1947

The place and value of rules in spelling instruction.

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THE PLACE AND VALUE OF RULES IN SPELLING INSTRUCTION

BAKER - 1947
THE PLACE AND VALUE OF RULES
IN SPELLING INSTRUCTION

BY
IRVING D. BAKER

A problem submitted in partial fulfilment
of the requirements for the Master
of Science Degree

University of Massachusetts
1947
TABLE OF CONTENTS
# TABLE OF CONTENTS

**TABLE OF CONTENTS** ........................................ III

**LIST OF TABLES** .......................................... VI

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**CHAPTER I -- INTRODUCTION** ........................................... 2

**CHAPTER II -- BACKGROUND MATERIALS.** .................. 5

- Need for Concentration of Common Words .................. 5
- Value of Rules ............................................... 7
- Value of Marking Hard Spots ................................ 15
- Causes of Spelling Disability .............................. 16

**CHAPTER III -- STATEMENT OF PROBLEM AND OUTLINE OF PROCEDURE.** 19

- Statement of Problem ........................................ 19
- Subjects and Materials ..................................... 19
  - (a) Designation of Groups .................................. 20
  - (b) Pairing of Groups ...................................... 20
  - (c) Selecting the Rules .................................... 20
  - (d) Selecting the Words .................................... 21
- Procedure ...................................................... 21
  - (a) The Pretest ............................................. 21
  - (b) Time of Class Meeting .................................. 22
  - (c) Time Allotted to Spelling Instruction ............... 22
  - (d) Procedure in the Experimental Groups ................ 23
  - (e) Procedure in the Control Groups ..................... 24
  - (f) Administration of the Final Test ...................... 25

**CHAPTER IV -- RESULTS OF STUDY.** ............................. 27

- Results of Pairing ........................................ 27
- Results of Pretests ......................................... 29
- Results of Final Tests ..................................... 30
- Gains Made by Grade Eleven ................................ 30
- Gains Made by Grade Ten .................................. 32

**CHAPTER V -- CONCLUSIONS.** .................................. 36

- Value of Rules .............................................. 36
- Subjects for Further Investigation ....................... 37

**APPENDIX A -- SUGGESTIONS FOR IMPROVING SPELLING INSTRUCTION.** ... 38

- Generalization as an Aid to Learning Efficiency .......... 38
LIST OF TABLES
LIST OF TABLES

I. A Comparison of Paired Pupils in the Eleventh Grade Classes. ................. 27

II. A Comparison of Paired Pupils in the Tenth Grade Classes. .................. 28

III. Results of Pretest Administered to All Classes .................. 29

IV. Results of Final Test Administered to All Classes .................. 30

V. Distribution of Gains in Eleventh Grade Classes .................. 31

VI. Distribution of Gains in Tenth Grade Classes .................. 33
THE INTRODUCTION
Chapter I

Introduction

The concept from which the following statistical study grew began when the writer, a high school teacher of English, asked himself what was his responsibility in the matter of acquainting his pupils with the conventional spelling rules. On the one hand, the rules were to be found in all the high school spelling textbooks available, and in at least two of them the words were introduced to the student solely in relation to the rule they exemplified. On the other hand, experience in teaching the rules had seemed to indicate that few pupils understood the rules sufficiently well in their entirety to apply them without error.

The writer was at this stage in his meditations on the subject when he encountered a book which told of a test given 70 college students at the University of Wisconsin eight months after they had completed a college English course which had emphasized the teaching and use of spelling rules. The college students were asked to spell 50 words exemplifying rules and then afterwards to write any rules, in whole or part, which they recalled as applying to any of the words on the list. The authors of the book, who apparently conducted the experiment, report that the attitude of the students was distinctly unfavorable to the use of rules, and that in most instances the rules were so incompletely and inaccurately remembered.

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1 Lester, John A., A Spelling Review (Pottstown, Pa., 1923), and Trowbridge, Cornelia R., Constructive Spelling (New York, 1928).
as to make it probable that had they actually been applied as re-
called, there would have been a higher percentage of errors than
was actually the case.

"Much of what they remembered," state the authors, "was
defective, erroneous, and not applied to their spelling in the
test. Spelling rules for the most part seem to be too long and in-
volved, and there are too many exceptions to every rule to make them
easily applied by students." 3

In view of the conclusions expressed in the above-quoted text,
the writer of this study felt a strong desire to experiment for
himself to find just what value if any was to be derived from the
use of rules in spelling instruction. In the following pages will
be found a description of a controlled experient designed to give
a partial answer to this question.

3 Ibid., p. 246
BACKGROUND MATERIALS
Chapter II
Background Materials

After spending some time in reading the material available in the field of spelling instruction, one is likely to feel that to date research is inadequate and that the opinions held by educators anent this subject are at best contradictory and confusing. Yet there are a few points one may advance with some temerity.

Need for concentration on common words—Ayers has demonstrated that "ten words—I, the and, to, you, of, a, be, in, we—make up 25 per cent of all the words used in ordinary writing. Fifty words make up nearly 50 per cent of all the running words used by adults." These are the fifty: "I, the, and, to, you, of, a, be, in, we, have, it, for, that, your, is, will, are, yours, not, as, that, with, this, but, on, if, do, all, so, me, very, my, get, from, our, was, time, put, can, one, would, he, had, go, letter, been, when, she, good."

The implications of the above quotation are that we fail to make a sufficiently sharp distinction between the pupil's recognition vocabulary and his writing vocabulary; and from this confusion stems much of our ineffectiveness in teaching spelling.

Jones phrases the same thought as follows: "Our spelling problem is not so gigantic as it is believed to be, for the reason that a handful of words misspelled over and over by the student has misled us in our judgment. Since our handling of the most dangerous

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4 Ayres, Leonard P., The Spelling Vocabularies of Personal and Business Letters (New York, 1913), p. 4
5 Ibid., p. 5.
6 Jones, Wallace F., Concrete Investigation of the Material of English Spelling (Vermillion, S.D., 1913).
7 Ibid., p. 26.
spelling materials is inefficient, students go on misspelling, year after year, words that should have been mastered in early years.\textsuperscript{8}

The cause of this continuing inefficiency would seem in part to be traceable to a teacher tendency to rely for spelling drill material on notoriously unsystematic spelling texts. Jones accuses such texts of being based on reading materials, whereas the "writing vocabulary of any student lags behind the auditory, visual, and lingual vocabularies for one, two, three, or even more years."\textsuperscript{9}

He also points out that our grading of spelling material is far from adequate.

In this connection Betts reports that he made a study of seventeen different series of graded spelling texts, and that they unanimously placed only one word at the same grade level.

Jones feels that our present spelling material is bad in that "it gives thousands of words our children do not use, and at the same time we are not teaching them the much smaller group of words that they do use." He suggests that spelling lists never be "desk made."

The writer was unable to discover any recent large-scale analysis showing how frequently the misspelling of certain basic

\begin{footnotes}
\item\textsuperscript{8} Ibid., p. 25
\item\textsuperscript{9} Ibid., p. 24
\item\textsuperscript{10} Ibid., p. 25
\item\textsuperscript{11} Betts, Emmett A., \textit{Spelling Vocabulary Study} (New York, 1940), p. 27.
\item\textsuperscript{12} Jones, \textit{Op. Cit.}, p. 25
\item\textsuperscript{13} Ibid., p. 26
\end{footnotes}
words tends to occur, but in 1919 Lester made a survey of the composition work of 2414 candidates for the College Board Entrance Examinations over a period of seven years, 1913 through 1919. Of a total of 14,002 misspellings, he found that 50 different words were misspelled 2,688 times, being thus responsible for 19.2% of the total misspellings. Although there were 2,620 different words misspelled, 775 different words were misspelled 10,497 times, thus accounting for 75% of the total misspellings.

An interesting corollary to this need for concentration on fewer words is appended by Masters. He gives the following bit of information almost incidentally, as his main interest was in finding out to how many words the conventional spelling rules are applicable. Looking over papers written by eighth grade pupils, high school seniors, and college seniors in Iowa, 200 of each selected at random, Masters concluded that "as the grade advances, misspellings tend to be more concentrated on the most frequently recurring forms." 16

Each pupil was asked to spell 268 words, and Masters found that 41 of the words at the eighth grade level, 79 at the 12th grade level, and 93 at the college senior level have one form of misspelling which accounts for at least 50% of the total misspellings. 17

Value of rules—As in the case of the foregoing point, there is little direct statistical evidence available as to the value of rules in the teaching of spelling.

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15 Ibid., p. 3.
17 Ibid.
One direct experimental study of the problem was made by Turner, who paired sixteen eighth-grade pupils in each of two groups as a result of grades secured in a common test. Group One was given three 25-minute exercises, drill only. Group Two was given three 25-minute exercises, one of drill and two of rules taught and associated with type-words and a minimum of drill.

"In a test given at the close of the third 25-minute study period One did better; in another test five days later One showed relatively less falling off in spelling efficiency," Turner concludes.

Note Masters' comment on the above experiment: "Turner's study, in which he attempted to determine the value of the rules in the teaching of spelling, gives no conclusive results for two reasons: one, the mean of the scores of the 'rule group' was 74 and that of the 'drill group' 76, and two, only 32 eighth grade children were used in the experiment."  

A much more definitive piece of work has been done by Sartorius in attempting to standardize words being introduced to children in schools throughout the country, and certain conclusions pertinent to this paper emerge from her study.

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19 Ibid.
She analyzed a list of 4,065 words, grouped by grade levels one through eight. She believes her list to contain those words most commonly used in the schools of the country, as well as the words most frequently taught to children and most widely used in the writing of children and adults.  

"There is a need of further investigation," she writes, "of the relationship between common spelling errors... and the usefulness of rules in preventing these errors.... Certain rules apply in many cases to parts of words that are infrequently misspelled, whereas other rules apply chiefly to parts of words most frequently misspelled.

"Since slight differences in the statement of a rule often result in a different number of cases falling under the rule, and a different number of exceptions, it is apparent that the greatest care should be exercised in stating a rule.

"...some rules are difficult to understand and apply even by an adult with the aid of a dictionary. A small number are relatively easy to understand and have few or no exceptions."  

Referring to the doubling consonant rule, Sartorius says, "The rule seems more confusing than helpful. It may be harder to learn the rule than to learn to spell the words separately. There are 752 double letters in the 4,065 words and only 58 plus 14 words, or a total of 73, that can be considered as conforming to this rule;
while 13 of these 72 words plus 22 others in the list are exceptions on the basis of one or more of the criteria just stated.²⁴

One rule that is often claimed of value because of a lack of exceptions is the rule for final y: 'Nouns ending in final y preceded by a consonant change y to i and add es to form the plural.' Commenting on this rule, Sartorius admitted that there were no exceptions to the rule as stated, but in the 4,065 words there are only 16 opportunities to use the rule. She concludes: "It is doubtful whether this rule would be of much use to children unless they could get more practice using it than they could from a speller with this list of 4,065 words."²⁵

The total number of words governed by the ei-ie rule (out of the 4,065) is 131 (101 ie, 30 ei). Thirteen of the 30 have ei sounded as long a. Eight of the 30 have ei following o. Eight others are exceptions: either, neither, foreign, height, seize, foreigner, leisure.

In the ie words there eight exceptions in which ie follows e: society, science, vacancies, ancient, conscience, efficiency, sufficient, conscientious.²⁶

This means that, counting the 13 with the sound of long a, there are 30 words out of 131 that do not follow the basic rule. Spending much time on the learning of this rule would seem hard to justify.

²⁴ Ibid.
²⁵ Ibid.
²⁶ Ibid.
The substance of Sartorius' testimony would seem to indicate that in general the spelling rules are possessed of so many exceptions and so limited an applicability as to make their study un-economic.

Not all writers on the subject agree however. Watson reports an experiment whose results apparently favor the use of rules. The subjects were two ninth and two tenth grade classes. One of each pair studied individually with access to rules for 27 and 25 fifteen-minute periods. The other studied without access to rules. In both classes studying with rules 100% of the pupils employing the rules reached or exceeded, on the final test, the median score on the initial test, whereas in the classes without access to rules the percentages were approximately 88 in both groups.  

Watson, evaluating her findings, claims "they tend to prefer individual practice with access to formulated rules over individual drill without reference to rule; to prefer class study of rules over class drill without rules...that homonyms are more advantageously taught in contrast with one another than either in isolation or together after one of a pair has already been taught in isolation. This is in itself one more bit of evidence for the general practicability of utilizing association technics in the teaching of spelling."  

"Economy in learning to spell appears to be likely to result," she adds, "from re-emphasis on the importance of developing efficient

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28 Ibid., p. 123.
technics for dealing among relationships among spelling units, such technics as might result from valid procedures of linking, grouping, contrasting, or comparing."

Tidyman notices "a decreasing reliance on rules for the teaching of spelling.... Teachers... are coming to believe that rules do not play a large part in spelling efficiency."

"The failure of the attempts to teach spelling by rules is probably due to the difficulty of trying to make systematic an unsystematic orthography. Children in the main learn spelling by seeing, hearing, and feeling words directly, rather than by a process of reasoning."

"The formation of rules should be based on a comparative study of words, (so that).... the child may be led to see or even discover for himself the principles of spelling involved. Thus generalizations—that is, rules—appear as a natural outcome of the intelligent observation of words, rather than arbitrary statements.

"The child should be taught the use of rules as means of correcting errors, aiding the memory, and acquiring the spelling of new words... Spelling by rule does not take the place of a free automatic use of words."

29 Ibid., p. 124.
31 Ibid., p. 76.
32 Ibid., p. 76.
Wilcox advises, after experimenting with the 'ei-ie' rule, that "the general conclusion...must therefore be unfavorable to the use of this rule as compared with the drill in the teaching of spelling."  

Gates describes an experiment intended to present a comparison of teaching spelling by a method designed to foster generalization and by the method of specific study of words treated as isolated items. The experiment involved a full school term and grades two to eight, 3,800 pupils in 106 classes in Public School 210, Brooklyn. The same basal list of words was used in both groups, and the amount of time spent in study and review was identical.

"For the generalization group words were grouped according to some common element, as derived form with suffix es or es, or those with some common visual or phonetic element, as in, eep, able, tion, ly, etc."  

They were introduced merely—rather than taught vigorously, and pupils were encouraged to see similarities and differences for themselves and generalize their experiences.

Summarizing the results of the experiment, Gates put forth the following very modest conclusion:

"It may be said that a broad and varied program of generalization, while it does not increase ability to spell the words studied during the term more than the specific learning method, does tend to increase

33 Wilcox, M. J., The Use of a Rule in Teaching Spelling (Iowa City, 1917), p. 84.
35 Ibid., p. 76.
36 Ibid., p. 76.
to some extent the power to spell new words and new elements to which the generalizations program was directed."

Writing on this topic of generalization and transfer in spelling, Archer says in effect that this power of transferring generalizations to a new situation may also result in a kind of negative transfer. He writes, "After studying create a child is more induced to write createing. After learning prefer he will be more likely to write prefering. After learning excelling he will be more likely to write excell instead of excel." 38

Gates' reaction to Archer's comment is as follows: "The term 'Negative Transfer' is unfortunate, since cases like those described above are instances of transfer quite as genuinely as the instances which assist the pupil to spell the word in the way called 'correct.' If a child writes coming, it is not because he is not influenced by previous experience, but probably precisely because he is solving the problem on the basis of an analogy with eating, going, and seeing, or even because he has formed a generalization: 'When a word comes with that ing sound, write the word and add ing to it.'

"...pupils who can spell one form of a word often make an error on another form...because English spelling does not consistently conform to the predisposition which early experience set up." 39

37 Ibid., p. 78.
For further comment on the problem of generalization as an aid to efficiency in spelling, see Appendix A.

Value of marking hard spots—Tireman has published a study suggesting the inadvisability of pointing out hard spots or danger points in words when teaching spelling. He describes the making of two equated lists, in one of which the hard spots were marked. A week was selected as the teaching unit, and to offset a possible carry-over of one method into the other or a slight superiority of one list, a rotation system was devised, so that a given class would study ListAm (marked) one week and List B (unmarked) the next week, while another class would study List A and then List Bm. In this way comparison was possible not only between A and B when studied by the same pupils but also between A and Am when studied by different groups.

Four intermediate and one delayed recall test were administered to each group, and papers were studied for 58 fourth grades (1,390 pupils), 68 seventh grades (708 pupils), and 45 eighth grades (1,084 pupils).

Tireman concludes: "One is impressed with the consistency with which the data showed that marking hard spots is of little or no value....People who advocate marking the hard spots are not only suggesting a useless device but possibly a harmful one."

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41 Ibid., p. 9.
42 Ibid., p. 10.
Causes of spelling disability—Capron has brought together a summary of the causes of pupil failure in spelling. She finds that neither general intelligence nor age is significant, but that specific experimental and temperamental factors are important in determining spelling accuracy, such factors as general disregard for details, feelings of inferiority, loss of confidence, apathy, rationalization, as well as such environmental factors as absence or excessive school changes. Among intellectual factors she includes weak visual or auditory perception or both, sensory or motor co-ordination defects. There is, she states, seldom a single causal factor. This suggests the need to sustain confidence and forestall adverse emotional attitudes.

She recommends individual help and analysis—value of systematic and continuous drill on a list of everyday words scientifically selected and grouped.

Other causes of spelling disability include psychological deafness, mental lapses, unconscious repressions, irregularities in English spelling, mental and emotional immaturity, faulty instructional methods, faulty teacher enunciation or even mispronunciation, inadequate technics for attacking spelling problems.

"Ignorance of word meaning sets up a taboo," Capron declares. (See "Appendix A").


Ibid., p. 44.

Ibid., p. 45.

Ibid., p. 46.
Palmer, dealing with the same subject, writes that "...good spellers were found to be noticeably superior to poor spellers in tests of phonetic abilities, visual perception, and associative learning..."

"There was no noticeable difference between performance of (the good and poor) groups in the tests of visual analysis and recognition, or visual and auditory memory span."

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48 Ibid., p. 160.
STATEMENT OF PROBLEM
AND
OUTLINE OF PROCEDURE
Statement of Problem and Outline of Procedure

The general purpose of this study is to set up a situation as completely controlled as possible and then see what variation in results will be caused by the admission of a single variable, namely, instruction in spelling based on the conventional spelling rules.

Statement of Problem--The basic question which this study hopes to shed light on is as follows: In tenth and eleventh grade high school English classes of average or above average ability, will spelling instruction based on a presentation of the spelling rules promote more efficient learning of the words exemplifying those rules than would equivalent time spent in study of the same words without access to rules?

Subjects and materials--With the co-operation of the principal and head of the department of English, four class groups in English, two on the tenth grade level and two on the eleventh, were made available to the writer. The experiment took place in Classical High School, Springfield, Massachusetts, during the months of May and June, 1942.

With a view to controlling all variables possible, the groups were selected on the basis of the average mark attained in English the preceding year. The pupils in both eleventh grade sections had received at least a B plus in the tenth grade course, and the pupils in the tenth grade divisions had all made a grade of B in ninth grade English. Later further selection within the groups was made by pairing certain pupils, as will shortly be described.
(a) **Designation of groups**—For the purposes of this study the groups will be hereafter described as follows: 11x, the eleventh grade experimental group; 11c, the eleventh grade control group; 10x, the tenth grade experimental group; 10c, the tenth grade control group.

(b) **Pairing of groups**—In the eleventh grade 27 pupil pairs were made, and in the tenth grade 20. The eleventh grade pupils were paired on the basis of (1) average grade in tenth grade English, (2) age in years and months, (3) grade rank out of a class of 377 at the time of graduation from high school, (4) a reading vocabulary score, intelligence quotient, grade average (Eng.) for eleventh grade, and grade average for twelfth grade, as well as the grade attained on a preliminary test given for control purposes and shortly to be described. The results of this pairing are shown in Chapter IV.

In the tenth grade pupils were paired on the basis of their age in years and months, their average English grade for ninth, tenth, eleventh, and twelfth grades, their rank in a graduating class of 311 pupils, their intelligence quotient, and a scaled vocabulary score, as well as the grade on the preliminary test given for control purposes. (See Chapter IV).

(c) **Selecting the rules**—An examination of the spelling book available to Classical High students in quantity revealed ten different spelling rules which might be used in an experiment of

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this nature. Five of them were selected on the basis of numerical applicability; in other words, for each of the five rules chosen it was possible to find at least a hundred words either a specific illustration of the rule or a specific exception to it. These rules will be found in Appendix C.

(d) Selecting the words—The next problem was to choose the words exemplifying each rule, and the number 40 was arbitrarily decided on, in order that there might be a total of 200 words in the entire list. Rare and difficult words were chosen whenever possible in preference to more familiar forms, in order that each pupil would actually be encountering enough words new to him to make his growth in spelling achievement measurable.

Appendix B contains the words selected, listed in alphabetical order, and it should be here noted that in terms of the rules and their applicability, the words are thus in a completely random order.

Procedure—With the classes paired, the next step was to give a pretest on the 200 words to all pupils concerned in the experiment.

(a) The pretest—A pretest was given in the form of the 200 words arranged alphabetically. Each of the four groups took the test in two consecutive class periods, 100 words each day.

The instructor pronounced the word carefully twice and then illustrated its meaning in one of three ways: he gave a synonym or analogous phrase, he defined it, or he used it in a simple, life-like sentence, according to whichever method the word best lent
itself to. Then he pronounced it a third time. In a few instances, such as the word reign, he added the statement that it was not spelled the same as some common homonym, in this instance rain or rein.

On both days the instructors retained the paper, and on the third class period, the day following the second half of the test, each pupil was allowed to correct his own paper, the instructor pronouncing and spelling the words in sequence. To avoid the possibility of errors in correction and dishonesty, the papers were later carefully recorrected. The factor of dishonesty may be dismissed as negligible however, in view of the fact that there was neither opportunity (the papers were written with a pen and corrected with red pencil, both furnished by the instructor) nor motive (the pupils were told they would be given no mark on the pretest) for malpractice.

All materials were collected following this correction period.

(b) Time of Class Meeting—Since the time of day when the class met was a possible variable, the eleventh grade experimental group was made the one that came earlier in the day, and the tenth grade experimental group the one that came later in the day, i.e., following the tenth grade control group.

(c) Time allotted to spelling instruction—In all groups an equivalent amount of time was spent on spelling instruction: ten consecutive class periods of thirty minutes each. In no group was any other work done except spelling. At the conclusion of the thirty minutes each group was given the remaining time (the periods were fifty minutes long) for individual study, with the instructor walking
around and giving individual help when requested to do so.

(d) **Procedure in the experimental groups**—The five rules were introduced in **numerical** order as given in this paper, with two periods (on successive class days) of thirty minutes each devoted to the exposition of each rule and a consideration of the words it governed.

Every effort was made to keep the procedure inductive. The words were put on the board and the pupils encouraged to note similarities and phrase rules based on their own observations. The period regularly ended with instructor and class jointly phrasing the rule on the board, and the class then copied the rule into a notebook. The following class period began with a review of the work—and the implications of the rule phrased—the preceding day.

Pupils were encouraged—as in the control groups—to **take** home the materials thus presented and study them, but no formal assignments were given throughout the ten-day period, for no control was possible over the amount of time the individual pupil might devote to home study.

At the end of the first class period of working on a given rule the pupils had met about half the words falling under each rule and had worked a rough-and-ready version of the rule, necessarily somewhat oversimplified, on the blackboard. This, together with the words, they copied in their notebooks, and they were instructed to discover, if they could, other words which were examples of or exceptions to the rule as stated.
The critical frame of mind thus achieved prepared them for a further refinement of the rule on the second day.

By the end of the second class period the rule had been fully stated, all the implications of the rules as phrased in this study had been brought out, and all the words used in conjunction with the rules had been presented.

It should be noted that many other words not in the experiment were also put on the board and discussed with the experimental sections. In many cases a simple, familiar word would illustrate the rule as well as the comparatively rare word chosen for the test list of 200, and such a word was often adduced by a pupil as an added example. Further, the process of leading pupils to note word analogies and thus proceed themselves step by step toward the formation of a rule demanded the introduction of many words that did not fit the rule, as the two steps in formulation of a rule require that the pupil see clearly what words do and what words do not come under the statement at issue.

(e) Procedure in the control groups—The procedure in the control group was to study unrelated words at the rate of 20 per day. The words were written on the blackboard one at a time, and the group discussed each word separately, debating its meaning, using it in sentences, remarking the "hard spots," referring to homonyms, etc.

It must be noted that the procedure was unlike that in the experimental group in respect to the amount of time spent on word meanings. The control group spent a third of its entire 300

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50 But see Tireman on "Value of Marking Hard Spots," p. 20.
minutes discussing the meanings of the words on the list, whereas the time spent on word meanings in the experimental sections could not have exceeded one tenth of the total, or three minutes out of every thirty.

At the conclusion of the 300 minutes both groups had the entire word list copied in their notebook. In the notebooks of pupils in the experimental group the words were grouped by their applicability to rules, and appeared either before or after the statement of the rule. In the notebooks of pupils in the control groups the words appeared in alphabetical order, numbered from one to two hundred.

(f) Administration of the final test—After the completion of the presentation as outlined above, the groups were all given an identical retest on the 200 words. To offset the advantage that would accrue to the control group if the words on the test were presented to them in the same order as in their study of the list, another random order, not alphabetical, was used. The words were written on 200 bibliography cards, which were then shuffled thoroughly as one would a pack of cards. The words were dictated to the groups in this order, thus ensuring a novel word order which no pupil in the experiment had before encountered.

The entire two hundred words were dictated to all groups within the fifty minute period—something not possible on the pretest because of the time expended in defining the words on that occasion—and that this was long enough for the purpose is attested to by the fact that only on four papers were one or more words left incomplete, i.e., only partly attempted. Each word was carefully pronounced three times during this final presentation.
RESULTS OF STUDY
Chapter IV

Results of Study

In this chapter the specific outcomes of the experiment are given.

Results of Pairing--In Table I are shown the results achieved in pairing pupils in the two eleventh grade classes.

TABLE I

A Comparison of Paired Pupils in Two Eleventh Grade Classes

<table>
<thead>
<tr>
<th>Name of Group</th>
<th>Number in Group</th>
<th>Age</th>
<th>I.Q.</th>
<th>Rank</th>
<th>Mean</th>
<th>% A Pupils</th>
<th>% B Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>A11x</td>
<td>51</td>
<td>16-5'127.5'</td>
<td>69.8</td>
<td>11.12</td>
<td>70</td>
<td>54</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>69.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A11c</td>
<td>52</td>
<td>16-6'127.4'</td>
<td>75.4</td>
<td>11.25</td>
<td>52</td>
<td>48</td>
<td>62</td>
</tr>
</tbody>
</table>

The above table does not show the chief basis of pairing these pupils, their mean grade (number of words right out of 200) on the pretest. Although that information is given in Table III, it

51 Hemmon-Nelson
52 Position at graduation out of 347 pupils in graduating class
53 Reading Vocabulary Score, Progressive Achievement Test, Intermediate Battery, Form A, California Test Bureau, Los Angeles. This test was given to all ninth grade pupils in the Springfield Schools in May 1940, when the students in this experiment had a school grade of 9.8. It would be reasonable to assume that their reading grade had advanced two years, to 13.12, and 13.25, instead of being below average as the table would indicate. The fact that this test was administered in ninth grade should in no way invalidate the pairing.
should be repeated here. The means were exceedingly close, 147.13 for 11x and 147.3 for 11c.

One will note a slight superiority of 11c in the matter of size of reading comprehension vocabulary and a slight superiority of 11x in terms of English grades throughout three years of high school, but in neither case is the divergence large enough to affect the validity of the pairing.

In Table II appear the results of the pairing of pupils in the tenth grade groups.

**TABLE II**

A Comparison of Paired Pupils in Two Tenth Grade Classes

<table>
<thead>
<tr>
<th>Name</th>
<th>No.</th>
<th>Mean</th>
<th>Mean</th>
<th>Mean</th>
<th>Read.</th>
<th>%B Pupils</th>
<th>%C Pupils</th>
<th>%D Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>Group</td>
<td>Age</td>
<td>I.Q.</td>
<td>Rank</td>
<td>Mean</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>-----</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>10x</td>
<td>20</td>
<td>15-6</td>
<td>120.3</td>
<td>1875</td>
<td>70.4</td>
<td>40</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>10c</td>
<td>20</td>
<td>15-7</td>
<td>121</td>
<td>194.5</td>
<td>67.5</td>
<td>40</td>
<td>60</td>
<td>45</td>
</tr>
</tbody>
</table>

54  Hemnon-Nelson

55  Position at graduation out of 418 pupils in graduating class

56  Percentile score based on standardized norms, Coöperative English Test Cl: Reading Comprehension, Form Q, Coöperative Test Service (New York, 1940).
Here the most noticeable divergence is in the mean score: 119.25 for 10x and 124.25 for 10c (See Table III). The other slight differences noticeable seem on the whole to favor the 10x group. The mean rank at graduation is an example, for here the lower the number the greater the relative achievement. The reading vocabulary mean is a measure of the size of the recognition vocabulary and is expressed on a percentile basis (50 would be the average group expectancy on the basis of nationwide standardized norms supplied by the publishers of the test.)

Results of pretests—In Table III will be found the results of the pretest administered to all groups.

| TABLE III
<table>
<thead>
<tr>
<th>Results of Pretest Administered to All Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eleventh Grade Classes</td>
</tr>
<tr>
<td>Name of Group</td>
</tr>
<tr>
<td>11x</td>
</tr>
<tr>
<td>11c</td>
</tr>
<tr>
<td>Tenth Grade Classes</td>
</tr>
<tr>
<td>Name of Group</td>
</tr>
<tr>
<td>10x</td>
</tr>
<tr>
<td>10c</td>
</tr>
</tbody>
</table>

The mean scores are very close in the eleventh grade groups, less close in the tenth grades. Yet it is in the 11c group that
the most striking gain was made, as will be shown presently.

Results of final tests—In Table IV are shown the results of the final test administered to all classes.

### TABLE IV

Results of Final Test Administered to All Classes

<table>
<thead>
<tr>
<th>Eleventh Grade Classes</th>
<th>Tenth Grade Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Group</td>
<td>Mean</td>
</tr>
<tr>
<td>1lx</td>
<td>177.4</td>
</tr>
<tr>
<td>1lc</td>
<td>183.6</td>
</tr>
</tbody>
</table>

The 10c group shows a gain in mean score of 33% as compared with a 28.5% gain by the 1lx group. The 11c group shows a gain in mean score of 24.7%, as compared with a gain of 20.5% by the 11x group.

Gains made by grade eleven—In Table V will be shown the distribution of gains made by grade eleven, together with the critical ratio.
### TABLE V

Distribution of Gains in Eleventh Grade Classes

<table>
<thead>
<tr>
<th></th>
<th>llx</th>
<th></th>
<th>llc</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>r</td>
<td>d</td>
<td>rd</td>
</tr>
<tr>
<td>53-56</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>49-52</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>45-48</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>41-44</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>37-40</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>33-36</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>29-32</td>
<td>8</td>
<td>-1</td>
<td>-3</td>
<td>3</td>
</tr>
<tr>
<td>25-28</td>
<td>3</td>
<td>-2</td>
<td>-6</td>
<td>12</td>
</tr>
<tr>
<td>21-24</td>
<td>3</td>
<td>-3</td>
<td>-3</td>
<td>9</td>
</tr>
<tr>
<td>17-20</td>
<td>1</td>
<td>-4</td>
<td>-8</td>
<td>32</td>
</tr>
<tr>
<td>13-16</td>
<td>2</td>
<td>-5</td>
<td>-10</td>
<td>25</td>
</tr>
<tr>
<td>9-12</td>
<td>1</td>
<td>-6</td>
<td>-12</td>
<td>15</td>
</tr>
<tr>
<td>Totals</td>
<td>27</td>
<td></td>
<td></td>
<td>81</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ Ef_{d1} = +1 \quad Ef_{d2} = 187 \]

\[ Ed = Emx2 + Emc2 \]

\[ M = 31.14 \]

\[ G = 10.52 \]

\[ Em = 2.02 \]

\[ D = 6.29 \]

\[ C.R. = 6.29^2 = 39.99 \]

M = 37.43

G = 15.45

Em = 2.97

D = 6.29
It will be noted that the critical ratio is 1.75, which means that the observed difference is 1.75 Ed units away from zero. According to Tiegs' table expressing the chance that measures will not fall below various standard error unit values, the chances are twenty-four to one that the true difference would not be 1.75 units below the observed difference. To put it more simply, the chances are twenty-four to one that the observed superiority is a true superiority. But this still leaves five chances out of 100 that the observed superiority is due to chance, and in most educational research a chance factor as large as this is usually considered great enough to deny any significance to the difference between the means. That is to say, there are too many chances that the observed difference is due to chance factors alone. In order to conclude with certainty that a reliable difference exists, the Critical Ratio should be as great as 2.5 and preferably 3.0.

Gains made by grade ten—In Table VI is shown the distribution of gains made by grade ten, together with the Critical Ratio.

---

TABLE VI

Distribution of Gains in Tenth Grade Classes

<table>
<thead>
<tr>
<th></th>
<th>10x</th>
<th></th>
<th>10c</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( x )</td>
<td>( f )</td>
<td>( d )</td>
<td>( \text{fd} )</td>
</tr>
<tr>
<td>77-80</td>
<td>1</td>
<td>11</td>
<td>11</td>
<td>121</td>
</tr>
<tr>
<td>73-76</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>69-72</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-68</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-64</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57-60</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>53-56</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49-52</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-48</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>41-44</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37-40</td>
<td>2</td>
<td>1</td>
<td>2/+35</td>
<td>2</td>
</tr>
<tr>
<td>33-36</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29-32</td>
<td>3</td>
<td>-1</td>
<td>-3</td>
<td>3</td>
</tr>
<tr>
<td>25-28</td>
<td>2</td>
<td>-2</td>
<td>-4</td>
<td>8</td>
</tr>
<tr>
<td>21-24</td>
<td>2</td>
<td>-3</td>
<td>-6</td>
<td>18</td>
</tr>
<tr>
<td>17-20</td>
<td>2</td>
<td>-4</td>
<td>-8</td>
<td>32</td>
</tr>
<tr>
<td>13-16</td>
<td>-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-12</td>
<td>-6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-8</td>
<td>1</td>
<td>-7</td>
<td>-7/-28 49</td>
<td></td>
</tr>
<tr>
<td><strong>Totals 20</strong></td>
<td><strong>( \Sigma f = 97 )</strong></td>
<td><strong>( \Sigma \text{fd} = 200 )</strong></td>
<td><strong>( \Sigma \text{fd}^2 = 387 )</strong></td>
<td></td>
</tr>
</tbody>
</table>

**M** = 36.4 \quad **Em** = 3.927 \quad **Ed** = 4.81 \quad **Em** = 2.837 \quad **M** = 41.6

\[ \text{C.R.} = 1.08 \quad \text{C} = 12.65 \]
It will be noted that the critical ratio is 1.08, which means that the observed difference is 1.08 Ed units away from zero. According to Tiegs' table expressing the chances that measures will not fall below various standard error unit values, the chances are 14.69 to one that the observed superiority is a true superiority. For an evaluation of the significance of this ratio, see page 32.

\textit{Ibid.}
Chapter V

Conclusions

Conclusions Emanating from This Study—While it may not be claimed that this study has proved anything positive, there would none the less seem to be definite value in the findings as they relate to the use of rules in spelling instruction.

(a) Value of Rules—The gains shown by both control groups in this experiment, while not so significant as to warrant the assumption that the control method is definitely superior, at least suggests that the experimental method as here employed is no better than the control method. In other words, it is of no special advantage to approach the learning of spelling words in English through an examination of the rules governing them as opposed to drill on individual words without reference to rules.

A fact that greatly reinforces this assumption is the small percentage of English words to which the rules apply (See pages 9, 10, and 11). Since the great majority of the words must be studied by the individual drill method anyway, it would seem advantageous to include in this approach the minority of words governed by the rule.

The use of the rules seems to this writer uneconomic because the length of time required to make certain that each member of the class understands all the implications of the rule fully. It appears that a rule half comprehended is more prejudicial to correct spelling than no rule at all.
(b) **Subjects for Further Investigation**—There are several points requiring future investigation. For one thing, how long does a pupil who fully understands a rule retain a grasp of all its parts? The testimony of Cook (See page 2) suggests that rules are forgotten very quickly, far more quickly than the ability to spell the words exemplifying the rule.

Another possible line of investigation would be the ratio of errors attributable to misapplication of the rule to the errors found in other parts of the same word. Inspection of the papers written by the experimental groups, with training in the rules, reveals a variety of spelling errors in parts of words where the rule does not apply. Is it possible that close attention to how the rule operates in a given word will tend to distract attention from the spelling of the word as a whole? This is a point which would bear statistical investigation.

Watson (See page 11) prefers drill with access to rules to drill without access to rules. It is not immediately apparent what is to be gained by this. Possibly the student can take from the rule those parts he understands and apply them solely to those words whose relationship to the rule he clearly sees. This is a point requiring research.

Possibly reference to rules should be made on an individual basis, as in a theme conference. When teacher and student encounter the word "deceive," it seems appropriate for the teacher to suggest the use of a key-word like "Alice." as an aid to remembering the vowel sequence in a half dozen words. (See page 56.)
Appendix A

Suggestions for Improving Spelling Instruction
Appendix A

Suggestions for Improving Spelling Instruction

This section contains certain general conclusions which, though not growing out of the statistical study herein undertaken, yet have a direct bearing on the larger problem that the study was designed to throw light upon. Some of these conclusions are based on collateral reading, others on direct experience.

Generalization as an aid to learning efficiency—There seems to be abundant evidence of a positive correlation between ability to spell and ability to see likenesses and differences between words. It should therefore follow that the teacher who encourages a pupil to make generalizations about like syllables or other like characteristics of English words is also strengthening that pupil's spelling ability.

At first glance this statement would seem to be contrary to the attitude toward rules previously enunciated, but there is a way to solve the apparent conflict, and that is to teach generalization about English spelling as an aspect of the problem of pronunciation.

It is a general principle that an accented vowel is long before a single consonant and short before a double consonant. Though there are many exceptions, observation of the principle in action will certainly give the pupil a new awareness of details about English spelling that he might otherwise be ignorant of. The following pairs of words illustrate this principle: accused-discussed, allotted-promoted, comma-comma, compassion-occasion, later-latter, riper-ripper, writing-written. Knowledge of the theory involved will keep the pupil from saying that he was "writting" a letter or that the sun was "shinning."
Likewise a knowledge of the work of silent e in making long the preceding vowel is a helpful concept to acquire. This is really a corollary of the preceding principle, in that the addition of silent e assures the base vowel of being followed by a single consonant. That is why we have hope—hop and hoping—hopping.

A knowledge of the principles just enunciated virtually replaces the complicated phraseology of Rules I and III (See Appendix B). If the material is presented as a pronunciation problem, the value accruing to the student lies in the fact there will be no tendency to inhibit the spontaneous impulse to spell the word in a given way. Such spontaneity may be a definite help to increased spelling accuracy, for the pupil may be drawing on a subconscious recollection of having seen the word in question spelled correctly many times. To sharpen the pupil's observation powers with regard to word formation without making him self-conscious and self-distrustful with reference to his instinct for the way a word is spelled—this may well be a fair statement of the objective of the teacher of spelling.

Importance of Familiarity with Meanings—A variable which may not have been completely controlled in the foregoing experiment is the degree of familiarity with word meanings. We have already seen that the control groups spent a larger portion of their class time studying word meanings than did the experimental groups. In any case it is now widely agreed that the first step in a successfully taught spelling lesson is "talking the words over." The pupil
should know clearly and be able to use correctly in a sentence every word he is asked to spell.

In Chapter Two we noted that the child's written vocabulary lags several years behind his recognition vocabulary; hence asking him to learn the spelling of a word not in his recognition vocabulary seems a foolish and cruel waste of effort.

Stimulating learning through sense perception—The teacher should appeal to as many sensory impressions as possible in presenting spelling to the child. Writing the word on the board in the pupil's presence has value, as does spelling the word aloud. Some children best retain visual images; others are ear or motor-minded, and the teacher should encourage the pupil to experience the word directly all three ways.

Need for critical reexamination of spelling materials—Two programs that especially need to be correlated are systematic instruction in spelling and the provision of a place where the spelling thus learned actually functions. Composition work itself will improve spelling, but the spelling drill without the composition seems particularly pointless. When a comparison is made of errors in spelling in student composition on the one hand and of our conventional spelling drill material on the other, one is instantly aware of the "lag" mentioned in section one of this chapter. Not only does the child tend to avoid using the more unfamiliar words in writing, but more than that, he is less likely
to take for granted his ability to spell such words than the commoner words about which he has built up a sense of false confidence. It would seem desirable for the teacher to compile such a list of common words, drill on them vigorously, and then hold the student to mastery of this restricted list, the while helping the pupil achieve a desirable attitude toward the problem of correcting his errors on less familiar words, a problem shortly to be discussed.

Need for a functional approach to spelling study—Spelling divorced from life seems sterile and doomed to failure. Recently a third grade class in a Hartford (Conn.) school went out on an expedition to observe a house being built a block or so away from the school. The pupils came back, discussed what they had seen, and then made a spelling list of words used in building as a preparation for writing an account of the things they had seen. Who can doubt but that the new words thus achieved were a permanent acquisition?

Special interests aid in the development of vocabulary and spelling ability. The sixth grade boy who takes pride in his rock collection can use with confidence and accuracy words not even in the recognition vocabulary. Special school projects may be utilized, and vocabulary of spelling words may well be the outgrowth of a group interest in something such as aviation.

In no field so much as English is it true that everything the teacher does has a bearing on all the related phases of the work. Every time one induces a pupil to read a book or achieve a new
interest he has indirectly helped with an individual spelling problem.

**Need for drill in dictionary techniques**—Why should a tenth grade pupil spend 45 seconds looking up a word in the dictionary when he can be taught to do it in 10 seconds? Much of the reluctance to correct spelling errors may be attributed to inability to use the dictionary effortlessly and accurately.

**Need for arousing the desire to correct spelling errors**—Too little attention is generally paid to the motivation of spelling improvement. Pupils by and large are not given sufficient incentive for improvement. The system of rewards and penalties, failing a composition with two misspellings on every page, as is practiced by the English department of Classical High, where the foregoing data was gathered, does not generally work out in assuring adequate care in revision.

**Need for a proofreading technique**—Another major cause for continuing failure to achieve spelling accuracy can be found in the poor psychology inherent in urging the pupil "to pause to investigate when uncertain," as do so many teachers and courses of study like the one here quoted. To pause to investigate the spelling of a word when engaged in composition is something that virtually no adults, and surely no professional writers ever do, and with good reason, for writing is a basically emotional experience, not to be interrupted frequently without

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prejudice to the continuity of the effort and the fertility of the
creative imagination.

Teachers should therefore urge their charges to get it down
on paper first, somehow, anyhow, and then revise it carefully
in the next draft. The first draft should be done quickly, with
no use whatever of the critical faculty. Then, in the revision of
the first draft, one needs both adequate motivation and a nearly
as possible a painless method or correcting one's spelling efforts.

An illustrative playlet—To illustrate both these objectives
being worked by an alert teacher, I have written the following play¬
let. The scene takes place in a schoolroom; the characters are
the teacher of English and a tenth grade boy whose spelling is notor¬
iously bad. Although this is individual teaching, the method can
easily be adapted to class instruction.

**FIVE DOLLAR WORDS**

Teacher (holding a one-page theme which the pupil has just completed
in class and brought up to the desk): Are there any misspelled
words on this theme?

Pupil: I dunno.

Teacher: Did you check it for spelling?

Pupil: No.

Teacher: Well, let's guess. How many would you think?

Pupil: I dunno.

Teacher: Well, do you think that there are no misspelled words
whatever?
Pupil: Gee, no. That never happened.
Teacher: Do you think there are more than five?
Pupil: Probably.
Teacher: Do you think there are more than ten?
Pupil: Could be.
Teacher: Surely there are not more than 20; you haven't more than 150 words on the whole paper.
Pupil: I guess not.
Teacher: Suppose I were to offer you five dollars for each misspelled word you found on that paper. Could you find them all?
Pupil: And how!
Teacher: Well, I'm sorry that I can't afford to give you the five dollars, but that proves that you could find them all if you really wanted to, doesn't it? Between now and tommorrow you write for me a list of all the reasons that you can think of why any one might want to avoid misspelling any words in something that he writes, but right now you get busy and earn those imaginary five dollar bills. And there's a way to do it so easy that it is like magic.

If we scrambled all the words on your paper and then rearranged them in an alphabetical list, could you find the mistakes more easily? Yes? Why?

Pupil: Because then I would not be reading a theme; I'd just be correcting a spelling list.
Teacher: That's right. When you read your theme, you're reading, not just a spelling list, but words that make sense and that have meaning for you apart from how they're spelled. In other words, when you read your paper you're trying to do two things—or really more than two things—at once. Now, how can we turn your theme temporarily into a list of spelling words without scrambling and recopying? The trick is simple. Just read it backward. Start with the last word and end with the first. The meaning will disappear completely; you will be looking at isolated words. Take your pencil and point to the last word in the theme. Ask yourself, "Am I sure it's right?" If you're not sure—dead sure, underline it lightly with your pencil. Then do the next-to-the last word and repeat the procedure. When you get to the first word then take your dictionary and look up all the underlined words. When you find one that's misspelled, cross it out and write it correctly right over itself between the lines. Then when that's done you will be ready for recopying, and really sure that there are no misspellings.

When you've practiced this method of revising a few times, you'll be able to do it fairly quickly, and before too long you will come to the place where you don't have to read backward at all; you'll be underlining the doubtful words at the very instant when you first write them down. It is not good to stop in the middle of a theme to look up the spelling of a word in your dictionary,
for too often you forget what you were going to say. Simply
underlining the word takes no time at all, and you come to the
end of your first draft with your words all checked for spelling,
and ready to be looked up in the dictionary.

You see, a little bell rings within you each time you mis-
spell a word. That is a humorous way of saying, in more non-tech-
nical language, that you have a subconscious awareness that a word
is misspelled, an awareness based on your having seen the word
spelled correctly many times in the past. If you faithfully, always
and everywhere, practice underlining when you're not sure, you'll
come to the point where you'll always know when you are not sure.
And that, after all, is the only real difference between poor
spellers and good spellers; the good spellers are simply those
who know when they don't know how to spell a word and look it up.
The bad spellers are simply those who don't know when they don't
know.

The foregoing scene, played by me countless times for individuals
and groups, has never failed to result in substantial, though regrettably
unmeasured, increase in spelling efficiency. It should work, for
it assures the pupil of a method of revision at once psychologically
sound and easy to implement, and the problem of motivation, though
not met completely, has at least been come to grips with.

As to motivation, the best way to attack that, it seems to
me, is to give the pupil a realistic motive for writing. When
a member of an English class is charged with the duty of writing
in behalf of the entire group to a professor at Harvard University,
he does not need to be reminded to check his spelling.

School journalism courses geared to the publication of a school newspaper provide such needed motivation for the correction of spelling errors. Pupils who write to please the teacher are generally content, unless prodded, to do the job but once; those who write for their contemporaries have been known to write an article five or six times before submitting it, even when the teacher does not capitalize on this zeal for self-improvement.

When I was adviser of the Classical Recorder, it was an ironclad rule that each pupil in the staff had to contribute five cents a month to a special fund. Then each time any pupil in the school found his name misspelled he was entitled to collect 25 cents from the editor, who posted the pupil's name on the staff bulletin board. No attempt was made to place the blame on any special reporter or editor, but in this manner the entire staff was kept constantly aware of the need for accuracy. Without some such device, the untrained pupil writer will feel no responsibility for spelling accuracy even in so vital a matter as the correct rendering of people's names, and his growth in journalistic skill and responsibility will mirror his progress in the matter of desiring to spell, not only names, but all words correctly.
Appendix B

The Two Hundred Words Arranged Alphabetically
Appendix B

The Two Hundred Words Arranged Alphabetically

1. abhorred
2. accessible
3. accident
4. accused
5. achievement
6. acknowledgment
7. acquiesce
8. acreage
9. acuteness
10. admitted
11. adobe
12. aggregate
13. aggrieved
14. agreeable
15. alien
16. allayed
17. allies
18. allotted
19. ancient
20. annoyance
21. annulled
22. appalled
23. applies
24. apostrophe
25. approximately
26. argument
27. arrangement
28. audacious
29. batteries
30. beauteous
31. befitted
32. believe
33. benefited
34. besiege
35. calliope
36. canoeing
37. catastrophe
38. chanties
39. chargeable
40. chimneys
41. collegian
42. colloquies
43. commission
44. committed
45. committee
46. companies
47. compelled
48. conceive
49. conciliatory
50. conscientious
51. conveyance
52. counseling
53. counterfeit
54. courageous
55. cried
56. crier
57. crying
58. cylinder
59. deceive
60. deducible
61. delayed
62. delaying
63. density
64. desirous
65. development
66. dirigible
67. discomfited
68. discussed
69. docility
70. donkeys
71. dryly
72. duly
73. dungeon
74. eccentric
75. efficient
76. eloping
77. equipped
78. excelled
79. excitement
80. exhibiting
81. extremity
82. fascinating
83. feign
84. fiend
85. fierceness
86. financier
87. fleccid
88. focusing
89. fogy
90. foreign
91. forfeit
92. freed
93. frolicking
94. frolicsome
95. frontier
96. gaseous
97. gayest
98. grievance
99. guidance
100. guileless
The Two Hundred Words Arranged Alphabetically
(continued)

101. heaviest
102. heavily
103. heaviness
104. height
105. heinous
106. hindrance
107. holiness
108. hungriest
109. hyperbole
110. iciness
111. illegible
112. implacable
113. incorrigible
114. ineligible
115. inference
116. interfering
117. inveig
118. irascible
119. irreducible
120. irrevocable
121. judgment
122. ladies
123. leisure
124. liege
125. loveliest
126. lullabies
127. marring
128. marshaling
129. medleys
130. mien
131. mischievous
132. modifies
133. modifying
134. mysteries
135. mysticism
136. navigable
137. negligible
138. niece
139. noticeable
140. obeisance
141. occasion
142. occupies
143. occurred
144. omitted
145. panicky
146. paralleled
147. peaceable
148. perceive
149. picknicking
150. plagiarize
151. plodding
152. plotting
153. portrayed
154. possession
155. possessive
156. predicament
157. prohibited
158. prophecies
159. prophesying
160. pulleys
161. pursuing
162. quarreled
163. quarreling
164. rarity
165. rebuttal
166. receive
167. recipe
168. referable
169. referring
170. regretted
171. reign
172. remitting
173. remorseful
174. replies
175. reprieve
176. seizure
177. shoering
178. simile
179. sincerely
180. skein
181. soliloquies
182. sovereign
183. species
184. surfeited
185. surveillance
186. tangible
187. thievish
188. traceable
189. tragedies
190. truly
191. vagueness
192. valleys
193. vengeance
194. venturesome
195. weird
196. wholly
197. wisdom
198. writer
199. written
200. yield
Appendix C

Statement of the Rules
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The statement of the spelling rules here given is in no way analogous to the method of class presentation, which was inductive. Rather an attempt has been made to state the rule and its various implications, together with the words it governs, as concisely as possible.

Rule One: Final E--The use of the letter e in spelling is important to understand. Long e has the sound of e in eve, short e the sound of e in end. When final e follows a single consonant, its function is to make the base vowel long (long vowels have the same sound they do in the alphabet). For example, compare the pronunciation of the following pairs of words: hat-hate, then-theme, hid-hide, not-note, cub-cube. Often, moreover, the final e fixes the sound of the final consonant. Compare arc-farce, rag-rage, rang-range, breath-breathe. The question is, what happens to the final e when a suffix is added?

Final e is kept before a suffix beginning with a consonant but dropped before a suffix beginning with a vowel.

When ed, er, est, ing, ous, ance, etc. are added, the vowel of the suffix replaces the e which is dropped. Examples: desir-ous, guid-ance, accus-ed.

Verbs ending in silent e drop the e before suffixes beginning with a vowel. Note the ing forms of the following verbs: arguing, fascinating, judging, pursuing, eloping.
The suffix *ity*, beginning with a vowel, requires that the final *e* be dropped. Hence *extreme* becomes *extremity*, *docile* becomes *docility*, *dense* becomes *density*, and *rare* becomes *rarity*.

When one adds a suffix beginning with a consonant, such as *ness*, the *e* is retained, as in *acuteness*, *fierceness*, and *vagueness*. Adding *ment*, we get *achievement*, *arrangement*, *excitement*. (Note exceptions: *argument*, *judgment*, and *acknowledgment*.) Common adjective endings beginning with a vowel include *ful*, as in *remorseful*; *some*, as in *venturesome*; *less*, as in *guileless*; and *ly*, as in *sincerely* and *appropriately*. (Note, however, the exceptions: *duly*, *truly*, and *wholly*.)

A number of words have the final *e* sounded as a separate syllable. In each case the word is of foreign language origin. We pronounce the final *e* in *adobe*, *apostrophe*, *calliope*, *catastrophe*, *hyperbole*, *receive*, and *simile*.

The word *wisdom* is an exception; it drops the final *e* before a suffix beginning with a consonant, but the omission is logical in view of the fact that the vowel sound of the base word *wise* is changed from long to short. Also note the change from *hinder* to *hindrance*.

Another group of exceptions is words ending in *ee*, which retain both the final *e's* before all suffixes save *er* and *ed* (in which case one would have three *e's* is succession). Compare, for example, *agreeable* (agree-able) and *freed* (fre-ed).

The words *canoeing* and *hoeing* are a special case in which the final *e* is retained before a suffix beginning with a vowel.
Rule Two: Final $\text{y}$—Basic rule: Final \text{y} following a consonant changes to \text{i} before every suffix except \text{ing}; final \text{y} following a vowel is kept unchanged before all suffixes. Examples: \text{cry, crying, crier, cried}; \text{heavy, heaviest, heavily, heaviness}; \text{delay, delayed, delaying}; \text{joy, joys, joyful, joyous}.

Note, however, that the rule does not apply before the suffix \text{ing}, for to observe it would be to write two \text{i}'s in a row. Hence we have \text{modifies} but \text{modifying}, and by the same analogy we get \text{crying, hurrying} (a frequently misspelled word) \text{prophesying}, and \text{worrying}.

Words ending in \text{y} following a consonant change the \text{y} to \text{i} and add \text{es} to form the plural of a noun or the third person singular of a verb, \text{ed} to form the past tense of the verb, as for example, \text{hurry, hurries, hurried, allies, lullabies, prophecies, prophesies, tragedies}.

Note the change from \text{y} to \text{i} in the comparative and superlative forms when \text{y} follows a consonant: \text{heavier, heaviest, hungrier, hungriest}; \text{lovelier, loveliest}. Nouns derived from adjectives with penultimate consonants also show the shift; \text{icy} becomes \text{iciness}, and \text{heavy} becomes \text{heaviness}. Before \text{ly} we observe the same change; \text{heavily, hungrily}.

When, however, words end in \text{y} after a vowel, their derivatives retain the \text{y}. Among possible examples are \text{allayed, conveyance, gayest, chimney}.\text{es}.

Apparent exceptions are the two words \text{soliloquies} and \text{colloquies}, in which the \text{y} changes to \text{i} following the vowel \text{u}. The words are not really exceptions however, for the reason that the \text{qu} combination has the consonantal force of \text{kw}. 
The rule is especially helpful when the ending e is to be added. Note chimneys, donkeys, medleys, pulleys, valleys. As we never have a double i in English, words ending in ie, such as tie and die, not only drop the unpronounced e before the ing (See Rule One) but they also change the i to y. Examples: bellying, dying, lying, and vying.

Rule Three: Doubling the Final Consonant—It seems simpler to divide this rule in two parts for effective presentation.

Rule 3A: Monosyllables ending in a single consonant preceded by a single vowel double the final consonant before a suffix beginning with a vowel.

To meet the above requirements a word must have its last three letters in the following sequence: consonant, vowel, consonant. This is true of the words mar and plot but not true of such words as walk (two consonants at end) and sleep (two vowels preceding the final consonant). Observe the forms walking and sleeping.

The following words meet the above requirements and double the final consonant: marred, marring, plodded, plodding, plotted, plotting.

Note that this principle of spelling is closely tied up with one governing the pronunciation of many English words. Before a double consonant a vowel tends to be long, and before a single consonant the vowel is regularly long. Observe both the spelling and pronunciation (and the intimate relation between them) of the following words. (See page 38).

<table>
<thead>
<tr>
<th>Single</th>
<th>Plural</th>
<th>Single</th>
<th>Plural</th>
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<tr>
<td>din</td>
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<td>dine</td>
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<td>dot</td>
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<td>sham</td>
<td>shammed</td>
</tr>
<tr>
<td>dote</td>
<td>dotted</td>
<td>shame</td>
<td>shamed</td>
</tr>
</tbody>
</table>
Rule 3B: Words of more than one syllable which, as in the case of the monosyllables in Rule 3A, end in a single consonant preceded by a single vowel, double the final consonant before a suffix with a vowel, provided also that they are accented on the last syllable. If the accent falls elsewhere in the word, the final consonant is not doubled. Examples: occur, occurred, occurring; regret, regrettable.

Here is a group of verbs in which the final consonant is doubled in conformance with the above rule. Note that in the original form the accent is on the last syllable; in the derived form the accent stays in the same place, on the penultimate now, due to the addition of a suffix pronounced as a separate syllable. For the first two words the original form of the word is given.

Examples: abhor, abhorring; admit, admitting; befitting, compelling, excelling, occurring, referring, regretting, remitting.

The addition of the suffix ed instead of ing in the above example would result in variance of the number of syllables (e.g., admitted, compelled) but in each case the accent would remain stationary, and the requirements of the rule would be met.

The chief difficulty in applying rule 3B is due to the final provision regarding the placement of the accent on the last syllable. Here is a list of words with the accent falling on different syllables. As before the original form is given in the first two instances.

hop  hopped
hope  hoped
plan  planned
plane  planed
strip  stripped
stripe  striped
wag  wagged
wage  waged

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The chief difficulty in applying rule 3B is due to the final provision regarding the placement of the accent on the last syllable. Here is a list of words with the accent falling on different syllables. As before the original form is given in the first two instances.
Examples: abhor, abhorring; labor, laboring; appalling, signaling; befitting, benefiting; omitting, limiting; deferring, differing; equipping, worshiping; interring, entering; preferring, offering.

Derivatives with several other suffixes may be formed under Rule 3B: abhorrence, occurrence, rebuttal, regrettable, remittance.

Note the following exceptions: (1) Whenever the accent shifts in the derivative from the final syllable of the base word, the consonant is not doubled. Thus we have infer, inferring, but we also have infer, inference. (2) Compounds of fer do not double the r before able wherever the accent falls. Note: preferable, referable, transferable.

There follows a list of present participles which do not double the final consonant of the base word before ing because the accent in the base word is not on the last syllable: benefiting, counseling, discomfiting, exhibiting, focusing, marshaling, paralleling, prohibiting, and quarreling.

In our preoccupation with the position of the accent, let us not forget that a word may accent the last syllable and yet not double the final consonant because another provision of the rule is not met. Interfere becomes interfering because the base word does not end in a single consonant preceded by a single vowel.

Rule Four: IE and EI—This rule is succinctly stated in a familiar jingle:
Put i before e
Except after c,
Or when sounded like e
As in neighbor and neigh;
And except seize and seizure
And also leisure,
Weird, height, and either,
Forfeit and neither.

The poem symbolizes the difficulties involved in the mastery of this rule. The list of exceptions contained therein is not nearly complete.

Most useful for the average person are the first two lines of the poem, though their applicability should perhaps be limited to the ie-el combination after the letters l and c, unless one makes the effort to master the rest of the rule as well.

In this connection, if one wishes to keep straight the order of vowels in that limited but frequently occurring group of words such as believe, relieve, receive, and deceive, the use of some such key word as slice or Alice will be found helpful. The point is that i follows l in slice and Alice just as it does in believe; whereas e follows c in those key words just as it does in deceive.

One former pupil put the difficulty neatly when he said that all he could remember of this rule was "i before e except--"

Base rule: ie. Exceptions: ei (1) after c; (2) when the ie-el combination is pronounced as long a; (3) in the list of special
exceptions. (Some spelling teachers insist on memorization of the following key sentence: "Neither leisured foreigner seized the weird height." The words given therein approximate the list of exceptions in the poem quoted above.)

Here is a partial list of **ie** words: achieve, aggrieve, believe, siege, besiege, fierce, fiend, liege, mien, mischief, mischievous, niece, piece (contains the word pie), reprieve, thievery, yield.

(1) The following words are exceptions to the base rule because of the preceding **o**: deceit, deceive, receive, perceive.

(2) The words in this group are exceptions because of the long **a** sound: heinous, inveigh, neigh, neighbor, weigh, weight, freight, surveillance, rein, reign, feign.

There are a few words containing **eign** in which the sound of **ei** is not so clearly that of long **a** as it is in feign and reign, but the analogy is perhaps sufficiently close to warrant including them with the above class of exceptions. Among these words are foreign, sovereign, and sovereignty.

(3) The following words are included in the list of special exceptions: height (also sleight), forfeit (also counterfeit and surfeit), seize (also seizure and leisure), either (also neither).

The words heifer, obeisance, plebeian, and sheik must be remembered by themselves.

A few words have **ie** after **o** because of the fact that the **o** is pronounced as sh: ancient, conscience, efficient, species, etc. Financier, another exception, may be remembered with them, even though **o** does not here have the sound of sh.
To such words as *alien* and *science* Rule 4 does not apply; in such cases both vowels are clearly heard.

**Rule Five: Hard and Soft **c** and **g**—The basic rule is that the letters **c** and **g** are regularly had before **o**, **a**, and **u**; regularly soft before **e**, **i**, and **y**. Hard **c** has the sound of **k**; soft **g** has the sound of **j**; hence the Merriam-Webster dictionaries, when respelling for pronunciation a word containing either of these letters, invariably represents the letter **c** by **k** (hard **c**) or **g** (soft **c**). When **g** is used in the respelling, it is always considered to be hard, as in *hunger*, while the soft sound, as in the word *wage*, is respelled *waj*.

Here are some simple examples of the foregoing rule: *cat, cot, cut; cent, city, cypress; gate, good, gun; gentle, gist, gymnast*.

The words *applicant* and *occasion* have a hard **c** because there is an **a** following in both cases. The words *cylinder* and *mysticism* have soft **c's** because of the following **y** and **i**. The word *occasion* reminds us that words with doubled **c's**—*accommodate, accident, eccentric, flaccid, accessible*—always have the first **c** pronounced like **k**, the second hard or soft according to the rule given above.

That group of adjectives ending in *ible* or *able* is likely to cause trouble. When **c** or **g** precedes these suffixes, however, it may prove helpful to note whether the consonant sound is hard or soft. Before *able* the consonant will be regularly hard, as in *implacable, irrevocable, and practicable*. Before *ible* the consonant is soft, as in *deducible, dirigible, illegible, incorrigible, irascible, irreducible, negligible, and tangible*. Note the word *plagiarize*, in which an **i** is inserted before the **a**, with the effect of
keeping the g soft.

The word plagiarize, noted above, illustrates a tendency common to a group of nouns ending in silent e preceded by soft c or g. (We saw under Rule One that silent e tends to fix the sound of the preceding consonant, and when it follows c and g it keeps the pronunciation of those letters soft, e.g., *arc*–*farce*, *rag*–*rage*). When these nouns add a suffix beginning with a or o, the silent e is retained in order that the final consonant sound of c or g will not change to hard. (This is in contradistinction to what we learned in Rule One, which says that final e disappears before a suffix beginning with a vowel.) Examples of this tendency include *chargeable*, *marriageable*, *noticeable*, *peaceable*, *traceable*, and courageous. The word dungeon is another instance of the use of e to keep the g soft.

The above use of e should not be confused, however, with its function in words such as *beauteous* and *gaseous*. There the e is distinctly pronounced.

The combinations ce and ci followed by vowels are sometimes modified into sh, as in *ancient*, *audacious*, and *ocean*.

A few words ending in c must insert k before the suffixes ed, er, ing, and y. From *picnic* we get *picnicked*, *picnicker*, and *picnicking*. Then there are *frolicking* and *panicky*. A word like *frolicsome* does not need to add the k, however, as the c remains hard before e consonant.
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