important tool in the teaching of spelling. Although, as Gilbert has pointed out, a pupil through visual memory may learn a great many words merely by reading them in context, phonetic knowledge still remains one of the most important aids to spelling.⁵

Hildreth claims that phonetic knowledge is an indispensable aid in recalling words already studied as well as in attacking the spelling of new words.⁶ Dolch devotes a chapter of his book to the five kinds of spelling knowledge,⁷ but he also devotes two additional chapters to the fifth knowledge alone, which deals largely with phonetic elements.⁸ Templin found the correlation between phonics and spelling higher than between phonics and reading.⁹ Horn

⁵L. C. Gilbert, "A Study of The Effect of Reading on Spelling," Journal of Educational Research, 28:570-76, April, 1935.

⁶Gertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company, 1955), p. 240.

⁷Edward W. Dolch, Better Spelling (Champaign, Illinois: The Girard Press, 1942), pp. 23-51.

⁸Ibid., pp. 192-236.

⁹Mildred C. Templin, "Phonic Knowledge and Its Relation to The Spelling and Reading Achievement of Fourth Grade Pupils," Journal of Educational Research, 47:441-54, February, 1954.

states that "there is some evidence that instruction in phonics is more beneficial to spelling than to reading" even though the phonetic skills may be taught during the reading lesson.¹⁰

The English language is often said to be non-phonetic in nature. Therefore, many argue that phonetic teaching of spelling only confuses children. "However, in spite of its many imperfections," writes Hanna, "the English system of writing is in origin and in its main features phonetic, or alphabetic."¹¹ Williams states that a large portion of English words fall into the phonetic group of words which need no study.¹²

Formal versus informal method. There is much discussion concerning the value of using formal word lists in teaching spelling. Guiles,¹³ Lionell,¹⁴ and

¹⁰Ernest Horn, "Experiences Which Develop Spelling Ability," National Education Association Journal, 43:210-11, April, 1954.

¹¹Hanna and Moore, loc. cit.

¹²Ralph M. Williams, "Method of Teaching Spelling to a Group of Seriously Mentally Retarded Students," College English, 16:500-516, May, 1955.

¹³R. E. Guiles, "Effect of Formal Spelling on Spelling Accuracy," Journal of Educational Research, 37:284-89, December, 1943.

¹⁴W. M. Lionell, "Purposeful Spelling," The Elementary School Journal, 55:341-45, February, 1955.

Betts¹⁵ condemn this method in no uncertain terms. According to Horn, however, McKee and other experimentals found that words studied in columns excelled in ease of learning, in delayed-recall tests, and in transfer to paragraphs.¹⁶ A number of writers agree that really good teachers will use effectively both formal and informal methods of teaching spelling. Horn, in one of his later articles implies that spelling learning takes place in all language arts activities.¹⁷ Delacato found both formal and informal methods of teaching spelling to have both strengths and weaknesses.¹⁸ Hildreth would permit the use of word lists if adapted to the child's needs.¹⁹ Straub advocates an organismic approach to spelling, and insists that spelling words cannot be taught in isolation from the total

¹⁵Emmet A. Betts, "Inter-relationship of Reading and Spelling," Elementary English Review, 22:13-23, January, 1945.

¹⁶Ernest Horn, "Research in Spelling," Elementary English Review, 21:6-13, January, 1944.

¹⁷Ernest Horn, "Experiences Which Develop Spelling Ability," National Education Association Journal, April, 1954.

¹⁸C. H. Delacato, "Spelling: Five Year Study," Elementary English, 32:296-98, May, 1955.

¹⁹Hildreth, op. cit., pp. 147-62.

experience field of reading, writing, and related areas.²⁰

II. SELECTION AND GRADE PLACEMENT OF SPELLING WORDS

Ayres, Buckingham, Thorndyke, and Horn were among the twentieth century pioneers in word-frequency counts. Some of the more recent writers in this area were Dolch, Gates, Fitzgerald, Rinsland, and Hildreth.

Many of the earlier lists were taken wholly or partly from the writing of adults. Many of these lists, especially in upper grades, were saturated with words bearing little relation to word usage in children's writings.

Rinsland, among others, compiled a word list based upon children's writings. His recent study of the writings of over one hundred thousand school children from 416 cities all over the United States is perhaps the most extensive study existing in this particular field of research. The published list contains 14,571 words.²¹

Hildreth selected 7,200 of the most commonly used words from Rinsland's list and divided them into ten levels

²⁰J. H. Straub, "An Organismic Approach to Spelling," Elementary English Review, 19:55-58, February, 1942.

²¹Henry D. Rinsland, A Basic Writing Vocabulary of Elementary School Children (New York: Macmillan, 1945).

of frequency according to use. She recommends this vocabulary list for use in elementary spelling.²²

Dolch informs us that, according to various studies, one thousand words make up 90 per cent of most written material. He advises the use of a minimum spelling lists-- the minimum list depending upon the grade level--supplemented by local lists based on errors in children's writing.²³

Horn states that "there is little difference between the basic needs of one section of the country and those of another," and he advises keeping the formal word list to a minimum so that it may be supplemented as need arises.²⁴

III. READINESS FOR SPELLING

Beginning spelling. Most authorities agree that spelling readiness is a necessary prerequisite to success in the teaching of spelling.

Russell found that spelling ability at the end of the second grade was closely associated with visual discrimination, recognition of letters of the alphabet, word

²²Hildreth, op. cit., pp. 311-37.

²³Dolch, op. cit., pp. 1-22.

²⁴Ernest Horn, "Research in Spelling," Elementary English Review, 21:6-13, January, 1944.

recognition, and reading skills in general.²⁵ Betts agrees that a "substantial level of reading achievement" appears to be a prerequisite to systematic instruction in spelling.²⁶ Bradford demonstrated that readiness to discriminate among regularly spelled speech sounds has not been achieved by all children at the close of grade one, and points out that spelling ability is developmental in nature.²⁷ Hildreth points out that a child is ready for spelling when he is able to read first-reader material with little help. She adds that "spelling failure is inevitable" if young children are expected to spell words which they cannot read and do not use in ordinary conversation.²⁸

The slow learner. Many of the same readiness rules apply to the slow learner as to other children; however, he will reach the proper maturity level at a much older

²⁵D. H. Russell, "Diagnostic Study of Spelling Readiness," Journal of Educational Research, 37:276-83, December, 1943.

²⁶Betts, op. cit., p. 17.

²⁷Henry F. Bradford, "Oral-Aural Differentiation Among Basic Speech Sounds as a Factor in Spelling Readiness," Elementary School Journal, 54:354-58, February, 1954.

²⁸Hildreth, op. cit., p. 52.

chronological age. Teachers must not forget this, and must learn to wait for the proper time to begin spelling. They must also realize that this type of child will be able to master much fewer words than the bright child. Fitzgerald reminds us of this fact when he writes:

Slow learning children may not be able to learn more than the minimum core. It would be obviously better for a slow learning child to master the one thousand most important words for writing by the end of the sixth grade than to learn only half of the 2,500, or 3,000 presented to a normal group.²⁹

Hildreth reminds the teacher that slow-learners can learn no faster than their linguistic ability permits, and that they usually cannot advance in spelling ahead of their reading level.³⁰ She adds that these children can make visible progress, however, if a simplified spelling vocabulary is used. She advocates a basic list of about four hundred words for the mentally slow and backward children.³¹

Too often teachers forget or do not realize that children can learn to spell relatively few words in comparison with their reading vocabulary. In their eagerness to have children become proficient in the art of spelling they often

²⁹James A. Fitzgerald, The Teaching of Spelling (Milwaukee: The Bruce Publishing Company, 1951), p. 214.

³⁰Hildreth, op. cit., p. 122.

³¹Ibid., p. 154.

deluge them with so many words, syllables, and combinations of syllables that they become confused and discouraged.

Hanna warns that they may develop negative attitudes toward spelling when these circumstances prevail.³² In expressing a similar point of view Betts writes:

In the elementary school, at least, the child's reading vocabulary is more extensive than his spelling vocabulary. The teacher who attempts to teach the child to spell words he cannot even pronounce in a reading context is doomed to disappointment.³³

IV. INTERRELATIONSHIP OF SPELLING AND READING

Good readers are usually good spellers, and good spellers are seldom poor readers. This fact is reflected in the results of standard achievement scores. Wide reading improves spelling and spelling study improves reading.

Correlation between reading and spelling ability.

Horn claims that correlations between spelling and reading are almost as high as between intelligence and reading.³⁴

³²Hanna and Moore, loc. cit.

³³Betts, op. cit., p. 18.

³⁴Ernest Horn, "Experiences Which Develop Spelling Ability," National Education Association Journal, April, 1954.

Russell also supports this view with statistical analysis.³⁵ Townsend found a higher correlation between spelling and reading vocabulary than between spelling and reading comprehension, but concluded that the correlation in each instance was substantial.³⁶

There also seems to be convincing evidence that many spelling words are learned from having had them in reading. This may occur without any conscious attention to the spelling process. Gilbert,³⁷ Hildreth,³⁸ Strickland,³⁹ Betts,⁴⁰ and

³⁵D. H. Russell, "Spelling Ability in Relation to Reading and Vocabulary Achievement," Elementary English Review, 23:32-37, January, 1946.

³⁶Agatha Townsend, "An Investigation of Certain Relationships of Spelling with Reading and Academic Aptitudes," Journal of Educational Research, 40:465-71, February, 1947.

³⁷L. C. Gilbert, "A Study of the Effect of Reading on Spelling," Journal of Educational Research, 28:570-76, April, 1935.

³⁸Gertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company, 1955), p. 83.

³⁹Ruth G. Strickland, "Utilizing Spelling Research," Childhood Education Journal, 32:69-76, October, 1955.

⁴⁰Emmett A. Betts, "Inter-relationship of Reading and Spelling," Elementary English Review, 22:13-23, January, 1945.

Horn,⁴¹ are among those who make this assertion. Margaret Keyser,⁴² and Ethel Standing,⁴³ in special studies of this nature also found that a significant amount of incidental spelling knowledge accrued from reading instruction.

Some attributes common to spelling and reading. Betts points out some physical attributes and teaching techniques necessary to successful learning in either reading or spelling. He maintains that auditory perception is shared by both reading and spelling. Some individuals misspell words because they do not pronounce them correctly. Visual perception is another characteristic which seems to be significantly related to both reading and spelling ability. A child may improve in both reading and spelling if proper exercises are given to develop his word recognition skills.⁴⁴

⁴¹Ernest Horn, "Experiences Which Develop Spelling Ability," National Education Association Journal, 43:210-11, April, 1954.

⁴²Margaret Keyser, "The Incidental Learning of Spelling Through Four Types of Word Presentation in Reading" (Doctor's dissertation, Boston University, Boston, 1948).

⁴³Ethel Standing, "The Effect of Reading in the Primary Grades Upon Spelling" (unpublished Master's thesis, State University of Iowa, 1929).

⁴⁴Betts, op. cit., p. 17.

Systematic instruction in structural analysis will improve a child's spelling as well as his reading. Phonic instruction is beneficial to spelling and reading according to Horn.⁴⁵ Isolated drill on phonics is of little use according to Betts.

Some beginning reading materials are built on the assumption that sheer mechanical repetition of words will develop the child's reading vocabulary. Then, too, there are those who believe that the memorization of a list of words improves spelling ability. Isolated drills on phonics, memorization of words in the name of spelling, teacher dictation of learner purposes, and the like, are characteristics of an era which should be forgotten.⁴⁶

V. SUMMARY

Much research in spelling has taken place in recent years, but poor spellers continue to be prevalent. Many spelling authorities attribute this condition to the failure of teachers to apply existing research.

There is some dispute concerning the value of using formal word lists in the teaching of spelling. Some authorities insist that teaching words in isolation is a waste of time; others claim that words studied in columns excel in delayed-recall tests, ease of learning, and in transfer to

⁴⁵Horn, loc. cit.

⁴⁶Betts, op. cit., p. 20.

paragraphs. All agree that when formal lists are used the words should be within the vocabulary and experience level of the child. Most authorities recommend supplementing the minimum basic list with words based upon the individual needs of each child.

Spelling readiness is essential to the successful teaching of spelling. In order to spell successfully children must first have reached a substantial level of reading; they must have acquired certain skills in auditory perception and visual discrimination; and, they will profit by having attained a degree of proficiency in handwriting.

Teachers must be careful of deluging children with too many spelling words. This is especially true of beginning or retarded spellers. Children can learn to spell relatively few words in comparison with their reading vocabulary.

Many studies have been made concerning the inter-relationships of reading and spelling. Most authorities agree that there is substantial correlation between the two. Good readers are usually good spellers and good spellers are seldom poor readers. There is convincing evidence that many spelling words are learned by having them in reading. This may occur without conscious attention to the spelling process.

Although many spelling words are learned through reading and by memorization, most authorities agree that

there are other factors more important in learning to spell. Three of these are visual discrimination, auditory perception, and phonetic analysis. According to many authorities the English language is largely phonetic in spite of its many imperfections, and phonics is considered more important to correct spelling than any other single factor.

CHAPTER III

THE IMMEDIATE-RECALL PROJECT

This study was conducted in Stockton, California, in February, 1958. The participants were on the elementary level and were chosen from the Stockton Unified School District. Dr. Nolan D. Pulliam, Superintendent of Schools, granted permission for the study.

The project outlined in this chapter is one of two related studies: (1) a short-term project designed to determine if children learn to spell words which they have had in their basic reading more readily than those which they have not had, and (2) an extended study to determine not only the ease with which they learn to spell these "familiar" words but also to determine the difference in retention between these words and those of comparable spelling difficulty not found in the developmental reading program. The short-term project is reported in Chapter III and will hereafter be identified as The Immediate-Recall Project. The extended study is reported in Chapter IV and will be referred to as The Delayed-Recall Project.

The purpose of The Immediate-Recall Project was to determine the immediate practical value of selecting upper-primary spelling words from the developmental reading program.

I. PROCEDURE FOLLOWED

Selecting the participants. All children were third-graders and had completed the first state second reader, Down Our Way.¹ Forty-two children chosen from three classes were used in the experiment.

The range and mean scores on achievement and mental maturity are presented in Table I. Mental scores were taken from the California Mental Maturity Test² which was given in second grade. The Metropolitan Achievement Test³ was given in February, 1958, and represents class achievement at the time the study took place. According to their test results these children were slightly above average in intelligence.

Selecting the spelling lists. The selection of the word lists was determined by four major factors:

1. Sufficient words were included in the original lists to allow for discarding in the process of selection for spelling difficulty.

¹Guy L. Bond, Down Our Way (Sacramento, California: California State Department of Education, 1953).

²Elizabeth T. Sullivan, Willis W. Clark, and Ernest W. Tiegs, California Short-Form Test of Mental Maturity for Primary Grades (Los Angeles, California Test Bureau, 1957).

³Gertrude H. Hildreth, Metropolitan Achievement Tests (Chicago: World Book Company, 1947).

TABLE I
RANGE AND MEAN SCORES ON INTELLIGENCE, SPELLING,
AND VOCABULARY FOR FORTY-TWO THIRD GRADE
PUPILS USED IN THE IMMEDIATE-RECALL
PROJECT

| | Range | Mean |
|-------------------------------|---------|------|
| Intelligence Quotient | 85-148 | 108 |
| Spelling (Grade Equivalent) | 1.3-5.0 | 3.6 |
| Vocabulary (Grade Equivalent) | 2.0-5.6 | 3.6 |

2. All words comprising the "familiar" list had been studied in developmental reading by the experimental group of children.
3. None of the "unfamiliar" words had been studied by these children except for the few that had occurred in supplementary and library reading.
4. Words for both lists were selected from the state-adopted third-grade speller.⁴

The two lists of spelling words were determined by giving one hundred third-grade words to 114 fifth-grade pupils and noting their success or failure in spelling them. At this point the more difficult words in each list were rejected. Additional ones were then discarded until the two lists were comparable in spelling difficulty.

Two final lists of twenty-five words were used in the experiment. The experimental group of children had read one list of these words in developmental reading. These words are, therefore, termed "familiar" in this study. The children had not read any of the other twenty-five words in their developmental reading; therefore, these words are termed "unfamiliar."

For additional confirmation of the spelling equality of the two lists of words they were related to the spelling difficulties of third-grade children as studied by Arthur I.

⁴David H. Patton, Word Mastery Speller (San Francisco: Charles E. Merrill Company, 1954).

Gates.⁵ In this study Gates gives the average grade placement of 3,876 spelling words according to their placement by eight spelling authors. The grade placement of the familiar and unfamiliar words according to these authorities is given in Table II. The mean grade placement of the familiar words is 3.51, and the mean grade placement of the unfamiliar words is 4.10. This seems to indicate that the unfamiliar words are more difficult; however, the familiar words may have been placed earlier in the spellers because of their more frequent use in children's reading and in their writing.

Table III, page 28, and Table IV, page 29, show the fifty spelling words as introduced in reading and spelling in grades one, two, and three. The familiar words were selected from the basic second reader by Bond.⁶ The children had studied these words in reading previous to spelling them in the experiment. They had not studied the unfamiliar words in basic reading previous to the spelling test. Both the familiar and unfamiliar words were selected from the state-adopted third-grade speller.⁷

⁵Arthur I. Gates, Spelling Difficulties In 3,876 Words (New York: Bureau of Publications, Teachers' College, Columbia University, 1937).

⁶Bond, loc. cit.

⁷Patton, loc. cit.

TABLE II

SPELLING GRADE PLACEMENT OF THE FIFTY WORDS ACCORDING TO
CALIFORNIA STATE SPELLER AND COMPOSITE OPINION
OF SPELLING AUTHORITIES

| Familiar Words | | | Unfamiliar Words | | |
|----------------|---------------------|--------------------|------------------|---------------------|--------------------|
| Word | Patton ^a | Gates ^b | Word | Patton ^a | Gates ^b |
| 1. almost | 3 | 4.6 | 1. bend | 3 | 4.8 |
| 2. better | 3 | 3.1 | 2. block | 3 | 4.3 |
| 3. both | 3 | 3.1 | 3. body | 3 | 5.7 |
| 4. clean | 3 | 3.2 | 4. desk | 3 | 3.8 |
| 5. cross | 3 | 4.1 | 5. died | 3 | 3.9 |
| 6. dish | 3 | 4.0 | 6. dirt | 3 | 3.6 |
| 7. done | 3 | 2.6 | 7. grade | 3 | 4.5 |
| 8. drink | 3 | 3.3 | 8. lead | 3 | 3.7 |
| 9. frog | 3 | 4.0 | 9. note | 3 | 3.3 |
| 10. grow | 3 | 2.8 | 10. order | 3 | 3.6 |
| 11. high | 3 | 3.4 | 11. pipe | 3 | 4.1 |
| 12. hole | 3 | 3.4 | 12. plate | 3 | 5.3 |
| 13. kept | 3 | 3.5 | 13. porch | 3 | 3.6 |
| 14. lake | 3 | 3.9 | 14. pray | 3 | 3.5 |
| 15. lesson | 3 | 3.7 | 15. price | 3 | 3.8 |
| 16. nice | 3 | 4.1 | 16. salt | 3 | 4.0 |
| 17. might | 3 | 4.1 | 17. seat | 3 | 3.7 |
| 18. money | 3 | 4.6 | 18. sold | 3 | 3.7 |
| 19. move | 3 | 3.2 | 19. soup | 3 | 3.0 |
| 20. paper | 3 | 2.7 | 20. speak | 3 | 4.3 |
| 21. poor | 3 | 4.0 | 21. spell | 3 | 3.8 |
| 22. shall | 3 | 3.2 | 22. spend | 3 | 5.2 |
| 23. stay | 3 | 2.8 | 23. spent | 3 | 5.2 |
| 24. such | 3 | 3.8 | 24. state | 3 | 4.0 |
| 25. wait | 3 | 3.6 | 25. study | 3 | 4.2 |

^aPatton, loc. cit.

^bGates, loc. cit.

TABLE III

PRIMARY GRADE PLACEMENT OF THE FAMILIAR WORDS AS USED
 IN BOND BASIC, IN THREE SUPPLEMENTARY READERS,
 AND IN THE CALIFORNIA STATE-ADOPTED SPELLER

| Word | Bond | Gray ^a | McKee ^a | Russell ^a | Patton ^b |
|------------|------|-------------------|--------------------|----------------------|---------------------|
| 1. almost | 2 | 2 | 2 | 3 | 3 |
| 2. better | 2 | 2 | 1 | 1 | 3 |
| 3. both | 2 | 2 | 2 | 3 | 3 |
| 4. clean | 2 | 2 | 1 | 2 | 3 |
| 5. cross | 2 | 3 | | | 3 |
| 6. dish | 2 | 3 | | 2 | 3 |
| 7. done | 2 | 2 | 1 | 2 | 3 |
| 8. drink | 2 | 2 | 2 | 2 | 3 |
| 9. frog | 2 | 3 | | 1 | 3 |
| 10. grow | 2 | 2 | 2 | 2 | 3 |
| 11. high | 2 | 2 | 1 | 2 | 3 |
| 12. hole | 2 | 2 | 2 | 2 | 3 |
| 13. kept | 2 | 2 | 1 | 3 | 3 |
| 14. lake | 2 | 3 | 3 | 2 | 3 |
| 15. lesson | 2 | 3 | 3 | | 3 |
| 16. mice | 2 | 3 | | 3 | 3 |
| 17. might | 2 | 2 | 2 | 2 | 3 |
| 18. money | 2 | 2 | 1 | 1 | 3 |
| 19. move | 2 | 2 | 3 | 2 | 3 |
| 20. paper | 2 | 2 | 2 | 2 | 3 |
| 21. poor | 2 | 2 | 2 | 3 | 3 |
| 22. shall | 2 | 2 | 2 | 1 | 3 |
| 23. stay | 2 | 2 | 2 | 1 | 3 |
| 24. such | 2 | 2 | 2 | 2 | 3 |
| 25. wait | 2 | 2 | 1 | 2 | 3 |

^aThese names refer to the primary authors of the texts used for supplementary reading.

^bThis name refers to the author of the state speller.

TABLE IV

PRIMARY GRADE PLACEMENT OF THE UNFAMILIAR WORDS AS USED
IN BOND BASIC, IN THREE SUPPLEMENTARY READERS,
AND IN THE CALIFORNIA STATE-ADOPTED SPELLER

| Word | Bond | Gray ^a | McKee ^a | Russell ^a | Patton ^b |
|-----------|------|-------------------|--------------------|----------------------|---------------------|
| 1. bend | | | 3 | 3 | 3 |
| 2. black | | 3 | 3 | 3 | 3 |
| 3. body | | 3 | | 3 | 3 |
| 4. desk | | 3 | 3 | | 3 |
| 5. died | | 3 | | 3 | 3 |
| 6. dirt | | 3 | 2 | 3 | 3 |
| 7. grade | | | | | 3 |
| 8. lead | | 3 | 3 | | 3 |
| 9. note | | | | | 3 |
| 10. order | | 3 | 3 | | 3 |
| 11. pipe | | | 2 | | 3 |
| 12. plate | | 3 | | 3 | 3 |
| 13. perch | | 3 | 3 | | 3 |
| 14. pray | | | | | 3 |
| 15. price | | | | 3 | 3 |
| 16. salt | | 3 | 3 | 3 | 3 |
| 17. seat | | 3 | 3 | 3 | 3 |
| 18. sold | | 3 | 3 | 3 | 3 |
| 19. soup | | | | 3 | 3 |
| 20. speak | | 3 | 3 | 3 | 3 |
| 21. spell | | | | | 3 |
| 22. spend | | 3 | 3 | 2 | 3 |
| 23. spent | | 3 | | | 3 |
| 24. state | | | 3 | | 3 |
| 25. study | | | | | 3 |

^aThese names refer to the primary authors of the texts used for supplementary reading.

^bThis name refers to the author of the state speller.

Table V shows the number of familiar and unfamiliar words which these particular children had read in their supplementary readers before the spelling test. Twenty-three of the familiar words had appeared in one or more of their supplementary readers, but only six words from the unfamiliar list had appeared in their supplementary readers. The readers were written by Gray,⁸ McKee,⁹ and Russell.¹⁰

A further study of the two lists reveals that the familiar words are probably used more frequently in children's writing. Table VI, page 32, based on an article by James A. Fitzgerald,¹¹ reveals that fifteen of the twenty-five familiar words appeared ten times or more in the writing of over two thousand third-grade children's life letters. Only five of the words from the unfamiliar list appeared in the letters of these same children.

⁸William S. Gray, A. Sterl Artley, and May Hill Arbuthnot, The New Basic Readers (Palo Alto, California: Scott Foresman and Company, 1951).

⁹Paul McKee, and others, McKee Reading Series (San Francisco: Houghton Mifflin Company, 1949).

¹⁰David H. Russell, The Ginn Basic Readers (Palo Alto, California: Ginn and Company, 1948).

¹¹James A. Fitzgerald, "The Vocabulary and Spelling Errors of Third-Grade Children's Life Letters," Elementary School Journal, 38:518-27, March, 1938.

TABLE V
NUMBER OF FAMILIAR AND UNFAMILIAR WORDS APPEARING
IN PUPILS' SUPPLEMENTARY READERS PRIOR
TO THE SPELLING EXPERIMENT

| | Gray ^a | McKee ^a | Russell ^a |
|-----------------------|-------------------|--------------------|----------------------|
| Familiar (25 words) | 19 | 18 | 18 |
| Unfamiliar (25 words) | 0 | 2 | 4 |

^aThese names refer to the primary authors of the texts used for supplementary reading.

TABLE VI

USE FREQUENCY OF WORDS APPEARING IN THE IMMEDIATE-RECALL
PROJECT AND THE DELAYED-RECALL STUDY
ACCORDING TO FITZGERALD'S STUDY^a

| Familiar Words | Use Frequency | Unfamiliar Words | Use Frequency |
|----------------|---------------|------------------|---------------|
| 1. almost | 18 | 1. bend | |
| 2. better | 88 | 2. block | |
| 3. both | 21 | 3. body | |
| 4. clean | 10 | 4. desk | |
| 5. cross | | 5. died | 15 |
| 6. dish | 22 | 6. dirt | |
| 7. done | 26 | 7. grade | 379 |
| 8. drink | | 8. lead | |
| 9. frog | | 9. note | |
| 10. grow | | 10. order | |
| 11. high | 20 | 11. pipe | |
| 12. hole | | 12. plate | |
| 13. kept | | 13. porch | |
| 14. lake | | 14. pray | 42 |
| 15. lesson | 36 | 15. price | |
| 16. mice | | 16. salt | |
| 17. might | 25 | 17. seat | |
| 18. money | 33 | 18. sold | |
| 19. move | 20 | 19. soup | |
| 20. paper | 51 | 20. speak | |
| 21. poor | | 21. spell | 110 |
| 22. shall | | 22. spend | |
| 23. stay | 48 | 23. spent | |
| 24. such | 10 | 24. state | |
| 25. wait | 23 | 25. study | 25 |

^aJames A. Fitzgerald, "The Vocabulary and Spelling Errors of Third-Grade Children's Life Letters," Elementary School Journal, 38:518-27, March, 1938.

The Rinsland¹² vocabulary of children's writing was used by Hildreth¹³ as a basis for the preparation of a vocabulary list arranged according to frequency levels. She selected about 7,200 of the most commonly used words in the Rinsland list according to total frequency of use, and divided them into ten levels or intervals--level one indicating the most frequently used words. Frequency levels for the spelling words used in this study are given in Table VII.

The mean level of the familiar words is 2.40 and the mean level of the unfamiliar words is 3.72. Since the smaller number indicates more frequent usage, the familiar words, according to this study, are used more often in children's writing.

Conducting the experiment. At the beginning of the experiment the children were given a pre-study test on all the words. The purpose of this test was to determine the amount of learning which had already taken place.

Following the initial test the words were presented in daily spelling lessons. Half the words in each day's

¹²Henry D. Rinsland, A Basic Writing Vocabulary of Elementary School Children (New York: Henry Holt and Company, 1955), pp. 311-37.

¹³Gertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company, 1955), pp. 311-17.

TABLE VII

USE FREQUENCY OF WORDS APPEARING IN THE IMMEDIATE-RECALL
PROJECT AND THE DELAYED-RECALL STUDY
ACCORDING TO HILDRETH'S STUDY^a
(SMALLER NUMBER DENOTES
MORE FREQUENT USE)

| Familiar Words | Use Frequency | Unfamiliar Words | Use Frequency |
|----------------|---------------|------------------|---------------|
| 1. almost | 2 | 1. bend | 6 |
| 2. better | 1 | 2. block | 4 |
| 3. both | 2 | 3. body | 2 |
| 4. clean | 2 | 4. desk | 3 |
| 5. cross | 3 | 5. died | 2 |
| 6. dish | 4 | 6. dirt | 4 |
| 7. done | 2 | 7. grade | 1 |
| 8. drink | 2 | 8. lead | 4 |
| 9. frog | 5 | 9. note | 5 |
| 10. grow | 2 | 10. order | 5 |
| 11. high | 2 | 11. pipe | 5 |
| 12. hole | 2 | 12. plate | 5 |
| 13. kept | 2 | 13. perch | 3 |
| 14. lake | 2 | 14. pray | 6 |
| 15. lesson | 3 | 15. price | 6 |
| 16. mice | 5 | 16. salt | 3 |
| 17. might | 2 | 17. seat | 3 |
| 18. money | 2 | 18. sold | 3 |
| 19. move | 3 | 19. soup | 6 |
| 20. paper | 2 | 20. speak | 4 |
| 21. poor | 2 | 21. spell | 4 |
| 22. shall | 2 | 22. spend | 3 |
| 23. stay | 2 | 23. spent | 3 |
| 24. such | 2 | 24. state | 2 |
| 25. wait | 2 | 25. study | 3 |

^aGertrude Hildreth, Teaching Spelling (New York: Henry Holt and Company, 1955), pp. 311-17.

assignment were familiar and unfamiliar, respectively. The children were encouraged to study, but undue emphasis was not attached to their lessons.

One week after the presentation of the last lesson the final fifty word test was administered. The result of this test, compared with that of the original, served as the basis for calculating the amount of spelling gain which had taken place because of the experiment.

II. STATISTICAL TREATMENT OF THE DATA

In order to determine the significance of the relative gains made on the familiar and unfamiliar words used in the experiment, the investigator was faced with the decision of choosing a reliable statistical method suitable to this particular set of data. Guilford's¹⁴ book on fundamental statistics seemed to have the answer. The formulas used are to be found in Chapter VIII which deals with the reliability and significance of statistics.

In particular, the study is concerned with the formula for determining the reliability of a difference between means. The reliability of a difference is indicated

¹⁴Joy Paul Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, Inc., 1942).

by its standard error.

The amount of fluctuation in a difference between sample means is naturally related to the amount of fluctuation in the means themselves. The simplest relationship is given by the formula,

$$\sigma_{dm} = \sqrt{\sigma_{m_1}^2 + \sigma_{m_2}^2}$$

Where:

σ_{dm} = Standard Error of a difference between means,
 σ_{dm_1} = Standard Error of the mean of the first distribution
 σ_{dm_2} = Standard Error of the mean of the second distribution¹⁵

Data from the entire sample. The mean gains made on the spelling words by the forty-two pupils used in this experiment as revealed from a comparison of initial and final tests, were as follows:

Familiar list 6.9 words

Unfamiliar list 5.0 words

Applying the above formula we derive the results as summarized in Table VIII.

Appendix F in Croxton and Crowden¹⁶ shows a t ratio of 2.423, with forty degrees of freedom, to be significant at the 2 per cent level. Since the above t ratio of 2.418

¹⁵Ibid., pp. 137-38.

¹⁶Frederick E. Croxton and Dudley J. Crowden, Applied General Statistics (New York: Prentice-Hall, Inc., 1939), p. 875.

TABLE VIII
SIGNIFICANCE OF MEAN GAINS MADE ON FAMILIAR AND
UNFAMILIAR WORDS STUDIED BY FORTY-TWO
THIRD-GRADE CHILDREN

| Statistics | Familiar Words | Unfamiliar Words |
|--|-------------------|---------------------|
| Mean Gain | 6.9 | 5.0 |
| Standard Deviation | 4.31 | 3.09 |
| Standard Error of the Mean | .672 | .482 |
| Standard Error of the Difference Between Mean Gains | | .827 |
| Difference Between Mean Gains | | 1.9 |
| t ratio | | 2.418* |

*t = significant at the .02 level of confidence.
df = forty-one.

is based on forty-one degrees of freedom, it approximates the 2 per cent level of confidence. The above difference between mean gains is, therefore, quite significant since there is only one chance in fifty that a difference of this magnitude could have occurred by random sampling alone.

As a group, the forty-two children did significantly better on the familiar words, but individually there was a great deal of diversity which merits some discussion.

Over one-fourth of the children made a greater gain on the unfamiliar words than they did on the familiar ones. An additional six children did equally well on both lists. All these children were interspersed throughout the ability range of the group. There seemed to be little correlation between intelligence scores and the gain made. Neither was there any significant correlation between spelling achievement and the type of gain made.

III. SUMMARY

The purpose of The Immediate-Recall Project was to determine if children learn more easily the spelling words which are more familiar to them.

Forty-two third-grade pupils, representing three different classes, were used in the experiment. These children ranged from two years below grade level to more than two years above in mental age and achievement. The class as

a whole was slightly above average.

The fifty spelling words used were divided into two equal lists. Half the words were selected from the basic reader, and are referred to as "familiar." The remaining twenty-five words had not been studied by the children and are, therefore, termed "unfamiliar." Both the familiar and unfamiliar words were selected from a third-grade speller. Neither list contained words with major spelling difficulties.

A majority of the children did significantly better on the familiar words, but all did surprisingly well on the unfamiliar in spite of the low frequency use of these words in reading and writing.

Some children did equally well on both the familiar and unfamiliar words, and over one-fourth of them did better on the unfamiliar words.

It seems apparent that many children profit by having spelling words appear first in their reading program, but this is certainly not the most significant factor in learning to spell.

CHAPTER IV

THE DELAYED-RECALL STUDY

This study was conducted in the Stockton Public Schools by special permission from the superintendent. The study was made during the school year, 1957-1958.

Two hundred children were used. One hundred were second-semester second-graders, and one hundred were beginning fourth-graders. As in The Immediate-Recall Project the study was focused on spelling achievement at third-grade level.

I. PROCEDURE FOLLOWED

Selecting the participants. Since two separate groups of children were used instead of one continuous group, it was necessary to use a fairly large sample in order to make the obtained data as reliable as possible under the circumstances. Children from five different schools were used in the study.

Because third-grade spelling words were used, second-grade pupils whose spelling ability was extremely low had to be discarded. Pupils participating in this study had all completed the first state-adopted second reader, Down Our Way¹

¹Guy L. Bond, Down Our Way (Sacramento: California State Department of Education, 1953).

by the end of the school year. Since it was desirable to use fourth-graders whose spelling ability was comparable to that of the second-graders, none of them were extremely poor spellers.

Range and mean scores for both groups are shown in Table IX, page 42, and Table X, page 43.

Second-grade achievement scores were obtained from The Metropolitan Achievement Test² which was administered about mid-term. Spelling scores were not available for second grades. However, there is generally a rather significant correlation between spelling and reading scores as reported by this study. (See pages 16-18.) We may assume that these children are above average in spelling.

The elementary battery of The Metropolitan Achievement Test was given to the fourth grades near the beginning of the fall term. Mental scores for both groups were derived from the California Mental Maturity Test.³

Selecting and equating the spelling lists. Similar procedure was used for this study as was used in The

²Gertrude H. Hildreth, Metropolitan Achievement Tests, Primary I Battery (Chicago: World Book Company, 1946).

³Elizabeth T. Sullivan, W. S. Clark, and Ernest W. Tiegs, California Short-Form Test of Mental Maturity For Primary Grades (Los Angeles: California Test Bureau, 1957).

TABLE IX

RANGE AND MEAN SCORES ON INTELLIGENCE AND READING
COMPREHENSION FOR ONE HUNDRED SECOND-GRADE
PUPILS USED IN THE DELAYED-RECALL STUDY

| | Range of Scores | Mean Score |
|------------------------|--------------------|---------------|
| Intelligence Quotient | 77-151 | 115 |
| Reading Comprehension* | 2.3-5.6 | 3.5 |

*Vocabulary and spelling scores were not available for all children, and so were omitted altogether.

TABLE X
RANGE AND MEAN SCORES ON INTELLIGENCE, SPELLING,
READING VOCABULARY, AND READING COMPREHENSION
FOR ONE HUNDRED FOURTH-GRADE PUPILS
USED IN THE DELAYED-RECALL STUDY

| | Range of Scores | Mean Scores |
|------------------------|--------------------|----------------|
| Intelligence Quotient | 77-130 | 106.3 |
| Spelling | 2.5-6.5 | 4.1 |
| Reading, Vocabulary | 1.6-7.6 | 4.4 |
| Reading, Comprehension | 1.8-8.6 | 4.4 |

Immediate-Recall Study.

1. All spelling words were selected from the third-grade state-adopted speller.
2. None of the words had been previously studied in a formal spelling lesson by the second-grade pupils.
3. All words had been studied by the fourth-grade pupils in a formal spelling lesson during third grade.
4. Since the spelling words for the entire study were of necessity limited by the reading progress of the second-grade pupils, the familiar words were all taken from the state-adopted reader, Down Our Way. All second-grade pupils had completed this reader.
5. For the unfamiliar list of words it was necessary to avoid the use of Bond first, second, and third-grade words, because many of the beginning fourth-grade children had completed all the Bond primary readers.
6. Enough words were included originally to allow for discarding in the process of equating the two lists for spelling difficulties.
7. The two lists were determined by giving them to a group of children reading beyond the level of the experimental group. These children were chosen because they had previously studied, both in their developmental reading and in their formal spelling program, all the words contained in both lists. Therefore, the normal spelling difficulty of each word was assumed to be the most important factor in determining its correct spelling for this control group.
8. All these restricting factors limited the available words suitable for use. Only fifty words were used in the study.

The same spelling words were used in this study as in The Immediate-Recall Project. For an analysis of the words refer to Chapter III.

Attention is again called to the fact that none of the unfamiliar words had been encountered by any of the children in their basic reading program before having had them in their spelling. Even in their supplementary reading the children had met the familiar words much more frequently than the unfamiliar, as is shown in Table XI.

Collecting the data. Five fourth-grade classes representing five different schools were given the spelling test in October. Five second-grade classes from the same schools were given the same test the following March.

By comparing the test scores at second and fourth-grade levels, information was obtained with which to determine the amount of learning presumed to have taken place in third grade the previous year. By comparing mean gains made on the familiar and unfamiliar words it was possible to draw tentative conclusions concerning the practical value of selecting upper-primary spelling words from the developmental reading program.

II. STATISTICAL TREATMENT OF DATA

The same formula was used in this study as was used in The Immediate-Recall Project,⁴ the object being to determine the reliability of the difference between mean gains on the

⁴Refer to page 36 of this study.

TABLE XI
NUMBER OF FAMILIAR AND UNFAMILIAR WORDS APPEARING
IN THE BASIC AND THREE MOST POPULAR
SUPPLEMENTARY READERS IN GRADES
ONE, TWO, AND THREE

| | Bond (Basic) | Gray | McKee | Russell |
|------------------|-----------------|------|-------|---------|
| Familiar Words | 25 | 25 | 21 | 23 |
| Unfamiliar Words | 0 | 15 | 14 | 14 |

familiar and unfamiliar words studied in third grade.

Data from the entire sample. The mean gains made on the spelling words by the one hundred pupils used in this study were as follows:

Familiar words 7.22 words

Unfamiliar words 6.99 words

By applying the formula we derive the results as summarized in Table XII.

With ninety-nine degrees of freedom, t ratio would have to be 1.98 in order to be significant at the 5 per cent level of confidence. Since the t ratio in this instance is only .54, we must assume that the slight difference in gain may easily have been either the result of an error in sampling or a result of chance factors.

Data from upper half of sample. In working with the test results, the investigator discovered an interesting variation which seemed to be consistent throughout the results. There seemed to be a decided difference between the relative scores of the better pupils compared with the others. It, therefore, seemed worth-while to divide the sample into two groups, with quartiles one and two composing one group and quartiles three and four the other. Each of these was then treated as a separate sample.

TABLE XII
SIGNIFICANCE OF THE MEAN GAINS MADE ON
FAMILIAR AND UNFAMILIAR WORDS
STUDIED BY ONE HUNDRED
THIRD-GRADE PUPILS

| Statistics | Familiar Words | Unfamiliar Words |
|--|----------------|------------------|
| Mean Gain | 7.22 | 6.99 |
| Standard Deviation | 3.13 | 2.87 |
| Standard Error of the Mean | .313 | .287 |
| Standard Error of the Difference Between Mean Gains | | .425 |
| Difference Between Mean Gains | | .23 |
| t ratio | | .54* |

*t = insignificant.

Range and mean scores for the upper fifty fourth-grade pupils are given in Table XIII. These scores are from standard tests given at beginning fourth grade. It is evident from the scores of these pupils that, as a group, they are well above average in both intelligence and achievement. Table XIV, page 51, shows the mean gains of these pupils and the significance of those gains. A t ratio of 2.12 is significant at the 5 per cent level; however, the singular thing about this t ratio, is the fact that the largest gain was on the unfamiliar words. This raises an interesting question. Do superior pupils tend to study more carefully and remember longer the spelling words which are less familiar to them? There are strong indications in the present study that this may be true.

Data from lower half of sample. Range and mean scores for this group are given in Table XV, page 52. These scores are taken from standard tests administered at beginning fourth grade.

According to the scores of these pupils they are average in intelligence and below average in achievement. The relative gains of these pupils are shown in Table XVI, page 53. A t ratio of 2.73 is significant at the 1 per cent level of confidence. There is less than one chance in one hundred that a difference of this magnitude could have

TABLE XIII

RANGE AND MEAN SCORES OF THE FIFTY FOURTH-GRADE
PUPILS WHO SCORED HIGHEST ON THE FAMILIAR-
UNFAMILIAR SPELLING WORD TEST

| | Range of Scores | Mean Scores |
|--|--------------------|----------------|
| Spelling (Grade Equivalent) | 3.5-6.5 | 4.84 |
| Reading Vocabulary (Grade Equivalent) | 2.8-7.6 | 5.09 |
| Intelligence Quotient | 89-130 | 111 |

TABLE XIV

SIGNIFICANCE OF MEAN GAINS MADE ON FAMILIAR AND UNFAMILIAR
 SPELLING WORDS STUDIED BY THE UPPER HALF OF
 ONE HUNDRED THIRD-GRADE PUPILS

| Statistics | Familiar Words | Unfamiliar Words |
|--|-------------------|---------------------|
| Mean Gain | 6.26 | 7.46 |
| Standard Deviation | 2.95 | 2.65 |
| Standard Error of the Mean | .421 | .379 |
| Standard Error of the Difference Between Mean Gains | | .566 |
| Difference Between Mean Gains | | 1.20 |
| t ratio | | 2.12* |

*t = significant at .05 level of confidence.
 df = ninety-nine.

TABLE XV

RANGE AND MEAN SCORES OF THE FIFTY FOURTH-GRADE
PUPILS WHO SCORED LOWEST ON THE FAMILIAR-
UNFAMILIAR SPELLING TEST

| | Range of Scores | Mean Scores |
|--|--------------------|----------------|
| Spelling (Grade Equivalent) | 2.5-5.7 | 3.36 |
| Reading Vocabulary (Grade Equivalent) | 1.6-5.7 | 3.73 |
| Intelligence Quotient | 77-125 | 100.9 |

TABLE XVI

SIGNIFICANCE OF MEAN GAINS MADE ON FAMILIAR AND
UNFAMILIAR SPELLING WORDS STUDIED BY THE
LOWER HALF OF ONE HUNDRED
THIRD-GRADE PUPILS

| Statistics | Familiar Words | Unfamiliar Words |
|--|-------------------|---------------------|
| Mean Gains | 8.18 | 6.52 |
| Standard Deviation | 3.01 | 3.01 |
| Standard Error of the Mean | .430 | .430 |
| Standard Error of the Difference Between Mean Gains | | .608 |
| Difference Between Mean Gains | | 1.66 |
| t ratio | | 2.73* |

*t = significant at .01 level of confidence.
df = ninety-nine.

occurred by random sampling alone. These figures indicate that children of lower ability tend to profit by having spelling words which are more familiar to them.

III. SUMMARY

The purpose of The Delayed-Recall Study was to determine if children retain the correct spelling of words longer if they have had them in their reading program.

Two groups of children were used instead of one continuous group. Since the study was focused upon spelling achievement at third-grade level it was expedient to use second-semester second-graders and beginning fourth-graders. Five schools were involved. One second grade and one fourth grade were chosen from each school. Two hundred pupils were used in the study.

The spelling test was composed of fifty words, twenty-five of which were taken from Down Our Way, a basic second reader. These words were classified as familiar. The remaining twenty-five words were termed unfamiliar because they did not occur in the basic primary reading series. All words were taken from the third-grade speller.

A comparison of mean gains made on familiar and unfamiliar words revealed no significant difference for the sample as a whole. If, however, the entire sample was divided into upper and lower groups according to ability

and achievement, an interesting contrast developed. Superior children did better on the less familiar words while children of lower ability did better on the familiar words.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents a brief summary of the results of the study, draws conclusions from these results, and makes recommendations for further study.

I. SUMMARY

This study represents an attempt to determine the feasibility of choosing third-grade spelling words from the developmental reading program; the idea being that children will learn to spell more easily the words which are more familiar to them because of having encountered them in classroom reading.

Two separate but related studies were made: (1) a short-term project designed to determine if children learn to spell words which they have had in their developmental reading program more readily than those which they have not had, and (2) an extended study to determine the difference in spelling retention between familiar and less familiar words. The short-term project has been commonly referred to as The Immediate-Recall Project, while the extended study has been termed The Delayed-Recall Study.

The purpose of The Immediate-Recall Project was to investigate the thesis that upper-primary children learn

more easily the spelling words which have previously appeared in their developmental reading.

Forty-two third-grade pupils representing three different classes were used in the experiment. These children had a range of about four years in mental age and achievement. The group as an average was slightly above grade-level.

The fifty spelling words used were divided into two equal lists, half of which were taken from the developmental reading program of these children, and half of which did not occur in their basic readers.

Most of the children did significantly better with the familiar words. However, all did surprisingly well on the unfamiliar considering the low frequency use of these words in both reading and writing. Some did equally well on both lists, and a few did better on the unfamiliar words.

The purpose of The Delayed-Recall Study was to investigate the thesis that children retain the correct spelling of words longer if they have had them in their developmental reading previous to their presentation in formal spelling.

Two hundred children from five schools were used in this study. In general these children were above average in intelligence and in achievement. Since the study was

focused upon spelling at third-grade level, it was expedient to use second-semester second-graders and beginning fourth-graders. The difference in spelling scores between these two groups was presumed to represent the learning which had taken place in third grade.

The same spelling test was used in The Immediate-Recall Project. The test was composed of fifty words, none of which the second-graders had had in formal spelling. They had studied half of them in reading. The beginning fourth-grade pupils had studied all the words in spelling the previous year, but had had only half of them in reading when the thesis test was administered.

A comparison of mean gains made on familiar and unfamiliar words revealed no significant difference for the sample as a whole. If, however, the entire sample was divided into upper and lower groups according to ability, an interesting contrast developed. Superior children showed a greater gain on the less familiar words while less able children did better on the familiar words.

II. CONCLUSIONS

It seems evident that the majority of children, who are average or below in intelligence and achievement, profit by having spelling words appear first in their developmental reading. In The Immediate-Recall Project a

group of forty-two third-grade pupils made a gain of 1.9 words more on the familiar words than on the unfamiliar.¹ This difference in gain is significant at the 2 per cent level of confidence, which indicates that this gain would happen purely by chance less than once in fifty samples.

In The Delayed-Recall Study the lower half of the one hundred pupils retained a gain of 1.66 words more on the familiar than on the unfamiliar words.² With forty-nine degrees of freedom there is less than one chance in one hundred that a difference of this magnitude could have occurred by random sampling. These figures indicate that children of lower ability tend to profit by having spelling words which are more familiar to them.

It is questionable if superior children profit by having spelling words chosen from their developmental reading program. In fact, less familiar words seem to present a challenge to them. Table IX, page 42, reveals that the upper fifty children used in The Delayed-Recall Study actually made a greater gain on the unfamiliar words.

Although it seems apparent that most children profit by having spelling words appear first in their reading,

¹See Table III, p. 28.

²See Table IX, p. 42.

this is certainly not the most significant factor in learning to spell.

III. RECOMMENDATIONS FOR FURTHER STUDY

The following recommendations are made for further study:

1. It is recommended that a further study be made of superior primary pupils in order to further determine to what extent they differ from the average in spelling needs and spelling habits.

2. It is recommended that the present study be extended to grades four, five, and six in order to determine where there are advantages to slow learners of having their spelling words taken from their developmental reading.

BIBLIOGRAPHY

BIBLIOGRAPHY

A. BOOKS

- Bond, Guy L. Down Our Way. Sacramento, California: State Department of Education, 1953.
- Groxton, Frederick E., and Dudley J. Crowden. Applied General Statistics. New York: Prentice-Hall, Inc., 1939.
- Dolch, Edward W. Better Spelling. Campaign, Illinois: The Girard Press, 1942.
- Fitzgerald, James A. The Teaching of Spelling. Milwaukee: The Bruce Publishing Company, 1951.
- Gates, Arthur I. Spelling Difficulties in 3876 Words. New York: Bureau of Publications, Teachers' College, Columbia University, 1937.
- Gray, William S., A. Sterl Artley, and May Hill Arbuthnot. The New Basic Readers. Palo Alto, California, Scott Foresman Company, 1951.
- Guilford, Joy Paul. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill Book Company, Inc., 1942.
- Hildreth, Gertrude. Teaching Spelling. New York: Henry Holt and Company, 1955.
- McKee, Paul, and others. McKee Reading Series. San Francisco: Houghton-Mifflin Company, 1949.
- Patton, David H. Word Mastery Speller. San Francisco: Charles E. Merrill Company, 1954.
- Rinsland, Henry D. A Basic Writing Vocabulary of Elementary School Children. New York: The Macmillan Company, 1945.
- Russell, David H. The Ginn Basic Readers. Palo Alto, California: Ginn and Company, 1948.
- Wolf, Maurice D. and Jeanne A. Remedial Reading. New York: McGraw-Hill Book Company, 1957.

B. PERIODICALS

- Betts, Emmett A. "Inter-relationships of Reading and Spelling," Elementary English Review, 22:13-23, January, 1945.
- Bradford, Henry F. "Oral-Aural Differentiation Among Basic Speech Sounds as a Factor in Spelling Readiness," Elementary School Journal, 54:354-58, February, 1954.
- Delacato, Carl H. "Spelling: Five-Year Study," Elementary English, 32:296-98, May, 1955.
- Fitzgerald, James A. "The Vocabulary and Spelling Errors of Third-Grade Children's Life Letters," Elementary School Journal, 38:518-27, March, 1938.
- Furness, Edna L. "Who Can Cure The Spelling Sickness?" American School Board Journal, 134:33, 34, May, 1957.
- _____. "Why Can't John Spell?" School and Society, 82:199-202, December 24, 1955.
- Gilbert, Luther C. "A Study of The Effect of Reading on Spelling," Journal of Educational Research, 28:570-76, April, 1935.
- Guiles, R. E. "Effect of Formal Spelling on Spelling Accuracy," Journal of Educational Research, 37:284-89, December, 1943.
- Hanna, Paul R., and James T. Moore. "Spelling From Spoken Word to Written Symbol," Elementary School Journal, 53:329-37, February, 1953.
- Horn, Ernest. "Experiences Which Develop Spelling Ability," National Education Association Journal, 43:210-11, April, 1954.
- _____. "Research in Spelling," Elementary English Review, 21:6-13, January, 1944.
- Lionell, W. Meno. "Purposeful Spelling," The Elementary School Journal, 55:341-45, February, 1955.
- Russell, David H. "Diagnostic Study of Spelling Readiness," Journal of Educational Research, 37:276-83, December, 1943.

- _____. "Spelling Ability in Relation to Reading and Vocabulary Achievement," Elementary English Review, 23:32-37, January, 1946.
- Straub, J. Harold. "An Organismic Approach to Spelling," Elementary English Review, 19:55-58, February, 1942.
- Strickland, Ruth G. "Utilizing Spelling Research," Childhood Education Journal, 32:69-76, October, 1955.
- Templin, Mildred C. "Phonic Knowledge and Its Relation to the Spelling and Reading Achievement of Fourth-Grade Pupils," Journal of Educational Research, 47:441-54, February, 1954.
- Townsend, Agatha. "An Investigation of Certain Relationships of Spelling with Reading and Academic Aptitudes," Journal of Educational Research, 40:465-71, February, 1947.
- Williams, Ralph M. "Method of Teaching Spelling to a Group of Seriously Mentally Retarded Students," College English, 16:500-516, May, 1955.

C. PUBLICATIONS OF THE GOVERNMENT, LEARNED SOCIETIES,
AND OTHER ORGANIZATIONS

- Hildreth, Gertrude H. Metropolitan Achievement Tests. Chicago: World Book Company, 1947.
- Sullivan, Elizabeth T., Willis W. Clark, and Ernest W. Tiegs. California Short-Form Test of Mental Maturity for Primary Grades. Los Angeles: California Test Bureau, 1957.