3-1-1956

Correlations Between Spelling and Phonetic Usage at the Third Grade Level

Robert S. Knicely
University of Omaha

CORRELATIONS BETWEEN SPELLING AND PHONETIC USAGE AT THE THIRD GRADE LEVEL

A Thesis

Presented to

the Faculty of the Department of Psychology

of the

University of Omaha

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

---

by

Robert S. Knicely

March 1956

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

ACKNOWLEDGMENTS

The author wishes to express his appreciation for the encouragement and assistance received from:

Dr. William H. Thompson, Dean of the College of Arts and Sciences and Head of Department of Psychology, University of Omaha;

Dr. Francis M. Hurst, Assistant Professor, Department of Psychology, University of Omaha;

Dr. Stewart J. Briggs, Instructor, Department of Psychology and Industrial Psychologist for the Bureau of Testing, Counseling, and Research, University of Omaha;

Dr. Joseph G. Dunn, Assistant Professor, Department of Elementary Education, College of Education, University of Omaha;

Miss Frances M. Edwards, Assistant Director, Child Study Service, University of Omaha;

His wife, Halene.

R. S. K.

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

From the very first symbol drawn upon the ground to the contemporary complicated system of communication, spelling has been a problem. The conveyance of an idea by writing has given the individual a means of expression to his fellow man, and has given the culture of the nation a method of carrying its discoveries to other groups.

This study was prompted by the need for further understanding of the relationship of phonics to spelling ability.

CHAPTER I

HISTORY OF SPELLING AND PHONICS

Spelling

Before 1900 the accepted procedure in teaching of spelling was to drill long lists of difficult words and to spell orally in highly competitive "bees" to prove spelling ability. The subject was considered a unit of study isolated from other subjects in the curriculum. From 1647 to 1840, "alphabetical" methods of teaching spelling and reading were used exclusively. From about 1840 to 1900, the "word" or "phonic" method was the popular means of teaching these subjects.[1] Several well-defined methods of phonic teaching were recognized, and of these Rebecca Pollard's Synthetic Method, in 1889, and the Gordan Readers, 1902, 1910, and 1918, will furnish examples to anyone wishing to further pursue this subject.[2] A new phonic method reader appeared as late as 1927, the Moore-Wilson Readers, but for the most part, the "phonic" or

---

[1] James A. Fitzgerald, "Research in Spelling and Handwriting," Review of Educational Research, Vol. 22 (April, 1952), p. 91.

[2] William S. Gray, On Their Own In Reading (New York: Scott, Foresman and Company, 1945), pp. 10-13.

"word" method was being usurped in favor of the "story method" in reading about 1915 and after.[3]

By 1920 the realization that phonics had some faults brought a revolt against "phonic" methods, and in many schools teachers ceased giving any special attention to visual forms of words. Some teachers and schools continued to pay some attention to the word-analysis skills, but the general trend was completely away from these.[4]

As the phonic methods lost favor, the realization came that spelling should be a tool for writing and should be related to the other language arts. Hildreth states that many persons have learned to spell by traditional methods, but not all have learned easily, become good spellers, or formed good spelling habits.[5]

In the 1930's an interest in the 3 R's as related to the whole school program, and as tools for learning and problem solving, became predominant. At this time some leaders began to propose incorporation of spelling in language books and demonstrated the advantages of linking spelling with reading.[6]

---

[3]Ibid., p. 24.

[4]Ibid., p. 26.

[5]Gertrude H. Hildreth, Teaching Spelling: A Guide to Basic Principles and Practices (New York: Henry Holt, 1955), p. 9.

[6]Ibid., p. 12.

By 1940 a powerful swing back to phonetic teaching had begun. Parents and teachers became aware that the remedial programs sometimes necessary in the upper grades were not matters of pride, but rather evidence of failure to provide adequate developmental programs.[7]

Thus, phonics was returned gradually to school systems where it had been completely abandoned and was re-emphasized in systems where it had lost favor but had not been absolutely cast aside.

Phonics

In the past, when communication by means of written symbol was first invented, there must have been many who could not draw in the sand, chisel the proper figures in the rock, or, unlike Madame DeFarge in Tale of Two Cities, could not knit the proper symbol to impart the desired impression in the mind of the reader. Today there is still the problem of the poor speller who is unable to communicate to the best of his ability in written material with his fellow men.

Some two hundred and fifty alphabets are known to scholars; and although English is allied to many of these,

---

[7]Gray, op. cit., pp. 27-28.

it is still independent of them all. All of the alphabets have one main purpose and that is the idea of a picture of a symbol of some inferrible concept which cannot be expressed by pictorial representation alone.

The American Indian and the early Chinese maintained cultures similar to each other in at least one respect: they each had groups which could make use of the same "picture-plus-idea concept" to communicate ideas between the different groups; however, the oral transmission of concept was so altered among the different tribes that communication was impossible. Scholars today find that the big difference between the Indian-Chinese "picture-plus-idea concept" and English is that where they used a new "picture" for every idea, English uses the "picture" to represent a sound, thus making our method phonetic.[8]

The origin of this phonetic principle was the writing of Ancient Egypt, born not full grown like Minerva, endowed with all the necessary faculties for living, but incomplete. Through the years, about four hundred varied symbols were made, used, adopted, or abandoned.[9]

---

[8]Margaret M. Bryant, Modern English and Its Heritage (New York: Macmillan Company, 1948), pp. 171-3.

[9]Ibid., pp. 173-4.

There is general agreement among present-day historians that the Egyptian system of writing was adopted by the Phoenicians before the earliest Greek records were in existence. Between the fall of Mycenae and the civilization of Crete, 1150 B. C., and the rise of the Homeric Greek culture of about 800 B. C., the Phoenicians traded with the Egyptians and borrowed their script. For three centuries they improved upon the system and passed this rejuvenated method of writing on to the Hebrews and the Greeks. This relationship is shown in our present-day alphabet by the first two letters, alpha and beta, which are Greek, and aleph and beth, which are Hebrew.

The Greeks made two major improvements in the alphabet and in methods of use. First, they made a vowel system, and second, they made letters run from left to right as in modern English.[10]

The precedent for the reform of the English phonetic system has been formed in Morse code, Gregg shorthand, Braille code for the blind, sign language for the deaf, and various systems of speedwriting for a multitude of purposes. If the unphonetic elements of the English alphabet as we

---

[10] Ibid., p. 174.

know it today were to be corrected, a new alphabet of thirty-seven to fifty symbols would be demanded in order to express adequately all of the necessary sounds. This idea of substitution of a phonetic alphabet has been suggested and advocated by some authorities; the disadvantages have, to date, outweighed the advantages.

Some of the most obvious difficulties of substituting a new and completely phonetic alphabet are (1) that thirty-seven letters would be more difficult to handle in typing, printing, and writing; (2) that every individual's pronunciation differs some from that of every other, so everyone would have to write just as he talked, or everyone would have to adopt a uniform spelling, which would still leave many persons' spelling unphonetic; and (3) that all English literature existing today would soon be obsolete.[11]

The last fifty years have brought many attempts to simplify spelling in order to alleviate some of the troublesome problems of the unphonetic language; the many efforts have resulted in a few changes, such as thru for through and tho for though.

---

[11] Ibid., pp. 180-2.

So it is that modern English has its unphonetic qualities; and since attempts to change these qualities have not to date been successful, the assumption must be made that teaching efforts in relation to spelling must be analyzed with phonics a part of the system.

Spelling and Phonics Today

Teaching of phonics and the ABC's was considered essential to spelling until about 1920 when "sight word" methods of reading were employed and phonics was taken out of the curriculum. Spelling was often left to the individual's ability to learn from other subjects being studied.

The English language is six-sevenths phonetic; about 85 per cent of the words are made with phonetic elements.[12] In considering these facts, educational authorities in the period that followed the trend away from phonetics realized that there was a place for phonic teaching in the school. Gradually phonetics began to reinstate itself as a teaching method, but this time it was combined with newer approaches and was not considered a method or a study by itself. Gates, in 1946, defined phonics as meaning instruction in the use of the auditory or sound

---

[12]Hildreth, op. cit., p. 5.

characteristics of words in improving word perception and independence in word recognition.[13]

During the years since 1940, an integrated system of teaching spelling has been evolved. In brief, Horn describes today's teaching system in this manner: spelling is taught in special periods, not exceeding fifteen minutes a day, or seventy-five minutes a week; a spelling book is utilized to determine the words to be studied. The steps in learning to spell are outlined in this way:

> They involve the pronunciation of each word, looking carefully at each part as the word is pronounced, saying the letters in sequence, attempting to recall how the word looks and saying the letters, checking this attempted recall by looking at the correct spelling of the word, writing the word, and comparing the word as written with the correct spelling of the word. These steps are repeated if necessary until the word is correctly spelled.[14]

These steps involve visual, auditory, and kinesthetic imagery as well as emphasis based on recall. Better spellers will not have to continue such detail habitually; poorer spellers will need special help and encouragement

---

[13]Arthur I. Gates, "Basal Techniques in Teaching Phonics," Teachers Service Bulletin in Reading, No. 9, Vol. 7 (May, 1946), p. 1.

[14]Ernest Horn, "Teaching Spelling," What Research Says to the Teacher, Vol. 3 (January, 1954), p. 19.

in using all these steps with particular emphasis upon recall, for it is the ability to recall the correct spelling that is needed in writing.[15]

Today children learn reading first by sight words in Grade I and do some writing, although they do not have an actual spelling program. In Grade II regular spelling lessons are instituted and then continued through the years. Phonics is used throughout this program, not as direct instruction on phonetic generalizations, but by putting emphasis upon sound-letter relationships in both auditory perception and visual-auditory perception. Hildreth outlines the phonetic techniques which most help spelling in this way: (1) learning the most common letter sound, (2) identifying phonograms, (3) giving letter equivalents for common sounds, (4) pronouncing words clearly and correctly, and (5) syllabicating.[16]

At present the tremendous volume of research in spelling has contributed much to the curriculum, and still the ever changing pattern of the world and the manner in which people live demand further investigation and the institution of newer and more modern methods.

---

[15] Ibid., pp. 15-19.

[16] Gertrude H. Hildreth, Teaching Spelling: A Guide to Basic Principles and Practices (New York: Henry Holt, 1955), p. 240.

Little wonder, then, that phonetic analysis is the subject of criticism and conjecture, for the research in this field has been far less prolific and conclusive than in spelling. When more scientific effort has been expended upon the subject of phonics, it is to be hoped that educator and student alike will benefit from the newly gained understanding.

CHAPTER II

RELATED RESEARCH

Early Research

For many years the research in the field of spelling achievement was directed at the wrong principle. During the era in which interest in the spelling bee was at its height, longer and harder words were sought with which to test students. Webster's Blue Backed Speller listed such exhibition words as machination, occlusion, shibboleth, verdigris, isosceles, sarsaparilla, and others. The popular idea of the era was that it does not make any difference what a boy studies so long as he does not like it.

When this theory of formal discipline was exploded at the turn of the century, the path was opened for investigation of the true nature of spelling and its purpose.

In 1897 Rice conducted revolutionary investigations which have been noted here for two main reasons: (1) By daring to question the prevailing methods, he opened the road for further investigation of an objective nature. (2) He recommended a fifteen minute spelling period a day; Rice's recommendation on this point was quite modern in that it has been followed in our present-day school spelling program.[1]

---

[1]Robert S. Thompson, The Effectiveness of Modern Spelling Instruction (New York: Teachers College, Columbia University, 1930), p. 2.

Inspired by Rice's work, which was done from June, 1897, to June, 1900, Cornman instituted the practice of teaching spelling as an integrated subject in two elementary Philadelphia schools and found that spelling was as good as ever.[2]

The old drill method and Noah Webster's Blue Backed Speller were destined to become a thing of the past. Experimentation with various methods of teaching spelling and of using phonics became a fairly common phenomenon. In 1915, when the phonetic approach was at its height and the ABC's were the first thing taught to children, Dr. Leonard P. Ayres published the first scientific word list which he had compiled from literary writing and adult correspondence. This publication awakened educators to the need for accurate word lists and gave rise to the questions: (1) What words are most frequently used by adults and children in writing? and (2) When should these words be taught?[3]

Since Dr. Ayres's first word list was published, there has been a continuous stream of other word lists, combinations of word lists, and modified word lists.

---

[2]Ibid., pp. 2-3.

[3]Leonard P. Ayres, A Measuring Scale for Ability in Spelling (New York: The Russell Sage Foundation, 1915), pp. 5-12.

Thorndike, Horn, Buckingham, Dolch, Gates, Fitzgerald, Hildreth, Rinsland, and many others approached the problem from various angles, namely: (1) lists of words most spelled by children, (2) lists of words most used by adults, (3) lists of words most used by children and adults, and (4) word lists classified according to the field of vocation or interest in which the individual becomes occupied in his work and recreation.

Ayres stated that one-fourth of all the words written are the ten most common words: the, and, of, to, I, a, in, that, for, you. Fifty words make up one-half of all words used. Three hundred words are more than three-fourths of all writing. One thousand words are nine-tenths, or 90 per cent of all words written.[4] These figures appeared to make the problem of word selection a simple one, but present-day writers find that such is not the case.

Later Research

Hildreth stated that an average person's life writing needs are estimated at ten thousand words. It is practically certain what twenty-five hundred will be but not the other seven thousand five hundred.[5] Horn stated that after two

---

[4] Ibid., p. 9.

[5] Gertrude H. Hildreth, Teaching Spelling: A Guide to Basic Principles and Practices (New York: Henry Holt, 1955), p. 141.

thousand words are learned, the returns from teaching each additional one thousand diminish rapidly: of the running words in adult writing, two thousand words make up 95.05 per cent; three thousand, 96.9 per cent; four thousand, 97.8 per cent; and ten thousand, 99.4 per cent.[6]

Hildreth summarized these figures in the following statement:

> These facts suggest that the spelling task for the school child is to learn the commonest 2000-2500 basic words, to learn how to derive alternate forms of these words, and to locate correct spellings of less usual words for himself; then later on to learn special vocabularies needed in particular writing tasks, informal, professional, or vocational.[7]

The National Education Association and the NEA Department of Classroom Teachers have long recognized that the latest research findings in spelling and other subjects are not readily available to the teacher. To bridge this gap and make the results of the most modern research available to the teacher for use in the classroom, the NEA and the NEA Department of Classroom Teachers have joined together and with the help of the National Education Research Division have produced a series of pamphlets on

---

[6]Ernest Horn, "Teaching Spelling," What Research Says to the Teacher, Vol. 3 (January, 1954), p. 6.

[7]Hildreth, loc. cit.

What Research Says to the Teacher. In an effort to combine the tremendous volume of research which has been done in the past twenty-five years on the teaching of spelling, this pamphlet has been used and combined with the latest available summary from the Encyclopedia of Educational Research.

Research says that incidental learning occurs and that definite plans should be made for teaching the words which have not been learned through incidental learning.[8]

In considering the general plans of teaching, the most important problems to be considered are (1) the provisions for individual difference, (2) determination of the most efficient unit of work, (3) use of tests in instruction, (4) decisions as to how words should be presented, (5) securing the proper motivation, and (6) provision for reviews.[9]

The evidence on these points, although not so complete as it should be, seems to warrant the following conclusions:

---

[8]Ernest Horn, "Spelling," Encyclopedia of Educational Research, Revised edition (Edited by Walter S. Monroe.) (New York: Macmillan Company, 1952), p. 1255.

[9]Ibid., pp. 1255-6.

1. Because the range of spelling ability of pupils of any grade is so great, individual differences must always be considered.

2. The general trend is to use fewer words in the total course.

3. The correct pronunciation of a word is an important factor in learning to spell it.

4. Pretests are considered the best single learning procedure.

5. The presentation of words in context is less efficient than in list form.

6. Calling attention to hard spots in presenting words is a doubtful practice.

7. Grouping of words is justified only when the principle of grouping is universal; otherwise, generalizations will be made which will not apply in other words.

8. Evidence in adding prefixes and suffixes to base words favors adding suffixes only.

9. The only rules that should be taught are those that apply to a large number of words and have few exceptions.

10. The pupil must be interested and be made to feel a sense of progress and success in order to continue to improve in spelling.

11. Reviews must be guided by a test, but the number of reviews has not been determined.

12. Low spelling achievement is due often to faulty training in spelling and other language abilities such as reading, pronunciation, handwriting, and phonetic analysis.[10]

---

[10] Ibid., p. 1257.

There is a positive correlation between low spelling ability and poor study habits, low reading ability, poor handwriting, faulty speech habits (especially pronunciation), certain visual disabilities, inferior auditory discrimination, and low I. Q. (although high I. Q. does not guarantee superior spelling ability.)[11]

The combined evidence on efficiency of methods of study seems to warrant the following statements:

1. Students' efforts should be focused on words or parts of words which pretest has shown them unable to spell.
2. The mode of sensory presentation should be predominantly visual.
3. Auditory imagery and kinesthetic imagery (the first accompanies pronunciation and the second accompanies both pronunciation and writing) increase effectiveness of learning.
4. Aggressive efforts to recall should be interspersed with sensory impression.
5. Distributed learning is better than mass learning.[12]

The amount of research done in the field of spelling has been tremendous. Since the first investigations by

---

[11] Ibid., pp. 1257-8.

[12] Ibid., p. 1258.

Rice and Cornman, which began the revolution of spelling and started scientific approaches to the problem until the present day with its curriculum, research in this field has flourished. Word lists, methods of teaching, study habits, and ultimate aims of spelling have been objectives of many brilliant investigators.

Research Related to Spelling and Phonics

A check of the Psychological Abstracts from 1927 to the latest available edition revealed no research done on phonics and its relation to spelling. However, research in phonics continues in many other fields.[13]

The greatest amount of research dealing with phonics has been regarding its relationship to reading and other related subjects. Since reading ability and spelling ability are known to show a positive correlation, the results of some of these investigations can be applied to spelling in some measure.[14] Because the application of those investigations which concern primarily reading and other language arts and their relationship to phonics must

---

[13] C. M. Louttit (ed.), Psychological Abstracts, Vols. 1-28 (Detroit: American Psychological Association, Inc., 1927-1954).

[14] Horn, op. cit., p. 1257.

be very carefully interpreted in applying them to spelling, no attempt has been made to discuss them in this study.

Some of the contemporary writers have expressed divergent opinions about phonics and its relationship to spelling, and some of these opinions are discussed in the following paragraphs.

Theman, in citing the teaching methods that are most effective for spelling, indicated that the emphasis on phonics for spelling purposes may be more confusing than helpful because of the frequency of irregularities in English spelling.[15]

Hildreth emphasized the need for phonic training:

> Work in phonics sharpens both auditory and visual discrimination, which aids memorization of word forms and helps the child use his reasoning ability in trying to spell new words. Practice in pronouncing and sounding benefits both reading and spelling.[16]

Gunderson indicated that phonics should be taught because "A knowledge of phonics is helpful to spelling."[17]

---

[15]Viola Theman, "Teaching Spelling, Research Indicates More Effective Ways of," National Education Association Journal, Vol. 40 (December, 1951), p. 607.

[16]Gertrude H. Hildreth, Teaching Spelling: A Guide to Basic Principles and Practices (New York: Henry Holt, 1955), p. 110.

[17]Agnes G. Gunderson, "Teaching Phonics I," The Instructor, May, 1946, p. 20.

Some of the conflicts concerning phonics and its influence on spelling are described by Fitzgerald in this way: "The question of phonics is a troublesome one, particularly because of the inconsistency of English spelling."[18]

Horn, after describing some of the phonetic discrepancies in spelling, made this statement:

> The limitations pointed out do not mean that phonics has no contribution to make to spelling. They are meant as a warning that much of the evidence needed to make a confident judgment has not yet been produced. We need more complete evidence on the principal ways in which each sound is spelled in various word positions, on errors made by children in spelling each sound, on phonetic rules which might be practicable to teach, and on the effect of teaching any kind or amount of phonics on spelling efficiency.[19]

Russell's diagnostic study of spelling readiness involved four first grade classes from average districts of greater Vancouver, Canada, selected because two had a reading program in which there was considerable work in phonics and two had a program with little phonics in use. Russell concluded from his study that children who have had systematic training in phonics advanced more rapidly

---

[18]James A. Fitzgerald, The Teaching of Spelling (Milwaukee: Bruce Publishing Company, 1951), p. 114.

[19]Ernest Horn, "Teaching Spelling," What Research Says to the Teacher, No. 3 (January, 1954), pp. 23-4.

in spelling by the end of the second grade than those who have not.[20]

Tests of Phonic Ability

Tests of phonic ability are rare; however, a few have been devised and used in relationship to reading and spelling. These are summarized briefly in the following paragraphs.

Rogers tested college students with a phonic test in the Graduate College of the State University of Iowa in order to determine the relationship between mispronunciations and comprehension and to determine the effect of training in phonics upon certain aspects of reading. The test included one hundred nonsense words uttered by the examiner to which written response was made by selection of multiple choice answers; it was administered as a group test. She concluded that phonic training was an effective technique for the improvement of pronunciation, oral reading, and reading vocabulary; however, there was no observable improvement in spelling. She stated that the lack of improvement in spelling may have been because of the type of words used in the spelling test or of the

---

[20]D. H. Russell, "Diagnostic Study of Spelling Readiness," Journal of Educational Research, Vol. 37 (December, 1943), pp. 276-83.

inertia on the part of the subjects in applying phonic principles. It is her belief that knowledge of pronunciation is an important factor in learning to spell.[21]

Tiffin and McKinnis modified the Rogers test for use in the fifth, sixth, seventh, and eighth grades. They changed the test from a group to an individual test, and the nonsense words were printed on cards which were shown one at a time to each child. The child said the word the way he thought it should sound, and the examiner recorded his response. The results of this study showed a significant relationship between phonic ability and reading ability for the pupils studied. However, the authors concluded that phonics should not be taught as a regular subject in the classroom because of the danger of slowing down the reading rate of each member of the class. They recommended that it be used only in cases where remedial reading was necessary.[22]

Templin tested 318 Minneapolis public school children in an upper elementary grade with one recall and three

---

[21]Maurine V. Rogers, "Phonic Ability as Related to Certain Aspects of Reading at the College Level," Journal of Experimental Education, Vol. VI (June, 1938), pp. 381-95.

[22]Joseph Tiffin and Mary McKinnis, "Phonic Ability: Its Measurement and Relation to Reading Ability," School and Society, Vol. 51, No. 1311 (February 10, 1940), pp. 190-2.

recognition phonic tests; all responses were written after hearing sounds uttered by the examiner. She concluded that a substantial amount of phonic knowledge as measured by the sound discrimination and sound-symbol association tests had been acquired by upper grade pupils, that for the total sample the correlations between phonic knowledge and spelling were somewhat higher than between phonic knowledge and reading, and that poor spellers and poor readers applied phonic knowledge less well than good spellers and good readers in unfamiliar test situations while the difference was not significant when phonic knowledge was measured in familiar words. Templin felt that this last finding had not been thoroughly investigated and that more work should be done before her finding was termed conclusive.[23]

---

[23]Mildred Templin, "Phonic Knowledge and Its Relation to the Spelling and Reading Achievement of Fourth Grade Pupils," Journal of Educational Research, XLVII (February, 1954), pp. 441-54.

CHAPTER III

THE PROBLEM

The statement, "They don't teach our young people to spell in school now-a-days," has provoked much interest in the problem of what makes a good speller. Lay people have added their comments to those of the educators, and much has been said concerning the teaching or the lack of teaching phonics in the present-day school system. The problem of this study was to consider whether phonics as it is taught in today's school system is important in the production of a good speller.

Purpose of the Study

The basic purpose of this study was to determine whether or not there is any relationship between phonetic usage and spelling grade at the third grade level in the Omaha Public Schools.

Need for the Study

Rudolf Flesch in his book, Why Johnny Can't Read, maintained that the use of phonics is the cure for poor spelling and stated that if the phonetic method of teaching were used, there would be no poor spellers.[1] He also

---

[1]Rudolf F. Flesch, Why Johnny Can't Read--and What You Can Do About It (New York: Harper, 1955), pp. 33-42.

stated that phonics has been driven out of spelling in the modern educational system.[2] Gates denied this statement by the following:

> This is an entirely false statement, as anyone can easily discover by looking over any modern series of spellers. One will find a much broader and more thoro program in the study of phonics and other phases of word structure than Flesch himself suggests.[3]

Rudolf Flesch is a Viennese lawyer who came to the United States in 1938 and has a Ph.D. from Columbia University's Teachers College. Concerning Flesch's book, Gates stated:

> Close reading of Mr. Flesch's book, in fact, makes it apparent that his aim is to discredit American education in general. And no attack has yet appeared which is more flagrant in its misrepresentation of the facts.[4]

American educators do not deny that there is room for improvement in our methods of teaching, nor do they maintain that there is only one way to teach spelling or any other subject. However, according to the Department of Education of the University of California concerning Flesch's book:

---

[2]Ibid., p. 38.

[3]Arthur I. Gates, "Why Mr. Flesch is Wrong," NEA Journal, No. 6, Vol. 44 (September, 1955), p. 333.

[4]Ibid., p. 234.

> The book cannot be accepted by professional people because it attempts to substitute an individual's "think piece" for the research and study of many scholars over the years.[5]

Flesch's book stimulated public interest in the problem of spelling as well as the problem of reading, and it provoked a wide variety of comments covering the pros and cons of teaching phonics as an adjunct to both spelling and reading.

A Philadelphia doctor who was exasperated with the vagaries of spelling suggested that if phonic spelling were used, the word "potato" could be spelled "ghoughphtheightteau." His explanation follows:

"gh" pronounced "p" as in "hiccough"

"ough" pronounced "o" as in "dough"

"phth" pronounced "t" as in "phthisic"

"eigh" pronounced "a" as in "neighbor"

"tte" pronounced "t" as in "gazette"

"eau" pronounced "o" as in "beau"[6]

---

[5]Field Service Leaflet No. 5, "Johnny Can Read," University of California, Berkeley, Department of Education, Field Service Center. n.d.

[6]Ruth Dunbar, "It's Flesch Who's Wrong," Chicago Sun-Times, May 29-June 7, 1955, p. 7.

Horn stated:

> The fact is that we do not have adequate evidence for making a confident decision as to how much and in what way the teaching of phonics can increase efficiency in spelling instructions.[7]

He further asserted:

> We need more complete evidence on the principal ways in which each sound is spelled in various word positions, on errors made by children in spelling each sound, on phonetic rules which might be practicable to teach, and on the effect of teaching any kind or amount of phonics on spelling efficiency. When dependable evidence is available on these points, it is entirely possible that teaching sound-letter relationships will be regarded as an essential part of the spelling program.
>
> Even tho the evidence is meager on some important matters, it seems to justify considerable emphasis upon phonics.[8]

Hanna and Moore stated:

> What about these sounds? What about the excuse so many give for failure in spelling--"English is not a phonetic language"? It is true that, compared with languages of most primitive peoples and with the languages of many advanced countries, English seems almost monstrous in its complicated phonics. However, in spite of its many imperfections, the English system of writing is in origin and in its main features phonetic, or alphabetic.[9]

---

[7] Ernest Horn, "Teaching Spelling," What Research Says to the Teacher, No. 3 (January, 1954), p. 22.

[8] Ibid., pp. 23-24.

[9] Paul R. Hanna and James T. Moore, Jr., "Spelling--From Spoken Word to Written Symbol," Elementary School Journal, (February, 1953), p. 4.

These comments and those of many other authorities plus the tremendous public interest created by Rudolf Flesch's book have suggested that research is needed in many aspects related to both phonics and spelling and their relationship to each other.

CHAPTER IV

METHOD OF THE STUDY

The Group Studied

This investigation involved four classes and 117 pupils in the third grade in the Omaha Public Schools. Originally 135 pupils were selected, but because of absences from school or families' moving to different school areas, eighteen of these were discarded, leaving a total of 117 pupils on whom all the information used in the study was available.

The group studied were pupils enrolled in Druid Hill School and Franklin School. They were chosen for this study because they appeared to be an average group for the city of Omaha, as determined by the city-wide norms at the third grade level when tested by the California Achievement Test--Complete Battery, which was given in April, 1955.

The Tests Used

Three tests were used in this study: the California Achievement Tests--Complete Battery, Primary, Form AA; the Kuhlmann-Anderson Intelligence Tests; and a test of the pupils' knowledge of initial sounds and sound words which was devised for this study. The three tests are described on the following pages.

The California Achievement Tests purport to measure pupil achievement in fundamental reading, arithmetic, and language skills; and the scores obtained will reveal a grade placement and percentile rank of pupils in relation to the general school population. Each of the tests is divided into two parts. The reading test has a Reading Comprehension section and a Reading Vocabulary section. The arithmetic test is divided into Arithmetic Reasoning and Arithmetic Fundamentals. The language test covers Mechanics of English and Spelling. For the purposes of this study the spelling section was the most important; but since reading is thought by most authorities to be closely related to spelling and understanding of phonics, the reading section of the test was also used. The complete battery of the test was given by the teachers in April, 1955, as a part of the regular testing program of the Omaha Public Schools, and the information used in this study was taken from this administration.

The Kuhlmann-Anderson Intelligence Tests are group tests which consist of thirty-nine tests arranged into nine overlapping test batteries, each of which is appropriate for a definite grade level. There are ten tests in each battery and where time must be saved, only part of a battery may be given and the results prorated. However, for the purposes of this study all ten of the appropriate

level were administered and a Mental Age and I. Q. were calculated for each child. These tests were administered by three members of the staff of the University of Omaha's Child Study Service during the dates of June 3 to 7, 1955.

The test of the children's use of phonics consisted of a list of twenty-five words, each of which was placed on six by nine inch cards in one inch manuscript printing. Manuscript printing was used, even though at this grade level the students had just been introduced to cursive writing because it was thought best to use the more familiar tool. The size of the letters was large enough to eliminate any fatigue or the possibility of error because of poor visual acuity on the part of any of the subjects.

The words used were the spelling words in the California Achievement Tests Form AA. They are scaled in order of difficulty for spelling, and they all appear in the first 500 words most frequently used in writing.[1]

A test record sheet was devised to include such information as the child's name, school, grade, sex, race, the date, the child's birthdate, his chronological age, his parent's name and address, and a list of the stimulus words

---

[1]Ernest W. Tiegs and Willis W. Clark, Manual, California Achievement Tests, Complete Battery, Grades 1-2-3-4, forms AA, BB, CC, DD (Copyright 1951), p. 4, 18.

with a space for recording the child's responses. (See Appendix.)

The test was administered individually with just the examiner and one subject in the room at a time. To conserve time, one child waited outside the door of the testing room while another was being tested, so that when one test was finished there was another subject ready to be tested.

In order to standardize the procedure, the instructions given each child were exactly the same and were kept as simple as possible. At the beginning of the test, the examiner said, "I'm trying to find out how boys and girls in the third grade sound out words, and I'd like to have you sound out these words for me."

Following this, the initial sound of the first word was presented to the child. All the letters except the initial sound were covered. If he made the correct sound or if the examiner was satisfied that he did not know the sound, the next sound was presented to him and so on until the word was complete. A record was kept of the correct sounds made, the incorrect sounds made, the absence of any response at all, and the words which were not sounded but recognized as sight words. This was kept rather easily by simply placing a red mark over the correct sounds made on

the record sheet, circling in red the parts omitted, writing out incorrect sounds, and writing out the sight words.

Scoring

The California Achievement Tests were scored by the teacher in the regular process of the public school testing program.

The Kuhlmann-Anderson Intelligence Tests were scored by the median mental age method as prescribed in the test manual, and the I. Q.'s were computed from the tables in the Stanford-Binet Manual.

Obtaining the initial sound score was accomplished by counting the number of correct initial sound responses made by the child. In the case of initial sounds where two or more sounds could be correct, credit was given if any correct sound was made, even though it did not fit the word which followed. As an example, the response to the initial sound of the word "good" might be the initial sound of the word "gem." Since recognizing the correct sound requires the visual stimulus of the rest of the word, either sound was counted as correct.

The sound word score was obtained by counting the number of words which were sounded correctly in their entirety.

Statistical Procedures

Means and standard deviations were computed for all the tests used in the study. The following formula described by Cronbach was used in computing the standard deviation:[2]

$$\sigma = i\sqrt{\frac{\Sigma fd^2}{N} - \left(\frac{\Sigma fd}{N}\right)^2}$$

The symbols are interpreted as follows: σ equals the standard deviation; Σfd equals the sum of the frequencies times the deviations from the assumed mean and N equals the size of the sample; i equals the interval used in the distribution.

Correlation coefficients were calculated on the raw scores using the Pearson Product-Moment Correlation Coefficient method described by Cronbach:[3]

$$rxy = \frac{\frac{\Sigma fdxdy}{N} - cx.cy}{\sigma x \cdot \sigma y}$$

The symbols are interpreted as follows: r equals correlation coefficient; $\Sigma fdxdy$ equals the total of the products of the

---

[2]Lee J. Cronbach, Essentials of Psychological Testing (New York: Harper and Brothers, 1949), pp. 29-31.

[3]Ibid., pp. 38-41.

frequency at each point on the distribution times the deviation from the mean on the x axis times the deviation from the mean on the y axis. Cx and cy are the correction factors necessary when an assumed origin is used for the mean and are determined by taking the total of the deviations from the mean times the frequency at each point on the distribution and then dividing by the number of cases in the sample. σ x equals the standard deviation of the x axis. σ y equals the standard deviation of the y axis.

A partial correlation was computed between spelling scores and sound word scores holding the I. Q. statistically constant. The following formula as described by Peters and Van Voorhis was used:[4]

$$r12.c = \frac{r12 - r1c\ r2c}{\sqrt{1 - r1c^2}\ \sqrt{1 - r2c^2}}$$

The symbols are interpreted as follows: r equals correlation coefficient; 1 equals sound word scores; 2 equals spelling scores; and c equals the constant, I. Q.

---

[4]Charles C. Peters and Walter R. Van Voorhis, Statistical Procedures and Their Mathematical Bases (New York and London: McGraw-Hill Book Company, Inc., 1940), p. 250.

A multiple correlation was computed using spelling scores as one variable and I. Q. and sound word scores as the other variable. The following formula as described by J. P. Guilford was used:[5]

$$R^2 1.23 = \frac{r^2 12 + r^2 13 - 2r12\ r13\ r23}{1 - r^2 23}$$

The symbols are interpreted as follows: R equals multiple correlation coefficient; 1 equals spelling scores; 2 equals sound word scores; 3 equals I. Q.

Percentages of total possible responses were calculated on initial sounds for correct responses, named letter responses instead of sound responses, incorrect responses, and instances where no response was made.

Percentages of total possible responses were calculated on whole words for correct responses, words recognized as sight words, incorrect responses, and no response at all.

---

[5]J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, Inc., 1950), p. 427.

CHAPTER V

FINDINGS

Means and Standard Deviations

The children ranged in chronological age from 8-6 to 10-5 with a mean age of 9-1 and a median age of 9-1.

The I. Q.'s ranged from 74 to 130 with a mean of 102.492, a median of 104, and a standard deviation of 10.78. This seems to be consistent with statistics reported by Anastasi on the Kuhlmann-Anderson Intelligence Tests and appears to testify to the normalcy of the population sample studied.[1]

The means, standard deviations, and ranges of all the scores obtained are presented in Table I below:

TABLE I

RANGES, MEANS, AND STANDARD DEVIATIONS FOR ALL SCORES OBTAINED

TEST	LIMITS	RANGE	MEAN	STANDARD DEVIATION
INITIAL SOUNDS	1 to 25	25	16.706	7.154
SOUND WORDS	0 to 25	26	15.014	6.984
SPELLING	3 to 24	22	12.380	4.516
I. Q.	74 to 130	56	102.492	10.780
C. A.	8-6 to 10-5	24	9-1.012	4.708
READING VOCABULARY	35 to 55	21	49.022	4.594
READING COMPREHENSION	11 to 30	20	24.474	2.550
TOTAL READING	52 to 84	33	73.492	7.874

[1]Anne Anastasi, Psychological Testing (New York: Macmillan Company, 1954), p. 210.

Correlation Results

The correlations between scores obtained on the sound word count and spelling, I. Q., reading vocabulary, reading comprehension, and total reading were significant in every case at the 1 per cent level.[2] This was also true of the correlations between scores obtained on the initial sound count and the above-mentioned tests.

The correlation coefficient obtained between spelling scores and I. Q. was .654 which is also significant at the 1 per cent level.

The correlation coefficient between chronological age and initial sound scores was -.197, and that between chronological age and sound word scores was -.050.

A comparison of the correlations listed in Table II, page 39, shows that the correlations between sound word scores and all the other variables except chronological age are significantly higher than those obtained between initial sound scores and the other variables.

The partial correlation between spelling scores and sound word scores holding I. Q. statistically constant showed a significant relationship. The coefficient obtained was .419.

---

[2]Allen L. Edwards, Statistical Analysis for Students in Psychology and Education (New York: Rinehart and Company, Inc., 1946), p. 188, 331.

The multiple correlation coefficient computed between spelling scores as one variable and I. Q. and sound word scores as the other variable was .727. This is also statistically significant.

Percentages of Responses

The twenty-five chances for an initial sound response on each test was given to 117 students. This provided a total of 2,925 possible responses. Of this number 2,232 were correct responses. In other words, 76.31 per cent of the total possible responses were correct ones, 11.59 per cent were named letters rather than sound letter responses, 6.19 per cent were incorrect sounds, and 5.91 per cent of the stimulus letters elicited no responses at all. Table III, page 40, shows these percentages together with the number of the various responses given.

TABLE II

CORRELATIONS OF SCORES ON PHONIC TESTS WITH SPELLING, I. Q., CHRONOLOGICAL AGE, AND READING

	Sound Words	Initial Sounds
Spelling	.612	.442
I. Q.	.523	.348
Chronological Age	-.050	-.197
Reading Vocabulary	.489	.259
Reading Comprehension	.571	.314
Total Reading	.534	.303

TABLE III

PERCENTAGES OF INITIAL SOUND RESPONSES

	Total Responses	Per Cent
Correct Initial Sound	2232	76.31
Named Letter	339	11.59
Errors	181	6.19
No Response	173	5.91
Total Possible Responses	2925	100.00%

The number of words which were sounded correctly, the number of words which were recognized as sight words, the number of responses which were incorrect, and the number of instances where no response was made, together with the percentages of the total possible responses, are presented in Table IV.

TABLE IV

PERCENTAGE OF WHOLE WORD RESPONSES

	Total Responses	Per Cent
Correct Sound Words	1809	61.85
Sight Words	573	19.59
Incorrect Word Responses	191	6.53
No Response	352	12.03
Total Possible Responses	2925	100.00%

Where 76.31 per cent of the possible responses were correct for initial sounds, only 61.85 per cent were correct for sound words. The percentage of no responses increased from 5.91 per cent for initial sounds to 12.03 per cent for sound words.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

Modern educational methods no longer demand that a child become a practiced and perfect speller simply by concentration on spelling. Attention has been called to the necessity of relating all of the vocabulary arts when any one of them is studied; visual, auditory, oral, and written vocabularies of the child should develop as an integrated program instead of an isolated subject.

The basic problem of this study was to determine whether or not any relationship exists between phonic knowledge and spelling grade.

A group of 117 children in the third grade of the Omaha Public Schools was tested for I. Q. on the Kuhlmann-Anderson Intelligence Tests and for spelling grade and reading grade by the California Achievement Test Battery. Phonic scores were obtained by having the students sound out the words in the California Achievement Test spelling list.

Means and standard deviations were computed for all the scores used in this study and are presented in Table I, page 37. The group had a mean I. Q. of 102.492 with a standard deviation of 10.780. The mean chronological age was 9 years 1.012 months and the standard deviation was 4.708 months.

Correlation coefficients computed were as follows: sound words with spelling .612; initial sounds with spelling .442; sound words with reading vocabulary .489; initial sounds with reading vocabulary .259; sound words with reading comprehension .571; initial sounds with reading comprehension .314; sound words with total reading .534; initial sounds with total reading .303; sound words with I. Q. .523; initial sounds with I. Q. .348; and spelling with I. Q. .654. These are all statistically significant at the 1 per cent level. The correlation coefficient for sound words and chronological age was -.050 and that for initial sounds and chronological age was -.197.

The partial correlation coefficient between spelling scores and sound word scores holding I. Q. statistically constant was .419. The multiple correlation coefficient between spelling scores as one variable and I. Q. and sound word scores as the other variable was .727. These are both statistically significant.

The percentages of possible whole word responses were calculated and the results were as follows: 61.85 per cent were words which were sounded correctly; 19.59 per cent were recognized as sight words; 6.53 per cent were incorrect responses; and 12.03 per cent were cases where no whole word responses were made.

The percentages of possible responses to the initial sounds were calculated and the results were as follows: 76.31 per cent were correct responses; 11.59 per cent were named letters rather than sounds; 6.19 per cent were incorrect responses; and 5.91 per cent were cases where no responses were made.

Conclusions

From the data gathered for this study the following conclusions have been drawn:

1. At the third grade level, pupils who have good understanding of phonics seem to be able to spell better than those with a poor knowledge of phonics.

2. Although intelligence is important to both spelling and phonics, there is a statistically significant relationship between spelling and phonics which is independent of intelligence.

3. At the third grade level a knowledge of a student's phonic ability together with his I. Q. should be of predictive value concerning his spelling ability.

4. A substantial amount of phonic knowledge as measured by the test used in this study has been learned by the pupils in the third grade for the sample studied.

Suggestions for Further Study

1. A study of the problem of scientific measurement of phonic ability and understanding of phonic principles should be made.

2. Further study should include all grade levels in an effort to determine at what point and to what extent phonics and spelling become significantly related.

3. More investigation of the phonetic and unphonetic qualities of English words should be done in order to determine the words in which stress should be placed upon phonetic spelling and the words which must be treated as "hard spots" because of their unphonetic spelling.

4. Further study might determine the relative importance of the separate facets of phonic training. Visual, auditory, oral, and written vocabulary training could be emphasized, each for a different group, and then measurements taken in order to determine the relative importance of each to spelling ability.

5. An effort should be made to determine what effect increasing difficulty of words has upon correlations between phonics and spelling.

6. Research should reveal what role incidental learning plays in the learning of phonic principles.

B I B L I O G R A P H Y

BIBLIOGRAPHY

Anastasi, Anne. Psychological Testing. New York: Macmillan Company, 1954.

Ayres, Leonard P. A Measuring Scale for Ability in Spelling. New York: The Russell Sage Foundation, 1915.

Bryant, Margaret M. Modern English and Its Heritage. New York: Macmillan Company, 1948.

Buckingham, B. R. and E. W. Dolch. A Combined Word List. Boston: Ginn and Company, 1936.

Corey, Arthur F. "Johnny Can Read!" The San Francisco Examiner, June 5, 1955. Reprinted by the National School Public Relations Association NSPRA Reprint Service.

Cronbach, Lee J. Essentials of Psychological Testing. New York: Harper and Brothers Publishers, 1949.

Dolch, E. W. Better Spelling. Champaign, Illinois: Garrard Press, 1942.

Dougherty, Mary L. How to Teach Phonics. Cambridge: The Riverside Press, 1935.

Dunbar, Ruth. "It's Flesch Who's Wrong," Chicago Sun-Times, May 29-June 7, 1955. Reprinted from a series of articles.

Edwards, Allen L. Statistical Analysis for Students in Psychology and Education. New York: Rinehart and Company, Inc., 1946.

Field Service Leaflet No. 5. "Johnny Can Read," University of California, Berkeley, Department of Education, Field Service Center. (Reprinted by California Teachers Association, 693 Sutter Street, San Francisco 2) n.d.

Fitzgerald, James A. A Basic Life Spelling Vocabulary. Milwaukee: Bruce Publishing Company, 1951.

_____. "Research in Spelling and Handwriting," Review of Educational Research, 22 (April, 1952), pp. 89-95.

_____. "Spelling Words Difficult for Children in Grades II-VI," Elementary School Journal, 53 (December, 1952), pp. 221-8.

_____. The Teaching of Spelling. Milwaukee: Bruce Publishing Company, 1951.

Flesch, Rudolf F. Why Johnny Can't Read--and What You Can Do About It. New York: Harper, 1955.

Gates, Arthur I. "Basal Techniques in Teaching Phonics," Teachers Service Bulletin in Reading, No. 9, Vol. 7 (May, 1946).

_____. A List of Spelling Difficulties in 3876 Words. New York: Teachers College, Columbia University, 1937.

_____. A Reading Vocabulary for the Primary Grades. New York: Bureau of Publications, Teachers College, Columbia University, 1935 (revised).

_____. "Why Mr. Flesch Is Wrong," NEA Journal, No. 6, Vol. 44 (September, 1955), pp. 332-4.

Gray, William S. On Their Own in Reading. New York: Scott, Foresman and Company, 1945.

Guilford, J. P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill Book Company, Inc., 1950.

Gunderson, Agnes G. "Teaching Phonics," The Instructor, May, 1946, p. 20; June, 1946, p. 13.

Hanna, Paul R. and James T. Moore, Jr. "Spelling--From Spoken Word to Written Symbol," Elementary School Journal, (February, 1953). Reprinted by the University of Chicago Press, Chicago 37, Illinois.

Hildreth, Gertrude Howell. Teaching Spelling: A Guide to Basic Principles and Practices. New York: Henry Holt and Company, 1955.

Horn, Ernest. A Basic Writing Vocabulary. 10,000 Words Most Commonly Used in Writing. University of Iowa Monographs in Education. University of Iowa, College of Education, Iowa City, Iowa. No. 4, 1926.

_____. "Phonics and Spelling," Journal of Education, Vol. 136 (May, 1954), pp. 233-5, 246.

_____. "Spelling," Encyclopedia of Educational Research, Revised Edition, pp. 1247-64, (Edited by Walter S. Monroe.) New York: Macmillan Company, 1952.

_____. "Teaching Spelling," What Research Says to the Teacher, 3 (January, 1954), Washington: Department of Classroom Teachers, American Educational Research Association of the National Education Association 1954.

Louttit, C. M. (ed.). Psychological Abstracts. Vols. 1-28. Detroit: American Psychological Association, Inc., 1927-1954.

Peters, Charles C., Walter R. Van Voorhis. Statistical Procedures and Their Mathematical Bases. New York: McGraw-Hill Book Company, Inc., 1940.

Rogers, Maurine V. "Phonic Ability as Related to Certain Aspects of Reading at the College Level," Journal of Experimental Education, VI (June, 1938), pp. 381-95.

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

Templin, Mildred. "Phonic Knowledge and Its Relation to the Spelling and Reading Achievement of Fourth Grade Pupils," Journal of Educational Research, XLVII (February, 1954), pp. 441-54.

Theman, Viola. "Teaching Spelling--Research Indicates More Effective Ways of," National Education Association Journal, Vol. 40 (December, 1951), pp. 607-8.

Thompson, Robert S. The Effectiveness of Modern Spelling Instruction. New York: Teachers College, Columbia University, 1930.

Thorndike, E. L. The Teacher's Word Book. Bureau of Publications: Teachers College, Columbia University, 1921.

Tiegs, Ernest W. and Willis W. Clark. Manual, California Achievement Tests, Complete Battery, Grades 1-2-3-4, forms AA, BB, CC, DD. (Copyright 1951), p. 18.

Tiffin, Joseph and Mary McKinnis. "Phonic Ability: Its Measurement and Relation to Reading Ability," School and Society, Vol. 51, No. 1311, (February 10, 1940), pp. 190-2.

Varty, Jonathan W. Manuscript Writing and Spelling Achievement, with Special Reference to the Second and Third Grades. New York: Teachers College, Columbia University, 1938.

A P P E N D I X

PHONIC TEST RECORD SHEET

Name_____ School_____ Grade____

Sex____ Race____ Date_____ Birthdate_____ C. A.____

Parent_____ Address_____

1. do			
2. is			
3. run			
4. good			
5. my			
6. live			
7. late			
8. stone			
9. song			
10. east			
11. lady			
12. half			
13. father			
14. past			
15. build			
16. broke			
17. perfect			
18. clerk			
19. answer			
20. result			
21. interest			
22. opinion			
23. business			
24. whether			
25. imagine			