1956

A summary of research and studies in phonics.

Grigoriev, Alexandra

Boston University

http://hdl.handle.net/2144/8968

Boston University
BOSTON UNIVERSITY
SCHOOL OF EDUCATION

Thesis

A SUMMARY OF RESEARCH AND STUDIES IN PHONICS

Submitted by

Alexandra Grigoriev
B.S., Institute of English, Riga, Latvia, 1932
LL.M., University of Riga, Latvia, 1935

In partial fulfillment of the requirement for the
degree of Master of Education

1956
First Reader:  Donald D. Durrell, Professor of Education

Second Reader:  Helen A. Murphy, Professor of Education
ACKNOWLEDGEMENT

Grateful acknowledgement is made for the help and guidance of Dr. Donald D. Durrell.
TABLE OF CONTENTS
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. THE STATEMENT OF PURPOSE</td>
<td>1</td>
</tr>
<tr>
<td>II. COMPARISON OF THE EFFECTS OF THE PHONETIC AND NON-PHONETIC METHODS OF INSTRUCTION ON READING</td>
<td>2</td>
</tr>
<tr>
<td>III. THE EFFECT OF VARYING AMOUNTS OF PHONICS ON READING AND SPELLING</td>
<td>52</td>
</tr>
<tr>
<td>IV. THE EFFECT OF A FORMALIZED PROGRAM IN AUDITORY AND VISUAL DISCRIMINATION</td>
<td>73</td>
</tr>
<tr>
<td>V. RELATION OF PHONIC ABILITY TO MENTAL ABILITY</td>
<td>79</td>
</tr>
<tr>
<td>VI. RELATION OF PHONIC ABILITY TO READING AND SPELLING</td>
<td>87</td>
</tr>
<tr>
<td>VII. STUDIES OF PHONETIC DIFFICULTIES IN WORD ANALYSIS AND READING</td>
<td>109</td>
</tr>
<tr>
<td>VIII. STUDIES OF PHONETIC ELEMENTS TO BE TAUGHT AND OF SOME CURRENT PRACTICES</td>
<td>116</td>
</tr>
<tr>
<td>IX. SUMMARY</td>
<td>170</td>
</tr>
</tbody>
</table>

Bibliography 177
CHAPTER I

THE STATEMENT OF PURPOSE

The writer has chosen to abstract the research and studies in the field of phonics.

The summaries in the chapters that follow will show:

1. the results of comparison of the effects of the phonetic and non-phonetic methods of instruction on reading;
2. the effect of varying amounts of phonics on reading and spelling;
3. the effect of a formalized program in auditory and visual discrimination;
4. the relation of phonic ability to mental ability;
5. the relation of phonic ability to reading and spelling;
6. the results of the studies of phonetic difficulties in word analysis and reading, and
7. the results of the studies of phonetic elements to be taught, as well as a survey of some current practices.
CHAPTER II
COMPARISON OF THE EFFECTS OF THE PHONETIC
AND NON-PHONETIC METHODS OF INSTRUCTION
ON READING

Summary

Among the earliest studies directed to find out relative effects of the phonetic and non-phonetic methods of instruction on reading in the first and second grades was that reported by Currier and Duguid. For experimental purposes two classes of equal size and of equal average ability were formed in each of the two grades. In each grade one of the classes received thorough phonetic drill, while the other was taught by a method defined by the investigators as "quick-perception" and "sense content", without any use of phonics. Through the duration of the experiment careful observations were made by the teachers and the results were recorded. No statistical treatment of the test results has been reported. The investigators observed that the classes having no phonics enjoyed reading for the sake of study, but were less careful and less correct than the phonic classes in regard to word pronunciation. The children in the non-phonics classes often substituted words from their own vocabulary when confronted with difficult or unfamiliar words, but read more swiftly and with more expression. In June, when the classes were
tested in reading from books which the children had not seen before, the ability in attacking new words was found to be about the same for the phonics and the non-phonics groups, though the classes having no phonics read more rapidly but less accurately.

Observation of the same pupils in the same experimental classes as to their reading performance was continued in grades three, four, and five and the results were reported by Currier in 1928. No statistical data have been reported. Instruction in the third grade had been continued as before in the first two grades: one class continued phonic drill, while the other was taught without the use of phonics. Observations were made and the results were recorded by the teachers. In June the average ability of the classes was found to be the same, and observations similar to those made in grades one and two were reported. An additional observation was reported, and namely, that some pupils apparently possess a "natural phonic sense" and employ it in their reading. Phonic drills were found to be without value to these pupils. In general phonic drills were found to be of a very real value, but not essential to every child in the primary grades. Word pronunciation drills proved to be helpful. Observations also showed that failures in oral reading and comprehension were possibly due to carelessly supervised silent reading.

The two above reported studies are of little significance in research because of the lack of statistically treated data. Observations made by the investigators are of some interest though,
if compared with the research findings reported in other more recent experimental studies.

Buswell made a series of photographic studies of eye movements of children in first grade reading in order to describe certain methods of teaching and to show the effects of these different methods upon the fundamental elements of reading. In one of the studies, conducted during the school year 1921/1922, he selected two groups of twelve and nine children each from the two first grade classes in the University of Chicago Laboratory School as participants in his experiment. Later two groups of children from two first grade classes in Chicago Public Schools, comprising four and six children each, were included into the study. The public school children were used only at the end of the semester. Only the average or typical children were selected. The public school children had been taught reading by a method which placed major emphasis on word mastery, including elaborate phonetic drill in a separate period. The laboratory school children were taught by a method which placed major emphasis upon securing the correct reading attitude, getting meaningful experiences from the printed material, and creating a desire to read by providing interesting reading material. The first photographic records for the laboratory school children showed that only five of the pupils followed the words in their reading from line to line. The others repeated the selection from memory, omitted words they did not recognize, repeated words, and showed a great deal of eye fixations
and a general confusion. Photographic records of the public school children, taught by the phonetic method, showed that these children followed the lines and read the story as it was printed. There were long pauses in their eye fixations. The subjects were reading in word rather than in thought units.

Photographic recording of eye movements was one of the techniques used by Mosher and Newhall in their study. In order to compare the reading habits resulting from two methods of teaching beginning reading, the phonic and the look-and-say method, these investigators made an experimental study on such phases as frequency of eye fixations, speed on easy and difficult material, and comprehension. Beginning first grade children from three elementary schools, comprising five classrooms, in New Haven, Connecticut participated in the experiment, which started in September 1926 and continued through May 1928. The groups were sectioned so as to have superior, average, and below average pupils. The test data analyzed in this study were secured after two years of experimental instruction. These data included the results of ten tests given to 50 children taught by the look-and-say method and 73 children taught by the phonic method. The mean of eye fixations per line on easy selection was 7.24 for the look-and-say group and 6.81 for the phonic group; on a difficult selection the mean of eye fixations was 8.96 for the look-and-say group and 8.36 for the phonic group. The number of seconds to read orally an easy selection was 27.4 for the look-and-say group.
and 31.58 for the phonic group; to read a difficult selection the number of seconds was 46.6 for the look-and-say group and 43.91 for the phonic group. The number of seconds in silent reading on an easy selection was 103.2 for the look-and-say group and 102.91 for the phonic group; the number of seconds on two difficult selections was: 122.8 and 107.6 for the look-and-say group and 118.73 and 124.8 for the phonic group. Accuracy on comprehension test (expressed as mean per cent) on an easy selection was 90 for the look-and-say group and 94.17 for the phonic group; on two difficult selections the accuracy was 77.4 and 84.2 for the look-and-say group and 80.75 and 78.56 for the phonic group. The data showed that in eight cases out of ten the differences were in favor of the phonic group. The differences were not statistically significant.

Sexton and Herron conducted the so called "Newark Phonics Experiment", the purpose of which was to test the value of phonics in the teaching of beginning reading. The experiment took place in eight schools in Newark, New Jersey and lasted from September 1924 to February 1927. Two IB grades started the experiment; one of the teachers used phonics, while the other eliminated phonics entirely. The same group continued instruction as started through the second term in class IA, only under two new teachers. The two grade IB teachers started two new classes, but reversed the methods of instruction as to the use and non-use of phonics. This step was taken to eliminate the difference in teacher ability. The
pupils were graded according to the ratings on Kindergarten Test and the size of classes was kept equal. Teaching conditions were also to be kept equal, and same methods were to be used by the teachers.

The grade IB pupils were tested in June 1925 and in January 1926, after having participated in the experiment through two terms, under two different teachers. The IB non-phonics group consisted of 220 pupils and the phonic group of 244 pupils. On the Newark Word Recognition Test the phonic group showed a gain of 0.52, on the Newark Sentence Test a loss of .23, on the Newark Picture-Word Matching Test a loss of .17, on the Detroit Word Recognition Test a loss of .41. The results indicated a very slight advantage of the non-phonics classes, except on the Newark Word Recognition Test, on which the phonics classes had a gain of 0.52 point score.

The grade IA pupils were tested in January and in June 1926. The phonic group consisted of 175 pupils and the non-phonics group of 176 pupils. The combined test scores, tabulated in average point scores, showed the following results: the phonic group had a gain of 1.08 on the Haggerty Reading Examination, Sigma I, Part I, of 0.68 on the Haggerty Reading Examination, Sigma I, Part II, and of 1.05 on the Detroit Word Recognition Test.

The grade IB pupils continued to work under the experiment in grade IIB and were tested in January and in June 1927. Final tabulation of the results for 94 pupils in the phonic group and
for 97 pupils in the non-phonic group showed gains for the phonic group on all the tests: a gain of 1.48 on the Haggerty Reading Examination, Sigma I, Part I, a gain of 1.36 on the Part II of the same test, and a gain of 1.31 on the Newark Second Grade Reading Test. There was an element of mathematical inaccuracy in totaling and averaging all the above point scores. A comparison of scores between the phonics and the non-phonics classes, taught by the same teachers within the same school, showed less difference than the scores between the same grades among different schools.

To investigate the value of training in phonetics on primary reading Garrison and Heard conducted an experiment with four groups of beginning first grade children in September 1927 and continued it through the first, the second, and the third grades to May 1930. The children were equated in age and intelligence according to mental test results and divided into a bright and a dull phonic group, and a bright and a dull non-phonic group. Equivalent group techniques were used in regard to children, teachers, and teaching conditions. Special instruction in phonics was given only in the first and in the second grade. In the third grade all groups received regular third grade instruction. At the close of each grade a battery of tests was given. At the close of the first grade mean scores on the reading tests for the bright phonic group were a little higher than those for the bright non-phonic group, except on the Gray Oral Reading Test, on which the difference favored the bright non-phonic group by 2.7 points. Mean scores for
the dull non-phonic groups were slightly higher than those for the dull phonic groups, except on the Haggerty Reading Examination II. At the close of the second grade the bright non-phonic group was slightly exceeded by the bright phonic group on all the tests; the dull non-phonic group exceeded on all the tests except on Gates Reading Test, Type 3. At the close of the third grade the bright phonic group exceeded the bright non-phonic group on the New Stanford Test, Part II, but the difference was in favor of the bright non-phonic group on the New Stanford Test, Part I. The differences favored the dull phonic group on all the tests.

On the spelling tests at the close of the first grade the bright phonic group exceeded the bright non-phonic group on all the tests. The dull phonic group exceeded the dull non-phonic group on Phonetic Words Not Taught and on Non-Phonetic Words Not Taught tests. The groups were equal on Phonetic Words Taught test. At the close of the second grade the phonic groups, both the bright and the dull, exceeded the bright and the dull non-phonic groups on all the tests, except on the Non-Phonetic Words Not Taught test, on which the dull non-phonic group was slightly better. At the close of the third grade the differences favored slightly the phonic groups, both the bright and the dull.

At the beginning of the second and the third grade the groups were tested to find out the amount of summer losses both in reading and in spelling. At the beginning of the second grade the phonic groups, both the bright and the dull, had a greater
loss in reading. In spelling the dull phonic group had the
greatest loss, but the bright phonic group was .1 score better
than the bright non-phonic group. At the beginning of the third
grade the non-phonic groups, both the bright and the dull, had a
greater loss in spelling, as compared with both the bright and
the dull phonic groups.

Tate conducted an eight-week experiment with two first
grade classes from Eli Whitney School in Chicago, Illinois to
determine the influence of phonics on silent reading when a
special period is used for formal instruction and drill in
phonics. The experimental group consisted of 37 pupils of
median CA 6-7, median MA 7-3, median IQ 108. The control
group consisted of 36 pupils of median CA 6-7, median MA 7-5,
median IQ 109. The experimental class was divided into two
groups: Division A with 22 most capable pupils, and Division B
with 15 less capable pupils. Every morning for fifteen minutes
each of these groups received special instruction and drill in
phonics only. The control class was divided into three groups:
Division A with 17 most capable pupils, Division B with 12
medium capable pupils, and Division C with 7 pupils of low
ability. No phonics at all were employed with this last group
through the duration of the experiment, although these pupils
had some knowledge of "incidental" phonics and training in how
to use them before the experiment began. The teachers were not
equated as to their personalities and methods, but both the
groups used the same basic textbooks. Median grade scores on the Gates Word Recognition Test for the experimental group were 2.27 on the initial test and 3.00 on the final test; for the control group—2.20 on the initial test and 2.47 on the final test, with a difference of 0.53 in favor of the experimental group. Median grade scores on the Gates Word, Phrase, and Sentence Reading Test for the experimental group were 2.20 on the initial test and 2.80 on the final test; for the control group—2.22 on the initial test and 2.90 on the final test, with a difference of 0.08 in favor of the control group. Median grade scores on the Gates Reading of Directions Test for the experimental group were 2.10 on the initial test and 2.75 on the final test; for the control group—1.95 on the initial test and 2.75 on the final test, with a difference of 0.15 in favor of the control group. The only gain in favor of the experimental group was in word recognition—7.3 months as compared with 2.7 months for the control group.

To determine the effect of the total non-use of phonics on primary reading, Tate, Herbert, and Zeman conducted another experiment which lasted for two school years, starting with the beginning first grade and continuing through the second grade with the same classes and with the same teachers accompanying their children through both the grades. The experimental group originally consisted of 44 pupils, grouped according to ability, with median CA 6-8, median MA 7-8, and median IQ 111.5. The
control group originally consisted of 44 pupils, grouped according to ability, with median CA 6-8, median MA 7-9, and median IQ 115.0. Because of drop-outs during the experiment, the final experimental group had a disadvantage of 6.5 points on the median IQ. No attempt was made through the entire duration of the experiment to teach phonics or sound letters to the experimental group. The control group was taught by the look-and-say method, with an incidental use of phonics. Median grade scores on the Gates Word Recognition Test for the experimental group were 1.90 on the initial test and 3.31 on the final test; for the control group--2.33 on the initial test and 3.33 on the final test. Median grade scores on the Gates Word, Phrase, and Sentence Reading Test for the experimental group were 2.05 on the initial test and 3.35 on the final test; for the control group--2.43 on the initial test and 3.45 on the final test. Median grade scores on the Gates Reading of Directions Test for the experimental group were 2.00 on the initial test and 3.55 on the final test; for the control group--2.20 on the initial test and 3.75 on the final test. Median grade scores on the final New Stanford Reading Test, Word Meaning, were 3.20 for the experimental group and 3.85 for the control group. Median grade scores on the final New Stanford Reading Test, Paragraph Meaning, were 3.20 for the experimental group and 3.95 for the control group. Tate computed the differences on the initial and final tests between the median scores of the experimental group and the control group and found that these
differences were in favor of the control group on all the Gates Reading Tests and that the control group was superior to the experimental group on the New Stanford Reading Tests by 7.5 months on Paragraph Meaning and 6.5 months on Word Meaning. These differences are statistically insignificant and the interpretation lacks accuracy. The data for the two groups are hardly comparable. The test results show that the control group was superior to the experimental group in median IQ and on all of the Gates initial reading tests. In general, the experimental group shows more relative gain between the initial and the final Gates Primary Reading Tests than the control group. The grade scores on the New Stanford Reading Tests are not comparable, as the criterion necessary for a comparison is missing. The groups were not adequately matched in achievement at the beginning of the experiment.

Buswell evaluated and reported the results of an experiment in teaching children to read by means of the non-oral method. This method of teaching reading was originated by James McDade and has been carried on for experimental purposes in Chicago public schools from 1935 to 1945. More than 70,000 pupils had been taught by this method. The non-oral method did not allow any oral activities to be carried on during the instruction in reading. The child was led to get the association between the visual symbol and the meaning without either the oral pronunciation or the inner subvocalization of the words. Any oral activities as well as
phonics, if necessary, were carried on during the oral language periods. This method was used only in the first and second grades. Evaluation was based on test data secured from the pupils taught by the non-oral method in the first two grades by the time they were ready to begin their sixth year in school. 593 children were matched with 523 children taught by a regular oral method. A comparison of the data on the Van Wangenen and A. Dvorak Diagnostic Examination of Silent Reading Abilities and the Nelson Silent Reading Test (Vocabulary and Paragraph Reading) showed that for the low IQ oral group the mean score was 22.8, for the low IQ non-oral group 23.7, for the high IQ oral group 45.2, for the high IQ non-oral group 46.1. The mean difference of 1.8 was in favor of the non-oral group. The differences were not statistically significant. Factors such as teachers, home practices of the children, and other influences could not be controlled, thus restricting interpretation of the test results.

**Purpose:**

To find out relative effects of the phonetics and of the non-phonetic method on reading in Grade I and II.

**Materials**

Formal tests were not given and no statistically treated data are available. Observations were made by the teachers during the year and the results were reported.

**Procedure**

Grades I and II in Franklin and Tilton, New Hampshire were chosen for the experiment. In each grade two classes of equal size and of equal average ability were formed. In each grade one class received thorough phonetic drills, while in the other class words were taught by quick-perception and sense-content methods. Through the duration of the experiment careful observations were made by the teachers and the results of these observations were recorded.

**Conclusions**

The classes having no phonics were found to enjoy reading for the sake of study. From the story they got the sense-content. They were less careful and less correct than the phonic classes in regard to word pronunciation. Keeping the sense in mind, they
often substituted words from their own vocabulary for difficult or unfamiliar words. They read more swiftly and with more expression. Fatigue was reduced, because curiosity in the story held the interest and caused the attention to be focused upon the outcome of the story.

In June a final test was given on new books, which the children had never seen before. The ability of classes in attacking new words was found to be about the same, although the classes having no phonics read more rapidly, but less accurately.

**Purpose:**

To find out relative effects of phonetic and non-phonetic methods, used in reading instruction in Grades I and II, upon the performance of pupils in Grades III, IV, and V.

**Materials**

Teachers' observations and records were reported. No formal testing or treatment of statistical data has been employed.

**Procedure**

Observation of the same pupils, studied for the December 1916 report, was continued through grades three, four, and five of the public schools in Franklin and Tilton, New Hampshire. At the beginning of the school year the third grade was divided into two classes: in one class the instruction was continued by employing the phonic drill as a method of teaching reading, while in the other class reading was taught as before, without the use of phonics.

In June, when the two classes were given the same sight reading, their average ability was found to be about the same, and observations similar to those of the preceding study were made.

**Conclusions**

One additional conclusion was reported by the teachers:
they observed that for at least one-fourth of the entire grade phonic drills were an absolute waste of time. According to the observers, a certain number of pupils evidently possessed a natural "phonic sense" and employed it, unconsciously depending on it from the very beginning of their reading. To these pupils phonic drills as a part of the daily routine proved very tiresome and without value.

Phonetic drills were found to have a very real value but not essential to every child as a part of the daily program in the primary reading instruction.

Conclusion was made that phonic drills should be employed with discretion and adapted to the needs of the individual child or a special group.

Word pronunciation drills proved to be of much value.

Much careless oral reading and failure to get the idea from the printed page was observed to come from poorly or carelessly supervised silent reading.

**Purpose:**

To describe certain methods of teaching in the first grade and by detailed analysis to show the effects of the different methods upon the fundamental elements of the process.

**Tests**

Photographic study of eye movements in reading

Oral reading

**Procedure**

In the school year 1921/1922 twelve children from Grade I B and nine children from Grade I A of the University of Chicago Laboratory School were selected for the experiment. Later on four Grade I B and six Grade I A children from a public school in Chicago were included into the study. A total of thirty-one first grade children were involved in the study. The public school children were used only at the end of the semester. None of the University School firstgraders missed more than one test, therefore sixty-one photographic records were available for the total group of thirty-one subjects. Sicknesses and other causes interfered with the public school group, therefore a complete record from only nine of the
pupils was obtained.

Photograph of a group of pupils from Grade I B was taken during the seventh week of school, then again during the thirteenth week, and again during the seventeenth week.

Records were also secured from a group of Grade I A children at the same time. Since they had already attended school one semester, their records were taken after a school experience of twenty-five, thirty-one, and thirty-five weeks. This method gave records at six intervals during the first school year.

Only the average or the typical children were considered in the study.

Methods

The children of the public school had learned to read by a method which placed the major emphasis on word mastery. Elaborate phonetic drill was provided in a separate period. In teaching a new selection the teacher first told the story in her own words, next she wrote the new words upon the board, drilling the children upon them as she proceeded. If a word possessed any particular difficulty, the teacher broke it up into its phonetic elements and assisted the pupils in attacking it. After the new words had been mastered, the pupils read the story.

The children from the University school were instructed by a method which places great emphasis upon securing the correct reading attitude, getting meaningful experiences from the printed
material, and creating a desire to read by providing interesting content. This method proceeded from the whole story to lines and phrases, and finally to individual word study. The teacher read the story first in the exact words of the book, next she re-told it, and after that the pupils told her how to write the story.

Findings

1. The first photographic records (seventh week of school) showed the earliest type eye movements. Only five of the University Grade I B pupils followed the words in their reading and proceeded regularly from line to line. The other five repeated the selection from memory, as it was familiar to them ("Little Red Hen"). Oral record of pupil No. 2 in Grade I B showed that the subject omitted the word "little" and repeated the word "the". The word "wheat" caused great confusion. In the attempt to recognize "wheat" and "seed" the word "little" was forgotten; the reading of the whole line was confused. The subject read two lines in nine and fourteen fixations respectively, and the two following lines in nineteen and eleven fixations. This general confusion and breaking down of established reading habits are according to the examiner the most serious aspects of the lack of word recognition.

2. The pupils from Grade I B of the public school, using the phonetic method of instruction, followed the lines and read the story as it was printed. Most of them read it in a mechanical
fashion, without giving any evidence from their expression that they appreciated the meaning of what they read.

A record secured for the oral reading of subject No. 1 from this group revealed that the first three words were read at equal intervals during the first second of time, then followed a pause of two and four-fifths seconds, after which the next four words, "little red hen found", were read. A time interval of three-fifths of a second elapsed before the next words, "a little seed", were spoken. There was then a long pause of three and four-fifths seconds before the pupil read the words "she said", another pause of three seconds before the next word, etc.

The rhythm of expression clearly indicated that this subject was reading in word rather than thought units.

Purpose:
To compare reading habits resulting from two methods of teaching beginning reading, the phonic and the look-and-say; specifically, such phases as frequency of eye-fixations, speed on easy and difficult material, and comprehension.

Tests
1. Test of eye habits by means of an instrument devised for this experiment.
2. Tests on oral and silent reading; the subject read the following selections before the examiner:

Procedure
Subjects were beginning first grade children from the three elementary schools connected with the State Normal School in New Haven, Connecticut. In September 1926 group intelligence tests were given to all the children entering the first grade. Each
classroom was sectioned so as to have superior, average, and below average pupils. Two schools had two first grade classes, while the third school had three. In all three schools the look-and-say method of teaching reading was employed in one of the first grade classrooms, while the other classroom employed the phonic method. At the end of the year the pupils were promoted to the second grade and the same general reading policy continued until the end of the second year. The data analyzed in this study were secured in April and May 1928 and include fifty look-and-say and seventy-three phonic method children. Only those whose records were complete were included in the final tabulations.

The tests were administered as follows:

Tests of Eye Habits. The subject was seated before the instrument which held the reading material and supported his head. The "easy" selection consisted of four sentences equal in length, the words being equivalent in difficulty to ordinary primer material, chosen from the first two hundred words on Thorndike's word list. The "difficult" selection was equal in difficulty to typical first reader material. The sentences were typed on a card and were read by the child orally.

Tests on Oral and Silent Reading. First the child read orally three selections: one easy and two difficult. Data were taken on word recognition and on time estimate on each of the three selections. Next the child was given silent reading comprehension tests on each of the three selections. Data on speed were taken at
completion of the tests. Small cardboard squares with "yes" and "no" printed upon them were given to the pupil. They placed the appropriate answers alongside the questions.

Findings

1. The number of eye fixations per line on the easy selection was: 8.96, sigma 3.65, for the look-and-say group, and 8.36, sigma 3.77, for the phonic group.

2. The number of seconds to read orally:
   a. the easy selection: mean 35, sigma 27.4, for the look-and-say group, and mean 31.58, sigma 24.2, for the phonic group;
   b. The difficult selection: mean 46.6, sigma 29.2, for the look-and-say group, and mean 43.91, sigma 29.43, for the phonic group.

3. The number of seconds on silent reading:
   a. the easy selection: mean 103.2, sigma 39.69, for the look-and-say group, and mean 102.91, sigma 39.36, for the phonic group;
   b. the difficult selections:
      i. "Wise Old Cat": mean 122.8, sigma 62.45, for the look-and-say group, and mean 118.73, sigma 49.8, for the phonic group;
      ii. "Policeman": mean 107.6, sigma 48.6, for the look-and-say group, and mean 124.8, sigma 56.84, for the phonic group.
4. Accuracy on comprehension test (expressed as per cent):
   a. the easy selection: mean 90, sigma 17.7, for the look-and-say group, and mean 94.17, sigma 17.7, for the phonic group;
   b. the difficult selections:
      i. "Wise Old Cat": mean 77.4, sigma 18.6, for the look-and-say group, and mean 80.75, sigma 17, for the phonic group;
      ii. "Policeman": mean 84.2, sigma 16.9, for the look-and-say group, and mean 78.56, sigma 18.9, for the phonic group.

Differences in means between the two groups were as follows (Diff./sigma Diff.):

1. Eye fixations
   a. on easy selection  .72
   b. on difficult selection  .90

2. Speed in Oral Reading
   a. on easy selection  .72
   b. on difficult selection  .98

3. Speed in Silent Reading
   a. on easy selection  .38
   b. on difficult selections--
      i. "Wise Old Cat"  .04
      ii. "Policeman"  1.80
4. Accuracy in Comprehension

a. on easy selection 1.02

b. on difficult selections--
   i. "Wise Old Cat" 1.56
   ii. "Policeman" 1.74

The above data show the results of instruction by the look-and-say method and by the phonic method at the end of the second grade for the group in study. The data show that in eight out of ten cases the differences are in favor of the phonic group. These differences are not statistically significant.

**Purpose:**

To test the value of phonics in the teaching of beginning reading.

**Tests**

**Grade I B**

1. Detroit Word Recognition Test, Form B
2. Newark Word Recognition Test
3. Newark Sentence Test
4. Newark Picture-Word Matching Test

**Grade I A**

1. Detroit Word Recognition Test, Forms A and B
2. Haggerty Reading Examination, Sigma I, Parts I and II

**Grade II B**

1. Haggerty Reading Examination, Sigma I, Parts I and II
2. Newark Second Grade Reading Test

The three Newark tests for Grade I B were constructed by the Experimental Committee on the basis of a vocabulary common to all the readers employed in the eight schools participating in the experiment. The Newark Reading Test for the second grade was constructed by the Department of Reference and Research.
Procedure

The experiment was conducted in eight schools in Newark and lasted from September 1924 to February 1927. Various types of schools in different sections of the city participated.

Two I B Grades (first half of the first year) were to start reading under similar conditions: one of the teachers was to use phonics, while the other was to eliminate phonics entirely. At promotion time the experimental group continued instruction in Grade I A, with and without phonics respectively, as the groups had it started in Grade I B, but under two new teachers. The Grade I B teachers took two new I B Grades, but reversed their procedures as to the use of phonics. The purpose of this reversal was to eliminate the difference in teacher ability. At the end of Grades I B and I A the pupils were to be tested.

The Experimental Committee tried to keep the conditions, under which the experiment was conducted, under control. Only one variable condition was changed, namely, the use of phonics. Size of the classes was kept equal. Kindergarten Test was given to all the pupils entering Grade I without Kindergarten training. The pupils were graded equally according to ratings on the Kindergarten Test. Health conditions were to be kept as equal as possible. Teaching conditions also were to be kept equal, same methods were to be used, and each class had to keep a record book. Classes were organized and observed during a trial period from September 1924 through January 1925, guarding against any pitfalls. The real
experiment began on February 1, 1925 at the opening of the second
term of the school year.

At the end of each five-month period tests were given by the
testers under the direction of the Department of Reference and
Research. In June 1925, 464 Grade I B pupils were tested. Of these
220 had been taught to read without the use of phonics, and 244 with
the use of phonics. The same pupils were tested again in January
1926. The test scores obtained from June 1925 testing were com-
combined with January 1926 test scores, so as to eliminate the teacher
element.

The combined test results for Grade I B from eight schools,
tabulated in average point scores, were as follows:

1. On Newark Word Recognition Test
   a. Phonic Group  15.76
   b. Non-Phonic Group  15.24
   Phonic Group Gain or Loss  0.52

2. On Newark Sentence Test
   a. Phonic Group  8.10
   b. Non-Phonic Group  8.33
   Phonic Group Gain or Loss  -0.23

3. On Newark Picture-Word Matching Test
   a. Phonic Group  3.35
   b. Non-Phonic Group  3.52
   Phonic Group Gain or Loss  -0.17
4. On **Detroit Word Recognition Test**
   a. Phonic Group 10.14
   b. Non-Phonic Group 10.55
   Phonic Group Gain or Loss - .41

5. Total on all four tests
   a. Phonic Group 37.35
   b. Non-Phonic Group 37.64
   Phonic Group Gain or Loss - .29

On account of the great difference in possible number of points on the four tests (Newark Word Recognition Test 20, Newark Sentence Test 10, Newark Picture-Word Matching Test 5, Detroit Word Recognition Test 40), there is an element of mathematical inaccuracy in totaling the average point scores. The results indicate a very slight advantage in favor of the classes not using phonics. Point scores of the classes within each school differed less than point scores of any of the two schools, with only a few exceptions.

Total scores on all the tests for Grade I B from the eight schools were as follows:

<table>
<thead>
<tr>
<th>School</th>
<th>Phonic Group</th>
<th>Non-Phonic Group</th>
<th>Phonic Group Gain or Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>47.25</td>
<td>46.74</td>
<td>.51</td>
</tr>
<tr>
<td>B</td>
<td>31.83</td>
<td>36.46</td>
<td>- 4.63</td>
</tr>
<tr>
<td>C</td>
<td>32.03</td>
<td>31.94</td>
<td>.09</td>
</tr>
<tr>
<td>D</td>
<td>18.87</td>
<td>21.67</td>
<td>- 2.80</td>
</tr>
<tr>
<td>E</td>
<td>59.76</td>
<td>60.04</td>
<td>- .28</td>
</tr>
</tbody>
</table>
The phonic and the non-phonic groups within one given school were taught by one and the same teacher, each group receiving the instruction for the length of one full term. The pupils promoted from Grade I B to Grade I A at the end of the first term continued the experiment in the group they had begun it, but under different teachers.

In January 1926, there were two Grade I A classes in each school and these were tested. The number of pupils included into the final investigation had been reduced to 175 in the phonic group and 176 in the non-phonic group. Dropouts were due to transfers, illnesses, and long absences. Each of these groups had had two different teachers in the ten months, but the instruction, either phonic or non-phonic, remained constant within each group. The test scores for Grades I A were tabulated and filed.

In June 1926, two more classes from each school in Grade I A that had been participating in the experiment for ten months, were tested and the test scores were tabulated.

The combined test results for Grade I A from eight schools, tabulated in average point scores, were as follows:

1. On Haggerty Reading Examination, Sigma I, Part I
   a. Phonic Group
      5.51
b. Non-Phonic Group  
Phonic Group Gain or Loss 1.08

2. On Haggerty Reading Examination, Sigma I, Part II
   a. Phonic Group 3.45
   b. Non-Phonic Group 2.77
   Phonic Group Gain or Loss .68

3. On Detroit Word Recognition Test
   a. Phonic Group 22.03
   b. Non-Phonic Group 20.98
   Phonic Group Gain or Loss 1.05

Total scores on all the tests for Grade I A from the eight schools are:

<table>
<thead>
<tr>
<th>School</th>
<th>Phonic Group</th>
<th>Non-Phonic Group</th>
<th>Phonic Group Gain or Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>35.84</td>
<td>31.72</td>
<td>4.12</td>
</tr>
<tr>
<td>B</td>
<td>23.50</td>
<td>21.78</td>
<td>1.72</td>
</tr>
<tr>
<td>C</td>
<td>20.64</td>
<td>16.93</td>
<td>3.71</td>
</tr>
<tr>
<td>D</td>
<td>5.00</td>
<td>20.10</td>
<td>-15.10</td>
</tr>
<tr>
<td>E</td>
<td>47.88</td>
<td>45.90</td>
<td>1.98</td>
</tr>
<tr>
<td>F</td>
<td>25.04</td>
<td>23.69</td>
<td>1.35</td>
</tr>
<tr>
<td>G</td>
<td>36.93</td>
<td>36.40</td>
<td>0.53</td>
</tr>
<tr>
<td>H</td>
<td>28.74</td>
<td>21.08</td>
<td>7.66</td>
</tr>
</tbody>
</table>

Two classes in six of the eight schools continued the experiment through the first half of Grade II B. The pupils who started Grade I B in September 1925, were continued under the regulations
of the experiment through January 1927, when they were tested.
Final tabulations of these groups were made on 191 pupils—94 in the
phonic group and 97 in the non-phonic group. Because of various
changes that had taken place in schools, in June 1927 the test
results from only four schools were included into the final combined
tabulation.

Combined average point scores for Grade II B classes in four
schools on June 1926 and January 1927 tests were:

1. On Haggerty Reading Examination, Sigma I, Part I

<table>
<thead>
<tr>
<th>School</th>
<th>Phonic Group</th>
<th>Non-Phonic Group</th>
<th>Phonic Group Gain or Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>11.11</td>
<td>8.58</td>
<td>2.53</td>
</tr>
<tr>
<td>F</td>
<td>7.28</td>
<td>6.45</td>
<td>0.83</td>
</tr>
<tr>
<td>G</td>
<td>11.03</td>
<td>11.18</td>
<td>-0.15</td>
</tr>
<tr>
<td>H</td>
<td>8.37</td>
<td>6.40</td>
<td>1.97</td>
</tr>
</tbody>
</table>

2. On Haggerty Reading Examination, Sigma I, Part II

<table>
<thead>
<tr>
<th>School</th>
<th>Phonic Group</th>
<th>Non-Phonic Group</th>
<th>Phonic Group Gain or Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9.07</td>
<td>6.49</td>
<td>2.58</td>
</tr>
<tr>
<td>F</td>
<td>4.30</td>
<td>4.56</td>
<td>-0.26</td>
</tr>
<tr>
<td>G</td>
<td>9.23</td>
<td>8.03</td>
<td>1.20</td>
</tr>
<tr>
<td>H</td>
<td>5.70</td>
<td>4.15</td>
<td>1.55</td>
</tr>
</tbody>
</table>

3. On Newark Second Grade Reading Test

<table>
<thead>
<tr>
<th>School</th>
<th>Phonic Group</th>
<th>Non-Phonic Group</th>
<th>Phonic Group Gain or Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10.96</td>
<td>7.88</td>
<td>3.08</td>
</tr>
<tr>
<td>F</td>
<td>6.32</td>
<td>6.88</td>
<td>-0.56</td>
</tr>
<tr>
<td>G</td>
<td>13.00</td>
<td>12.87</td>
<td>0.13</td>
</tr>
<tr>
<td>H</td>
<td>8.95</td>
<td>6.55</td>
<td>2.40</td>
</tr>
</tbody>
</table>
4. **Total scores on all the tests**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31.14</td>
<td>17.90</td>
<td>33.26</td>
<td>23.02</td>
</tr>
<tr>
<td></td>
<td>22.95</td>
<td>17.89</td>
<td>32.08</td>
<td>7.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.92</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8.19</td>
<td>.01</td>
<td>1.18</td>
<td>5.92</td>
</tr>
</tbody>
</table>

In summary total average point scores for all the pupils tested in all the classes of Grades I B, I A, and II B were added up, per pupil point scores derived, and phonic group gain or loss per pupil, as well as the per cent, were tabulated. The results of these tabulations show the following:

<table>
<thead>
<tr>
<th>Grade I B</th>
<th>Phonic Group Gain or Loss per Pupil</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newark Word Recognition Test</td>
<td>.52</td>
<td>3.41</td>
</tr>
<tr>
<td>Newark Sentence Test</td>
<td>-.23</td>
<td>-2.76</td>
</tr>
<tr>
<td>Newark Picture-Word Matching Test</td>
<td>-.17</td>
<td>-4.83</td>
</tr>
<tr>
<td>Detroit Word Recognition Test</td>
<td>-.41</td>
<td>-3.89</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade I A</th>
<th>Phonic Group Gain or Loss per Pupil</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haggerty Reading Examination, Sigma I, Part I</td>
<td>1.08</td>
<td>24.38</td>
</tr>
<tr>
<td>Haggerty Reading Examination, Part II</td>
<td>.68</td>
<td>24.55</td>
</tr>
<tr>
<td>Detroit Word Recognition Test</td>
<td>1.05</td>
<td>5.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade II B</th>
<th>Phonic Group Gain or Loss per Pupil</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haggerty Reading Examination, Part I</td>
<td>1.48</td>
<td>18.57</td>
</tr>
<tr>
<td>Haggerty Reading Examination, Part II</td>
<td>1.36</td>
<td>23.86</td>
</tr>
<tr>
<td>Newark Second Grade Reading Test</td>
<td>1.31</td>
<td>15.86</td>
</tr>
</tbody>
</table>

There is an element of mathematical inaccuracy in totaling
and averaging the above total point scores.

**Findings**

1. The results showed slight losses for the phonic group at the close of Grade I, and somewhat greater gains at the close of Grade II.

2. Results showed less difference between classes taught with and without phonics by the same teacher within the same school than between the same grades among different schools.
To investigate the value of training in phonetics on primary reading.

Tests

**Grade I**
1. Pintner Cunningham Primary Mental Test
2. Gates Reading Test, Type 3
3. Haggerty Reading Examination, I
4. Haggerty Reading Examination, II
5. Gray's Oral Reading Test
6. Pronunciation Test

**Grade II**
1. Gates Reading Test, Type 1
2. Gates Reading Test, Type 2
3. Gates Reading Test, Type 3

**Grade III**
1. New Stanford Test, I
2. New Stanford Test, II

Procedure

The experiment began in September 1927 with beginning first grade children, and continued through the first, the second, and the
third grades to May 1930. Only children not having any knowledge of reading or spelling were used. The equivalent group techniques were used in regard to children, teachers, and teaching conditions. The children were divided into two groups according to mental test results: the bright group with IQ of 100 or more, and the dull group with IQ less than 100. The children were placed in four classrooms. Two of the classrooms constituted the phonetic group, and the other two formed the non-phonetic group. There were bright and dull children in each group: a bright phonetic group (39 children), a dull phonetic group (18 children), a bright non-phonetic group (28 children), and a dull non-phonetic group (26 children). Both the bright and the dull groups were equated in age and intelligence. All the groups lost children during the three years of the experiment. Methods of teaching were made similar through supervision, teachers' meetings, conferences, and inter-visititation of teachers. All the other teaching conditions were alike, but for a fifteen-minute period each day, when the phonetic group received instruction in phonetics. The Teaching of Phonetics by Daugherty was followed rather closely. During the same fifteen-minute period the non-phonetic group used Gates's "intrinsic" method, consisting of easy and familiar readings, dramatization, drills, and exercises of various kinds. Only in the first and second grades the special instruction was given. In the third grade all received regular third grade work. At the close of each grade a battery of tests was given.
Findings

Grade I. Mean scores for the bright phonetic group were a little higher on the three tests for silent reading than the scores for the bright non-phonetic group. Differences in favor of the bright phonetic group were: 1.4 (PE diff. .76) on Gates, Type 3, Test; 1.1 (PE diff. .64) on Haggerty, Part I; 0.7 (PE diff. .62) on Haggerty, Part II; on Gray's Oral Reading Test the difference favored the non-phonetic group by - 2.7 (PE diff. .73), and in pronunciation by 1.4 (PE diff. .94). Differences of the dull phonetic group were as follows: - 0.8 (PE diff. 1.15) on Gates, Type 3, Test; 0 (PE diff. .64) on Haggerty, Part I; 1.7 (PE diff. .64) on Haggerty, Part II; - 3.0 (PE diff. .83) on Gray's Oral Reading Test; 1.0 (PE diff. 1.44) in pronunciation.

Grade II. At the close of the second grade differences in favor of the bright phonetic group were: 0.2 (PE diff. .79) on Gates, Type I, Test; 0 (PE diff. .42) on Gates, Type 2, Test; 0.2 (PE diff. .25) on Gates, Type 3, Test. Differences in favor of the dull phonetic group were: - 2.0 (PE diff. .82) on Gates, Type 1, Test; - 2.2 (PE diff. .82) on Gates, Type 2, Test; 3.0 (PE diff. .55) on Gates, Type 3, Test.

Grade III. At the close of the third grade differences in favor of the bright phonetic group were: - 1.0 (PE diff. 1.80) on the New Stanford Test I; 1.8 (PE diff. 1.78) on the New Stanford Test II. Differences of the dull phonetic group were: 2.5 (PE diff. 2.22) on the New Stanford Test I; 1.0 (PE diff. 2.36) on the New
Stanford Test II. At the close of the third grade scores of the phonetic groups, both bright and dull, exceeded those of the non-phonetic groups, with one exception: on the New Stanford Tests the bright non-phonetic group slightly exceeded the bright phonetic group.

Results on the Spelling Tests at the Close of Grade I.
Differences in favor of the bright phonetic group were: 0 (PE diff. .09) on Phonetic Words Taught; 0 (PE diff. .17) on Non-Phonetic Words Taught; 3.0 (PE diff. .27) on Phonetic Words Not Taught; 1.9 (PE diff. .28) on Non-Phonetic Words Not Taught. Differences in favor of the dull phonetic group were: 0 (PE diff. 1.4) on Phonetic Words Taught; -0.2 (PE diff. .35) on Non-Phonetic Words Taught; 3.4 (PE diff. .5) on Phonetic Words Not Taught; 1.1 (PE diff. .41) on Non-Phonetic Words Not Taught.

Results on the Spelling Tests at the Close of Grade II.
Differences in favor of the bright phonetic group were: 0 (PE diff. .11) on Phonetic Words Taught; 0 (PE diff. .1) on Non-Phonetic Words Taught; 3.3 (PE diff. .52) on Phonetic Words Not Taught; 4.3 (PE diff. .76) on Non-Phonetic Words Not Taught. Differences in favor of the dull phonetic group were: 0 (PE diff. .77) on Phonetic Words Taught; 0 (PE diff. .78) on Non-Phonetic Words Taught; 5.4 (PE diff. 1.06) on Phonetic Words Not Taught; -1.0 (PE diff. 1.11) on Non-Phonetic Words Not Taught.

Results on Spelling Tests at the Close of Grade III.
Differences in favor of the bright phonetic group were: 0 (PE diff.
.29) on Phonetic Words Taught; 0 (PE diff. .22) on Non-Phonetic Words Taught; 0.5 (PE diff. .16) on Phonetic Words Not Taught; 0.5 (PE diff. .43) on Non-Phonetic Words Not Taught. Differences in favor of the dull phonetic group were: 0.7 (PE diff. .31) on Phonetic Words Taught; 0.1 (PE diff. .51) on Non-Phonetic Words Taught; - 0.7 (PE diff. .57) on Phonetic Words Not Taught; 0.4 (PE diff. .52) on Non-Phonetic Words Not Taught.

At the beginning of the second grade tests were given in both reading and spelling to see the losses during the summer vacation. Tests used in May were used again in September. The findings show that on Gates Reading Test, Type 3, the bright phonetic group lost 1.5 (PE diff. .94); in spelling this group lost .9 (PE diff. .69). The dull phonetic group lost 4.0 (PE diff. 1.24) on the same reading test, and 5.2 (PE diff. .23) on the spelling test. The bright non-phonetic group lost .3 (PE diff. .83) on the same reading test, and 1.0 (PE diff. .76) on the spelling test. The dull non-phonetic group lost 2.7 (PE diff. 1.24) on the same reading test, and 2.0 (PE diff. 1.17) on the spelling test.

At the beginning of the third grade spelling tests given in May were given again in September. Reading was not tested this time because of a change in reading tests in school. In spelling the bright phonetic group lost 4.3 (PE diff. 1.52), the dull phonetic group lost 2.0 (PE diff. 2.48), the bright non-phonetic group lost 8.0 (PE diff. 1.62), and the dull non-phonetic group lost 3.5 (PE diff. 2.46).
At the beginning of Grade II the phonetic group, both the bright and the dull, had a greater loss in reading. In spelling the dull phonetic group had the greatest loss, and the bright phonetic group was .1 score better than the bright non-phonetic group.

At the beginning of Grade III the non-phonetic group, both the bright and the dull, had a more considerable loss in spelling, as compared with both the bright and the dull phonetic groups.
Tate, Harry L. "The Influence of Phonics on Silent Reading in Grade I." Elementary School Journal 37: 752-763, June 1937.

Purpose:
To determine the influence of phonics on silent reading in Grade I when a special period is used for formal instruction and drill in phonics.

Tests
1. Otis Group Intelligence Test
2. Gates Primary Reading Test, Form I, at the beginning of the experiment
3. Gates Primary Reading Test, Form II, at the end of the experiment

Procedure
The eight-week experiment was conducted with two classes of Grade I A pupils from Eli Whitney School in Chicago, Illinois. It was run from March 2, 1936 to April 24, 1936. The experimental group consisted of 37 pupils of median CA 6-7, median MA 7-3, median IQ 108. The control group consisted of 36 pupils of median CA 6-7, median MA 7-5, median IQ 109. The groups were not equated on the basis of mental age. Odd and even numbered pupils, entering the first grade from the two Kindergartens, were assigned as they came to the two different classes, thus producing the two above equated groups, in spite of the small numbers involved. For pur-
poses of phonic instruction the experimental class was divided into
two groups, Division A with 22 most capable pupils, and Division B
with 15 less capable pupils. Every morning each group was allotted
a special fifteen-minute period of instruction and drill in phonics
only. The children, included in the experiment, were not without
some knowledge of phonics and some training in using them. Although
look-and-say method was emphasized in the school, teachers have been
accustomed to impart an incidental knowledge of phonics as an aid
in pronouncing words. The following phonograms were used with the
experimental group during the experiment: ow, ar, oi, ew, th, oo,
ch, ing, oy, sh, ee, ight, wh, er, or, ea, ou, ay, ir, ai, old, all.
Various ear-training games were used from time to time. The
control group, consisting of three divisions—Division A with 17
most capable pupils, Division B with 12 medium capable pupils, and
Division C with 7 pupils of low ability—had a special period of
ten minutes for each group. This special period was devoted to:
(1) word recognition, (2) phrase recognition, and (3) recognition
of the sense of a selection. No phonics were employed with the
control group. Incidental teaching of phonics was dropped, although
on a few occasions a child would volunteer to solve his difficulty,
silently, by the use of phonics. Both the experimental and the
control groups used the same basic textbook, *The Elson Basic Reader.*
In the supplementary reading no preparatory procedure was used. No
attempt was made to hold the classes to the same pages, or even to
the same books. The teachers were not equated as to their persona-
lities and methods. During the experiment only eight pupils of the control group had a perfect attendance, while twenty-eight pupils were absent for an average of 4.6 days. Only nine pupils of the experimental group had a perfect attendance, while twenty-eight pupils were absent for an average of 6.1 days.

Findings

The initial tests were given on March 2, 1936 (Types 1 and 2 of the Gates Test) and on March 3, 1936 (Type 3 of the Gates Test). The final test was given on Friday preceding the one-week spring vacation.

Median grade scores made on the initial Gates, Type 1, Word Recognition, were: 2.27 for the experimental group, and 2.20 for the control group, with the difference of 0.07 in favor of the experimental group. Median grade scores on the final test were: 3.00 for the experimental group, and 2.47 for the control group, with the difference of 0.53 in favor of the experimental group.

Median grade scores on the initial Gates, Type 2, Word, Phrase, and Sentence Reading, were: 2.20 for the experimental group, and 2.22 for the control group, with the difference of - .02 in favor of the control group. Median grade scores on the final test were: 2.80 for the experimental group, and 2.90 for the control group, with the difference of - .10 in favor of the control group.

Median grade scores on the initial Gates, Type 3, Reading
of Directions, were: 2.10 for the experimental group, and 1.95 for the control group, with the difference of 0.15 in favor of the experimental group. Median grade scores on the final test were: 2.75 for the experimental group, and 2.75 for the control group.

The final test medians show that at the end of the experiment the experimental group had an advantage of 5.3 months in word recognition, 1 month disadvantage in understanding sentences, and that in understanding paragraphs its performance was exactly the same as that of the control group. During the eight weeks of experiment the experimental group registered a gain of 7.3 months in word recognition, while the control group gained 2.7 months. In understanding sentences the experimental group gained 6.0 months, while the control group gained 6.8 months. The experimental group gained 6.5 months in reading directions, while the control group gained 3.0 months. The largest gain for the experimental group was in word recognition (7.3 months).
Tate, Harry L., Herbert, Theresa M., and Zeman, Josephine K.


**Purpose:**

To determine the effect on primary reading of the total non-use of phonics.

**Tests**

1. Otis Group Intelligence Scale, Primary Examination, Form A
2. Gates Primary Reading Test, Form I
3. The New Stanford Reading Test, Form V

**Procedure**

The experiment was conducted for two years, the schoolyear 1936/1937 and the schoolyear 1937/1938, through the grades I and II of the Eli Whitney School in Chicago, Illinois. The same teacher accompanied her Grade I class through Grade II. The experimental class at the beginning of the experiment consisted of 44 pupils, grouped into Divisions A, B, and C on the basis of the ability. Median CA of this group was 6-8, median MA 7-8, median IQ 111.5. The control class originally consisted of 44 pupils, of median CA 6-8, median MA 7-9, median IQ 115.0. The final experimental group, because of dropouts during the experiment, had a disadvantage of 6.5 points on the median intelligence quotient. During the entire two years of the experiment no attempt was ever made by the
teacher to sound letters with the experimental group. Many devices were used to secure correct contextual understanding and pronunciation. The control group began and continued its work according to the method customary to the school, the look-and-say with an incidental use of phonics. The basic textbooks used were The Elson Basic Readers. There were many absences due to illnesses. The experimental group had a total of 883.5 days of absence, while the control group had a total of 691.0 days of absence through the duration of the experiment. The experimental group averaged 13.0 days, and the control group 10.2 days annually per pupil.

Findings

The initial test was given in March, 1937, and the final test in June 1938. As the Gates Primary Reading Test was an insufficient measure for the control group at the end of the experiment, the New Stanford Reading Test, Form V, was also used.

Median grade scores on the initial Gates, Type 1, Word Recognition, were: 1.90 for the experimental group, and 2.33 for the control group, with the difference of - .43 in favor of the control group. Median grade scores on the final test were: 3.31 for the experimental group, and 3.33 for the control group, with the difference of - .02 in favor of the control group.

Median grade scores on the initial Gates, Type 2, Word, Phrase, and Sentence Reading, were: 2.05 for the experimental group, and 2.43 for the control group, with the difference of - .38 in favor of the
control group. Median grade scores on the final test were: 3.35 for
the experimental group, and 3.45 for the control group, with the
difference of - .10 in favor of the control group.

Median grade scores on the initial Gates, Type 3, Reading
of Directions, were: 2.00 for the experimental group, and 2.20 for
the control group, with the difference of - .20 in favor of the
control group. Median grade scores on the final test were: 3.55
for the experimental group, and 3.75 for the control group, with
the difference of - .20 in favor of the control group.

Median grade scores on the New Stanford Reading test were:
on Test 2, Word Meaning, 3.20 for the experimental group, and 3.85
for the control group, with the difference of - .65 in favor of the
control group; on Test 1, Paragraph Meaning, 3.20 for the experi­
mental group, and 3.95 for the control group, with the difference
of - .75 in favor of the control group.

The differences on all the Gates Primary Reading Tests were
in favor of the control group. The data show that the control
group was superior to the experimental group on the New Stanford
Test by 7.5 months on Paragraph Meaning, and by 6.5 months on
Word Meaning.

**Purpose:**
Evaluation of the results of the experiment in teaching children to read by the use of a non-oral method.

**Tests**
1. Van Wagenen and A. Dvorak Diagnostic Examination of Silent Reading Abilities
2. The Nelson Silent Reading Test (Vocabulary and Paragraph Reading), Form A, for Grades 3 to 9

**Procedure**
The non-oral method of teaching reading was initiated by James E. McDade, and has been carried on for experimental purposes in Chicago public schools from 1935 to 1945. The essential characteristics of this method is that it proceeds by direct association between the visual symbol and the meaning without the intervention of either the oral pronunciation or the inner subvocalization of the words. No oral activities were carried on during the reading instruction. Oral activities as well as phonics, if necessary, were related to oral language instead of reading. This method was used only in Grades I and II. More than 70,000 pupils have been taught by the non-oral method. Evaluation of the
method was based on the reading performance of these pupils, taught by the non-oral method in Grades I and II, by the time they reached Grade VI.

Records of children in this group were examined and 595 cases were found suitable for matching with 523 children, who had been taught by the regular oral method.

Factors like teachers, home practices and experiences of the children, and others that could possibly have influenced their early reading instruction, could not be controlled during the experiment.

**Findings**

A summary comparison of the oral and non-oral matched groups on their scores in reading in Grade V show that for the low IQ oral group the mean score was 22.8, while the low IQ oral group scored 23.7. The mean score of the high IQ oral group was 45.2, and that of the high IQ non-oral group was 46.1. Mean difference in reading scores of matched pairs was 1.8; high reading score of paired cases for the oral group was 195, while for the non-oral group it was 253.

These differences are not statistically significant. Lack of adequate controls is a restricting factor in interpreting the above results.
Summary

Gates and Russell conducted three studies in Manhattan, New York public schools in the schoolyear 1936/1937 for the purpose of evaluating several factors on the acquisition of reading ability in the beginning stages. One of the three studies was concerned with the effect of varying amounts of phonics on primary reading. It was based on data obtained from 354 pupils comprising nine classes in four schools. For the purpose of comparison of data pupils were equated as to mental age, obtained from group tests, as well as from scores on the Metropolitan Readiness Test, given in September. The methods of instruction in the classes differed, although all of them used the same basal materials. Pupils were divided into three large groups according to the training they received. Group D, consisting of 57 pupils, received the smallest amount of phonics or word analysis. Group E, consisting of 146 pupils, received moderate amounts of informal, newer type word analysis. Group F, consisting of 51 pupils, received substantial or large amounts of conventional phonetic drills. Each group had three subdivisions: those with readiness scores of 85 and above, those with readiness scores of 70-84, and those with readiness scores
below 70. Gates Primary Reading Test and the Tests of Vocabulary of Basal Materials were administered in February 1937. Group D, receiving the smallest amount of phonics, scored 1.77 on Gates Word Recognition Test, 1.69 on Gates Paragraph Reading, 27.6 on Basal Vocabulary, Word Recognition, and 13.5 on Basal Vocabulary, Paragraph Reading. Group E, receiving moderate amounts of informal phonics, scored 1.83 on Gates Word Recognition Test, 1.75 on Paragraph Reading, 29.6 on Basal Vocabulary, Word Recognition, and 14.1 on Basal Vocabulary, Paragraph Reading. Group F, receiving a large amount of conventional phonetics, scored 1.71 on Gates Word Recognition Test, 1.61 on Gates Paragraph Reading, 27.7 on Basal Vocabulary, Word Recognition, and 13.5 on Basal Vocabulary, Paragraph Reading. Pupils in all three divisions of the Group E, receiving moderate amounts of informal phonics, were superior to the other groups on all of the tests. Group D, receiving the smallest amount of phonics, scored slightly higher than the Group F, receiving large amounts of conventional phonetics, on Gates reading tests, and about the same on the Basal Vocabulary tests. Based on analysis of the above data, Gates made a conclusion that very little phonics seemingly produced better results than large amounts of formal phonetic drills.

Agnaw made a comprehensive experimental study of the effects of varying amounts of instruction in phonics in the first grade on primary reading. He found that a training in phonics produced the following favorable results: (1) it increased independence
in word recognition, (2) it aided the child in learning new words, 
(3) it encouraged correct pronunciation, and (4) it improved the 
quality of oral reading.

Agnew conducted two experiments with third grade pupils: the 
first in the public schools of Raleigh, N. C., where the pupils 
received comparatively small amounts of phonetic training in the 
first grade, and the second in the public schools of Durham, N. C., 
where the pupils received larger and more consistent amounts of 
phonetic experience in the first grade. The data as to the quan-
tity of the phonetic training in both the school systems were 
obtained from a teachers' check list, consisting of 25 questions, 
each of which had four possible answers. Raleigh pupils received 
160-270 points of score, whereas Durham pupils scored 370-400 
points.

In the first experiment in Raleigh two groups of pupils were 
carefully equated and paired as to their MA and IQ. One of the 
groups received high phonetic experience for that school system, 
while the other group had a very low phonetic experience. Not 
only the factor of gross amounts of phonetic training, but also the 
factor of time when such experience was obtained (Grade I), and 
constancy of further phonetic training in Grades II and III, were 
carefully isolated. Both the groups were given a battery of tests 
in the second half of the third grade. The test results disclosed 
a small difference in favor of the non-phonetic group on Gates Word 
Pronunciation Test; the differences also favored the non-phonetic
group on Gates Silent Reading Abilities Tests; differences on Pressey Vocabulary Test seemed to favor the non-phonetic group, although the significance of differences obtained was doubtful; differences on speed in oral reading favored the phonetic group, though the differences were of doubtful significance. Influence of phonetic training on eye-voice span disclosed a questionable significance. On the battery of tests as a whole no consistent evidence was disclosed that the differences in phonetic training, as measured in Raleigh study, affected the test scores appreciably. The question, whether the children benefited from non-phonetic training in Grades I and II, was not answered.

Purpose of the Durham investigation was to check the results obtained from the Raleigh study, and to provide new data on the effects of larger and more consistent amounts of phonetic training, such as experienced by the Durham pupils. Eighty-nine paired cases were carefully selected and paired, and then equated with Raleigh groups as to their MA and IQ. Mean MA for the paired Raleigh and Durham combined groups was 117, mean IQ for the Raleigh group was 112, and mean IQ for the Durham group was 111. The Durham group was given the same battery of tests that had been administered to the Raleigh groups. The results of the Raleigh and Durham groups on the battery of tests were compared, and the critical ratios between the means of the scores of the groups were obtained. On the four Gates Phonetic Ability tests the critical ratios were 10.05, 7.11, 12.02, and 8.44 in favor of the Durham
group. On Gates Graded Word Pronunciation tests the critical ratio was 8.86 in favor of the Durham group. On Gates Silent Reading tests the smallest and least reliable differences were obtained: on Type A--CR .55, on Type B--CR .00, on Type C--CR 4.16, on Type D--CR 2.87. On Pressey Vocabulary test the CR of 10.39 favored the Durham group. On Gray Oral Reading tests, measuring errors, the CR favored the Durham group: on Set II CR was 8.47, on Set III CR was 12.54. On Gray Oral Reading tests, measuring time, the differences favored the Raleigh group by - 40.26 on Set II and by - 26.61 on set III; the CR on Set II was 17.20 and on Set III it was 8.61. On Eye-Voice Span test the CR was 9.76, thus favoring the Durham group more than nine times. Average score on Vocabulary test for Raleigh pupils represented 1,200 words, whereas for the Durham pupils the average score was 1,400 words. The results on Oral Reading tests disclosed that Durham pupils were slower but more accurate oral readers. No consistent evidence was disclosed that large amounts of phonetic training made silent reading slower but more accurate. The fact that Durham pupils had a greater eye-voice span than the Raleigh pupils disproved the argument that phonetic training decreases the eye-voice span.

In order to investigate the relative merit of the phonetic method in teaching primary reading, which method had been introduced for experimental purposes in some parochial schools in the Diocese of Pittsburgh, Rev. McDowell conducted a series of tests
and analyzed the data. The phonetic method had been in use for three years when the study was made. Two groups of fourth grade children were selected and equated on basis of Otis Intelligence tests; one of these formed the experimental group that had used phonetics, and the other—the control group that had been taught by the regular diocesan-approved method, which included phonetic training as subsidiary word-attack skill, but introduced it gradually and developed it through analysis of meaningful material. No particular effort had been made to control the teacher variable. The report was based on data obtained from 142 pupils in the experimental group, and from 142 pupils in the control group. The final groups were closely matched on basis of the intelligence test scores, sex, and uninterrupted instruction in reading during the first three years in school by the use of one and the same method, either the phonetic or the diocesan-approved. A slight difference of .6 score favored the experimental group on the intelligence tests. A five per cent confidence level was accepted for this study as a minimum margin for statistical significance. On the Iowa Silent Reading Test differences favored the control group in the following areas: rate of reading by 5.7, comprehension by 2.1, word meaning by 3.5, paragraph comprehension by 5.7, sentence meaning by .6, use of index by 11.2. Median in reading was in favor of the control group by 3.7. The differences favored the experimental group in directed reading by .1, and in alphabetizing by 4.9. The difference in favor of the control group was
statistically significant in word meaning, and very significant in rate, paragraph comprehension, and use of index. Alphabetizing was very significantly in favor of the experimental group. On the Metropolitan Achievement Test a difference of .6 score in intelligence still favored the experimental group. Differences favored the control group in reading by 4.7, vocabulary by 1.5, and language usage by 3.9. None of these differences were statistically significant. In spelling difference favored the experimental group by 7.3, and this difference was very significant, the t ratio being 3.0.

Purpose:

An effort to evaluate the effects of several factors on the acquisition of reading ability in the beginning stages. The first part of this study compared the effect of use or non-use of supplementary reading materials, the second study evaluated the effect of the number of different words introduced, and the third study compared the effect of varying amounts of phonics on primary reading. The summary that follows will report data pertaining to the third study only, namely, the effect of varying amounts of phonics on primary reading.

Tests

1. Metropolitan Readiness Test
2. Gates Primary Reading Test, Type 1, Word Recognition
3. Gates Primary Reading Test, Type 3, Paragraph Meaning
4. Test of Vocabulary of Basal Materials, Word Recognition
5. Test of Basal Materials, Paragraph Reading

Procedure

This study was conducted in Manhattan, New York public schools. It is based on data obtained from 354 pupils out of a
total population of 382, comprising nine classes in four schools. Assistance in preparing materials, in conducting tests and observations, and in performing the statistical and clerical work was provided by research workers, including former teachers, under the Works Progress Administration.

The pupils were fairly representative of the population of New York City. The classes were mainly large. For most comparisons of data groups were equated on the basis of mental age, mainly obtained from group tests, and scores on the Metropolitan Readiness Tests, which were given in late September 1936, about a month after the opening of schools. All the classes used the same basal materials. The methods of instruction differed. The pupils in this study were assembled in three groups according to the type of training they received: (1) **Group D**—those who received the smallest amount of phonics or word analysis, consisting of 57 pupils, (2) **Group E**—those who received moderate amounts of informal, newer type word analysis, comparisons, etc., consisting of 146 pupils, and (3) **Group F**—those who received substantial or large amounts of conventional phonetic drill, consisting of 51 pupils. Each group was subdivided into three divisions, classified according to their reading readiness scores: (1) those with reading readiness scores of 85 and above, (2) those with reading readiness scores of 70-84, and (3) those with reading readiness scores below 70.

Gates Primary Reading Test and the Tests of Vocabulary of
Basal Materials were administered in February 1937.

**Findings**

Data tabulated from the scores of the above named groups showed the following picture:

1. **Group D** (smallest amount of phonetics). The total group scored 1.77 on Gates Primary Reading Test, Type 1, Word Recognition, 1.69 on Gates Primary Reading Test, Type 3, Paragraph Reading, 27.6 on Basal Vocabulary, Word Recognition, and 13.5 on Basal Vocabulary, Paragraph Reading.

2. **Group E** (moderate amount of informal phonetics). The total group scored 1.83 on Gates, Word Recognition, 1.75 on Gates, Paragraph Reading, 29.6 on Basal Vocabulary, Word Recognition, and 14.1 on Basal Vocabulary, Paragraph Reading.

3. **Group F** (large amounts of conventional phonetics). The total group scored 1.71 on Gates, Word Recognition, 1.61 on Gates, Paragraph Reading, 27.7 on Basal Vocabulary, Word Recognition, and 13.5 on Basal Vocabulary, Paragraph Reading.

Group E (moderate amounts of informal phonetics) had the highest average scores on all of the tests. Pupils in all the three divisions (high, average, and low) of this group scored higher than those in the corresponding divisions of the two other groups.

Group D (smallest amount of phonetics) scored slightly higher on some tests, and about the same on others as the Group F.
(large amounts of conventional phonetics).

Following the analysis of the test results, Gates came to a conclusion that moderate amounts of informal word analysis are helpful, and that very little of this type seems to be better than large amounts of formal phonetic drill.

**Purpose:**
An effort to determine the effects of varied amounts of phonetic training on certain reading abilities as measured by a battery of tests. Object of investigation was to obtain data concerning the validity of some of the claims and objections, specifically:

a. comparison of effects on speed and comprehension in silent reading,

b. comparison of effects on speed and comprehension in oral reading, and

c. effect on eye-voice span.

**Tests**

1. Otis Intelligence Test, Primary Examination, Form A
2. Gates Silent Reading Test, Types A, B, C, and D
3. Pressey Diagnostic Test: Vocabulary Grades 1 A - 3 A
4. Four Tests for Phonetic Ability devised by Arthur I. Gates
   a. test of phonetic ability
   b. test of word pronunciation ability
   c. tests of oral reading
   d. test of eye-voice span
5. Gates Graded Word Pronunciation Test, Form II
6. Gray Oral Check-Test, Sets II and III

Procedure

Two investigations were made: for the first one public schools of the city of Raleigh, N. C. provided the location, while the public schools of Durham, N. C. were chosen for the second investigation. The investigations were made in the last half of the third grade. This time was chosen to avoid measuring the effects too soon after the training had been given. To obtain measures in determining the phonetic experience of pupils, data were secured from the Pupils' Blank, which contained the names of schools and teachers the pupil had had from Grades I to III, and from the Teachers' Blank, which revealed the amount of emphasis they had given to phonetic analysis during the five preceding semesters. Teachers' Blank consisted of 25 questions, each having four possible answers, indicating varying degrees of emphasis on phonetic training. Teachers' reactions to the sum of these 25 items were presumed as a reliable indicator of the teachers' instructional procedure concerning the amount of phonetic training applied. Only pupils for whom blanks were available from all of the teachers they had had during the preceding five terms, were used.

For the first investigation in Raleigh 230 pupils were selected who (a) had had all of their training in Raleigh schools,
(b) therefore had approximately the same course of study and instructional material, (c) had made normal progress in school, i.e., they had been neither retarded nor accelerated. These 230 pupils were representative of the whole school population of Grade III A in Raleigh. Further, groups were selected out of the extremes of distribution of the gross phonetic experience scores—those scoring below 230 on the Teachers' Blanks (89 pupils) were included in the low group, and those scoring above 290 (86 pupils) were included in the high group. 55 pupils in the middle of the distribution were omitted. The two groups were equated on the basis of measures of intelligence test results and were paired in terms of MA and IQ. The factor of time when phonetic experience was obtained was also isolated. Division into phonetic and non-phonetic groups was made on the basis of phonetic experience scores for Grade I. Amounts of phonetic training received in Grades II and III had to be kept constant too.

Findings

Correlations between test scores of groups G (high gross phonetic experience) and G (low gross phonetic experience) showed the following results: on Gates Phonetic Ability (Word Pronunciation) tests: A4 r .06, A5 r -.11, B2 r -.06, B3 r -.21; on Gates Silent Reading Abilities tests: Type A r .06, Type B r .20, Type C r .30, Type D r -.02; on Gates Type A, B, C, and D r .16; on Pressey Vocabulary test r -.08; on Gray Oral Reading tests:
Part II (errors) $r = -0.13$, Part III (errors) $r = -0.07$, Part II (time) $r = 0.09$, Part III (time) $r = 0.09$; on Eye-Voice Span test $r = 0.20$.

In word pronunciation a small difference favored the non-phonetic group, in silent reading abilities on Gates tests five differences appeared that were greater than three times the PE of the differences. Differences favored the non-phonetic group, which fact made the investigator derive the conclusion that large amounts of phonetic training in Grades I and II are not so advantageous to silent reading abilities as small amounts of phonetic training in these grades. On vocabulary test difference seemed to favor the non-phonetic group, though there was a possibility that the test did not measure the actual vocabulary, and significance of differences obtained was doubtful. On oral reading tests differences obtained were of doubtful significance. On eye-voice span test the significance was questionable.

On the whole investigators in the Raleigh experiment found that there was no consistent evidence that the differences in phonetic training, measured in the Raleigh study, affected the test scores appreciably, and the question—whether children benefit from non-phonetic training in Grades I and II—was not answered.

Purpose of the second investigation, conducted in Durham, was (1) to check the results obtained from Raleigh investigation and (2) to provide new data on the effects of larger and more consistent amounts of phonetic experience.
Methods applied in quantifying the amounts of phonetic experience and equating the pupils were the same as used in the Raleigh experiment. 89 paired Durham cases were equated with Raleigh groups as to MA and IQ. The only variable was the quantity of previous phonetic experience: Durham cases scored 370-400 points on the Teachers' Blanks, whereas Raleigh cases had scored 160-270 points.

Durham cases were given the same battery of tests that had been administered before to Raleigh cases. The results of the equated and paired Durham and Raleigh groups on the battery of tests were compared. Critical ratios of the differences between the means of the two groups were obtained and showed the following results: on Gates Word Pronunciation (Phonetic Ability) tests: A4 CR was 10.05, A5 CR was 7.11, B2 CR was 12.02, B3 CR was 8.44; on Gates Word Pronunciation CR was 8.36; on Gates Silent Reading tests: Type A CR was .55, Type B CR was .00, Type C CR was 4.16, Type D CR was 2.87; on Pressey Vocabulary CR was 10.39; on Gray Oral Reading tests: Set II (errors) CR was 8.47, on Set III (errors) CR was 12.54, on Set II (time) CR was 17.20, and on Set III (time) CR was 8.61. On the last two tests in oral reading (time) differences between the means were - 40.26 and - 21.61 and favored the Raleigh group; all the other differences and critical ratios either favored the Durham group or were insignificant (on Gates Silent Reading). Average score on vocabulary for the Raleigh pupils (N 59) represented 1,200 words;
average score for the Durham pupils (N 71) was 1,400 words. Durham group was slower than the Raleigh group in oral reading, but it made less errors and was more accurate. On eye-voice span the Durham group exceeded the Raleigh group more than nine times. No consistent evidence was disclosed that large amounts of phonetic training make silent reading slower but more accurate. Durham pupils had a greater eye-voice span than Raleigh pupils; this evidence refuses argument that phonetic training decreases eye-voice span.

Purpose:
An inquiry into the merits of the phonetic method in the teaching of reading.

Tests
1. California Test of Mental Maturity, Elementary Form, 1951 edition
2. Iowa Silent Reading Test
3. The Metropolitan Achievement Test

Procedure
In the Diocese of Pittsburgh the supervisor of the community employing the experimental (phonetic) method of teaching reading was asked to recommend any five schools in the diocese where the phonetic method was in use. The choice of five schools employing the diocesan-approved method of teaching reading was made by the diocesan school office. The selection was made on the basis of the Otis Intelligence Test, administered at the beginning of the school year. No particular effort was made to control the teacher variable. Teachers of three different communities were involved. It was decided to do all the testing at the fourth-grade level, since the phonetic method had been in use for three complete years in the schools comprising the experimental group.
The control group was selected from schools using the regular diocesan-approved program. This program included phonetic training, but as a subsidiary word-attack skill, which is introduced gradually and developed through analysis of meaningful material. The ten fourth grades, selected for the study, had a population of 550 students. The average class size was approximately 45 students, since some schools had double classes. In the middle of December 1952, all of the children were given the California Test of Mental Maturity, Elementary Form, 1951 edition. 33 papers were eliminated due to absences, giving a total tested population of 517. On the basis of these data the groups to be included in the experiment were formed.

Reading tests were administered on January 12, 1953. During the third week in January the regular testing program called for the administration of the Metropolitan Achievement Tests. The scores for these were also included in the study.

A five per cent confidence level was accepted as a minimum margin for statistical significance in this study.

Findings
Final report was made on the performance of 284 fourth grade pupils, 142 in the experimental (phonics) group, and 142 in the control (diocesan-approved method) group. Groups were formed on the basis of their performance on the intelligence test, as well as sex. Only those children, whose entire primary work was
uninterrupted in either the phonetic or the regular reading program, were included in the study. 77 sets of boys and 65 sets of girls were closely matched.

Comparison of the results for the two groups on the Iowa Silent Reading Test showed the following picture:

<table>
<thead>
<tr>
<th></th>
<th>difference</th>
<th>SE diff.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ</td>
<td>.6</td>
<td>1.7</td>
<td>.4</td>
</tr>
<tr>
<td>Rate</td>
<td>- 5.7</td>
<td>2.3</td>
<td>- 2.5</td>
</tr>
<tr>
<td>Comprehension</td>
<td>- 2.1</td>
<td>2.1</td>
<td>- 1.0</td>
</tr>
<tr>
<td>Directed Reading</td>
<td>.1</td>
<td>1.5</td>
<td>.1</td>
</tr>
<tr>
<td>Word Meaning</td>
<td>- 3.5</td>
<td>1.8</td>
<td>- 2.0</td>
</tr>
<tr>
<td>Paragraph Comprehension</td>
<td>- 5.7</td>
<td>2.1</td>
<td>- 2.8</td>
</tr>
<tr>
<td>Sentence Meaning</td>
<td>- .6</td>
<td>2.0</td>
<td>- .5</td>
</tr>
<tr>
<td>Alphabetizing</td>
<td>4.9</td>
<td>1.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Use of Index</td>
<td>- 11.2</td>
<td>1.9</td>
<td>- 5.8</td>
</tr>
<tr>
<td>Median Reading</td>
<td>- 3.7</td>
<td>1.4</td>
<td>- 2.7</td>
</tr>
</tbody>
</table>

A slight difference in intelligence favored the experimental group. The control group performed better on every section of the Iowa Silent Reading Test, except in directed reading and alphabetizing. On word meaning the difference was very significant on rate, paragraph comprehension, and the use of index. Alphabetizing was very significantly in favor of the experimental group.

Comparison of the results for the two groups on the Metropolitan Achievement Test showed the following picture:

<table>
<thead>
<tr>
<th></th>
<th>difference</th>
<th>SE diff.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ</td>
<td>.6</td>
<td>1.7</td>
<td>.4</td>
</tr>
<tr>
<td>Reading</td>
<td>- 4.7</td>
<td>2.8</td>
<td>- 1.7</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>- 1.5</td>
<td>2.3</td>
<td>- .6</td>
</tr>
<tr>
<td>Arithmetic Fundamentals</td>
<td>.3</td>
<td>1.3</td>
<td>.2</td>
</tr>
<tr>
<td>Arithmetic Problems</td>
<td>.2</td>
<td>1.6</td>
<td>.1</td>
</tr>
<tr>
<td>Language Usage</td>
<td>- 3.9</td>
<td>2.2</td>
<td>- 1.8</td>
</tr>
<tr>
<td>Spelling</td>
<td>7.3</td>
<td>2.6</td>
<td>3.0</td>
</tr>
</tbody>
</table>
A slight difference in intelligence still favored the experimental group. Only 128 sets of scores for each group were tabulated in this report.

On the reading, vocabulary, and language tests the differences favored the control group. None of these differences were significant according to the confidence levels accepted for this study. There was no significant difference on the two arithmetic tests; both the groups were doing about the same level of work.

On the spelling test the phonic group was superior to the diocesan-approved method group, and the difference was very significant.
CfLJ/ER

THE EFFECT OF A FORMALIZED PROGRAM IN
AUDITORY AND VISUAL DISCRIMINATION

Summary

Murphy and Junkins conducted an experiment with the purpose of evaluating the effectiveness of a formalized program in auditory and visual discrimination in first grade reading. Three groups of beginning first grade children, fifty in each group, were matched on the basis of chronological age, mental age, and sight vocabulary. Tests of visual and auditory discrimination and a measure of learning rate were given to all the three groups. The children in one of the groups received special instruction in auditory discrimination, consisting of thirty lessons in discriminating initial and final consonant sounds and blends in words known to the child, presenting the easier sounds first and providing for a constant review, but at the same time avoiding monotony. These lessons were given in place of a regular reading instruction for part of the period. The second group of fifty children received special instruction, as a part of the regular reading period, in thirty lessons on visual discrimination, such as matching letters, words, finding words in context, and copying letters and words. The lessons were graded in difficulty and presented in a variety of ways. The third group of fifty children served as a control group.
and continued their regular daily reading lessons. At the end of six weeks the two experimental groups and the control group were retested. All three groups made progress in visual discrimination, but the experimental visual discrimination group made the greatest gain. In auditory discrimination the experimental auditory group showed marked progress, while the other groups made little or no gain. The retention rate had doubled for the two experimental groups, while the control group increased its score only slightly. Three months after the experiment all groups were given the Detroit Word Recognition Test. Mean differences showed a gain for the auditory training group of 13.4, with the critical ratio of 13.1, in auditory discrimination, of 1.7, with the critical ratio of 1.4, in visual discrimination, of 1.7, with the critical ratio of 4.1, in learning rate, and of 4.0, with the critical ratio of 2.7, on Detroit Word Recognition Test. Mean differences showed a gain for the visual training group of 1.4, with the critical ratio of 1.8, in auditory discrimination, of 4.6, critical ratio 3.2, in visual discrimination, of 1.2, with the critical ratio of 2.8, in learning rate. Both the auditory and the visual groups had raw scores of 12 and 13 respectively, as compared to 7 for the control group. These differences were statistically significant.
Murphy, Helen A. and Junkins, Kathryn M. "Increasing the Rate of Learning in First Grade Reading." *Education* 62: 37-39, September 1941.

**Purpose:**

To evaluate the effectiveness of a formalized program in auditory and in visual discrimination in beginning reading.

**Tests**

1. Test of Auditory Discrimination
2. Test of Visual Discrimination
3. Test of Learning Rate
4. Detroit Word Recognition Test

**Procedure**

One hundred and fifty children were found who had made little or no progress in reading during the first semester in the first grade. These children were using as a basal method one of the most widely used of the modern reading "systems". These children were divided into three groups of fifty each on the basis of chronological age, mental age, and sight vocabulary. Tests of visual and auditory discrimination and a measure of learning rate were given to all three groups.

The teachers of one group of the fifty children were given a mimeographed manual which included thirty auditory discrimination lessons. These exercises provided practice in discriminating
initial and final consonant sounds and blends known to the child. Words containing the easier sounds were presented first, and there was provision for constant review. Many different types of lessons were used to avoid monotony. The oral lessons were occasionally supplemented with letters and words on the blackboard. These lessons were given in place of regular reading instruction for part of the daily period.

The teacher of the other group of fifty children received thirty exercises on visual discrimination. These consisted primarily of matching letters, matching words, finding words in context, and copying letters and words. These were graded in difficulty and were presented in a variety of ways. The lessons were given as a part of the regular reading instruction. No special supervision was provided. Teachers made verbal reports each week in regard to the interest of children in the various exercises and indicated the points of confusion and difficulty.

The third group of fifty children served as a control group in this experiment. This group continued their daily lessons as usually.

The two sets of exercises, one on auditory discrimination and the other on visual discrimination, were evaluated separately to determine the effectiveness of each independent of the other.

Findings

At the end of six weeks, the two experimental groups and the
control group were retested with the visual and auditory discrimination tests and the rate of learning test.

All groups made progress in visual discrimination. The experimental visual discrimination group made a greater gain than the other two. In auditory discrimination the experimental group showed marked progress while the other groups made little or no gain. At the end of the experiment the retention of words taught had doubled for the two experimental groups while the control group increased its score only slightly.

Three months after the end of the experiment, all groups were tested with Detroit Word Recognition Test. The auditory and visual discrimination groups had raw scores of 12 and 13 respectively, as compared to 7 for the control group. These differences were statistically significant. Differences between the gains of the experimental and control groups with critical ratios of the differences were as follows: (1) for the Auditory Training Group gain in auditory discrimination was 13.4 mean difference, 13.1 critical ratio; gain in visual discrimination was 1.7 mean difference, 1.4 critical ratio; gain in learning rate was 1.7 mean difference, 4.1 critical ratio; gain on Detroit Word Recognition Test was 4.0 mean difference, 2.7 critical ratio, (2) for the Visual Training Group gain in auditory discrimination was 1.4 mean difference, 1.8 critical ratio; gain in visual discrimination was 4.6 mean difference, 3.2 critical ratio; gain in learning rate was 1.2 mean difference, 2.8 critical ratio.
Although the auditory training group had a higher score on the rate of learning test, the visual discrimination group made a slightly better score on the word recognition test, given in June. This inconsistency was due to the fact that after the end of the six weeks of the experiment, the school authorities advised all children in the school system to be given the auditory exercises because of the effect they produced on learning during the experiment.
CHAPTER V

RELATION OF PHONIC ABILITY
TO MENTAL ABILITY

Summary

Experimental studies have been conducted to measure the relationship between mental ability and phonic ability in first grade children. Arthur conducted a series of tests to evaluate the relationship between mental and reading ability from three different aspects: (1) the ability to name words, (2) the ability to recognize sound elements in words and combine them into spoken word forms, and (3) the ability of getting ideas from printed word forms. The investigator studied 171 first grade children and administered a series of tests. The average mental age for the total group was 6.07, the average score on the phonetic test was 62.6, the average score on sight vocabulary was 100.2, and the average score on reading comprehension was 4.38. The mental age group of 7.5-7.9 (N 2) had an average score of 100 on sight vocabulary, 110 on phonetic vocabulary, 13.0 on reading comprehension. The mental age group of 7.0-7.4 (N 10) had an average score of 126.6 on sight vocabulary, 95.8 on phonetic vocabulary, 9.2 on reading comprehension. The mental age group of 6.5-6.9 (N 27) had an average score of 114.3 on sight vocabulary, 84.0 on phonetic vocabulary, 9.1 on reading comprehension. The mental age group of
6.0-6.4 (N 55) had a score of 103.8 on sight vocabulary, 60.5 on phonetic vocabulary, 4.6 on reading comprehension. The mental age group of 5.5-5.9 (N 53) had a score of 93.6 on sight vocabulary, 52.2 on phonetic vocabulary, 3.1 on reading comprehension. The mental age group of 5.0-5.4 (N 24) had a score of 75.4 on sight vocabulary, 34.1 on phonetic vocabulary, 1.4 on reading comprehension.

Data showed that the mental age group of 5.0-5.4 made an average score of 34.1, with a median score of zero. Children in the mental age group of 5.5-6.4 gained some from the instruction in phonetics, while the efficiency increased greatly for the mental age group of 6.5-6.9.

To measure children's mental development in order to find out whether the ability to learn and use the principles of phonics is closely related with the increase in mental age, Dolch and Bloomer conducted an experiment in the first two grades in a school, in which uniform methods in reading instruction had been employed and some phonics had been taught. Two groups of children, one from the first grade and the other from the second grade, were chosen for the experiment. The pupils had been given intelligence tests in both the grades. The phonic achievement for both the groups was determined by means of the Basic Reading Tests, Word Attack Series. For each group the mental age and the phonic achievement were correlated by means of the Pearson product-moment method. As a check on the results, the experiment was repeated a year later. An agreement was found between the results of the two
experiments. Correlation of mental age and phonic achievement for pupils in the first grade, in the first experiment, was $0.412 \pm 0.102$ (N 30), in the second experiment it was $0.472 \pm 0.106$ (N 24). For the pupils in the second grade the correlation in the first experiment was $0.516 \pm 0.096$ (N 28), and in the second experiment it was $0.406 \pm 0.098$ (N 33). Dolch further reported that a scatter diagram of the scores showed that children of high mental ability sometimes fail to acquire phonic ability, and that children of low mental ability were certain to fail in acquiring it; that the same scatter diagram also showed that children with mental ages below seven years made only chance scores on the phonics test.

On the basis of the above findings Dolch made conclusions that the correlation between mental maturity and use of phonics was remarkably high. As a matter of fact, the correlations showed only an evidence of a medium relationship of little value for forecasting purposes.

**Purpose:**

To measure mental ability of first grade pupils and its relationship to reading ability from three different angles: (1) naming words, (2) recognizing sound elements in printed word forms and combining them into spoken word forms, and (3) getting ideas from printed word forms.

**Tests**

1. Haggerty Visual Vocabulary Scale
2. Haggerty Reading Examination, Sigma I.

**Procedure**

Chisholm, Minnesota public school children, 171 first graders in all, were studied in order to determine the relationship between the mental age and the reading scores on the above named tests.

**Findings**

The average mental age of the total group was 6.07 (SD 0.55), the average score on the phonetic test was 62.6 (SD 38.7), the average score on sight vocabulary test was 100.2 (SD 25.0), and the average score on reading comprehension was 4.88 (SD 3.8).

The average test score of each mental age group within the total group was as follows: for the MA group 7.5-7.9 (N 2)--on sight
vocabulary 100, on phonetic vocabulary 110, on reading comprehension 13.0; for the MA group 7.0-7.4 (N 10)—on sight vocabulary 126.6, on phonetic vocabulary 95.8, on reading comprehension 9.2; for the MA group 6.5-6.9 (N 27)—on sight vocabulary 114.3, on phonetic vocabulary 84.0, on reading comprehension 9.1; for the MA group 6.0-6.4 (N 55)—on sight vocabulary 103.8, on phonetic vocabulary 60.5, on reading comprehension 4.6; for the MA group 5.5-5.9 (N 53)—on sight vocabulary 93.6, on phonetic vocabulary 52.2, on reading comprehension 3.1; for the MA group 5.0-5.4 (N 24)—on sight vocabulary 75.4, on phonetic vocabulary 34.1, on reading comprehension 1.4.

These data showed that the mental age group of 5.0-5.4 made an average score of 34.1, with a median score of zero. On this test an increase of two years in mental age was paralleled by an increase of 181 per cent in score. Correlation coefficient of .54 ± .04 was the same as for the sight vocabulary test.

Conclusions

On the basis of the test data it seemed to the investigator that the time spent in teaching phonetics to children with a mental age of less than five years and a half was largely wasted.

Children with mental ages from 5.5 to 6.4 did gain some from the instruction in phonetics.

The increase in efficiency for the mental age group of 6.5 to 6.9 was so great as to make the investigator suggest that age as the better one at which to begin the teaching of reading by the phonetic method.
Dolch, E. W. and Bloomster, Maurine. "Phonic Readiness."
Elementary School Journal 38: 201-205, November 1937.

Purpose:
To measure children's mental development in order to find out whether the ability to learn and to use the principles of phonics is closely connected with the increase in mental age.

Tests
1. The Pintner-Cunningham Primary Mental Test
2. The Word-Attack Series, Tests I and II of the Basic Reading Tests

Procedure
The experiment was conducted in the first two grades of a school in which the teaching of reading had been uniform for at least two years, and in which the teaching of phonics had had some emphasis, though not an unusual amount of it.

About May 1, 1935 Pintner-Cunningham Primary Mental Test was given to the children in each of the two grades. Previous to that in September the first grade pupils had been given Detroit First Grade Intelligence Test, and the year before that the pupils, now in Grade II, had been given the Pintner-Cunningham Primary Mental Test. Results from these previous tests were roughly brought up to date by the addition of the number of months from the time of giving the test to May 1.
The phonic achievement in these two grades was determined by the use of experimental issues of tests 1 and 2 of the Basic Reading Tests, Word-Attack Series. Test 1 of this series consisted of words containing only short vowels, preceded and followed by a single consonant. Test 2 of this series was of similar construction, except that some of the test words contained short vowels and some long vowels with the final e and that many words also contained consonant blends or consonant digraphs. In both tests sight knowledge was rendered largely useless by the great similarity of the word forms. For each group the mental age and the phonic achievement were correlated by the Pearson product-moment method. As a check on the results, the experiment was repeated in May 1936. There was marked agreement between the results of the two experiments.

Findings

The findings showed the correlations between mental maturity and the use of phonics. Correlation of mental age and phonic achievement for pupils of Grade I (first year) was \( .412 \pm .102 \) (N 30), of Grade I (second year) it was \( .472 \pm .106 \) (N 24), of Grade II (first year) it was \( .516 \pm .096 \) (N 28), and of Grade II (second year) it was \( .406 \pm .098 \) (N 33).

Conclusions

The scatter diagrams made by the investigators from the scores showed that children of high mental age sometimes failed
to acquire phonic ability, but children of low mental age were certain to fail.

The investigators concluded that these scatter diagrams seemed to show the minimum age for phonic readiness. Children with mental ages below seven years made only chance scores. As far as this experiment indicated, a mental age of seven years seemed to the investigators to be the lowest one at which a child could be expected to use phonics, even in the simple situations provided by the two above mentioned tests.
CHAPTER VI
RELATION OF PHONIC ABILITY
TO READING AND SPELLING

Summary

Rogers studied seventy-two poor silent readers from the college freshman class who ranked at the twentieth percentile or below on the Iowa Silent Reading Test when they entered the university, in order to determine the relationship between mispronunciations and comprehension, and to determine the effect of training in phonics upon certain aspects of reading. Half of these students served as a control group, while the other half was used as an experimental group. After the initial testing the experimental group received a special training in phonics, which varied according to the needs of the individual. The length of the training was also determined by the need of each student. The method of teaching phonics was based on that developed by Dr. Cordts.

None of the words occurring in the tests were used during the instruction. Emphasis was put only on pronunciation, not considering the meanings. When a student had completed the training, he and his matched control student were tested by the final series of tests. The control students were tested only on vocabulary, spelling, and pronunciation of the Nelson-Denny Test, since phonic ability was considered unlikely to improve with maturation. An
average of sixteen conferences was held with each student. An analysis of the pronunciation records showed that on the average 78 per cent of the words mispronounced were also missed in meaning. The analysis seemed to show a relationship between the extent of mispronunciation and probability of missing the meaning. A slight change in pronunciation was accompanied by a failure in meaning 63 per cent of the time, while the substitutions were accompanied by lack of comprehension 73 per cent of the time. To determine the reliability of the examiner's recordings, these were compared with a phonographic recording and an agreement of 97 per cent for oral reading and of 98 per cent for pronunciation was disclosed. The experimental group gained 9 per cent, SE 3.9, on Nelson-Denny vocabulary, while the control group gained 1 per cent, SE .6. On Inglis Vocabulary Test the experimental group gained 4 per cent, SE 2.7, on Nelson-Denny paragraph comprehension it gained 6 per cent, SE 2.1, while the control group gained 9 per cent, SE 4. In spelling both of the groups gained 2 per cent. On the Phonic Ability Test, Syllabification, the experimental group gained 13 per cent, SE 6.7, and on the Phonic Ability, Selected Correct Pronunciation, it gained 15 per cent, SE 6.0. In oral reading the experimental group made an average 50 per cent gain over the original scores, and many of them were statistically significant. The gains in pronunciation represented an average of 70 per cent. The critical ratios were all high and favored the experimental group. Critical ratio on faulty accents was 10.5, on substitution and slight change of word
it was 17.3, on insertion of sound it was 10.5, on words of one error it was 20.8, on words of two errors it was 9.4, and on words of three errors it was 7.4. All these gains were recorded on Nelson-Denny Test.

Tiffin and McKinnis conducted an experimental study with 155 pupils from the fifth, sixth, seventh, and eighth grades to determine whether and to what extent phonic ability was related to reading ability, as measured by certain standardized reading tests. The pupils were distributed approximately equally among the above mentioned four grades. They were tested by an individual phonic ability test, modified and adapted from a group test of phonic ability for college freshmen constructed by Maurine Rogers. The relationship between phonic ability and reading ability was investigated by correlation of the results on the phonic test with the results on the New Stanford and Iowa Silent Reading tests. Correlation between the phonic ability and the New Stanford Reading test scores was \( r = 0.70 \pm 0.027 \), and between the phonic ability and the Iowa Silent Reading test it was \( r = 0.66 \pm 0.030 \). Correlation between the phonic ability and the rate of reading on the Iowa Silent Reading test was \( r = 0.55 \pm 0.038 \). Phonic ability was found to be significantly related to reading ability of the pupils in the experiment. Variability of scores on the phonic ability tests within a given grade was found to be very large. Practically no relation was found between the chronological age and the phonic ability of the pupils studied.
The level of phonic knowledge of fourth grade pupils, the relationship between phonic knowledge and reading, as well as what differences, if any, exist in the phonic knowledge of good and poor spellers and of good and poor readers, was studied by Templin.

A group of 318 children in grade 4.9 at the time of the experiment were given intelligence tests, tests of normal hearing, three phonic tests constructed by the author, and standardized reading and spelling tests. Fifty-eight cases were later eliminated. First the scores of the entire experimental sample were studied and analyzed to determine the interrelationships. The scores on reading and spelling tests were correlated with the intelligence test scores of the pupils controlled. The critical ratio of the differences for the total sample between the sound discrimination test and each of the three phonic tests was 1.30. The critical ratio between the recall and the nonsense-word phonic tests was 6.10, and between the recall and both the word phonic and the sound discrimination tests it was 29.2.

Critical ratios of the differences in the scores between the good and the poor spelling groups, having about the same mental age of 117.96, were: 12.26 in spelling, 4.19 in reading, 1.61 in recall on the phonic test, 1.19 on word recognition phonic test, 1.81 on nonsense-word test, 2.60 on sound recognition test, and 0.59 on sound discrimination test. The good spellers received higher scores on recall and recognition phonic tests.

Critical ratios of the differences in the scores between the
good and the poor reading groups, with a mean mental age of 118.12 for the good readers and a mean mental age of 117.54 for the poor readers, were: 4.96 in reading, .74 in recall on nonsense-word test, and .16 on sound discrimination. All the phonic test scores were higher for the better readers.

Analysis of the test scores for the contrasted spelling and reading groups disclosed that the relation between phonic knowledge and spelling was somewhat higher than between phonic knowledge and reading.

12/ 

House provided a special instruction in phonetic symbolization to fourth grade pupils for fifty-four days, twenty minutes daily, in order to determine how successfully these fourth grade pupils could master the use of a complete phonetic symbolization as an aid in independent analysis of unfamiliar words. He selected 222 pupils on the basis of freedom from foreign accent, a usual range in mental ability, and a satisfactory progress in their curricular studies. The experimental group was subdivided into three groups with 55, 53, and 56 pupils respectively. The rest of the selected pupils made up the control group. The instruction for each of the three groups was varied: the experimental group E1 used the regular spelling with diacritics, the experimental group E2 used the Webster system of phonetic respellings with diacritics, and the experimental group E3 used the International Phonetic Alphabet. The control group received the regular classroom instruction. At the end of the experiment the groups were compared in
achievement on the Pronunciation Skills Test. A comparison of the
data showed that the standard error ratio between the control and
the experimental $E_1$ group was 4.95, between the control and the
experimental $E_2$ group it was 8.72, and between the control and the
experimental $E_3$ group it was 5.92. The ratios were high and
indicated that the achievement on the Pronunciation Skills Test
for all the three experimental groups was much higher than that of
the control group. On the Real and Synthetic Word Pronunciation
Test the standard ratio between the control and the experimental
$E_1$ group was .312, between the control and the experimental $E_2$ group
it was 12.03, and between the control and the experimental $E_3$ group
it was 9.39. On this test the control group did slightly better
than the experimental $E_1$ group, but the differences between the
control and the two other experimental groups were in favor of
these experimental groups. These differences were highly significant.

Purpose:

To determine the relationship between mispronunciations and comprehension, and to determine the effect of training in phonics upon certain aspects of reading.

Tests

1. Nelson-Denny Reading Test, Form B
   a. 100 vocabulary words
   b. paragraph comprehension

2. The Inglis Vocabulary Test (Inglis, A. "A Vocabulary Test for High-School and College Students." The English Leaflet XXIII, 1923, No. 197), 150 words

3. A Spelling Test (Spelling section of both forms of the Iowa English Training Test), 125 words

4. A Phonic Ability Test, constructed by the experimenter

5. Pronunciation of the vocabulary words in the Nelson-Denny Test and Inglis English Vocabulary Test

6. An Oral Reading Test, composed of four paragraphs of about 200 words each, from the Nelson-Denny Reading Test, Form A

Procedure

The subjects for this study were seventy-two poor silent readers from the freshman class who ranked at the twentieth percentile or below on the Iowa Silent Reading Test in the university of Iowa qualifying examinations when they entered the university.
Half of these served as an experimental group in total comprehension on the Iowa Silent Reading Test and in general ability as measured by the composite qualifying score on the above examinations. The latter half served as a control group and was not given any special training in phonics.

A period of training followed the testing. This varied according to the needs of the individual. Some individuals did not even know the vowel or consonant sounds and required a longer training period than the others who already knew most of the individual sounds. The method of teaching phonics was based on that of Dr. Cordts (A. D. Cordts. *The Word Method of Teaching Phonics*. Chicago: Ginn and Company, 1929.). None of the words, used as examples in training, were to be found in the tests, and during the training attention was given only to pronunciation of words. Meanings were not considered. When an individual had completed the training, his paired control was called in. They were given the final series of tests within a few days of each other. Practical considerations made it advisable to give only the Nelson-Denny Vocabulary, Spelling, and Pronunciation tests to the control group in the second series. Phonetic ability thus was the only skill not retested in the control group, since it was not likely to improve with the maturation. An average of sixteen conferences was held with each student in the experiment.

**Findings**

Each pronunciation record for each word was analyzed as to
the type of error it contained. Errors were classified in several categories.

Most of the percentages for lack of comprehension ranged between 75 and 85. On the average, 78 per cent of the words which were mispronounced also were missed in meaning, although the presence in the test of wellknown words which are regionally mispronounced, such as "miniature", made this percentage lower than it would otherwise be. Many of the words still would have been unfamiliar if the students had themselves pronounced the words correctly. Some of the words, however, would have been recognized and associated with their correct meanings. There seemed to be a relationship between the extent of the mispronunciation and the probability of missing the meaning of a word. A slight change, such as perceiving "adolescence" for "adolescent", was accompanied by a failure in comprehension only by 63 per cent of the time, while the substitutions of entirely different words were accompanied by lack of comprehension 73 per cent of the time, and "no attempt" words 91 per cent of the time.

To determine the reliability of recording, the examiner's personal recording was compared with phonographic recording. The average per cent of agreement for oral reading was 97 and for pronunciation 93.

The reliability of the phonic ability test was computed by odd-even item correlation, applying the Spearman-Brown formula. For Part I (breaking words into syllables) it was .94, while for
Part II (selecting pronunciations) it was .80.

Gains made by the experimental and the control groups were as follows: on Nelson-Denny vocabulary 9 per cent, SE 3.9, for the experimental group, and 1 per cent, SE .6, for the control group; on Inglis Vocabulary 4 per cent, SE 2.7, for the experimental group; on Nelson-Denny paragraph comprehension 6 per cent, SE 2.1, for the experimental group and 9 per cent, SE 2.4, for the control group; on spelling 2 per cent, SE .8, for the experimental group and 2 per cent, SE .3, for the control group; on Phonic Ability Test I, Syllabification, 18 per cent, SE 6.7, for the experimental group; on Phonic Ability Test II, Selected Correct Pronunciation, 15 per cent, SE 6.0, for the experimental group.

The gains in oral reading were not as large as the pronunciation gains, but many of them were statistically significant. On the average a 50 per cent gain over original scores was made in oral reading. The gains in the pronunciation columns represented an average 70 per cent gain, and the critical ratios were all high. Gains in elimination of some errors made by the experimental and the control groups in pronunciation and oral reading showed that the critical ratios were in favor of the experimental group.

Critical ratio on total faulty accents was 10.5, on substitution and slight change of word 17.3, on insertion of sound 10.5, on words of one error 20.8, on words of two errors 9.4, and on words of three errors 7.4, all in favor of the experimental group.

All these gains were made and computed on Nelson-Denny Test.
Conclusions

These large improvements seemed to the examiner to validate the use of instruction in phonics for the improvement of pronunciation at the college level, for poor readers could make use of these principles in actual pronunciation.

**Purpose:**

To determine whether and to what extent phonic ability is related to reading ability, as measured by certain standardized reading tests.

**Tests**

1. Individual Phonic Ability Test, modified for present investigation from a group test of phonic ability, constructed by Maurine Rogers for use with college freshmen. The Rogers list of nonsense words had been adapted only in the choice of pronunciations offered.

2. The New Stanford Reading Test, Form V

3. The Iowa Silent Reading Test, Elementary Form A

**Procedure**

The subjects in this study were 155 pupils from the fifth, sixth, seventh, and eighth grades of the Longlois School in Lafayette, Indiana. The pupils were divided approximately equally among the four grades.

The reliability of the individual phonic test was computed by the odd-even method. Reliability coefficient for the 155 pupils tested was .94 ± .006.
The relationship between phonic ability and reading ability was investigated by correlating the results on the individual phonic test with the results on the two reading tests.

Findings

Correlations between the New Stanford Reading Test scores and the phonic ability were $0.70 \pm 0.027$, between the Iowa Silent Reading Test scores on comprehension and the phonic ability were $0.66 \pm 0.030$, and between the Iowa Silent Reading Test scores on rate of reading and phonic ability they were $0.55 \pm 0.038$. These correlations showed with reasonable certainty that phonic ability was significantly related to reading ability among the pupils tested.

Mean scores on the phonic ability tests were as follows:

Grade 5 (N 34) 47.8, standard deviation 16.5
Grade 6 (N 43) 50.1, standard deviation 21.4
Grade 7 (N 39) 52.2, standard deviation 17.9
Grade 8 (N 39) 56.2, standard deviation 20.4

The increase in mean scores from grade to grade was not great and the variability within the given grade was very large.

For the 155 pupils studied, representing an age range from 9 years, 11 months to 15 years, 9 months, there was practically no relation between phonic ability and chronological age. The coefficient of correlation was $-0.08 \pm 0.055$.

The correlation between phonic ability and mental age had not been investigated in this study.

**Purpose:**

To investigate: (1) the level of phonic knowledge of fourth grade pupils, (2) the relation between phonic knowledge and reading, and (3) what difference, if any, exists in the phonic knowledge of good and poor spellers and of good and poor readers.

**Tests**

1. Kuhlman-Anderson Group Intelligence Test
2. Word Phonic Test
3. Nonsense-Word Phonic Test
4. Sound Phonic Test
5. Spelling Test from the Intermediate Stanford Achievement Test
6. Durrell-Sullivan Reading Test

Tests mentioned in 2, 3, and 4 were constructed by the author.

**Procedure**

The sample consisted of 318 children from five Minneapolis public schools who were in grade 4.9 at the time the testing was carried on. Only those subjects were included for whom intelligence test scores were available, who had normal hearing, and who had taken all of the phonic tests together with the standardized reading...
and spelling tests. Fifty-eight cases were dropped because of incomplete data. Normal hearing was determined by a sweep check audiometric test. The mental age used for each child was corrected to the date of administration of the phonic tests. The tests were given in classroom situation over a period of two weeks. Classroom teachers gave the reading test as a part of the school testing program. The spelling and the phonic tests were administered by the experimenter.

The scores of the entire sample were analyzed to determine the level of phonic knowledge and the interrelationship between the scores. The relation of phonic knowledge to spelling and reading achievement was further studied in contrasting groups of good and poor spellers and of good and poor readers. Since the correlations of mental age with the scores on the spelling and reading tests were substantial (.54 on the reading and .62 on the spelling tests), intelligence was controlled in the contrasted groups. The eighty-six cases of the typical mental age for grade 4.9 were selected. These had a mean chronological age of 10 years, 0 months and a mean IQ of 98. There were two deviate groups of twenty-six cases in each: one-third receiving the lowest scores on the spelling test, and one-third receiving the highest scores on the spelling test. The same technique was used with the scores on the Durrell-Sullivan Reading Test to select the upper and the lower reading cases. Mental age range was restricted for both the deviate groups.
Findings

In order to determine the statistical significance among the differences in scores for the total sample, the critical ratio of the difference was determined between the sound discrimination test and each of the phonic tests, as well as among the several phonic tests. The difference between these scores was only .78 of one percent, with a critical ratio of 1.30. The other critical ratios ranged from 6.10 between the recall and nonsense-word tests to 29.2 between the recall and both the word phonic and the sound discrimination measures. For the experimental sample there were real differences in the degree of application of phonic knowledge by fourth grade pupils under various conditions.

Correlation of scores on phonic tests with (1) mental age, (2) spelling, and (3) reading were: .24, .34, .25 on the recall test; .43, .54, .40 on the word recognition test; .36, .55, .44 on nonsense-word recognition test; .37, .57, .47 on the sound recognition test; .29, .23, .22 on the sound discrimination test.

These fourth graders had attained a substantial amount of phonic knowledge, although no reliable estimate of the differences in the amount of phonic experience was possible. Most of the teachers reported that they used phonic training when they felt it was necessary.

There was no significant difference in the mental ability of the two contrasted, upper and lower, deviate spelling groups. The upper spelling group had a mean mental age of 117.96 and the lower
one of 117.54, with sigma diff. .54, critical ratio 1.00. Mean difference in spelling was 38.39 (upper group), 20.85 (lower group), with sigma diff. 1.43, critical ratio 12.26, significance .001. Mean difference in reading for the same deviate spelling groups was: 76.16 (upper group), 59.43 (lower group), with sigma diff. 3.99, critical ratio 4.19, significance .001. Mean difference in recall on the phonic test was: 16.46 (upper group), 17.27 (lower group), with sigma diff. .74, critical ratio 4.19, significance .20. Mean difference on word recognition phonic test was: 77.77 (upper group), 76.08 (lower group), with sigma diff. 1.42, critical ratio 1.19. Mean difference on nonsense-word test was: 69.39 (upper group), 65.85 (lower group), with sigma diff. 1.96, critical ratio 1.81, significance .20. Mean difference on sound recognition test was: 78.85 (upper group), 73.92 (lower group), with sigma diff. 1.90, critical ratio 2.60, significance .02. Mean difference on sound discrimination was: 46.23 (upper group), 46.96 (lower group), with sigma diff. 1.22, critical ratio 0.59.

On recall and on recognition phonic tests the better spellers received the higher total score.

There was no significant difference between the mental ages of the two deviate reading groups within the restricted mental age range, although the better readers had a slight advantage of about one-half month of mental age. The upper reading group had a mental age of 118.12 and the lower one of 117.54, with sigma diff. .54, critical ratio 1.06. Mean difference for this group of deviates was:
83.08 (upper group), 53.54 (lower group), with sigma diff. .2.64, critical ratio 11.23, significance .001. Mean difference in reading was: 34.54 (upper group), 24.38 (lower group), with sigma diff. 2.05, critical ratio 4.96, significance .001. Mean difference on recall phonic test was: 18.50 (upper group), 17.85 (lower group), with sigma diff. .38, critical ratio .74. Mean difference on word recognition phonic test was: 77.69 (upper group), 75.96 (lower group), with sigma diff. 1.41, critical ratio 1.16. Mean difference on nonsense-word test was: 70.31 (upper group), 65.96 (lower group), with sigma diff. 2.18, critical ratio 1.99, significance .20. Mean difference on sound recognition test was: 78.08 (upper group), 74.23 (lower group), with sigma diff. 1.51, critical ratio 2.43, significance .05. Mean difference on sound discrimination was: 46.69 (upper group), 46.50 (lower group), with sigma diff. 1.17, critical ratio .16.

All the phonic test scores were higher for the better readers.

The difference in the scores on the word phonic test was not significant between the deviate spelling groups or between the deviate reading groups. The difference between the scores on the nonsense-word phonic test reached only the twenty per cent level of confidence between the deviates in the spelling group and those in the reading group. On the sound phonic test and on the recall phonic test the level of significance of the difference was greater for the spelling than for the reading groups. Differences in sound discrimination ability were not significant for either sample.
Although there was some overlap of cases in the spelling and in the reading deviate groups, it was likely that the relation of phonic knowledge and spelling was somewhat greater than the relation of phonic knowledge and reading, since the correlations for the experimental sample were higher between spelling and phonic scores than between reading and phonic scores.

Conclusions

On the basis of the above data the examiner arrived to following conclusions:

1. A substantial amount of phonic knowledge as measured by tests had been acquired by fourth grade pupils in the experiment.

2. For the total sample the correlations between phonic knowledge and spelling were found to be somewhat higher than between phonic knowledge and reading.

3. A comparison of the scores of restricted mental age deviate spelling groups indicated that the better spellers received the higher scores on all tests, except on the sound discrimination.

4. A comparison of the scores of restricted mental age deviate reading groups indicated that better readers received the higher scores on all tests.

5. Scores on the test of phonic knowledge were significantly higher when a recognition rather than a recall technique was used.

**Purpose:**

To determine how successfully fourth grade pupils can master the use of a complete symbolization as measured by independent analysis of unfamiliar words, following a controlled experience with a specific form of instructional material.

**Tests**

1. The Pronunciation Skills Test, Form B Series
2. The Real- and Synthetic-Word Pronunciation Test, Form A Series

**Procedure**

In order to obtain as homogenous a population as possible, the following criteria were used in the selection of schools participating in the experiment: (1) the classrooms had to be free from foreign accent, (2) the classrooms had to possess pupils with the usual range of mental ability, and (3) the classrooms had to possess pupils making satisfactory progress in their schoolwork. The pupil population selected was 222. They were divided into a control group and an experimental group. The experimental group was subdi-
vided into three groups and renamed Group E 1, E 2, and E 3, with 55, 53, and 56 pupils respectively.

The variable within the experimental groups was the symbolization employed: Group E 1 used the regular spelling with diacritics, Group E 2 used the Webster system of phonetic respelling with diacritics, and Group E 3 used the International Phonetic Alphabet.

The Peters regression technique was employed in obtaining hypothetical matching of the groups. The experimenter taught the three experimental groups. Method of instruction was that of a highly motivated drill. The experimental group received twenty minutes of instruction daily for fifty-four days. The control group was taught by the regular classroom teachers, who taught the skills needed whenever an occasion presented itself.

Findings

A comparison of the achievements on the independent word analysis of the control and the experimental groups on the Pronunciation Skills Test, Form B Series, showed that the standard error ratio between the control and the experimental E 1 group was 4.65, between the control and the experimental E 2 group it was 8.72, and between the control and the experimental E 3 group it was 5.92. These ratios indicated that the achievements of the pupils in the experimental groups were superior to the achievements of the pupils in the control group.
A comparison of the achievements on the independent analysis of new words of the control and the experimental groups on the Real- and Synthetic-Word Pronunciation Test, Form A Series, showed that the standard error ratio between the control and the experimental E1 group was .312, between the control and the experimental E2 group it was 12.03, and between the control and the experimental E3 group it was 9.39. On this test the experimental group E1 did not do as well as the control group; the mean difference of -0.23 was in favor of the control group. The differences in favor of the experimental groups E2 and E3 were highly significant.

Conclusions

Some of the conclusions drawn by the examiner after the results of the tests were analyzed were as follows: (1) fourth grade pupils could readily learn to use any type of complete symbolization if it contained only one symbol for each sound of the English language, (2) these fourth grade pupils did not seem to tire or to form a dislike for highly motivated drill on the blending of the speech sounds represented by the symbols in monosyllabic synthetic words, (3) fourth grade pupils should learn the word analysis skills more rapidly when systematic instruction and a functional use of what was taught could be integrated, as the period of systematic instruction lengthens, and (4) that the advantage of the Webster key over the International Phonetic Alphabet seemed to be more apparent than real.
Summary

Hester made a study of records of pupils recommended to the Reading Laboratory of the University of Pittsburgh because of reading difficulties, with the purpose of analyzing the pupils' phonetic difficulties and their effect on reading. Records of 194 children were studied. The Durrell Analysis of Reading Difficulty was administered to each child. The records showed that out of the amount of 194, 112 children who scored below the third grade level in reading revealed difficulties with letters, sounds, and blends when given the phonetic inventory. 196 errors were made on lower-case letter names, the troublesome letters ranking in difficulty as follows: q, l, b, and p. Capital letters were recognized more readily, there being only 169 errors on these letters. 755 mistakes were made because the letter sounds were made either incorrectly, or were totally unknown. Of letter blends tw and cl were the most troublesome, while sh and st caused the least difficulty. Errors were rather evenly distributed among all the other blends. Children of the CA group 7-0 to 7-12 showed a rapid increase in phonetic disabilities, as compared with the CA group of 6-0 to 6-12. The increase continued for the CA group of
8.0 to 8.12, and for the CA group of 9.0 to 9.12, the disability remained the same for the CA group of 10.0 to 10.12, and after that started to decrease slowly. The chronological ages of the highest frequency of phonetic difficulties corresponded to the second and to the third grades, with a maximum reached at the fourth and fifth grade levels.

In order to study the errors made by native Spanish-speaking children of New Mexico when recognizing English words in isolation, Tireman tested individually eighty-four fourth grade children by presenting to them 100 words selected from Stone lists of 2,000 words of 29 primers, 27 first readers, 20 second readers, and 11 third readers. An analysis of the errors made by the pupils tested showed that the meanings of 46 per cent of words taken from the Stone list were not understood by the children, 2.09 per cent of errors were classified as "no response" category, 15.14 per cent of the errors were classified as "word pronounced correctly but meaning distorted in various ways" category, 25.63 per cent of the errors were due to mispronunciation of words, and 2.58 per cent of the errors were classified as "meaningless substitutions for words mispronounced". The analysis established that quite a considerable percentage of the errors made by the children was due to a failure to pronounce the elements in the words correctly.
Hester, Kathleen B. "A Study of Phonetic Difficulties in Reading."


**Purpose:**

To study the records of pupils recommended to the Reading Laboratory of the University of Pittsburgh because of reading difficulties.

**Tests**

Durrell Analysis of Reading Difficulty

**Procedure**

The records of 194 children, admitted to the Reading Laboratory before January 1942, were studied.

The Durrell Analysis of Reading Difficulty was administered to each child.

Of 194 pupils, 64 scored at third grade level or above on both the word recognition and the word analysis tests, and were therefore excluded from the phonetic inventory. Only one child had difficulty because of overemphasis on phonetics. Eighteen of the children had no difficulty with the letter names, sounds, or blends. Thus there remained 112 children, or 58 per cent of the group, who lacked partially or entirely the knowledge of phonetics, essential for independent word attack.

**Findings**

The test results for these 112 children revealed the letters,
the sounds, and the blends which were the most troublesome.

The letter q ranked first in order of difficulty in both the capital and the lower-case forms. In the case of capital letters, V and Y ranked next in order of difficulty, while B, H, S, and X caused the least difficulty. Among the lower case letters, l ranked next to q in difficulty, with b and p next in order. The capital letters were recognized more readily than were the lower-case letters, there being 169 errors on the capital letters and 196 on the lower-case letters.

The letter sounds presented the following range of difficulties: the letter q caused the most difficulty, with the letter x followed closely. The letters u, i, w, and l were next in order of difficulty, with c, k, s, and t being the least troublesome.

While 196 errors were made on lower-case letter names, 755 mistakes were made because the sounds were either made incorrectly or were totally unknown.

Of letter blends tw and cl were the most difficult, while sh and st caused the least difficulty. The errors were rather evenly distributed among all the other blends.

Age distribution of children with phonetic disabilities showed a rapid increase in difficulty from CA 7-0 to 7-12 (frequency 11), as compared with the CA group of 6-0 to 6-12 (frequency 1). The increase continued for the CA of 8-0 to 8-12 group (frequency 17), CA group of 9-0 to 9-12 (frequency 23), remained the same for CA group of 10-0 to 10-12 (frequency 23), and started decreasing slowly
from this point on. The chronological ages corresponded to the second and third grades, where the most difficulties were encountered, with a maximum point being reached at the fourth and fifth grade levels.

Conclusions

On the basis of the records studied, the examiner came to the following conclusions:

1. There is a definite lack of knowledge of letter sounds.
2. Blending is evidently a more difficult process and needs to be taught specifically.
3. Careful attention to the difficulties needs to be given at the second and at the third grade levels.

Purpose:
To study the errors made by native Spanish-speaking children when recognizing English words in isolation.

Tests
100 words selected from Stone lists of 2,000 words of 29 primers, 27 first readers, 20 second readers, and 11 third readers

Procedure
The 100 words selected from the above mentioned source were presented individually to each of the eighty-four native Spanish-speaking children of New Mexico, all of them fourth grade pupils. The child was asked to pronounce each word and to explain its meaning. If he was unable to explain its meaning, he was asked to use it in a sentence. His responses were recorded, but no attempt was made to make a phonetic transcription. The 8,400 responses were classified independently by two people and were catalogued.

Findings
Findings showed that the meanings of 46 per cent of the words taken from the Stone list were not understood by the children examined.
2.09 per cent of all the errors were classified in the category under "no response".

15.14 per cent of all the errors fell into the category under "word pronounced correctly but meaning distorted in various ways".

25.63 per cent of the errors fell into the category under "words mispronounced".

2.58 per cent of the errors fell into the category of "words mispronounced and a meaningless word substituted".

The percentages attached to the various categories could not be taken too literally, since some words had more than one error and might have been classified in several places.

Conclusions

The examiner recognized that this study was but a preliminary and an incomplete one, although it did seem to establish quite definitely that a large percentage of the errors made by the native Spanish-speaking children when recognizing English words in isolation was due to a failure to pronounce the elements of the words correctly.
CHAPTER VIII
STUDIES OF PHONETIC ELEMENTS TO BE TAUGHT
AND OF SOME CURRENT PRACTICES

Summary

Studies of the phonetic elements to be taught. In 1923 Washburne reported in detail the results of three separate studies made in 1921-1922 by a group of primary teachers in the Winnetka, Illinois public schools to determine what phonograms would be most helpful to children in sounding out new words.

The first of the three studies yielded only the means of ranking the phonograms. As a criterion was used the number of "book-words" in which a phonogram occurs. All "phonetic" words in seven commonly used primers and first readers were listed. The number of book-words was found by scoring each word with the number of different books in which it occurred and by adding all such scores under any given phonogram. All of the investigators did not agree, however, as to what makes a word "phonetic", therefore making it impossible to use the rank list of phonograms resulting from this study.

The second study, conducted by Vogel, investigated the relative importance of the first fifty of the 345 phonograms in ten of the more modern primers and first readers. As a phonogram in this study was defined any group of letters beginning with a vowel and not forming more than one syllable.
The phonograms which were found important in one group of readers were found equally important in an entirely different set of readers. This finding led the investigators to conclude that phonograms ranking high in importance were probably important in any group of readers. Based on this finding, a list of first fifty phonograms was made, and ranked in order of importance. To this list of phonograms was added a list of initial consonant combinations, taken from the word list in the Twentieth Yearbook of the National Society for the Study of Education.

As a result of this study a Basic First Grade Phonics List was developed. The following items were included in this list: (1) all short vowel sounds, (2) all simple consonant sounds, (3) the rule for lengthening vowel before final e, and (4) these phonograms and letter groups: ee, ed (ending--as in "looked"), ing, er (as ending), ea, (as in "eat"), ar, ou (as in "our"), ee, ay, oo (as in "good"), oo (as in "moon"), ar, ow (as in "cow"), ow (as in "show"), all, st, th, sh, cr; optional: at, it, in, y (as in "cry"), ai.

Another study was made with the purpose of preparing the Basic Second Grade Phonics List. This list was based on the phonograms derived at from the words in the Seventeenth Yearbook of the National Society for the Study of Education. The phonograms were listed in descending order of the number of words containing them. All the phonograms included in the first grade list were eliminated. From the remaining phonograms the ones occurring in five or more words were used. Phonograms occurring in seventy or more words of Thorndike's first
1,000 words were added to the list.

The following items were included into the final Second Grade Phonics List: (1) all consonant sounds, (2) final y (as in "country"), and (3) phonograms and letter groups: and, all, ent, ide, in, un, br, cl, dr, sp, wh.

A check on reliability of both the first grade and the second grade list showed that of the twenty-five first phonograms found by the first grade method, twenty-one occurred among the first twenty-five phonograms found by the second grade method.

Washburne reported that the requirements of phonics program in the first grades of Winnetka, Illinois Public Schools constitute: (1) a knowledge of the first fifteen of the fifty phonograms, making the next five optional, (2) a knowledge of the short vowel sounds and of the first four initial consonant combinations, and (3) a knowledge of all single consonant sounds.

In spring of 1927 the Winnetka second-grade teachers decided to make a new list of phonics for the second grade, as the list in use then proved to have become out-of-date. Washburne reported the results of the revision work which yielded a new Second Grade Phonics List. The revised list was based on analysis of each word on the Gates’s list "A Reading Vocabulary for the Primary Grades". This analysis showed the vowel sounds, the phonograms, and the initial consonant combinations. Each of these elements in each of the 1,500 words on the Gates’s list was recorded together with the rank order for that word as reported by Gates. In ten or more words from Gates’s
list were found: twenty-four single vowel elements, forty phonograms, and twelve initial consonant combinations. A very close relationship was observed between the 1923 first grade list and the first half of the new list based on the analysis of Gates's list vocabulary. The relationship between the 1923 second grade list and the new revised list was relatively slight. This finding justified the need for a revised second grade phonics list.

The Revised List of Phonics for the Second Grade recommended the following items: **single vowel elements**—e (silent, no effect on preceding vowel, as in "come"), o as in "so", y as in "any", a as in "all", "water"; **phonograms**—in as in "robin", ow as in "show", et as in "get", ai as in "rain", on, as in "done", it as in "sit", ea as in "bread", ir as in "girl", oo as in "look", and as in "hand", el as in "help", un as in "run", ill as in "will", oe as in "boat", igh as in "might"; **initial consonant combinations**—th as in "the", st as in "stop", sh as in "show", br as in "bring", ch as in "chair", el as in "close", gr as in "grass"; **other elements**—qu as in "squirrel", ng as in "long".

Washburne holds the opinion that lists like the ones he presented should be of value to primary grades teachers, in so far as phonics are justifiable in the teaching of reading. The second grade list showed which vowel sounds, phonograms, and initial consonant combinations would help the child in his attempt to read words which he is likely to meet in his primary reading.

Dolch made a study of school practices in teaching phonics in
order to determine which phonics should be taught as an aid to the child with his reading in the higher grades, when such phonics should be taught, and how should such phonics be taught. He studied 8,509 syllables to investigate in how far the twenty-four "important" phonograms, appearing on the Vogel and Washburne list help the child in pronouncing these syllables. Dolch found that these phonograms were identical with syllables only in a total of 1,001 cases, and that only in 2,826 cases they were found as a part of a syllable, thus totaling 38.7 per cent of the syllables studied. He rationalized that the phonic system presented to the child in the primary grades has been built upon monosyllables. On the other hand, the phonic principles taught to the child will be mostly applied by it in the subsequent nine years to what is called "extensive reading" and in the study of content text books. There are 16,000 words which the child will meet in his reading from the fourth grade on, which are predominantly polysyllables. The phonograms taught do not appear as syllables, though they may help in the sounding of syllables. Letter phonics are useful and should be taught at all levels of school work, but the proper attack upon polysyllables should be the teaching of syllabication. This should be practiced constantly, until most of the syllables become sight syllables.

According to Dolch phonics have no place in the first steps of teaching reading. Sight words should be introduced first, and after that initial sounds as a method in first grade reading. The study of the chief phonic principles should be completed by the end of the
second year. In the third year a review of the principles taught previously is needed. In the fourth year the child "supposedly" should have enough reading ability to carry on "extensive reading". The teaching of syllables could be begun as soon as the child is mature enough to concentrate on division of words into parts. Rules could be taught, but much practice would be needed to develop the facility in attacking polysyllables. Dolch thinks that a facility in syllabication should help in eliminating much of the remedial work in upper grades and in high school.

In his second study Dolch made another investigation in order to determine which of the 8,509 syllables analyzed could be classified as "common syllables" to be taught to the children as an aid in attack upon the new long words in their reading. Dolch found a total of 1,255 different syllables. Among these the highest ranking and the most common were -ing, -ed, and -er. Frequencies for the other syllables ranged from high to very low, and yielded no satisfactory basis for drawing a line between common and uncommon syllables. Thus if even one or two hundred commonest syllables could be identified and taught, there would be hundreds more the child would meet. When and how these common syllables should be taught were the two questions that Dolch left unanswered. He concluded that he could not find any proof to his own hypothesis that the teaching of common sight syllables would be a better aid in attack upon the polysyllables than the teaching of letter phonics, and that the latter might even be more practical.
16/

Gunderson made a plea for simplified phonics to be taught in the first and second grades. She studied ten reading manuals for these grades, published within three years before 1939, and found that the number of phonograms to be taught in these grades ranged from twelve in one manual to fifty-four in another, not including the teaching of consonant blends, digraphs, or words. Gunderson is of the opinion that this task is too difficult for a seven-year-old child, as there are 104 ways of representing thirteen vowel sounds, and besides that one vowel may have as many as 26-30 functions. Only a few phonograms of high frequency should be taught in the first two grades. According to Gunderson, letter phonics together with context clues cannot replace phonograms and it would not be desirable for the child to attack unfamiliar words letter by letter.

Gunderson presented the following simplified classification of phonograms for grades I and II:

1. **prefixes and suffixes**--ed, en, es, est, um;
2. **difficult phonograms**--ack, al, ang, ap, ëa, ëad, et, ew, ick, ock, ong, op, ot, uckland, um, ung, ut;
3. **unnecessary phonograms**--ark, atch, ear, ell, ent, er, ëe, is, igh, ink, ir, ish, oil, ook, oon, ought, ound, own, ox, ump, ur, ed (t);
4. **double-vowel phonograms**--able, ace, ai, ain, air, ake, ame, ære, ëa, ee, ide, ëe, ine, oe, oke, ore, ose;
5. **preferred phonograms**--ar, ay, ight, ing, oi, oo, 00 (as in "look"), ou, ow, ow (as in "show"), oy.
By the end of the second grade the pupil should apply several techniques to gain independence in reading: recognize and apply the preferred phonograms, the double-vowel rule, letter phonics, context clues, and the initial sound of the word. Gunderson stresses the need for the intermediate grades teacher to continue work on phonic analysis, as well as develop other techniques of word recognition, one of these being syllabication, or the "phonics of polysyllables", using the definition proposed by Dolch.

An inquiry has been made by Horn as to whether the English language is so unphonetic that it makes impracticable attempts at rationalization through phonetic teaching. Neither in spelling nor in reading have attempts through phonetic teaching given results that are very satisfactory. The investigations on effects of teaching phonics in reading have been quite extensive, though poorly controlled. The investigators did not agree upon the type of phonetic training to be given, nor did they agree as to how much phonics should be taught. This might be due to: (1) poorly controlled experiments, whereby the factor of phonetic training had not been skillfully isolated, (2) the fact that very few teachers teach any system of phonics as planned, or (3) the fact that many so-called "intrinsic" methods really include phonetic training, or (4) that possibly many children have built up a phonic system of their own without ever being taught phonics; and (5) another possibility of failure being the unphonetic character of the English language, which makes rationalization through phonics teaching unsuccessful. This last possible cause of failure of
instruction in phonics was the issue investigated by Horn.

Horn's investigation is based on the tables in Dr. Cordts's analysis of the representation of all the sounds in ten first, second, and third grade readers (Cordts, Anna D. "An Analysis and Classification of the Sounds of English Words in a Primary Reading Vocabulary". Ph.D. Thesis, Unpubl., State University of Iowa, 1925). Low frequency words were also included from the sources used by Dr. Cordts. He found: that in the first three grades the child will encounter a sound as in "paper" made in six different ways by utilizing the letter a (a, a-e, ai, ay, ea, not including the other ways of making the sound without utilizing the letter a); that the child will spell forty-four words in which the sound is made by the letter a followed by a consonant and the final e; that he will read ninety-five words with a total occurrence of 8975 in which the sound a is made in the same fashion; that there are actually forty-seven different sound-letter associations for the letter a in words occurring in the first, second, and third grade readers; that no one interpretation of the letter a has a majority of uses in its favor, though the most frequent value of a is the so-called short a (â), which is found in sixty-three words in spelling and in two hundred and twenty-three words in reading, with 60,295 occurrences in reading, counting repetitions; that there are eight different sound values for ea, with the total frequency of 14,650 occurrences in primary reading.

Horn concluded his analysis by accenting factors like the above-mentioned and pointed out that plans for teaching phonics should take
these into consideration. When this will be done, the results of teaching phonics should be more satisfactory. While the unphonetic character of the English language presents an obstacle, it is—according to Horn—not an unsurmountable one and should not lead to an interpretation that phonics should not be taught.

4

Atkins made an analysis of the phonetic elements in a basal reading vocabulary with the purpose of comparing the letter symbols occurring in it with the ideal standard of a phonetically perfect language, in which each written symbol would have but one possible sound. Her objective was to find out which of the letter symbols are of fairly constant pronunciation and of sufficiently frequent occurrence to make phonics a possible aid to a child who is learning to read. Thorndike's list of words most commonly used in reading was taken as a basis for the work. The frequency of occurrence of each pronunciation of the symbols in the list was tabulated. Final e and y following a consonant were added to the list as soon as their frequency of occurrence began to be apparent.

Atkins found that the range of frequencies for the symbols was very wide. Many of them occurred only once or not at all, and many others occurred less than fifty times in the entire list of 2,500 words. The symbols occurring most frequently were: er—235 times, and final e—528 times. In result of comparing the symbols with the standard "one symbol, one sound" the number of sounds per symbol ranged from one to eleven, the mean being 3.6. The symbol at occurred with eleven different pronunciations. In exactly one-half of the
symbols the number of unphonetic occurrences was found to be larger than that of phonetic. The phonetic occurrences of some symbols, such as -s, -y, ch, ai, and sh far outnumbered unphonetic occurrences. The symbol ee, with a phonetic frequency of 61, was found to have only two unphonetic occurrences, both with the same sound. The symbol or, on the other extreme, was found to have a phonetic frequency of 63 and unphonetic frequency of 70.

A total of 66 symbols was examined. Among these final e was found to rank first, receiving a total score of 2,112 occurrences. For only 36 symbols were found enough phonetic frequencies to outweigh the unphonetic frequencies. The range of scores for the symbols was found to be very wide. The diversity of sounds per symbol also was found to be great.

Based on the data of the above analysis Atkins made a conclusion that though all phonetic systems assume that single consonant and vowel sounds should be the first elements taught, no scientific investigation of their importance in relation to the phonetic standard had ever been made.

Some current practices in teaching phonics. Several surveys have been made to ascertain the extent of phonetic training in various school systems throughout the nation. Atkins conducted a survey of practices in thirty-six first grades in San Antonio, Texas public schools. Her study showed that in 1951-1952 first grade teachers in San Antonio school system presented more phonics than the manuals of the adopted readers recommended in the nine principal phonetic prac-
tices suggested by the manuals for the first grade work in reading, such as: (1) rhymes, (2) the sound of initial consonants, (3) the sound of final consonants, (4) introducing new words by the substitution of one initial consonant sound for another, (5) consonant digraph sounds, (6) addition of $s$ to root words, (7) addition of ing to root words, and (8) compound words. San Angelo first grade teachers started many phonetic practices earlier in the school year than manuals recommended, and taught phonics more days than the manuals suggested.

10/ Dickson studied eighteen reading manuals and found that all of them devoted considerable space to various phases of phonetic instruction. In two cases separate manuals had been published on teaching of phonics, acquainting the teachers with specific objectives of such instruction and illustrating approved methods of procedure. A preliminary period generally preceded the introduction of formal phonics. This preliminary period of instruction at present is of a longer duration than it used to be in 1920. Analytic-synthetic method is preferred in introducing formal phonics. Phonic work should be brought into close relation with the reading program and the drill should be limited to the child's discovery of the method of recognizing and blending sounds and phonograms into words.

To ascertain the varying extents to which particular practices with respect to phonetic analysis are employed in the primary grades, and to reveal the relation, if any, between the extent of phonetic emphasis and certain professional factors, such as the length of teaching experience and recency of course work in reading, Brownell.
conducted a survey of the actual practices of 627 teachers of grades I, II, and III, representing thirteen states and twenty-six school systems in urban and rural areas. As instrument used in the survey was a thirty item check list, the first twenty-eight items describing classroom activities relating to phonetic analysis, and the last two items dealing with the point of view or opinion concerning the place of phonetic analysis in the second term of the first grade. After the elimination of eighty-one check lists, the study proper was restricted to 546 check lists, of which 431 came from city systems and 115 from rural schools. The value one was arbitrarily given to all alternatives representing the least emphasis on phonics, values two and three to alternatives representing intermediate degrees of emphasis, and the value four to alternatives representing extreme emphasis on phonetic analysis. The actual range of emphasis proved to be from 36 to 110. For 152 first grade teachers from city schools the lower quartile was 63, median 72, upper quartile 83, the interquartile range 10.0; for 46 first grade teachers from rural schools the lower quartile was 64, median 74, upper quartile 84, the interquartile range 10.0; for 137 second grade teachers from city schools the lower quartile was 66, median 76, the upper quartile 85, the interquartile range 8.5; for 38 second grade teachers from rural schools the lower quartile was 70, median 78, the upper quartile 85, the interquartile range 7.5; for 142 third grade teachers from city schools the lower quartile was 69, median 77, the upper quartile 84, the interquartile range 7.5; for 31 third grade teachers from rural schools the lower quartile was 70,
median 79, the upper quartile 85, the interquartile range 7.5. Rural teachers, grade for grade, seemed to emphasize phonetic analysis more than the city teachers. While none of the differences were statistically reliable, the data showed an unvariable consistency. The data also showed an increase in emphasis from grade to grade. In both city and rural schools the largest amount of increase occurred between grades I and II. The critical ratios for the city schools were: 2.9 between the medians of grades II and I, 3.9 between the medians of grades III and I, and 0.8 between the medians of grades III and II. The critical ratios for the rural schools were 2.1 and lower, probably reflecting the influence of the smaller population. The data did not show any decrease in emphasis for grade III; they revealed even a certain amount of increase for that grade. The data revealed also a large overlapping from grade to grade. Most of the third grade teachers could have possibly transferred to the first grade where they would have continued to stress phonetic analysis about as they had before without attracting attention. This statement is referred only to gross amounts of emphasis and does not preclude the possibility of large differences in the pattern of phonetic activities stressed.

Accompanying the check list was a series of questions designed to facilitate various types of tabulation. The following facts were disclosed by these questions: (1) the expectation that teachers with a longer experience would stress phonetic analysis to a greater extent did not prove to be correct, (2) no relationship was disclosed between the recency of course work in reading and the amount of phon-
etic emphasis, (3) a reliable tendency was found for the amount of phonetic emphasis to agree with supervisory policy—the more local policy required regularity of systematic instruction, the greater was the emphasis.

In November 1935 the Research Division of the National Education Association reported the results of a survey of research and successful practices in reading instruction. Supervisors' opinions as to the types of instruction which received too little, or too much emphasis in various grades of the elementary school were analyzed. The analysis was based on replies received from 144 supervisors participating in this study. These supervisors reported not the work of their best teachers, but the general tendency among all the teachers under their supervision. The types of instruction believed by many supervisors to be in need of a greater emphasis included: silent reading to teach the pupils how to apply reading skills and silent reading appreciation, especially in the fourth, fifth, and sixth grades; silent reading to develop specific skills and free reading, in all the grades; drill to develop word recognition and instruction and drill in phonics, particularly in the second and third grades; 14 per cent of all the supervisors emphasized the need for more instruction in phonics in the first grade, 30 per cent—in the second grade, 35 per cent—in the third grade, 21 per cent—in the fourth grade, 13 per cent—in the fifth grade, and 11 per cent—in the sixth grade.

**Purpose**

Three separate studies were made to determine what phonograms will be most helpful to children in sounding out new words, in recognizing such letter groupings as occur in many commonly used words. An investigation as to the relative importance of such letter groupings was necessary in order to know which ones to teach.

**Materials**

For the *first grade phonics list*: Phonetic words in seven commonly used primers and first readers; phonograms in ten of the more modern primers and first readers; the word list from the Twentieth Yearbook of the National Society for the Study of Education.

For the *second grade phonics list*: Phonetic words in ten second readers; the word list from the Seventeenth Yearbook of the National Society for the Study of Education.

**Procedure**

This investigation had been made in the past two years preceding the publication of this study by a group of primary teachers in the Winnetka Public Schools.

The first of the three studies yielded results that were not entirely accurate but gave the method of ranking. It consisted of
listing all "phonetic" words in seven commonly used primers and first readers. These words were listed according to phonograms they contained. Number of times and number of readers in which the words occurred were tabulated after each.

As criterion was used the number of "book-words" in which a phonogram occurs. The number of "book-words" is found by scoring each word with the number of different books in which it occurs and adding all such scores under any given phonogram. It was not possible to use the ranking of the phonograms from the first study because of the lack of a clear understanding on the part of all the investigators as to what made a word "phonetic". The result of this study was securing the "means" of ranking.

The second study was conducted by Miss Vogel. In this study a phonetic analysis of the word list from the Twentieth Yearbook of the National Society for the Study of Education was made.

As a phonogram was defined any group of letters beginning with a vowel and not forming more than one syllable; thus the word "grandma" contains the following vowel sounds: a as in "grand" and a as in "ma"; the following phonograms: an and and; and the initial consonant combination gr.

The relative importance of the first fifty of the 345 phonograms in ten of the more modern primers and first readers was investigated.

**Findings**

The phonograms which were found important in one group of
readers were equally important in an entirely different group of readers; thus the phonograms ranking high in importance are probably important in any group of readers.

List of the First Fifty Phonograms Ranked in Order of Importance

Sum of final e
sum of ea
ed (ending)
ing (ending)
er (ending)
sum of ea (neat)
sum of an
sum of ou (our)
sum of en
sy
sum of oo (good)
an
sum of oo (moon)
sum of ar
ing (ring)
sum of ow (cow)
sum of ow (show)
il
sum of at and atch
sum of it
sum of in
y (cry)
at

sum of ai
en (ending)
ea

sum of ea (bread)
all
ick
ake

sum of or
ess
ook
ear
ell
op

un

sum of ir
ight
old
ot

sum of ea
ap
and
ook
"sum of final e" in this table means the sum of all the phonograms in which the initial vowel was lengthened by silent e, such as ate, ike, ese. Ake is the only phonogram of this type that has a place in the first fifty phonograms. The sum of all "final e's" would indicate that the rule for lengthening the vowel before final e should be taught, but not the phonograms themselves.

"Sum of ea, of ou, etc. are again cases where the prevalence of these letter combinations make it important to teach them, but the lack of any persistent consonant endings makes it undesirable to teach several separate ea or ou phonograms.

To the above list was added a rank list of initial consonant combinations taken from the Yearbook list only. In order of importance, these consonant combinations are: st, th, sh, gr, br, dr, wh, pl, fl, sp, ch, bl, sw, fr, cr, cl, sn, sm, tw.

The Basic First Grade Phonics List

(1) All short vowel sounds
(2) All simple consonant sounds
(3) Rule for lengthening vowel before final e
(4) Phonograms and letter groups:

   ee, ed (ending—"looked"), ing, er (ending), ea ("eat"), an, ou
The Second Grade Phonics List

This list was a result of a separate study and was prepared from the Seventeenth Yearbook list of words occurring fourteen or more times in ten second readers. It was prepared before the basic list of first grade phonograms was made and was based on somewhat different criterion. This phonics list resolved itself into a list of phonograms in descending order of the number of listed words containing them.

All the phonograms that are taught in the first grade were eliminated. From the remaining list the ones were used that occurred in five or more words. To this list were added phonograms which were not in either of Washburne’s lists but occur in seventy or more words of Thorndike’s first 1,000 words, since sooner or later the children would meet these words in their reading.

This study yielded the following list of second grade phonograms and consonant combinations:

(1) all consonant sounds

(2) final y (“country”)

(3) and, all, ent, ide, in, un, br, cl, dr, sp, wh.

As a check on the reliability of both the first grade list and the second grade list, the same criterion was applied to the first grade list as was used for the second grade list. It showed that of the first twenty-five phonograms found by the first grade method...
twenty-one occurred among the first twenty-five phonograms found by the second grade method.

**Application**

The requirements of the first grades of Winnetka, Illinois Public Schools are as follows: (1) knowledge of the first fifteen of the fifty phonograms, making the next five optional, (2) a knowledge of the short vowel sounds and of the first four of the initial consonant combinations, and (3) a knowledge of all single consonant sounds. In order to pass to second grade reading a child must be able to read at sight material containing new words made up of the required phonograms or capable of sounding these out correctly by the use of consonant and short vowel sounds.

A much used device to teach phonograms in the above school system is a mimeographed booklet with a list of all of the required phonograms and consonant combinations on the first page followed by a page for each phonogram on which all primer and first reader words containing this phonogram are listed. Every four pages are followed by a review with words containing the preceding phonograms mixed together.

**Purpose**

Revision of the second grade list of phonics.

**Materials**

"A Reading Vocabulary for the Primary Grades" by Gates was selected as the best available list of words likely to be useful to children in the primary grades.

**Procedure**

The second grade teachers in Winnetka reached the conclusion that the second grade list of phonics was not satisfactory. This list was based on words in readers of a type no longer commonly used. It was also realized that the Thorndike list was made up largely on the basis of adult literature, and that those phonograms which may be frequently found in adult literature may occur too rarely in the literature of the primary grades to justify their inclusion in a list of phonics for the primary.

In spring of 1927 the Winnetka second grade teachers decided to prepare a new list of phonics for the second grade, based on a list more up to date than that contained in the Seventeenth Yearbook of the National Society for the Study of Education.

Each word on the Gates's list "A Reading Vocabulary for the Primary Grades" was analyzed in three ways: to show the vowel sounds,
the phonograms, and the initial consonant combinations. A phonogram was defined, as it was in the study reported in 1923, as any group of letters beginning with a vowel and not forming more than one syllable.

Each of these elements in each of the 1,500 words in the Gates's list was recorded on a card together with the word from which it was derived and the rank order for that word as reported by Gates. The cards were assembled alphabetically and then within each letter grouping by sound, thus making it possible to determine the number of different words in which any given combination of letters occurs with the same sound.

There was some discussion as to whether to take into consideration the rank order of each word in which a phonogram occurs. It would seem that the more frequently a child will meet a certain phonogram, the more important it is to teach this phonogram. On the other hand, a word of high frequency tends to become a sight word and therefore does not require phonic analysis. Since there was no way of knowing the point at which word frequency tends to make phonic analysis unnecessary, it was decided to ignore this factor and to count only the number of different words in the Gates's list in which any given letter group occurs. All the words in Gates's list are words of reasonably high frequency in primary reading.

**Single Vowel Elements** found in ten or more words in the Gates List (in rank order):

1. (him)
2. (white)—lengthens the preceding vowel; e as in "come" does not
er (never)
e (bed)
a (at)
e (after)
i (bite)
silent e (come)
o (so)
u (bunch)
o (drop)
y (heavy)
a (cage)
a (among)
o (son)
a (art)
e (broken)
a (fall)
e (because)
o (across)
i (dirt)
e (be)
o (or)
o (do)
y (why)

Phonograms found in ten or more words in the Gates list:

er (never)
e (read)
en (then)
se (heel)
an (can)
in (skin)
ar (hard)
ou (cloud)
oo (moon)
ow (show)
ing (spring)
et (yet)
sai (pail)
on (done)
it (hit)
ow (town)
sy (play)
sa (bread)
ir (circus)
oo (brook)
end (stand)
elt (help)
un (run)
il (hill)
oa (boat)
igh (sight)
uck (brick)
ight (bright)

om (coming)

cr (got)

cr (nor)

de (hide)

ell (bell)

at (fat)

ead (bread)

ak (bake)

es (best)

ut (but)

ock (rock)

ol (cold)

---

**Initial Consonant Combinations** found in ten or more words in the Gates list:

th (then)

st (stair)

sh (shake)

br (branch)

ch (chair)

cl (clang)

gv (grade)

wh (what)

cr (cracker)

fr (frank)
There is a very close relation between the 1923 first grade list and the first half of the new list based on the vocabulary study by Gates. The relation between the 1923 second grade list and the present list, however, is relatively slight. This fact seems to confirm the conclusion of the Winnetka second grade teachers that the 1923 list of phonics needed revision.

A new second grade phonics list was prepared from the above tables. Certain single vowels appearing in the table are omitted from the recommended list for pedagogical reasons, as taught in phonograms, or too similar to another sound, or taught only in sight words (o as in "do").

Recommended List of Phonics for the Second Grade

Single Vowel Elements:
- e (come)—silent, no effect on preceding vowel
- o (so, over)
- y (any, pretty)
- a (all, water)

Phonograms:
- in (robin, wind)
- ow (snow)—ow as in "cow" in the first grade list
- et (get)
- ai (rain, paint)
- on (done)
it (sit, little)
ea (bread, head)
ir (girl, bird)
 oo (look)
 and (hand)
el (help, well)
un (run, under)
ill (will)
 oa (boat, coat)
 igh (might)

Initial Consonant Combinations:

th (the)
 at (stop)
 sh (show)
 br (bring)
 ch (chair)
 cl (close)
 gr (grass, green)

Other Elements:
 qu (squirrel, queer)
 ng (long)

Conclusions

In so far as phonics are justifiable in the teaching of reading, such lists as those given here should be of distinct value to second
grade teachers as showing which vowel sounds, phonograms, and initial consonant combinations will be useful to the child in attempting to read the words which he is likely to meet in his primary reading.
Dolch, E.W. "Phonics and polysyllables". Elementary English Review
15: 120-124, April 1938.

**Purpose:**

To determine (1) what phonics should be taught, (2) when should such phonics be taught, and (3) how should such phonics be taught.

**Procedure**

Dolch made a study of 8,509 syllables and investigated in how far the twenty-four "important" phonograms as they appear on the Vogel and Washburne list help in pronouncing these syllables.

The following findings resulted from this study:

<table>
<thead>
<tr>
<th>Phonogram</th>
<th>Times Found as a Syllable</th>
<th>Per Cent</th>
<th>Times Found as part of a Syllable</th>
<th>Total Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ing</td>
<td>240</td>
<td>2.8</td>
<td>17</td>
<td>3.0</td>
</tr>
<tr>
<td>er</td>
<td>223</td>
<td>2.6</td>
<td>467</td>
<td>8.0</td>
</tr>
<tr>
<td>ed</td>
<td>125</td>
<td>1.4</td>
<td>204</td>
<td>3.8</td>
</tr>
<tr>
<td>or</td>
<td>16</td>
<td>.2</td>
<td>164</td>
<td>2.1</td>
</tr>
<tr>
<td>ir</td>
<td>2</td>
<td>.2</td>
<td>15</td>
<td>.2</td>
</tr>
<tr>
<td>ar</td>
<td>21</td>
<td>.2</td>
<td>177</td>
<td>2.0</td>
</tr>
<tr>
<td>at</td>
<td>14</td>
<td>.2</td>
<td>68</td>
<td>.5</td>
</tr>
<tr>
<td>et</td>
<td>-</td>
<td>-</td>
<td>60</td>
<td>.6</td>
</tr>
<tr>
<td>it</td>
<td>15</td>
<td>.2</td>
<td>77</td>
<td>.8</td>
</tr>
<tr>
<td>an</td>
<td>71</td>
<td>.8</td>
<td>283</td>
<td>3.9</td>
</tr>
<tr>
<td>en</td>
<td>50</td>
<td>.6</td>
<td>273</td>
<td>3.5</td>
</tr>
<tr>
<td>in</td>
<td>93</td>
<td>1.1</td>
<td>160</td>
<td>1.8</td>
</tr>
<tr>
<td>(not counting -ing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The above table showed that schools teach phonics which are based upon an analysis of the common words, predominantly monosyllables, or monosyllables with inflectional endings, such as -ed or -ing.

Phonics have no place in the first steps in teaching reading. The beginning reading should be introduced with sight methods. After that initial sounds should be introduced as a method during the first year and the study of the chief phonic principles should be completed by the end of the second year. A review of these principles is needed in the third year. In the fourth year an average child supposedly
has enough reading ability to carry on what is called "extensive reading". It is during the nine years that follow the primary grades that phonics is going to be needed both for extensive reading and for study of content text books. Therefore a phonic system which is built upon monosyllables is to be used upon new words which are predominantly polysyllables. There are 16,000 words which the child will meet in his reading from the fourth grade on (Buckingham, B. R. and Dolch, E. W.) A Combined Word List. Boston: Ginn and Company, 1936). The above table proves that the important phonograms are not the same as syllables in longer words. Teaching phonograms we do not teach syllables. The phonograms do appear in polysyllables, but not as syllables, though they may help in sounding syllables. Letter phonics are useful and should be recognized at all levels of school work. But letter phonics is not the only possibility for attack on polysyllables. The proper attack on polysyllables should be the teaching of syllabication. Much practice should be needed until the syllables become sight syllables. When we see a new long word, we should be able to recognize some of the syllables instantly (like: pro-, -tion), and have to sound out only one or two others. Letter phonics serve as an expedient when all else fails. Phonograms are of doubtful help in the attack on polysyllables that is essential for independent reading at all levels. The teaching of syllables could be begun as soon as the children are mature enough to concentrate on division of words into parts. This work should be continued year after year until there is a real facility in this attack on long words. Rules may be taught,
but much practice is necessary to develop the skill. facility in
attacking polysyllables should go far in eliminating much of the
remedial work in reading in the upper grades and in high school.
Teaching of syllabication, according to the author, is a neglected
field of instruction, a means to an end.

Purpose:
To supplement the previous study on "phonics and polysyllables"; to find certain common syllables which could be taught to children in order to help them with the polysyllables in their reading.

Procedure
8,509 syllables discussed previously were analyzed again. The problem consisted in finding among this number certain common syllables. As a result of this analysis 1,255 different syllables were found. The syllables -ing, -ed, and -er were the highest ranking ones. Frequencies for the other syllables, no matter how computed, ranged from high to very low and yielded no satisfactory basis for drawing a line between common and uncommon syllables. It was found out that even if one or two hundred common syllables could be identified and taught, there would be hundreds more to be met with.

Conclusion
There is no proof that teaching a child the common sight syllables would be a better aid in attacking polysyllables than teaching letter phonics. The latter might even be a more practical answer. Even after a list of common syllables would be decided upon, the question would still remain when should these syllables be taught and how.
Perhaps a well developed skill in working out any syllable, common or uncommon, would give a child the best aid in attacking the host of polysyllables which he will always meet in his reading. More research would be needed to determine how this problem could be best solved.
Purpose:

To help answer the question what phonics should be taught, and to make a plea for simplified phonics, particularly in the first and second grades.

Procedure

In looking over the reading manuals and courses of study the author is amazed at the large number of phonograms that children are expected to learn. In ten reading manuals published within the last three years the number of phonograms to be taught in the first and second grades ranges from twelve in one manual to fifty-four in another, not including consonant blends and digraphs or words. As there are 104 ways of representing the thirteen vowel sounds, and as one vowel may have 26-30 functions, the task for a seven-year-old child to learn all the ways of expressing vowel sounds may become too enormous.

A child must learn certain phonograms, such as all, and, at, in, old, or, which occur frequently in his reading; using these as phonograms does not add to his vocabulary load. Some prefixes, such as ed, en, er, est, un, may have a reason for being taught; however, these could be postponed until the third or fourth grade.

The double-vowel phonograms (with the first vowel long and the second silent), as in meat, mail, rode, time, may be grouped and
taught in one lesson. The author found that children have no more
difficulty with the group than with one phonogram, if their attention
is called to the generalization that only four letters (a, e, i, o)
"take partners", and that only these letters "may be partners".

The long sound of "u" should be omitted from the primary
readers, as words with the long sound of "u" are seldom used.

Only a few phonograms of high frequency should be taught, in
order that phonics may not become an additional burden for the child,
but may be made a means of easing the reading task.

The phonograms er, ir, ur may be omitted and letter phonics
should be substituted for these. They have the same sound as the
consonant "r", as in purred, older.

As many as possible of the meaningless word elements should
be eliminated, such as: ack, ock, uck, ick, ut, ot, et, and ell
(they represent short vowel sounds), and letter phonics substituted.

Letter phonics, together with context clues, prove helpful,
although they cannot replace the learning of phonograms, nor should
it be desirable for a child to attack an unfamiliar word letter by
letter.

_Simplified Classification of Phonograms_ to be taught in grades

I and II:

_prefixes or suffixes:_ ed, en, es, est, un

_difficult phonograms:_ ack, sl, ang, ap, sa, Aad, et, ew, ick, ock,
ong, op, ot, uck, um, ung, ut

_unnecessary phonograms:_ ark, atch, ear, ell, ent, er, ls, ig, igh,
ink, ir, ish, ool, ool, own, ox, ump, ur, ed (t)

Double-Vowel Phonograms: able, ace, ai, ain, air, ake, ame, are, eae, ee, ide, lee, ins, oo, oke, ore, ose

Preferred Phonograms: ar, aw, ay, ight, ing, oi, oo, oo (look), ou, ow, ow (show), oy

By the end of the second grade the pupil should use several techniques in gaining independence in reading: recognize and apply the preferred phonograms, the double-vowel rule, letter phonics, context clues, and the initial sound of the word. If he uses these methods, he should be well on the way to becoming an efficient reader.

Phonics in the Intermediate Grades. The teacher in these grades must continue phonic analysis, as well as the other techniques of word recognition, to the end that every child may become an efficient reader. Author agrees with Dolch that what schools definitely need is the teaching of the phonics of polysyllables in the intermediate grades.

A list of phonograms and other helps useful in sounding out polysyllables would be a worth-while contribution to the field of intermediate grade reading.
Horn, Ernest. "Child's Early Experiences with the Letter A". 


**Purpose**

This study is an inquiry as to whether the English language is so unphonetic that it makes impracticable attempts at rationalization through phonetic teaching.

**Procedure**

Neither in reading nor in spelling have attempts at rationalization through phonetic teaching given results which are very satisfactory. Children who have had training in phonics do not show, according to the rather meagre evidence that is available, any significant superiority in spelling.

The investigations of teaching phonics in reading have been more extensive, though poorly controlled, but even here the investigators do not agree upon the type of phonic training that should be given; they also do not agree as to how much phonics, if any, should be taught.

This is possibly due to several causes: (1) poorly controlled experiments; the factor of phonic training has not been skillfully isolated in the experiments; (2) possibility that many children who have not been taught phonics have made their own comparisons between words and have built up a phonic system of their own; (3) many of the so-called "intrinsic" methods really include phonic training; (4) an analysis of existing phonic systems shows that many of them
either contain serious phonetic inaccuracies or are clumsily devised; it is also likely that few teachers teach any system of phonics as has been planned to be taught; (5) the unphonetic character of the English language may constitute an unsurmountable barrier to successful rationalization.

Each of these factors helps to account for the fact that up to the present time the results of investigations are not in agreement as to the kind or amount of phonic teaching which should be recommended.

This study is a partial inquiry into the last possibility enumerated above.

The data in spelling are presented on the assumption that the child has studied throughout the first three grades a certain speller in wide current use. The data on reading are based on the detailed tables in Dr. Cordts's analysis of the representations of all the sounds in ten first, ten second, and ten third grade readers (Cordts, Anna D. "An Analysis and Classification of the Sounds of English Words in a Primary Reading Vocabulary". Ph.D. Thesis, Unpublished, State University of Iowa, 1925). Low frequency words were also included from the sources used by Dr. Cordts.

The child will see the sound ā as in "paper" made in six different ways by utilizing the letter a: a as in "paper", ā as in "ate", āi as in "fail", ay as in "day", āe as in "great". There are, of course, other ways of making this sound without utilizing the letter a.

The child will spell forty-four words in which the sound is
made by using a followed by a consonant and a final e. He will read ninety-five words with a total occurrence of 8,975 in which the sound is made in the same fashion.

There are forty-seven different sound-letter associations for the letter a in words actually occurring in first, second, and third readers. Thus: a expresses twelve sounds, ai expresses four sounds, ay expresses five sounds, a followed by a consonant and so-called silent a expresses six sounds; one day the child must sound oa as in "broad", the next day—oa as in "boat". Moreover, the child will soon be confronted by new values for a, as i (isle) and a (game).

No one interpretation of the letter a has a majority of uses in its favor either as measured by the number of different words falling under it or the total frequency of occurrence as measured by running words. The most frequent value for a is the so-called short a (ə), which is found in sixty-three words in spelling, and two hundred and twenty-three words in reading, with 60,295 occurrences in reading, counting repetitions.

As for the interpretation of ea, there are eight different sound values for ea. Total frequency of these in reading is 14,650 occurrences.

From the point of view of a primary child there are additional complications due to the fact that some of the vowels with which the letter a sometimes forms a digraph are not infrequently separated from a in syllabication, influence the sound of consonants, or are actually used as consonants.
Conclusion

From the above data one cannot conclude that phonics should not be taught. One can only conclude that plans for teaching phonics must take into account such factors as are here presented. When this is done the results of teaching phonics should be undoubtedly more satisfactory. While the unphonetic character of the English language constitutes a real obstacle to successful rationalization, it is not necessarily an unsurmountable one.

Purpose:

(1) To compare the letter symbols occurring in a basal reading vocabulary with the ideal standard of a phonetically perfect language, in which each written symbol would have but one possible sound or pronunciation, and each distinct sound would be represented by but one written symbol; (2) to find out which of these letter symbols are of fairly constant pronunciations and of sufficiently frequent occurrence to make the establishing of a bond between the symbol and the sound as a possible aid to a child who is learning to read.

Procedure

Thorndike's list of the words most commonly used in reading (Edward L. Thorndike. The Teacher's Word Book. New York: Teachers College, Columbia University, 1921), was taken as a basis for all the work, not because this list is regarded as perfect, but merely because it was the best list available at the time. This list is being considered by the author as poorly adapted for research in primary reading for two reasons: (1) it was not compiled exclusively from children's literature, and (2) it fails to list separately derived forms, which are in constant use in first readers, such as buys, taller, running, and walked. The newer primary readers are, nevertheless, based on the Thorndike list. Because of that a study of phonetic elements in this particular list was considered of major
importance.

The frequency of occurrence of each pronunciation of each of the symbols in the list was tabulated. Final e and y following a consonant were added to the list and considered separate symbols as soon as their frequency began to be apparent.

The range of frequencies for these symbols was found to be very wide. Many symbols were found to occur only once or not at all, and many others were found to appear less than fifty times in the entire list of 2,500 words. At the other extreme were found er, with a frequency of 235 and final e, with a frequency of 528.

In result of comparing the symbols with the standard "one symbol, one sound", the number of sounds per symbol was found to range from 1 to 11, the mean being 3.6, instead of the single one required by the phonetic standard. The symbol occurred with eleven different pronunciations (like: what, nation, etc.).

In the case of exactly one-half of the symbols the number of unphonetic occurrences was found to be larger than the number of phonetic occurrences. On the other hand, the phonetic occurrences of some symbols, such as -e, -y, ch, ai, and sh far outnumbered their unphonetic occurrences. The symbol ee with a phonetic frequency of 61, showed only two unphonetic occurrences, both with the same sound. In contrast to this, the symbol or with a phonetic frequency of 63, was found to have 70 unphonetic occurrences.

The author examined a total of 66 symbols. Among these the final e was found to rank first in frequency, receiving a total score
Conclusions

For only thirty-six symbols were found enough phonetic frequencies to outweigh the unphonetic frequencies and thus to secure a positive score for the symbol.

The range of scores for the symbols was found to be very wide. Only a small number of symbols scored high enough to have significant value. The diversity of sounds per symbol was also found to be great.

Nearly all phonetic systems assume that single consonant sounds and single vowel sounds should be the first elements taught, although no scientific investigation of their importance in relation to the phonetic standard has ever been made.

The author studied eighteen reading manuals in the present investigation and found out that they devote considerable space to various phases of phonic instruction. In two cases separate manuals were published on the teaching of phonics, acquainting teachers with specific objectives of such instruction and illustrating approved methods of procedure.

The author found that there is a preliminary period in the education of the child before the introduction of formal phonics. This preliminary period is of a longer duration at present than it used to be in 1920.

Phonic work should be brought into closer relation with the reading program and the drill should be limited to the child's discovery of the method of recognizing and blending sounds and phonograms into words. The analytic-synthetic method is preferred to formal drill.
Akins, Thelma Shaw. "First Grade Phonics in Texas Schools".  

**Purpose**

A survey of actual practices in thirty-six first grades in the San Angelo, Texas public school system concerning the use of phonetic practices during the school year 1951-1952.

This survey was made by the author to use as a part of the thesis "Phonics: A Survey of Actual Practices in Thirty-Six First Grades", which was presented to the University of Texas in partial fulfillment of the requirements for the degree of Master of Education.

**Procedure**

A personal interview with each of the thirty-six teachers of first grades in the San Angelo school system was used as a means of determining the actual practices in phonetic teaching in use during the school year 1951-1952.

All of the teachers were using as basal texts *The Curriculum Foundation Series* by William S. Gray and others.

**Findings**

The study of survey revealed that the San Angelo first grade teachers presented more phonics than the manuals of the adopted texts recommended in the nine principal phonetic practices suggested by the manuals for first grade work: (1) rhymes, (2) the sound of initial consonants, (3) the sound of final consonants, (4) introducing new words by the substitution of one initial consonant sound for another,
(5) consonant digraph sounds, (6) addition of _s_ to root words, (7) addition of _ing_ to root words, (8) addition of _ed_ to root words, and (9) compound words.

Additional phonics was presented to the first graders in these areas: (1) the sound and appearance of letters in initial position in words, (2) the final consonant sounds of words, (3) the addition of _ed_ and _ing_ to root words, and (4) compound words.

The teachers presented: (1) rhymes, (2) consonant digraph sounds, (3) new words by the substitution of one initial consonant sound for another, and (4) the addition of _s_ to root words at the same time as recommended by the manuals.

San Angelo teachers presented phonics more days than the manuals suggested.

The over-all view showed that San Angelo first grade children in 1951-1952 were taught more phonics than the manuals recommended.

The study also revealed that San Angelo first grade children began receiving phonetic training as early as they could be expected to profit from it, judged by research upon the subject. The research upon which this judgment was based, was that conducted by Dolch and Bloomster. The burden of phonetic training came in the latter half of the first grade. At this same period about half of the children could be expected of having reached the M.A. of seven years, which Dolch and Bloomster have found to be the lowest mental age at which a child could be expected to use phonics.

Many phonetic practices were introduced earlier in the school
year than manuals of the adopted texts recommended.

Purpose:
To ascertain the varying extents to which particular practices with respect to phonetic analysis are employed in each primary grade, and to reveal the relation between extent of phonetic emphasis and certain professional factors, such as the length of teaching experience and recency of course work in reading.

Materials
A thirty item check-list was used in the survey; the first twenty-eight items of this list describe classroom activities relating to phonetic analysis, and the last two deal with the point of view or opinion concerning the place of phonetic analysis in the second term of grade I.

Procedure
The check-lists were sent to the teachers whose names were listed by third grade pupils as their teachers during the five preceding terms or semesters. Check-lists were returned by 627 teachers of grades I, II, and III, representing thirteen states and twenty-six school systems. 81 check-lists were eliminated. The study proper is restricted to 546 papers, of which 431 came from city systems and 115 from rural schools.
The value one was arbitrarily given to all alternatives which represent the least emphasis, values of two and three to alternatives which represent intermediate degrees of emphasis, and the value of four to alternatives which represent extreme emphasis on phonetic analysis. The actual range proved to be from 36 to 110.

**Findings**

Medians, upper and lower quartiles, and interquartile range of scores given on check-list of phonetic practices by teachers in city and rural schools:

**Grade I.** In city schools: 152 teachers, lower quartile 63, upper quartile 83, median 72, interquartile range 10.0; in rural schools: 46 teachers, lower quartile 64, upper quartile 84, median 74, interquartile range 10.0.

**Grade II.** In city schools: 137 teachers, lower quartile 66, upper quartile 83, median 76, interquartile range 8.5; in rural schools: 38 teachers, lower quartile 70, upper quartile 85, median 78, interquartile range 7.5.

**Grade III.** In city schools: 142 teachers, lower quartile 69, upper quartile 84, median 77, interquartile range 7.5; in rural schools: 31 teachers, lower quartile 70, upper quartile 85, median 79, interquartile range 7.5.

Rural teachers, grade for grad, seem to emphasize phonetic analysis more than do city teachers. While none of the differences are statistically reliable, an argument for the authenticity of the
differences can be advanced from the consistency of the data.

The data disclose an increase in emphasis from grade to grade. In both city and rural schools the largest amount of increase occurs between grades I and II. The critical ratios for the city schools are: between the medians of grades II and I 2.9; between the medians of grades III and I 3.9; between the medians of grades III and II 0.8. The critical ratios for the rural schools are 2.1 and lower, probably reflecting the influence of the small population. There is no decrease in emphasis, and perhaps even an increase, in grade III. There is a large overlapping from grade to grade. Most of the third grade teachers could transfer to grade I and continue to stress phonetic analysis about as they had before without attracting attention. This statement refers only to gross amounts of emphasis and does not preclude the possibility of large differences from grade to grade in the pattern of phonetic activities which are stressed.

The thirty items on the check-list represented genuine phonetic activities in which teachers may or may not have their pupils engage. Items were obtained from an examination of texts on the teaching of reading and from the experience and observations of specialists in the field. Accompanying the check-list was a series of questions designed to facilitate various types of tabulation. Purpose of these tabulations was to determine by simple procedures the relations between certain factors and instruction in phonetic analysis. The facts disclosed by these questions were:

(1) The expectation that teachers with longer experience would stress
phonetic analysis to a greater extent was not borne out. (2) No relationship was found to exist between recency of course work in reading and the amount of emphasis on phonetic analysis. (3) A reliable tendency for the amount of phonetic emphasis to agree with supervisory policy was disclosed: the more local policy required regularity of systematic instruction, the greater the emphasis.
CHAPTER IX

SUMMARY

The foregoing chapters were the result of an attempt to summarize and classify according to their objectives a number of experimental studies, undertaken mainly with the purpose of determining the effects of instruction in phonics upon the children's later achievement in various phases of reading and spelling. Only two of the studies reported tried to measure the relationship between mental ability and phonic ability in first grade children, namely those conducted by Arthur, and by Dolch and Bloomster.

This summary could not be considered by any means as a complete one. Only the results of research studies, reported in various educational periodicals, have been summarized. A great number of educators have published their opinions about phonics, and have attempted to suggest the advisability or non-advisability of teaching them, the need for them, and how to teach them. The controversy as to the relative merits of phonic or non-phonic methods could be traced back to the beginning of the nineteenth century in the United States, and in England as well. These controversial issues were considered irrelevant for the purpose of the present study.

The research findings were by no means uniform as to the value of either one of the methods used in reading instruction.
Some of the early studies reported that both of the methods had their values and also their weak points, if overemphasized. Such observations were made by Currier and Duguid in their two studies, and by Buswell. The latter made a series of photographic recordings of eye movements of children in first grade reading. The ability of attacking new words more accurately, but reading more slowly and rather in word than in thought units was reported after observation of reading habits of children taught by the phonic method. Lack of accuracy in attacking new words and guessing or reading from memory were observed in children who had been taught to read by the look-and-say method. A photographic recording of eye habits was undertaken also by Mosher and Newhall. The data of their findings showed that in eight cases out of ten the differences on speed and comprehension in reading favored the phonic group, though the differences were not statistically significant. Sexton and Herron conducted the so called "Newark Phonics Experiment" to test the value of phonics in teaching of beginning reading. Final tabulations of the results for ninety-four pupils in the phonic group and for ninety-seven pupils in the non-phonic group showed gains for the phonic group on all of the reading tests. The examiners admitted, though, an element of mathematical inaccuracy in totaling and averaging the scores. It was also interesting to note that a comparison of results between the phonics and the non-phonics classes taught by the same teacher within the same school showed less difference than a comparison of results between the same grades
among different schools. Garrison and Heard conducted a similar experiment with four groups of beginning first grade children, continuing the study with the same children through the second and the third grade. They found that in reading the scores of the bright phonic group were a little higher than those of the bright non-phonic group at the close of the first, the second, and the third grade, except on a few tests, on which the differences favored the bright non-phonic group (on Gray Oral Reading Test at the close of the first grade and on New Stanford Test, Part I, at the close of the third grade). The scores of the dull non-phonic group were slightly higher than those of the dull phonic group at the close of the first grade, except on one test; at the close of the second grade the dull non-phonic group exceeded the dull phonic group on all of the tests, except on Gates Reading Test, Type 3; at the close of the third grade the differences favored the dull phonic group on all of the tests. In spelling the phonic groups, both the bright and the dull, exceeded the respective non-phonic groups on the majority of tests. Tate conducted two experiments to determine the influence of phonics and of total non-use of phonics on silent reading. In the first experiment he found that the experimental phonic group gained only slightly in word recognition over the non-phonic control group. In the second study the experimental non-phonic group was found to be inferior to the phonic control group. The differences were statistically insignificant and the interpretation lacked accuracy. Data for the
inadequately matched groups were hardly comparable.

Gates and Russell investigated the effect of varying amounts of phonics on primary reading and spelling and found that a group of children receiving a moderate amount of informal phonetics was superior to the groups receiving large amounts of conventional phonetics or a very small amount of phonetics. These findings were based on the scores of the three groups tested in the experiment.

Agnew in his experimental study tested carefully matched groups of third grade children. One group was comprised of pupils with a comparatively small phonic experience through grades one to three. These children were tested and the results compared with the scores of a matched and paired group of children who had received substantial and constant amounts of phonic experience through grades one to three. Analysis of the data showed that for the groups tested phonics increased skill in word recognition, aided the children in learning new words, improved accuracy in oral reading, though made it slower, and aided the children in word pronunciation. No reliable differences were disclosed between the scores of the two groups on silent reading tests. Rev. McDowell conducted a series of tests with fourth grade pupils from parochial schools, contrasting two matched groups: an experimental group taught through the first three grades by a conventional phonic method, and a control group taught through the first three grades by a method which included phonetic training only as a subsidiary word-attack skill. On Iowa Silent Reading Test the differences were found to be significantly
in favor of the control group on rate of reading, on paragraph comprehension, and on the use of index, while the experimental phonic group excelled in alphabetizing. On the Metropolitan Achievement Test the differences in reading favored the control group, while the difference in spelling very significantly favored the experimental phonic group.

Ruswell evaluated and reported the results of a ten-year experiment in teaching children to read by means of an entirely non-oral method, initiated in Chicago schools by James McDade. No significant differences were disclosed in favor of either the oral or the non-oral groups. There was no means of controlling many influencing factors through the duration of the experiment, thus restricting the interpretation of the test results.

Murphy and Junkins evaluated the effectiveness of a formalized program in auditory and in visual discrimination in first grade reading, after having conducted an experiment with three groups of first grade children beginning reading instruction. The experimental auditory group received a special thirty-lesson instruction in auditory discrimination, the experimental visual group received a special thirty-lesson instruction in visual discrimination, while the control group received the regular classroom instruction. Statistically significant differences were found in gains of the auditory and of the visual experimental groups on Detroit Word Recognition Test. The retention rate had doubled for the two experimental groups after the training period, while the
score of the control group increased at the same time only slightly. Rogers studied seventy-two poor readers from a college freshman class, giving a special training in phonics to the half of this group and comparing their test scores before and after the training in phonics with the test scores of the second half, who were used as a control group and did not receive the special training in phonics. The analysis of records showed that gains in pronunciation significantly increased comprehension in reading for the group trained in phonics. Tiffin and McKinnis studied groups of fifth, sixth, seventh, and eighth grade pupils and found that phonic ability was related to reading ability of pupils in the experiment. Similar results were reported by Templin, who analyzed the test scores of poor readers and of poor spellers in matched groups with those of good readers and of good spellers of the same mental age and found that all of the phonic test scores were higher for the good readers, and that the relationship between spelling and phonic knowledge was somewhat higher than that between reading and phonic knowledge of the groups tested.

Hester and Tireman analyzed errors made by poor readers; the first one studied remedial reading cases, while the latter studied a group of native Spanish-speaking children of New Mexico. In both cases the analysis seemed to establish the fact that quite a considerable percentage of errors in reading was due to phonetic difficulties of the children studied.

As mentioned before, only two studies have been made with the
purpose of establishing the mental age groups of children for whom
the instruction in phonics would have been most effective, by finding
the relationship between the mental age and the phonic ability. The
earlier of the two studies was conducted by Arthur, while the more
recent study was conducted by Dolch and Bloomster. The numbers of
children tested in the experiments were very small, and no reliable
relationship was disclosed between mental maturity and the use of
phonics in these experiments, which could be used for forecasting
purposes.

In a separate chapter an attempt was made to summarize a
number of studies in which the investigators tried to show what
phonics should be taught— if it were agreed that phonics should be
taught—, how much of these phonics should be taught at different
grade levels, what difficulties could be encountered in teaching
phonics, as well as a survey of some current practices related to
the teaching of phonics. The purpose of these studies was not to
experiment and find out the relative merits of either the one or
the other method, but to show merely some of the efforts of
classification in the field of phonics, and what has been done or
could be considered in helping children to learn to read.
BIBLIOGRAPHY


22. Murphy, Helen A. and Junkins, Kathryn M. "Increasing the Rate of Learning in First Grade Reading." Education 62: 37-39, September 1941.


26. Tate, Harry L. "The Influence of Phonics on Silent Reading in Grade I." Elementary School Journal 37: 752-763, June 1937.


