



1938

The Test-Study Versus the Study-Test Method in the Teaching of Spelling in Grades V and VI

Rose H. Thompson

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THE TEST-STUDY VERSUS THE STUDY-TEST METHOD
IN THE TEACHING OF SPELLING
IN GRADES V AND VI

THE TEST-STUDY VERSUS THE STUDY-TEST METHOD

IN THE TEACHING OF SPELLING

IN GRADES V AND VI

By

Rose Henderson Thompson

A Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree

Master of Science

COLLEGE OF EDUCATION

BUTLER UNIVERSITY

1938

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FOREWORD

This thesis is an outgrowth of an attempt to improve the spelling ability of the pupils of Grades V and VI in School Number 56, Indianapolis, Indiana. It was the hope that the results of the experiment would be of such a nature as to render specific help in the planning of a spelling program for those grades. Every effort has been made to keep the discussion concrete and definite.

The experiment was conducted over a period of eighteen weeks by carefully trained and supervised teachers. All data were evolved under the practical conditions in the regular classroom. Whether the experiment has definitely proved the superiority of one method over the other may be questioned, but it has proved invaluable in the stimulus it has given to better teaching techniques, keener interest in research, the importance of objective data, and the many angles of the spelling situation.

Grateful acknowledgment is given to Mrs. Creella Lee, 6A teacher, Miss Myrtle Johnson, 6B teacher, and Miss Vivian Reynolds, 5AB teacher, for their interest, excellent work, and fine spirit of cooperation. Thanks are also due Dr. A. B. Carlile for his helpful suggestions.

R.H.T.

Indianapolis, 1938

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Spelling
earliest field.
returning methods
offers some of
to the level
Instruction
purpose for

THE TEST-STUDY VERSUS THE STUDY-TEST METHOD
IN THE TEACHING OF SPELLING
IN GRADES V AND VI

CHAPTER I

INTRODUCTION

The Need for an Investigation

Among the many problems of instruction with which the elementary school system is confronted probably none is more difficult than that of the teaching of spelling. Quite recently attention was drawn to the exceptionally poor spelling to be found in all written work of pupils in general in the Indianapolis Public Schools. The average work of pupils in general in the regular spelling assignment was also found to be most unsatisfactory. Achievement in this subject has not been commensurate with the time that has been devoted to the mastery of it. The fact that spelling is concerned only with single words and the writing of the letters of the words in order has made many of us consider the teaching of the subject a simple one.

Arthur I. Gates, eminent authority in the field of reading, however, has this to say of the subject,

Spelling seems superficially to be one of the easiest fields in which to settle speedily issues concerning methods of teaching. These superficial appearances are, however, in many respects illusive. Spelling offers some of the most subtle and difficult problems to the investigator. . . . It is very doubtful whether instruction in spelling has reached even approximately a maximum degree of efficiency. Instruction in spelling lags considerably behind the efficiency achieved in reading. It is, moreover, by no means certain that it may be easily and quickly raised to the level of good management now possible in reading. . . . It is being taught by the extrinsic rather than the intrinsic method.¹

The intrinsic method as applied to spelling would mean that children would not be called upon to drill upon isolated words, work out crossword puzzles, study spelling rules, and apply them to isolated words in isolation from the function which spelling is supposed to serve. The only important service which ability to spell is supposed to have is to enable children to write words in their compositions. The intrinsic method would mean that, when children undertake to write letters or some other composition, they should be aware of a difficulty in spelling a word and be able then and there to learn to spell the word by appropriate methods. If the teacher had only a few pupils in her class, she could put this method into operation. Since the size of most classes makes this procedure impossible, the other alternative would be to approximate more closely the characteristics of the intrinsic procedure. That is, to include in grade lists

¹Arthur I. Gates, "Recent Investigations of Instruction in Spelling," Indiana University of Education Bulletin, IX (September, 1932), pp. 125-131.

words which represent more accurately the relative uses made in children's compositions and to introduce them at the time or very shortly before the time when they are going to be used and to reduce the number to be learned. The extrinsic method of complete isolation from composition writing is the one in present use in the Indianapolis schools. This method is known in general as the Test-Study method. The pupils are given a preliminary test on a list of words before they study the words. The misspelled words are noted and corrected, and each pupil studies only the words that he misspelled. The pupils who spell correctly all the words in the preliminary test are excused from further study of spelling until the other pupils have learned the words which they respectively misspelled. All the pupils are required to take a second test on the entire list of words. The misspelled words are again noted and corrected, and the process is continued until satisfactory results are obtained.

Methods in Spelling

Opinions as to effective methods of teaching spelling differ widely. The extremists feel that any method will bring results if excellent teaching technique is used. Experiments involving the question of script versus content, continuous repetition versus repetition after an interval, the proper use of phonics in spelling, the relation of handwriting to spelling effectiveness, the place of visualization

in spelling, the importance of memory, and the Test-Study versus the Study-Test method have been conducted in the past thirty years. Out of this mass of data experimenters have arrived at very different conclusions. Freeman, Breed, and Gray² felt that to recognize a word a pupil should be taught its meaning, form, the details of the word, the familiar parts, the principles of syllabication, and accent. They considered phonics an aid to recognition of words. Horn³ in his study of methods of instruction in spelling found that spelling in general is always poor, that pride is not a substitute for drill, and that teaching meaning guarantees use, but does not affect immediate ability to spell. He thought phonics helped in ability to spell. "Emphasis should be placed," Horn said, "upon visual imagery," and that script rather than print should be used to teach spelling in the elementary grades. Hartman⁴ in his study of auditory and visual factors in spelling ability thought that sensory and

²F. A. Freeman, W. S. Gray, and F. S. Breed, "Summary of Current Practices in the Teaching of Handwriting, Phonics, and Spelling," Childhood Journal of Education, May, 1930.

³Ernest Horn, "Principles of Method in Teaching Spelling as Derived from Scientific Investigation," Eighteenth Yearbook. Part II, of the National Society for the Study of Education, (191), pp. 53-57.

⁴G. W. Hartman, "Relative Influence of Visual and Auditory Factors in Spelling Ability," Journal of Educational Psychology, XXVII (December, 1931), pp. 691-699.

motor idiosyncracies were the major determiners of performance. He found that deaf mutes were relatively better in spelling than in other school subjects so he discounted the value of stressing pronunciation as an important factor in correct spelling. The fact that Americans could spell French words which they could not pronounce made him doubt the importance of phonics as a determining factor in learning to spell. He thought poor spellers were deficient in mental imagery. As a result of his investigations, Hartman concluded that "speed and accuracy of immediate visual perception exert the dominant influence in spelling ability." Almack and Staffebach's findings⁵ showed a need for a psychological approach to the teaching of spelling. They called seeing and hearing, "forms of impression"; writing and speaking, "forms of expression." A pupil according to these men received four images of a word:

- (1) sight of a word
- (2) sound of a word
- (3) how it "feels" when written
- (4) how it "feels" when spoken

They also concluded that the eye was more important than the ear in spelling instruction.

⁵J. C. Almack and E. W. Staffebach, "Experimental Study of Individual Improvement in Spelling," Journal of Educational Research, XXIX (September, 1935), pp. 6-11.

Description of the Two Methods

The old method of teaching spelling is known as the Study-Test method. The pupils are required to study a given list of words on which they are later tested, and they usually apportion their time about equally among the words in the list. The usual method of procedure is to divide the assignment for the week into four equal lists. One of these short lists is taught on Monday, Tuesday, Wednesday, and Thursday, respectively. Friday is devoted to a test of the total assignment for the week.

In 1919, another method was introduced by Ernest Horn and has been widely used. This is known as the Test-Study method. The pupils are given a preliminary test on the week's assignment before study. The schedule is as follows:

Monday--Test on all words in the new assignment for the week.

Tuesday--Individuals study the words which they misspelled on the Monday test. Pupils making no errors on the Monday test are excused from study.

Wednesday--Test on all words in the assignment for the week as on Monday. All pupils take the test.

Thursday--Individuals study the words misspelled on the Wednesday test. Pupils making no errors on the Wednesday test are excused from study.

Friday--Test on all words in the assignment for the

week. All pupils take the test. In some instances the pupils who are excused from study are permitted to do as they like. In others, the teacher has a definite program for that period. The question as to whether the time is spent to the best advantage is a moot one and not pertinent to this study.

Previous Investigations of the Two Methods
 Gates⁶ thought that so far as the Test-Study and the Study-Test methods are concerned that possibly the Study-Test plan may be more effective for slow children and the Test-Study for the brighter ones. Keener's study⁷ in Grades II through VIII in Chicago showed a slight superiority of the Test-Study plan in Grades IV through VIII, but the Study-Test was the better in Grades II and III. Kilzer⁸ in a ninth grade study of the two methods found on the whole that the Test-Study plan gave better immediate results but the advantage was not apparent after an interval of six months.

One limitation of the Test-Study plan lies in the fact that a single dictation test is not a wholly reliable means

⁶Arthur I. Gates, loc. cit.

⁷E. E. Keener, "Evaluation of Two Methods of Teaching Spelling," Yearbook of the National Society of College Teachers of Education, 1926.

⁸L. R. Kilzer, "The Test-Study versus the Study-Test Method in the Teaching of Spelling," School Review, XXXIV (September, 1926), pp. 521-525.

of determining which words a child can spell correctly. In the first place the test puts the child in a state of concentration on spelling. He might misspell the same word in casual writing or dictation. As a result words insufficiently mastered may be omitted by this method from Tuesday and Thursday's study. On the other hand the plan provides three tests, Monday, Wednesday, and Friday, and words spelled correctly three times need no further systematic drill. Some words, however, were probably spelled correctly by chance. Kilzer⁹ found that of the words misspelled in a second test, 31 per cent were spelled correctly on the first test. The results obtained in a careful survey of a large New York system led Dr. Thompson¹⁰ to conclude that the Test-Study method is far from adequate to the purpose desired. What he found in general was that the typical pupil about "half-learned" the words which were unknown to him on the pre-test for each weekly list. That is to say, if the pupil failed on 50 per cent of the words on the first pre-test and was given a week to study these words, a test applied a few months later usually showed that he was still unable to spell 75 per cent of them. In other words, the permanent effect of instruction was to cut the misspellings from 50 to 25 per cent. Therefore

⁹L. R. Kilzer, loc. cit.

¹⁰Dr. R. S. Thompson, The Effectiveness of Modern Spelling Instruction, New York City: Teachers Bureau of Publications, 1930.

he was skeptical of the value of current teaching procedure. Gates¹¹ asserts that a brief preview of the words, such as reading them in printed columns or in context would increase ability to spell words without thorough mastery. He found that 25 per cent of the words spelled incorrectly on a second test were correctly spelled on the first test without a preview, whereas the percentage was 30 after the children were given two seconds per word for a preview of the list. At the same time the Test-Study method saves overlearning of words which pupils can spell with some measure of consistency as would be the case in the Study-Test plan. Three tests, however, rarely allow a word to slip through which needs drill, thus becoming a time saver.

The Test-Study plan, however, exaggerates the effect of misplacement of words. In spite of extensive studies by Ashbaugh, Ayres, Horn, and others, grade placement of words is far from satisfactory. Many grade lists still contain words which are taught before they are needed in writing. Therefore the Test-Study scheme devotes a maximum amount of time upon words which will seldom or never be used in that grade. The difficulty of the Test-Study plan is not as intrinsic or as irremedial as the limitation of the Study-Test method. With the removal of improper grade placement the trouble disappears. Gates¹²

¹¹Arthur I. Gates, loc. cit.

¹²Arthur I. Gates, loc. cit., p. 131

in his comparison of the two methods felt that the Test-Study plan made initial errors not only a necessity but a natural result as well as producing a tolerant attitude toward mistakes in spelling. It forces pupils to "practice errors," according to Gates.¹³ Keener¹⁴ as a result of his study concluded that the general tendency of initial errors to persist was apparently less strong than commonly supposed. Such a tendency is offset by immediate correction and the resulting feeling of dissatisfaction at having missed the word, plus the concentrated attack on remedying the exact difficulty.

Adherents of the Study-Test method point out that relatively more classroom time is available for study when this plan is employed because less time is spent in testing. The Test-Study reply is that there is less time in absolute terms because fewer pupils are engaged in study; and that pupils do not study all words, only those misspelled, therefore, there are fewer minutes per week spent in actual study.

The Study-Test method according to Phillipps¹⁵ is based upon the following fundamental assumption:

¹³Arthur I. Gates, op. cit.

¹⁴E. E. Keener, loc. cit.

¹⁵Claude A. Phillipps, "Teach-Test-Study Plan in Spelling," Elementary English Review, (June, 1930), pp. 155-157.

1. Spelling is primarily a matter of habit formation.

2. As such, it is essentially an individual accomplishment for every new word studied.

3. One hundred per cent efficiency in spelling is the only goal worth striving for.

In his opinion the steps of the Study-Test plan constitute directed learning and employ the major ways of stimulating the pupil to learn. These are pronunciation, visualization, and motor activity in writing. The technique of the Study-Test method provides for these stimuli in separate form and significant combinations. Ninety-three pupils in the fifth and sixth grades in the rural schools of Pettis County, Missouri were taught by this plan for eight months. Each pupil spelled six hundred and forty words, making a total of 5,952 words. The percentage of accuracy was 98 per cent. Another experiment was conducted in the city schools of Tulsa, Oklahoma. In the city schools of Tulsa a group of fifty-nine fifth and sixth grade students were taught by this plan. Grade 6B had a range in intelligence quotient from 75 to 95, which is a low group. This group spelled 2,160 words with an efficiency of 96.2 per cent. The 5A section had a range in intelligence quotient of 100 to 120; This is a high group. This group spelled a total of 2,560 words with an efficiency of 98.5 per cent. Twelve pupils in a group at the University of Missouri who measured by the new Stanford Achievement Test Form W as of January, 1930,

were of sixth grade standing, spelled 3,120 new words with an accuracy of 99.55 per cent.¹⁶

In the Study-Test method the pupils are held to better techniques of learning, to better distribution of time on different words, and to a more adequate check-up of results, because the entire study is under the direction of the teacher. In the Test-Study, it is assumed that the pupils are following the same techniques as those of the Study-Test plan, but since each child is working independently without direct teacher intervention it is impossible to judge to what extent this assumption is correct. The Study-Test plan stresses techniques which take into account those factors upon which good spelling depends, namely: ability to pronounce syllabic units and individual syllabic sounds; ability to perceive a word effectively, since one difficulty consists in the fact that English words are not phonetic, so one must have a visual image of each word; ability to visualize which is secondary in point of time, but is of first order in importance; and, ability to write. Defects in one or more of these techniques are usually the cause of spelling failures.¹⁷ Dr. R. S. Thompson thinks¹⁸ that the Study-Test

¹⁶Claude A. Phillipps, loc. cit.

¹⁷Frank N. Freeman, Wm. S. Gray, and Frederick S. Breed, loc. cit.

¹⁸Dr. R. S. Thompson, loc. cit.

plan is better suited to Grades II and III because the teacher leads the study. Above these grades the Test-Study procedure, he thinks, is probably the more effective. It must be remembered, however, that the Test-Study presupposes the ability on the part of the pupils to do effective independent study because each pupil studies the words which he himself misspelled. Therefore it is impossible for the class as a whole to participate in a study of each word directed by the teacher.

Purpose of This Investigation

In summary it may be said that the investigations discussed have implied that the question of the best general method is not yet a closed one. The experiment described in the following chapters will attempt to decide which is the better method in the teaching of spelling in Grades V and VI, the Test-Study or the Study-Test.

Description of the Investigation

The School.--The data of this experiment were procured

CHAPTER II

in elementary School Number 56 in Indianapolis, Indiana.

This school serves a residential district described as underprivileged. The norms in all branches of its instruction are up to the standard of other public schools in the

THE EXPERIMENT

Statement of the Problem

Which is better the Test-Study or the Study-Test method in a daily spelling period of fifteen minutes in Grades V and VI?

The plan for trying to answer this question was to conduct an investigation under actual school conditions. No special incentives were to be employed. Three experiments were conducted. Each consisted of two parts and lasted nine weeks. All the words usually taught during the period of nine weeks were taught. A preliminary test of twenty-five words selected at random from the words to be taught during each of the nine weeks was given. At the end of each nine weeks these same words were given as a retest. The relative value of the Test-Study and the Study-Test methods was to be measured by the relative gains in ability to spell the words of the preliminary test at the close of each period of nine weeks' training under each method.

Description of the Investigation

The School.--The data of this experiment were procured in elementary School Number 56 in Indianapolis, Indiana. This school serves a residential district described as underprivileged. Its norms in all branches of its instruction are up to the standard of other public schools in the underprivileged sections of the city.

Judged by the method of instruction the school would be termed a conventional one. Although conventional in type, it is progressive. For the last two years it has conducted investigations in the field of reading based upon different levels of instruction within the regular class grouping. The teachers have cheerfully shouldered the burden of keeping records of experimental work and always have been ready to experiment.

Each child in this school is graded and classified upon the basis of group intelligence tests when he enrolls for the first time. At regular intervals additional ratings according to group intelligence tests, achievement tests, and teacher ratings are compiled and each child is regarded in the light of such ratings. No classes, however, are formed on the basis of intelligence groupings.

The Illinois General Intelligence Tests were given in connection with this experiment. The average

intelligence quotient of the one hundred thirty-five pupils participating in the experiment was normal.

General Statement of the Plan.--Three different experiments were made. Each consisted of two parts. In Experiment I, one group of sixth grade pupils was taught by the Study-Test method for nine weeks; another group of sixth grade pupils, by the Test-Study plan at the same time. In Experiment II, the group taught by the Study-Test plan in Experiment I were instructed by the Test-Study plan for nine weeks; those taught by the Test-Study plan in Experiment I studied under the Study-Test plan. In both Experiments I and II, the Study-Test method was taught by the same teacher. This was also true of the Test-Study plan. This was done so that factors pertaining to method would be constant in both experiments. In Experiment III, spelling was taught by both the Study-Test method and the Test-Study method by the same teacher to the same group of fifth grade pupils. The purpose was to eliminate as far as possible in this experiment the effect of change in technique and teacher personality upon method which was present in Experiments I and II. In Experiment I, the same children participated in the study under both methods. This was also true of Experiment III. In Experiment II, the pupils were not the same due to promotion, but they were of the same grade and as a class they were of the

same average mentality. loud while the others listen.

A preliminary test of twenty-five words was given prior to each experiment. These words were chosen at random from the regular grade lists of the Horn-Ashbaugh "Progress in Spelling," state-adopted text for Indiana. Twenty-five words were studied each week, twenty new and five review words. At the conclusion of each nine weeks the children were tested upon the preliminary test for that nine weeks.

The Study-Test Method.--The following directions were typed and given the teacher:

1. Teacher pronounces word clearly. If it contains two or more syllables, it is pronounced by syllables.

2. Use the word in one or more sentences. In some cases ask the pupils to use the word in a sentence.

3. Write the word on the blackboard and have the children say it.

4. The pupils look at the word and say it syllable by syllable to themselves.

5. Pupils look at the word and say the letters to themselves.

6. They should look at the word as a whole as they say it to themselves.

7. Same as (5).

8. Pupils close their eyes and say the letters to themselves. In some instances the teacher asks one of

the pupils to do this aloud while the others listen.

9. Pupils write the word as they say the letters to themselves. They proceed by syllables whenever possible.

10. Pupils compare their written work with the correct spelling on the board.

11. Pupils cover their word, write it again, and compare with the correct form.

12. They repeat (11) until they write without error. Near the end of the period the pupils are given a test of the words studied that day. The entire assignment for the week is divided into fourths which are taught Monday, Tuesday, Wednesday, and Thursday, respectively. Friday is devoted to a test of the assignment for the week.

The Test-Study Method.--The assignment for the week was mapped out in the following fashion: On Monday, a pre-test was given of the twenty-five words in the assignment for the week without a preview, that is, without reading the words before writing. The teacher pronounces the word, uses it in a sentence, and the child writes the word. The teacher collects and scores the papers. On Tuesday, those children making perfect scores are excused from study. Those who misspelled words studied them individually. On Wednesday, another test of all the words for the week was given. All pupils take this test. On Thursday, the same procedure is followed as on Tuesday.

On Friday, the entire list is again dictated to all pupils.

Individual typed directions for study were in the hands of each pupil. The instructions were:

1. Pronounce the word carefully, enunciating each syllable.

2. Close eyes and try to see the word syllable by syllable. Try to recall how the word looks and at the same time say the letters. Spell by syllables.

3. Open eyes and look at the word. If you do not have it right, go over (1) and (2). Keep trying until you can say the letters correctly with closed eyes.

4. When you are sure that you have learned the word, write it and then compare. If you fail, do (1), (2), and (3) again.

5. Write the word again. See if it is right. If it is right, do it again and compare. Now try to write it a third time. The word is learned when it is written correctly three times successively. Teachers supervised the individual study to insure that pupils worked and that proper learning methods were used.

All papers in both methods were scored by the teachers. No alterations of the first spelling was allowed. Any word altered or illegible was counted wrong. No time was allowed for study except the fifteen minutes allotted on the class program. Books were never in the hands of the children except at class time under the supervision of the teacher.

CHAPTER III

RESULTS OF EXPERIMENT

The Data

Each teacher handed in a report of the preliminary test for each experiment. This report showed the score of each pupil on the preliminary test, his intelligence quotient, his eye and ear rating, and the average of the class on the test. At the close of each nine weeks of study under the Test-Study plan or the Study-Test method, the teacher handed in a report of the scores of each pupil on the final test and the class average for that test. These final scores were placed upon the sheet containing the preliminary scores of the pupils for that experiment. On it was also placed the per cent of gain between final and initial scores under each method. Another report gave the number of times each word was spelled correctly on both the initial and final tests. A weekly graph was also kept of the progress of each class under the Test-Study plan and the Study-Test plan.

Table I presents the intelligence quotients of forty 5AB pupils.

Figure 1 presents the distribution of intelligence quotients of forty 5AB pupils.

TABLE I. INTELLIGENCE QUOTIENTS OF FORTY 5AB PUPILS

I. Q.	No. of Pupils
126-135	3
116-125	3
106-115	4
96-105	10
86- 95	11
76- 85	3
66- 75	3
56- 65	2
46- 55	1
Total	40
Median	97

The intelligence quotients are grouped in intervals of ten. The median for the group is 97.

Figure 1 presents the distribution of intelligence quotients of forty 5AB pupils.

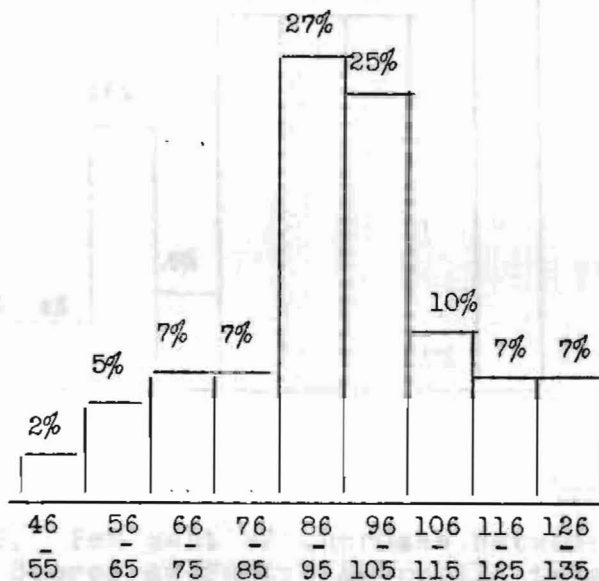


Figure 1. Distribution of Intelligence Quotients of Forty Pupils in Grade 5AB.

The intelligence quotients are grouped in intervals of ten. In the middle group are those from 86-95; the ascending groups include in order the intelligence quotients from 96-105, 106-115, and so forth; correspondingly with the descending groups. The range of distribution in this grouping is fairly symmetrical.

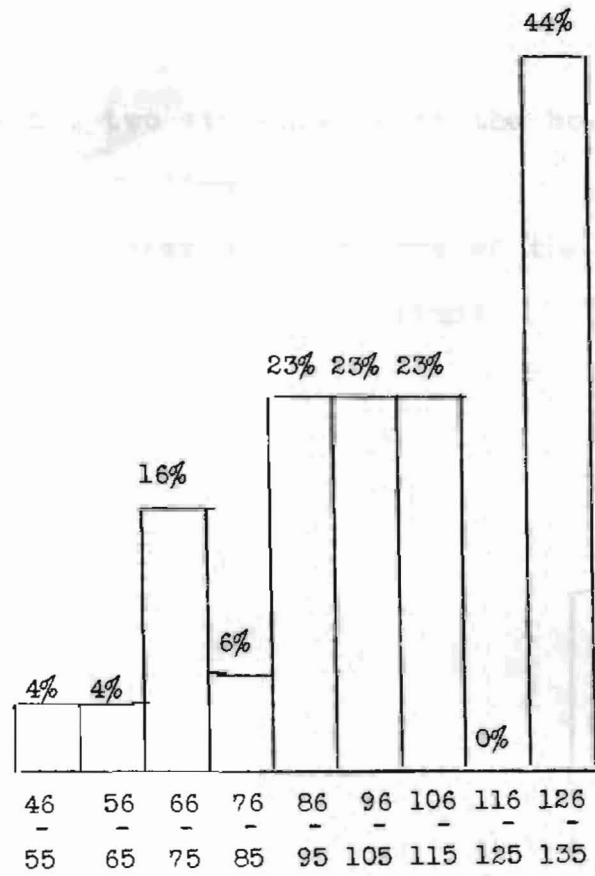


Figure 2. Per cent of increase between Final and Initial Scores of Forty 5AB pupils taught by the Test-Study method, grouped on the basis of Intelligence Quotients.

Figure 2, shows the per cent of increase between final and initial scores and their relation to the distribution of intelligence quotient of 5AB students using the Test-Study method. The numbers below the figure represent the intelligence quotient grouping. The per cent of increase of each grouping is shown by the per cent at the top of the figure. It is significant that in Figure 2 the normal, near normal and superior groups show the same per cent of increase. The near genius group almost doubled the per cent of increase of the dull or borderline groups. In that group, however,

there were but two students, with the borderline grouping having a total of five pupils.

Figure 3 presents the scores of the same 5AB pupils in the use of the Study-Test method.

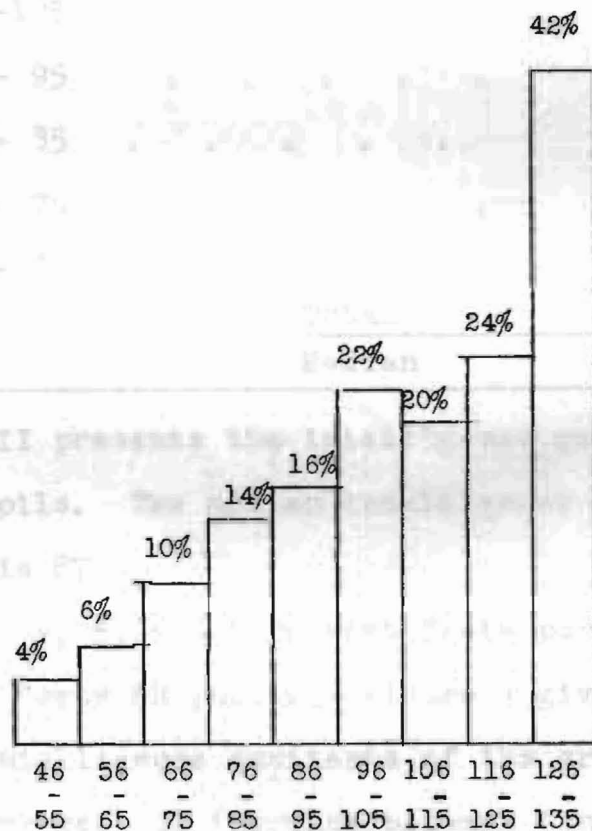


Figure 3. Per cent of Increase between Final and Initial Scores of Forty 5AB pupils taught by the Study-Test method, grouped on the basis of Intelligence Quotients.

In Figure 3 the per cent of increase between final and initial scores of the 5AB pupils using the Study-Test method presents a better distribution of per cent of

increase with relation to the distribution of intelligence quotients than any other set of scores in this study.

TABLE II. INTELLIGENCE QUOTIENTS OF FORTY 6B PUPILS

I. Q.	No. of Pupils
116-125	1
106-115	4
96-105	8
86- 95	7
76- 35	12
66- 75	5
56- 65	3
	<u>Total</u> 40
	Median 87

Table II presents the intelligence quotients of forty 6B pupils. The median intelligence quotient of this group is 87.

Figures 4, 5, and 6 present facts pertaining to the same class, forty 6B pupils. Figure 4 gives the distribution of intelligence quotients of the group. Figure 5 shows the per cent of increase between final and initial scores and the relation to the distribution of intelligence quotients when the Study-Test method is used. Figure 6 presents the per cent of increase between final and initial scores and their relation to the distribution of intelligence quotients when the Test-Study plan is used.

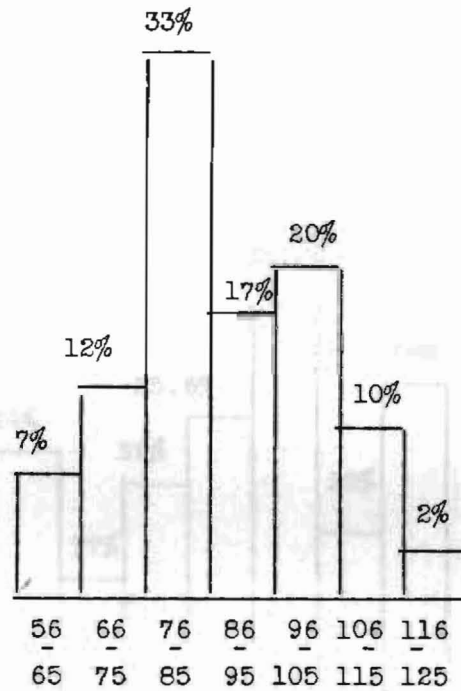


Figure 4. Distribution of Intelligence Quotients of Forty pupils in Grade 6B.

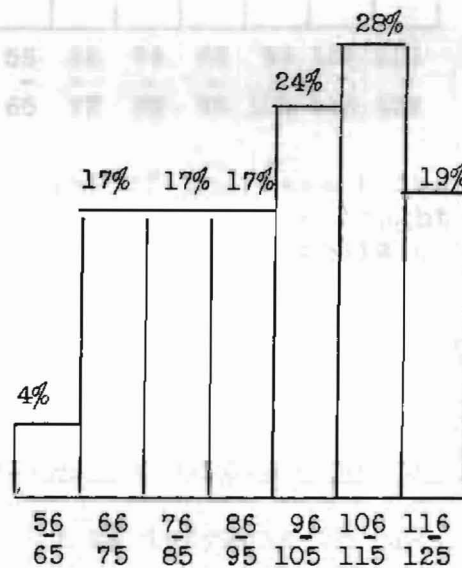


Figure 5. Per cent of Increase between Final and Initial Scores of Forty 6B pupils taught by the Study-Test method, grouped on the basis of Intelligence Quotients.

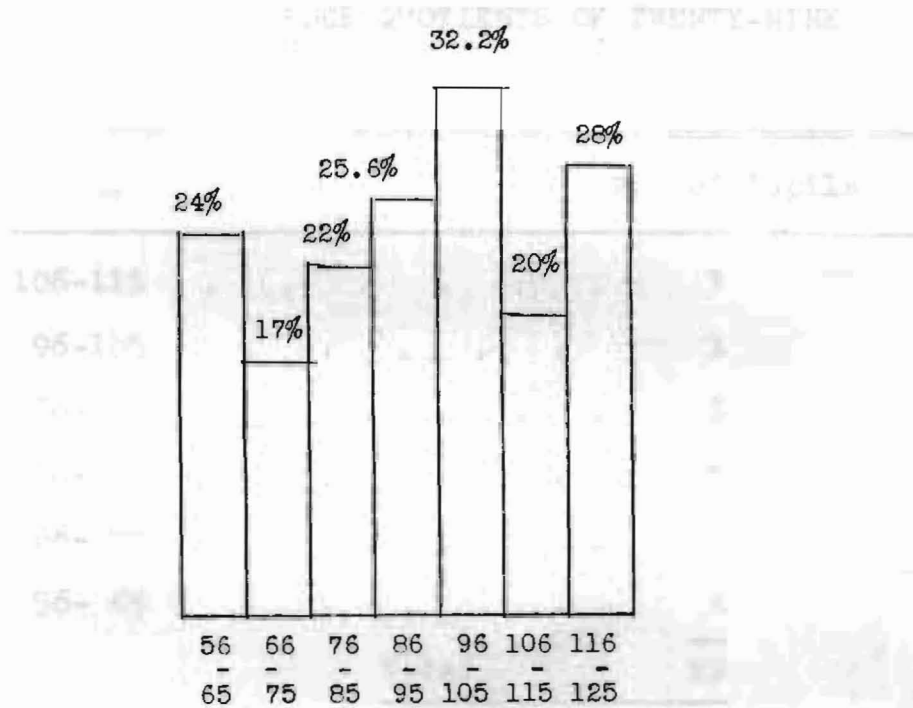


Figure 6. Per cent of Increase between Final and Initial Scores of Forty pupils taught by the Test-Study method, grouped on the basis of Intelligence Quotients.

In Figure 6 the feeble or borderline pupils show a gain of six times that in the Study-Test plan when taught by the Test-Study method. On the other hand there is a more even distribution of increase on the part of each grouping of Intelligence Quotients under the Study-Test plan as shown in Figure 5.

TABLE III. INTELLIGENCE QUOTIENTS OF TWENTY-NINE
6A PUPILS.

I. Q.	No. of Pupils
106-115	3
96-105	3
86- 95	8
76- 85	6
66- 75	4
56- 65	5
Total	<u>29</u>
Median	85

Table III shows the intelligence quotients of twenty-nine 6A pupils. The median intelligence quotient for this group is 85.

Figure 7 presents the distribution of intelligence quotients of twenty-nine 6A pupils.

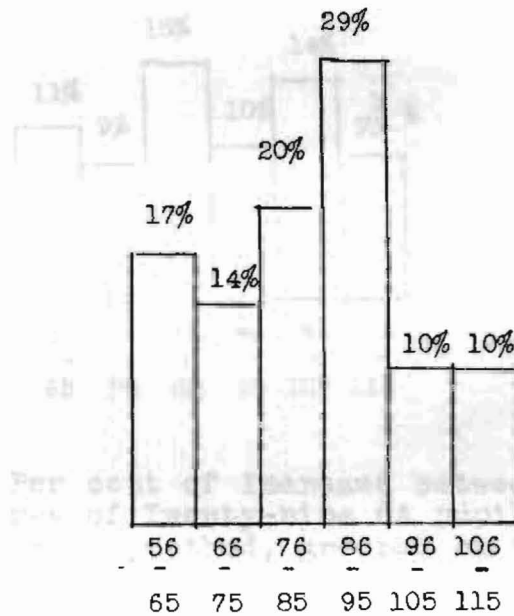


Figure 7. Distribution of Intelligence Quotients of Twenty-nine pupils in Grade 6A.

Figure 8 shows the per cent of increase between the final and initial scores in the Test-Study method and the relation of such increase to the distribution of intelligence quotients of the same 6A pupils.

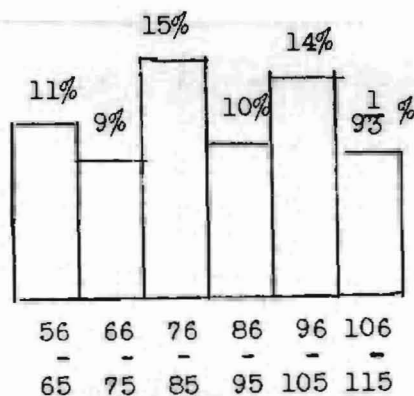


Figure 8. Per cent of Increase between Final and Initial Scores of Twenty-nine 6A pupils taught by the Test-Study method, grouped on the basis of Intelligence Quotients.

In this group the per cent of increase in the borderline group under the Test-Study plan is very significant. Other groupings show an evenly balanced proportion of increase.

Figure 9 shows the distribution of intelligence
 of twenty-five pupils of Grade 6A.

TABLE IV. INTELLIGENCE QUOTIENTS OF TWENTY-FIVE
 6A PUPILS.

I. Q.	No. of Pupils
106-115	3
96-105	3
86- 95	7
76- 85	4
66- 75	4
56- 65	4
Total	25
Median	88

Table IV shows the intelligence quotients of twenty-five 6A pupils, whose median of intelligence is 88.

Figure 9 shows the distribution of intelligence quotients of twenty-five pupils of Grade 6A.

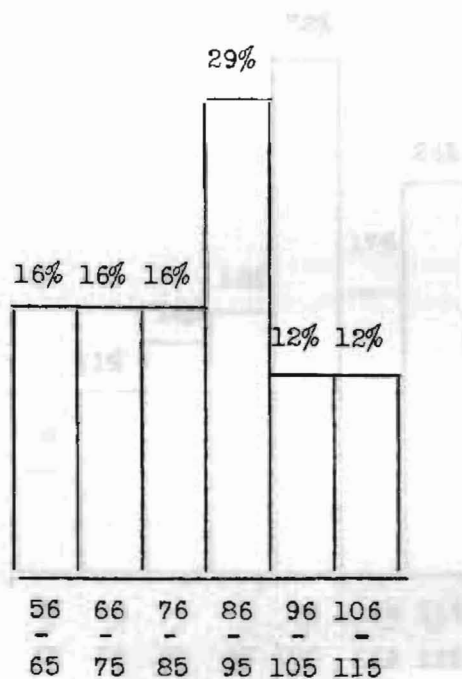


Figure 9. Distribution of Intelligence Quotients of Twenty-five pupils in Grade 6A.

The middle group shows the largest grouping.

Table V presents the comparative table of the per-
 cent of correct spellings for each word in the test of
 seven 6A pupils and twenty-one 6B pupils. The words
 which each group was tested are the same; but due to
 the small number of pupils whose scores are recorded in this

TABLE V. COMPARATIVE TABLE OF THE PERCENTAGE OF CORRECT
 SPELLINGS FOR EACH WORD BY TWENTY-SEVEN 6A PUPILS AND
 TWENTY-ONE 6B PUPILS FOR EACH WORD IN THE
 SPELLING TEST. (EXPERIMENTAL)

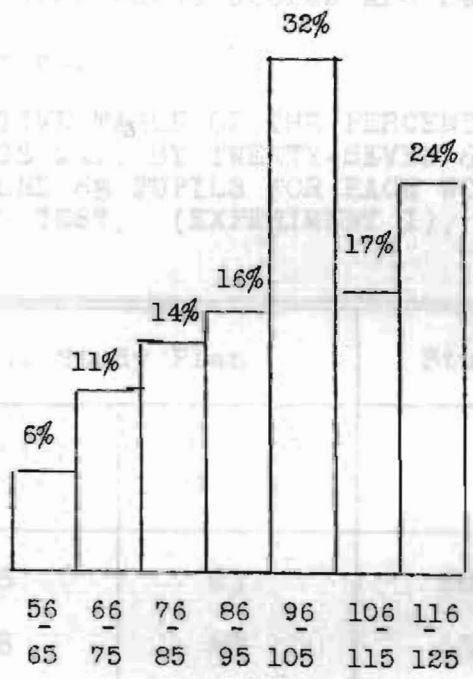


Figure 10. Per cent of Increase between Final and Initial Scores of Twenty-five 6A pupils taught by the Study-Test method, grouped on the basis of Intelligence Quotients.

Figure 10 differs from all other groupings in that the per cent of increase is fairly consistent with the rise in intelligence quotient groupings.

Table V presents the comparative table of the percentage of correct spellings for each word in the test of twenty-seven 6A pupils and thirty-one 6B pupils. The words upon which each group was tested are the same, but due to promotion the children whose scores are recorded in this study, were different.

TABLE V. COMPARATIVE TABLE OF THE PERCENTAGE OF CORRECT SPELLINGS MADE BY TWENTY-SEVEN 6A PUPILS AND THIRTY-ONE 6B PUPILS FOR EACH WORD IN THE SPELLING TEST. (EXPERIMENT I).

Word	Test-Study Plan		Study-Test Plan	
	Initial Score	Final Score	Initial Score	Final Score
collect	66	63	68	74
poultry	48	48	45	49
labor	63	63	84	87
article	33	26	65	74
husband	52	74	78	80
imagine	19	30	41	49
calendar	41	44	29	41
acquainted	19	30	3	10
receive	33	37	39	35
surprise	26	44	23	58
holiday	52	74	52	74
practicing	7	59	16	55

TABLE V (CONT'D.) COMPARATIVE TABLE OF THE PERCENTAGE OF CORRECT SPELLINGS MADE BY TWENTY-SEVEN 6A PUPILS AND THIRTY-ONE 6B PUPILS FOR EACH WORD IN THE SPELLING TEST. (EXPERIMENT I).

Word	Test-Study Plan		Study-Test Plan	
	Initial Score	Final Score	Initial Score	Final Score
visitor	55	74	74	80
foreign	66	63	13	41
government	74	81	49	61
neglected	44	66	49	68
friend	59	81	52	64
beautiful	55	70	24	78
travel	59	77	68	97
amusement	48	44	13	32
automobile	37	37	16	32
laundry	48	55	32	39
pleasant	52	55	41	45
valuable	26	33	13	22
funeral	22	63	26	33
Average	40	55.6	41.7	55.55

Table V shows an increase of 6 per cent in favor of the Test-Study plan.

TABLE VI (CONT'D.) PERCENTAGE OF CORRECT SPELLINGS MADE BY TWENTY-EIGHT 6AB PUPILS FOR EACH WORD IN THE SPELLING TEST. (EXPERIMENT II).

Study-Test Plan		
Word	Initial Score	Final Score
government	28	53
neglected	14	32
beautiful	18	39
travel	50	60
amusement	39	32
laundry	25	32
pleasant	14	35
Average	24.6	44

Table VI presents the scores of twenty-eight 6AB pupils for each word in the spelling test in Experiment II.

Table VII presents the scores of a group of thirty-nine 6AB students taught by the Test-Study plan.

TABLE VII. PERCENTAGE OF CORRECT SPELLINGS MADE BY THIRTY-NINE 6AB PUPILS FOR EACH WORD IN THE SPELLING TEST. (EXPERIMENT II).

Test-Study		Final Score
Word	Initial Score	Final Score
attack	69	64
suggested	33	64
opposite	40	49
appearance	59	41
dumb	80	97
governor	59	41
beginning	59	56
decide	28	46
injured	36	54
precious	13	23
paragraph	15	69
citizens	18	56
appetite	8	49
relief	26	51
memory	33	64
affectionate	26	66
chorus	3	64

TABLE VII (CONT'D.) PERCENTAGE OF CORRECT SPELLINGS
MADE BY THIRTY-NINE 6AB PUPILS FOR EACH
WORD IN THE SPELLING TEST. (EXPERIMENT II).

Test-Study							Initial Score	Final Score
Word								
traffic	.	.	.	.	.	.	56	90
joint	.	.	.	.	.	.	49	61
disappoint	.	.	.	.	.	.	3	56
tractor	.	.	.	.	.	.	36	61
sincere	.	.	.	.	.	.	10	66
physical	.	.	.	.	.	.	8	15
telegraph	.	.	.	.	.	.	18	74
metal	.	.	.	.	.	.	61	64
Average							33	58.1

A comparison of Tables VI and VII shows a gain of 2.8 per cent in favor of the Study-Test method. In Table III one is impressed by the fact that many words thought known on the initial test were incorrectly spelled on the final test. Words used oftenest in daily life and apparently presenting very little spelling difficulty were also misspelled.

In Table VIII is shown the percentage of correct spellings made by the same group of 5AB pupils under both methods. The initial test employed different words because the pupils had entered the second semester's work when the Study-Test method was commenced but words according to spelling authorities were supposed to be of equal difficulty.

TABLE VIII. PERCENTAGE OF CORRECT SPELLINGS MADE BY FORTY-ONE 5AB PUPILS FOR EACH WORD IN THE SPELLING TEST. (EXPERIMENT III).

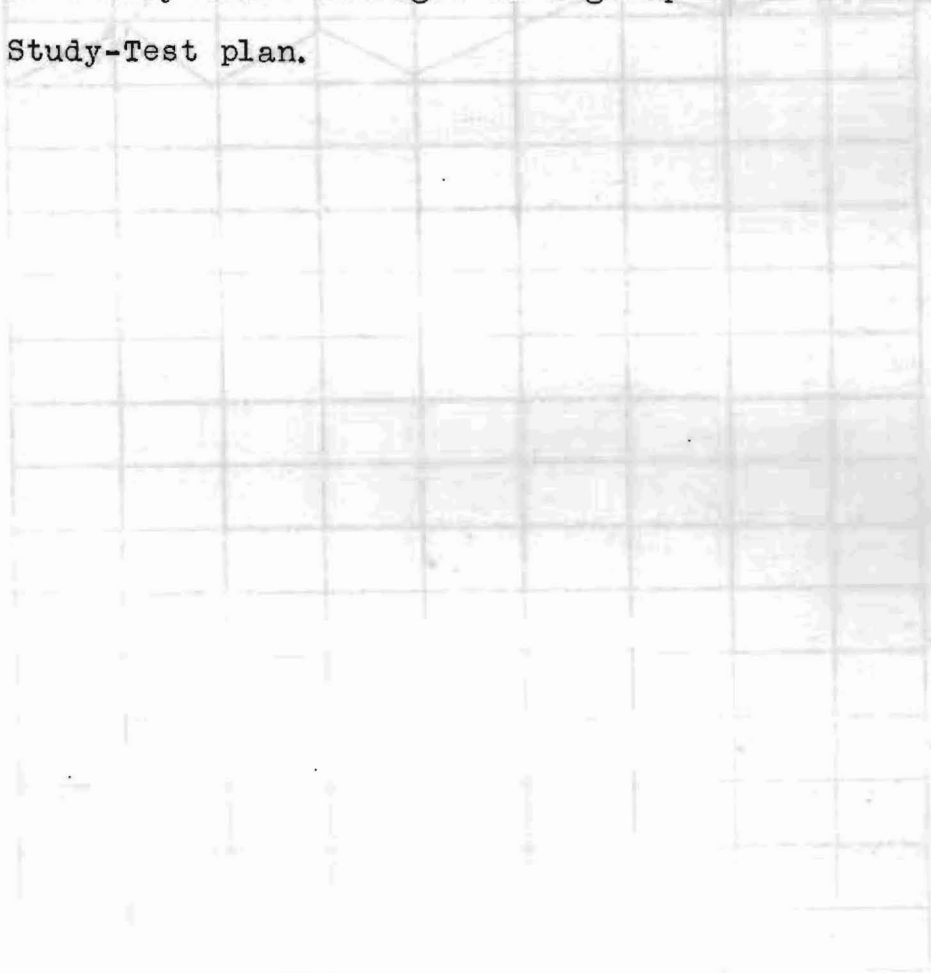
Test-Study			Study-Test		
Word	Initial Score	Final Score	Word	Initial Score	Final Score
double	54	49	president	60	55
secret	39	66	A.M.	65	75
receive	29	34	doesn't	43	40
envelope	29	37	magazine	20	33
straight	15	56	either	12.5	30
newspaper	59	78	sincerely	12.5	30
minute	20	39	neighborhood	18	23
theater	37	59	dentist	35	60
studied	22	44	salad	35	65
empty	37	59	stories	30	58
material	54	49	medicine	12.5	28
twentieth	5	59	folks	35	65
absence	7	56	social	30	65

TABLE VIII (CONT'D.) PERCENTAGE OF CORRECT SPELLINGS
MADE BY FORTY-ONE 5AB PUPILS FOR EACH WORD
IN THE SPELLING TEST. (EXPERIMENT III).

Test-Study			Study-Test		
Word	Initial Score	Final Score	Word	Initial Score	Final Score
handkerchief	7	31	disease	12.5	48
soldier	24	27	anxious	15	33
usually	7	49	parents	25	43
women	31	56	bobbed	18	20
peach	66	64	problems	35	43
doesn't	5	15	basement	33	48
pleasant	12	12	favorite	30	50
crowd	22	34	altogether	23	45
automobile	15	41	toward	25	62.5
average	31	49	certainly	18	50
thousand	51	64	stopped	20	37.5
Average	26.6	44.96		27.7	47.88

The average gain was greater by the Study-Test method by 3 per cent. It may be said that the lists of words were not equal in difficulty, but the Horn-Ashbaugh lists are fairly well graded.

The following group of graphs shows the weekly class averages of the fifth and sixth grade students for each nine weeks of the study. Figure 11 presents the weekly class averages of the same group of 6AB pupils in both the Test-Study and the Study-Test methods. Figure 12 shows the same type of data for a group of 5AB pupils. Figure 13 presents the weekly class averages of a group of 6B students using the Study-Test plan.



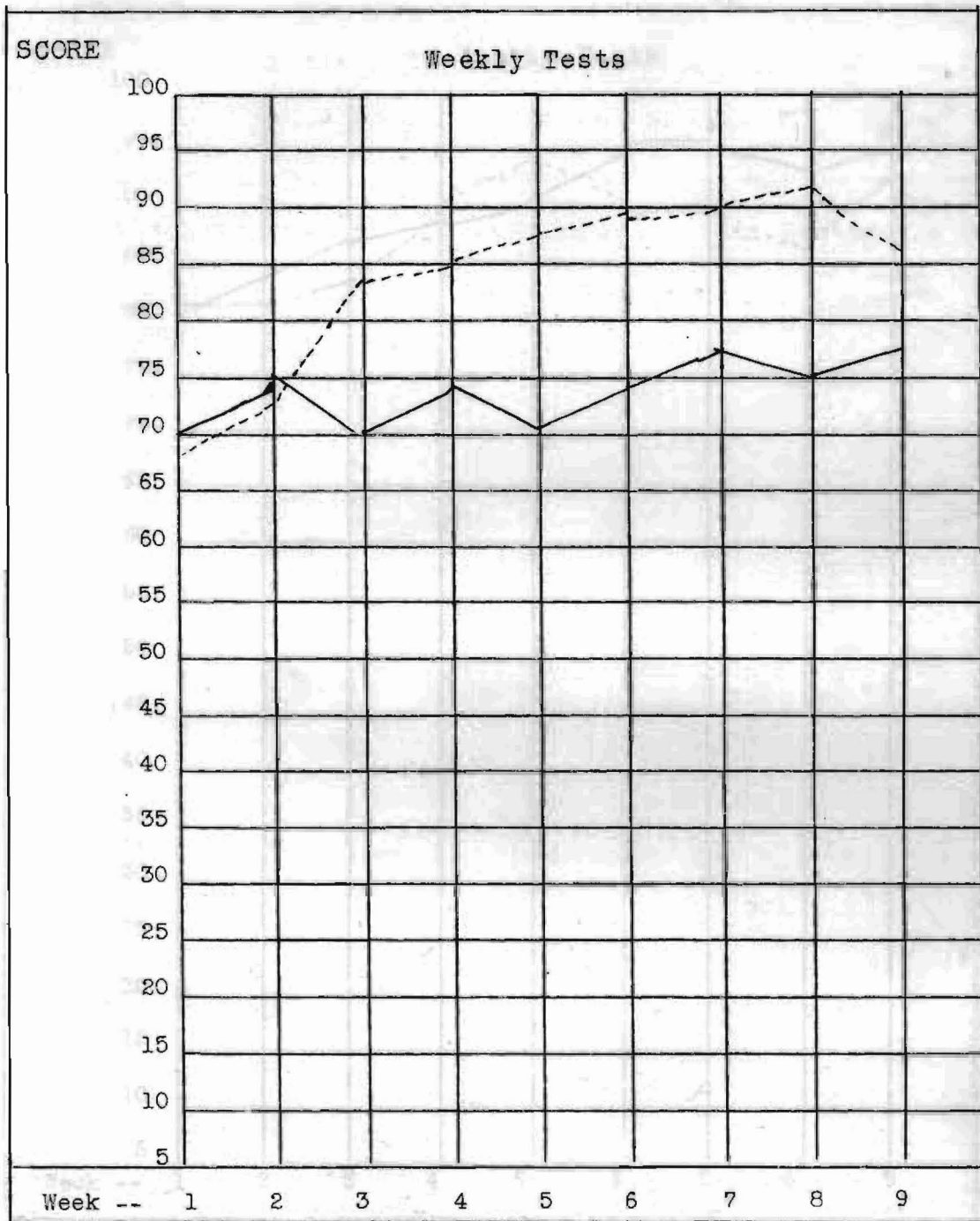


Figure 11. Weekly Class Averages. 6AB Study-Test —
6AB Test-Study ---

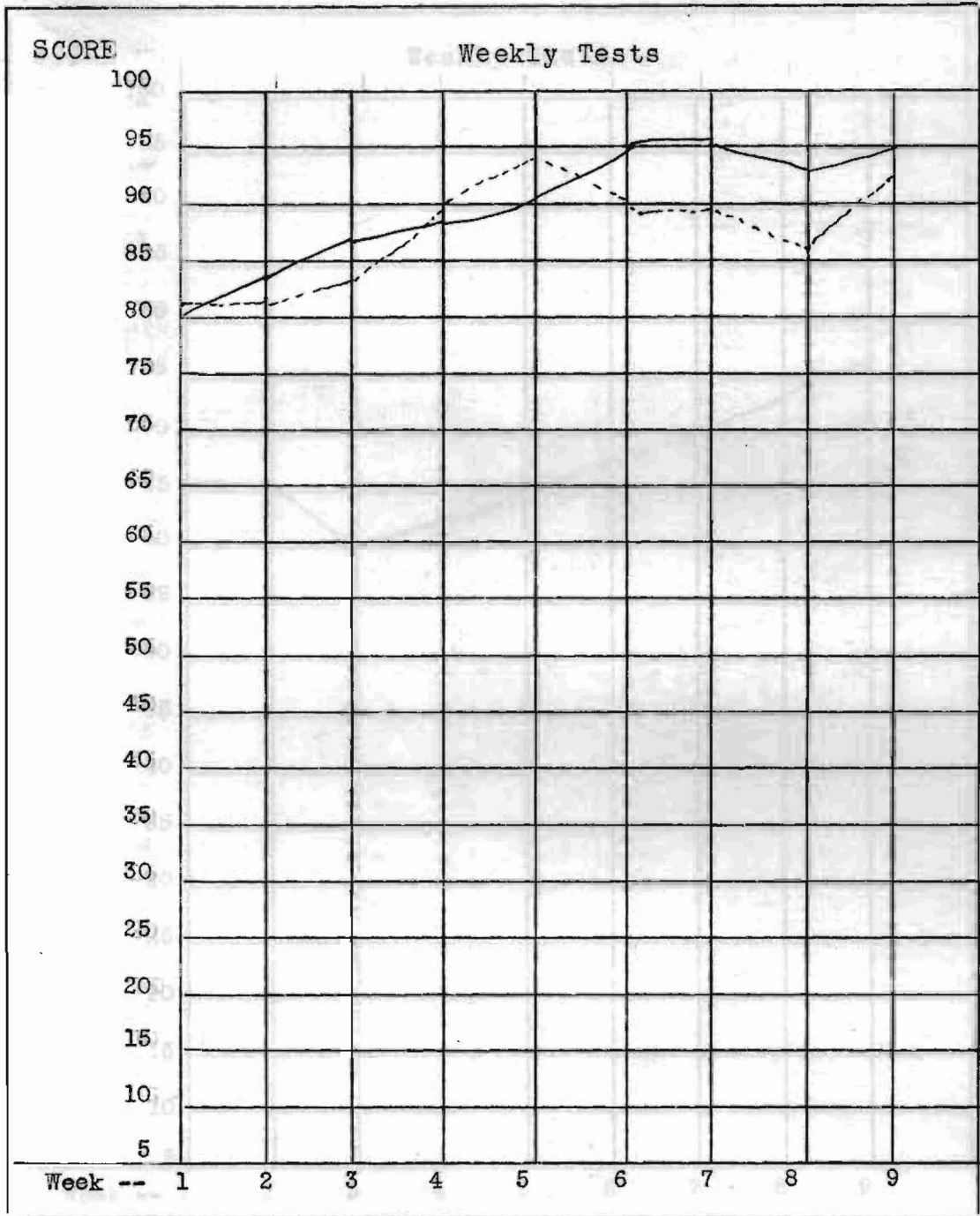


Figure 12. Weekly Class Averages. 5AB Test-Study —
5AB Study-Test ---

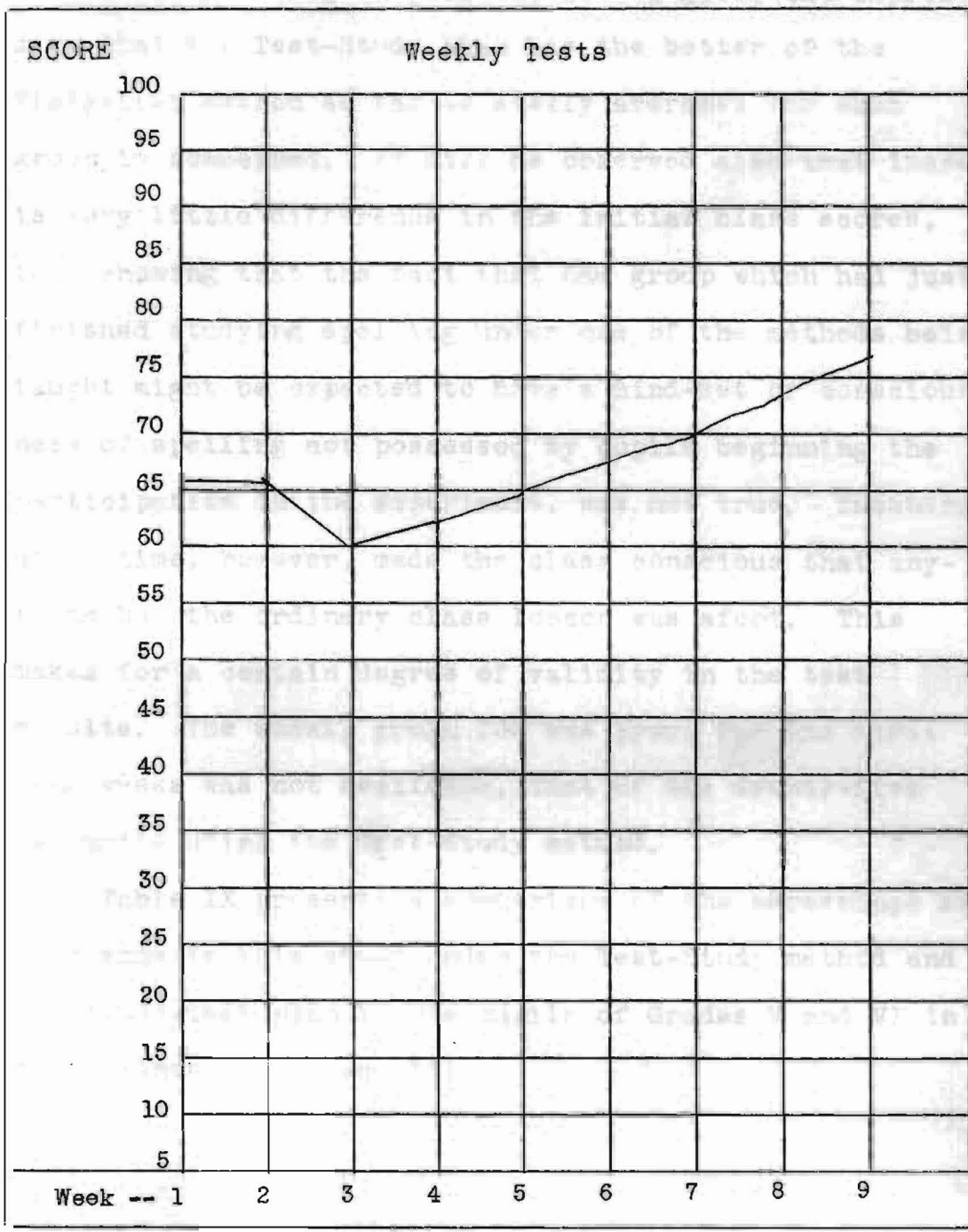


Figure 13. Weekly Class Averages 6B Study-Test —

A study of Figures 11, 12, and 13 gives the impression that the Test-Study plan has the better of the Study-Test method so far as weekly averages for each group is concerned. It will be observed also that there is very little difference in the initial class scores, thus showing that the fact that one group which had just finished studying spelling under one of the methods being taught might be expected to have a mind-set or consciousness of spelling not possessed by pupils beginning the participation in the experiment, was not true. Teachers at no time, however, made the class conscious that anything but the ordinary class lesson was afoot. This makes for a certain degree of validity in the test results. The weekly graph for one group for the first nine weeks was not available, that of the twenty-five 6A pupils using the Test-Study method.

Table IX presents a comparison of the percentage of gain made in this study under the Test-Study method and the Study-Test plan by the pupils of Grades V and VI in Experiments I, II, and III.

TABLE IX. COMPARISON OF PERCENTAGE OF GAIN MADE BY PUPILS OF GRADES V AND VI USING THE TEST-STUDY AND THE STUDY-TEST METHODS.

Grade	Study-Test Plan				Test-Study Plan			
	I Q	Initial Score	Final Score	Gain	I Q	Initial Score	Final Score	Gain
Ex. I 6AB	86.3	36	54	50	86.3	37	60.9	64
Ex. II 6AB	90.4	25	39	56	88.3	48	56.	16.6
Ex. III 5AB	97.3	37	63	70	97.3	30	50	66.6
Average	91.3	33	52	57.5	90.6	38	55.6	46.3

Table IX shows an average gain of 11.2 per cent in favor of the Study-Test method. If one compares the percentage of gain of the two groups of the same children's scores, the 5AB pupils in Experiment III show a gain of 4 per cent when taught by the Study-Test plan, but the 6AB group in Experiment I, a gain of 14 per cent in favor of the Test-Study plan. The 5AB pupils, however, were taught by the same teacher throughout Experiment III. The 6AB pupils in Experiment II were taught by the Study-Test plan by one teacher, and the Test-Study plan by a different teacher. The other group of 6AB students shows an increase of 39 per

cent when taught by the Study-Test Plan. It was expected by those conducting the investigation that the greater increase would be shown under the Test-Study method because some students had made almost phenomenal gains under this method.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. There was no appreciable difference between the performance of children who took part in the experiments for the first time and those who had had nine weeks' previous training in the Test-Study plan or the Study-Test method. This result of the experiment does not lead the writer to believe the theory that spelling ability depends upon the "tachistoscopic speed of eye-movements" rather than upon drill in writing or recitation, whether recited orally or otherwise.

2. The theory was made during the investigation that any method of teaching spelling as an auditorial program would be more effective than the traditional method. The results of the investigation definitely affect the theory. The results for the other following methods are under investigation.

3. The Test-Study method averaged higher scores than

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. There was no perceptible difference between the performance of children who took part in the experiments for the first time and those who had had nine weeks' previous training in the Test-Study plan or the Study-Test method. This is one of the factors which has led the writer to believe the theory that spelling ability depends upon the "tachistoscopic span of comprehension"¹ rather than upon drill in writing or vocalizing words, either syllabically or otherwise.
2. The discovery was made during the investigation that any change of routine such as an auditorium program or room parties reacted unfavorably upon the class averages. That emotional reactions would definitely affect so dry a subject as spelling seems to be, calls for further reflective thinking as well as investigation.
3. The Test-Study method averaged a higher degree of

¹G. W. Hartman, loc. cit.

attainment in practically all ability groups.

4. More children, however, made gains under the Study-Test plan.

5. Experiment I showed an increase of 14 per cent in favor of the Test-Study plan.

6. Experiment II showed an average gain of 39.4 per cent in favor of the Study-Test method.

7. Experiment III showed an average gain of 3.4 per cent in favor of the Study-Test plan.

8. The results in Experiment III seem to indicate that where the teaching element was constant (the same teacher taught both methods in this experiment) the advantage of one method over another was not so apparent.

9. The average per cent of gain in the three experiments was 11.2 per cent in favor of the Study-Test procedure. In a daily spelling period of fifteen minutes in Grades V and VI, the Study-Test method is better than the Test-Study plan.

Recommendations

It is recommended that all children have visual and auditory tests when they enroll in the first grade. As far as the school health program will permit all eye defects should be taken care of immediately. Children with ear defects should be seated as near to the instructor as possible. Those with left ear defects should be seated so

that the right ear will be toward the center of the room and those with right ear defects so that the left ear will be toward the center. In this manner they will be able to hear with a maximum degree of efficiency. Lists of children with such defects should be kept on file in the principal's office. When a pupil is promoted or transferred, the record should be sent immediately to the receiving teacher. In the fourth and eighth grades, the visual and auditory situation should be rechecked.

Assuming that spelling ability is dependent upon "the tachistoscopic span of comprehension"² it is recommended that drill exercises should be given daily in order to increase "the speed and accuracy of immediate visual perception as it exerts the dominant influence in spelling efficiency."³ Such drills might be word, phrase, sentence, number, or graphic, such as lines, curves, dots, or angles. They should be presented in both script and print by means of the ordinary flash card or upon the stereopticon.

²G. W. Hartman, op. cit.

³G. W. Hartman, op. cit.

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