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An Experiment in the Improvement of Reading for Study

Alois H. Holper

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AN EXPERIMENT IN THE IMPROVEMENT
OF READING FOR STUDY

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A Thesis
Submitted to the Graduate Faculty
of the
University of North Dakota.

by
Alois H. Holper

In Partial Fulfillment of the Requirements
for the
Degree of
Master of Science in Education
June 1937

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This thesis, presented by Alois H. Holper in partial fulfillment of the requirements for the degree of Master of Science in Education, is hereby approved by the Committee in Instruction in charge of his work.

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CHAPTER 1

INTRODUCTION

Mastery of study and reading are undoubtedly important tools for every pupil who enters high school. Very little has been done either in measuring the ability of Freshman students to study, or read with comprehension, or in attempting to improve such ability during their stay in school. Various attempts have been made to improve students ability to study and read by using material as remedial work for retarded pupils.

We believe all pupils can be benefitted by a course in mastery of studying and reading. This has been attempted by various methods; namely,

1. In study halls where a mixed group usually exists. Here much can be done but results are limited and hard to determine.

2. In English and Social Sciences. The course is given as an introductory unit or it maybe given two periods a week. Most courses of study in English or Social Sciences require considerable material in the course of study. It is not advisable to add more.

3. In Physical Education, Music or Art classes. These classes meet at odd times. This would not allow for a proper application of material learned. It would be hard to convince students of the importance of study and reading by this arrangement.

4. In Faculty meetings. Here we suggest it would be possible to explain the program we are attempting. Teachers would be requested to apply the principles of study and good reading for study in all

assignments as a continuation of the work.¹ To ask all teachers to add it to an already crowded course of study would be of little value.

5. In Library instruction classes considerable information could be given pupils, but many important principles would be omitted because of lack of proper application.

6. In Home Room groups. Here the material would be presented as a part of the home room program. We might suggest this method to be used in connection with our plan, so as to keep constantly before the pupil the importance of reading and study.

7. Study Clubs. Many clubs have been formed which have proved interesting and profitable. This would take care of a limited number of pupils particularly interested in the question of reading and study. The pupils that should have training in study and reading should be encouraged to join the study club.

The above mentioned methods have all been attempted and proved quite satisfactory, some have failed not because of the method used, but because teachers and pupils alike have failed to see the importance of reading and study. Furthermore, it was an added feature of an entirely different program of work. We suggest that the improvement of reading and study be a part of a definite course or subject offered, which will give it an importance equal with other subjects.

This year we have added the improvement of study and reading as a part of the subject matter in Business Relations and Occupations.

¹A. E. McNelly, Study Mastery Manual for Teachers (Lyon and Carnahan - New York City 1936)

This is in line with the idea of giving a course which will better prepare the pupil for study in the senior high school. For many years, the difficulties of high school pupils have been due to a lack of ability to study and read. It is suggested that some method be devised to continue the application of these principles in study and reading for each succeeding year in high school.

Two experiments have been made in reading, which seem to apply particularly here. (1) By Dr. Dudley H. Miles in two high schools in New York City, (2) By P. B. Jacobsen and E. C. Van Dusen in the Little Falls, Minnesota high school.

Dr. Miles² in his report of the experiment, in the two high schools of New York City concluded: "Dull, slow readers can be taught to read more accurately, and even brilliant pupils can be urged to a higher degree of comprehension."

Jacobsen and Van Dusen in their experiment concluded³.

1. "Pupils of high intelligence in nearly all cases improved their reading ability equal to or above the tenth grade level."
2. "Pupils with low intelligence made large gains."
3. "About equal gains in test scores were made by the best and poorest of pupils deficient in reading."
4. "The deficient readers gained 2.1 grades in reading ability."
5. "The percentage of ninth grade pupils who entered tenth grade was larger than usual."

²Dudley H. Miles, "Can the High School Pupil Improve His Reading Ability." Journal of Educational Research, Volume 14 (September 1926) pp97

³P. B. Jacobsen and E. C. Van Dusen, "Remedial Instruction In Reading In the Ninth Grade", School Review, Volume 38 (February 1930) pp. 142

These facts are significant in that the results were obtained by remedial work in reading for the pupils proved deficient by standard tests. Pupils of normal ability did not take the remedial work.

The terms "reading" and "study" have long been closely associated in common speech and thought. Lesson learning or recitation, and preparation of the lesson from textbook has occupied the largest share of the time in school. Pupils and teachers have thought of reading as study, and study as reading. Our study of textbooks has made our schools almost entirely reading schools. The teaching of reading has often been the only means used for improvement of study.

A course of improvement in reading and study should have for its aim "improvement of reading for study." By improvement of study a pupil can increase his ability to read. Others have improved reading ability by the use of remedial work in reading for below normal pupils, for pupils irregular in attendance, for pupils retarded because of changing schools or because of ill health.

All pupils will take the course in Business Relations and Occupations. To the course of study will be added units of work designed to aid the pupil to improve his ability to "read for study" as this is an important factor for future success. It is the purpose of this study to determine whether this is being realized.

The Problem

The Problem approached has many phases:

- 1) To determine (a) Comprehension, (b) Rate of silent reading of students at the beginning of the ninth year, and to determine what gains are made during the course in Business Relations and Occupations.

2) To determine (a) Comprehension, (b) Rate of silent reading for: 1) pupils who attended the schools of the local district (2) pupils who attended rural schools 3) pupils who attended other schools not in district organization. Purpose of this comparison is to determine the deficiency of each group for purposes of instruction.

3) To determine (a) Comprehension (b) Rate of silent reading for: students of three different levels of intelligence and to determine what gains are made by each group during the course. This grouping is also to be used to point out deficiencies for instruction purposes. The following three levels were used: 1) I.Q. - 111-150, 2) I.Q. - 91-110, 3) I.Q. - 71-90

4) Three classes are to take the first semester of the course known as Business Relations and designated as group B, three classes are to take the second semester of the course known as Occupations and designated as group A. The reading ability of the two groups is determined at the beginning of each semester's work. At the end of first semester each group is to be tested a second time. This will determine what gains have been made by each group, during the first semester.

At the beginning of the second semester the group which has completed the first semester's work in Business Relations will study the second semester's work in Occupations. Also the group which completed the work in Occupations, namely; group A, will study the first semester's work in Business Relations. At the end of the second semester each group will be tested a third time. This test is to determine the gain made by each during the second semester.

Limitations

The main purpose of this experiment is to determine the improvement made by ninth grade pupils in reading ability. This will be accomplished by obtaining their scores in reading comprehension and rate of reading according to the Iowa Silent Reading Test. The problem is limited to improvement of reading rate and comprehension in so far as it can be accomplished by regular class room work based upon the units of instruction as outlined for this experiment.

No attempt was made to improve reading rate or comprehension by selecting below normal pupils for remedial work. For the purpose of this experiment all instruction, special and individual aid was

handled during the regular class period. Therefore, the results obtained are limited to what has been accomplished during regular classroom procedure.

Other experiments of this nature have used remedial work in reading as the basis for improvement of reading ability. No remedial instruction was given to pupils whose score indicated above normal reading ability. This study includes all pupils in the ninth year, whose test showed them to possess, average, above average or below average reading ability. No outside work was assigned pupils in any of the units that had to do with reading or study. Whatever home work was assigned consisted of exercises in units of business or occupations. Home work was limited to three assignments.

Progress in reading rate and comprehension, for the purpose of this study is therefore limited to such progress it was possible to attain by class room study and discussion.

Subjects

For many years it has been believed that a considerable number of the pupils in the Bemidji High School were deficient in reading ability and that this deficiency was a serious handicap to the individual through out his high school course. Accordingly, during the second week of the school year 1936-37, the Freshman class of 226 pupils was tested by means of the Iowa Silent Reading Test.

The Freshman class as a result of the program of studies, had been divided into six sections; three sections in Junior Business Training and three sections in Occupations. The section in Junior Business

7

Training (for our purpose) is designated as Group B and the section in Occupations as Group A. The ninth grade was composed of 103 students who had attended school in the local district, 88 students who had completed their elementary work in the rural schools of Beltrami County, and 35 students had completed their elementary work in schools outside the district. The object is to compare the reading abilities of each group having elementary training in rural, private, or other public schools to determine which group had the greater reading ability. This would give reason for providing such opportunity as needed for special remedial instruction.

Technique

The experiment was set up during the first two weeks of school. Considerable difficulty was experienced because of this fact. However, once the program was established, it was carried out carefully. The pupils in Group A were slightly handicapped because of the indefiniteness of when the tests were to be given and some delay in determining the course of study.

Three tests were given every student in the ninth grade. The first test was given the second week of the school year, and the second test the last week of the first semester and the third test will be given in the last month of the second semester. Group B is used as the control group for the first semester and Group A is used as the control group for the second semester.

Progress is to be measured by 1) increase or decrease in grade ability, 2) increase or decrease in percentile rank. The comprehension and rate scores are turned into grade equivalents. The progress made

by a pupil is indicated by the increase or decrease in grade ability. For illustration a comprehension score of 142 is equal to a grade equivalent of 9.1 and a reading rate score of 30 is equal to a grade equivalent of 9.1. The scores of the second and third tests are turned into grade equivalents. By comparing the grade equivalents, the increase or decrease in reading ability of a student can be determined.

The percentile rank for various scores in each group for every test will be calculated. The percentile ranks will be compared with the normal percentile and the percentile rank scored in the previous test. The data for these comparisons are arranged in a chart. The charts for the various tests will contain all the data necessary for making the comparisons for each phase of the study.

Class technique in improvement of reading was designed to show the pupil his weakness in reading and how best to break this habit and replace it with the corresponding correct habit. All methods for improvement of reading and study were applied in the study of Occupations. Here the pupil was shown how the various habits of study and reading applied, whether he could use each method successfully. If a method did not work satisfactorily, the pupil was shown another method which was perhaps better adapted to his ability.

The main purpose of study in classwork and reading habits was to discover correct habits of study and reading, and to use properly the habits which, by experience the pupil found he could use most successfully for his ability.

The Units of Instruction

The units of instruction which are treated by this study are:

1) those which touch upon personal needs of large numbers of people constitute the course of study for the first semester's work, 2) those which touch the personal needs of students for: a) a wise choice of a life work, b) a comprehensive study for improvement of study and reading.

The following units or topics will be made the basis for the present investigation:

First Semester

In the first semester's work in Business Training for Group B, no attempt was made to improve reading or studying ability. Group B was used as a control group. The class work was carried on in a regular manner. No special effort was made to improve reading or study, except what would be done in ordinary class work. During the second semester no further attempt was made to improve reading and study by Group A. This class room work followed the same procedure as Group B for the first semester. Group A was the control group the second semester.

The following is the outline of work for Group B for first semester and Group A for the second semester.

I- Common Skills

- A- Penmanship
- B- Typewriting
- C- Business Letters
- D- Business Arithmetic
 - 1- Fundamental Processes
 - 2- Fractions and percentage
 - 3- Graphs
 - 4- Business activity problems
 - 5- Home activity problems
 - 6- Bank interest
- E- Ruling
- F- Filing and Indexing
- G- Use of Business Machines
 - 1- Duplicating Machines
 - 2- Check protectors
 - 3- Adding machines

- 4- Cash registers
- 5- Addressing machines
- 6- Dictating machines
- 7- Other machines

II- Thrift

- A- Earning
- B- Spending
 - 1- Wise spending
 - 2- Budgeting
- C- Saving and Investing
 - 1- Factors to be considered in investing money.
 - 2- Life Insurance
 - 3- Home ownership
 - 4- Savings account in bank
 - 5- Certificate of deposit in bank
 - 6- Postal savings
 - 7- Retirement and pension funds
 - 8- Building and loan associations
 - 9- Mortgages
 - 10- Stocks and Bonds

III- Public Service

- A- Communication
 - 1- The telephone
 - 2- The postal service
 - 3- Other facilities for sending messages.
 - a- The telegram
 - b- The cablegram
 - c- The radiogram
- B- Transportation
 - 1- Express shipments
 - 2- Freight shipments
- C- Travel Information
 - 1- Railroads
 - 2- Bus
 - 3- Airplane
 - 4- Foreign travel
 - 5- Hotels
 - 6- Traveler's money

IV- Business Forms

- A- Relations to merchandise
- B- Relating to banks
- C- Relating to money transactions

V- Taxation

- A- National Taxes
- B- State Taxes
- C- Local taxes

VI- Business Organizations**Second Semester**

Class work for Group A for the first semester and Group B for the second semester consisted of two phases, 1) improvement of the individual 2) a survey study of the various occupations. The following is the outline of work for group A for the first semester and group B for the second semester:

I- Improvement of the Individual**A- Self-analysis****B- Personal qualities necessary for occupational success.**

- 1- Character traits
- 2- Personality traits
- 3- Social traits

C- Principles of study

- 1- Physical conditions of study and posture.
- 2- School and home study conditions
- 3- Aid to concentration
- 4- Attitudes of study
- 5- Habits of study
- 6- Assignments
- 7- Use of references

D- Reading

- 1- Introduction
- 2- Habits of reading
- 3- Purposes of reading
- 4- Rate of reading
- 5- Comprehension
- 6- Re-reading

E- Methods of Studying

- 1- Introduction
- 2- Memorizing
- 3- Outlining
- 4- Note taking
- 5- Key words
- 6- Paragraph comprehension
- 7- Study questions
- 8- Study devices
- 9- Study problems
- 10- Taking tests
- 11- Reviewing for test and examinations
- 12- Special study helps

II- Activity Fields

- 1- Agriculture
- 2- Forestry and Fishing
- 3- Mining
- 4- Manufacturing
- 5- Transportation
- 6- Communication
- 7- Trade
- 8- Public service
- 9- Professional service
- 10- Clerical services
- 11- Domestic and personal service
- 12- Homemaking

III- Successful Men and Women

Study of biographies in each of activity fields listed in Part II above.

The Test

The Iowa Silent Reading Tests drafted by H. A. Goune and V. H. Kelly⁴ have been used in this study. The statements of the authors disclose the following facts regarding the test.

"Value and Function- The aims and purposes of teaching reading in our schools has definitely shifted in recent years. A few years ago it was enough for a child glibly to name words appearing on the printed page. Now it is considered more important for him to read such material rapidly and secure the answer to a specific question as an indication of his comprehension of it. The oral type of reading is now somewhat over-shadowed in importance by the more practical work-study type of reading ability."

⁴Iowa Silent Reading Tests - Elementary A and B by H. A. Green and V. H. Kelly. Published by World Book Co., Yorkers - or - Hudson, New York, and Chicago, Illinois, 1933.

"The solution of most class room problems and many life problems requires the skillful use of books as sources of information. This means that reading is something more than merely the rapid comprehension of printed symbols and the memory and organization of material read. It is also the ability to use books and libraries as efficient sources of information."

"The test represents an effort to go beyond a mere general survey of a single phase of silent reading ability. It is designed to cover a wide range of the skills indispensable to effective reading of the work-study type. The test measures four major aspects of silent reading ability: namely, (1) Comprehension (2) Organization (3) Ability to Locate Information and (4) Rate of Reading."

"Validity-Validity may be defined as an expression of the degree to which a test measures the qualities, abilities, and skills it is designed and supposed to measure. In general, validity may be expressed in terms of the extent to which the test sets up a situation calling into play the use of skills or abilities which experienced observers consider fundamental to success in the given field. Validity may also be expressed statistically in terms of the correlation of the test or tests with certain outside criteria."

"In validating these silent reading tests the major dependence has been placed upon the first method. The analysis list of Horn and McBroom⁵, showing the skills, knowledges, attitudes and abilities involved

⁵Ernest Horn and Maude McBroom. "A Survey of a Course of Study in Reading" Extension Bulletin No. 93, College of Education Series No.3. University of Iowa: 1924

in typical silent reading situations was used. Certain additional criteria were used in the validation of the tests. For example, the words used in each exercise were selected and evaluated in terms of research relating to the social utility of these words. All exercises were constructed by using words of known social importance. The words comprising the Subject Matter Vocabulary Tests were selected from the most important words of the Pressey Word Lists."⁶

"Reliability-The reliability of a test expressed the consistency with which it measures whatever qualities it does measure. In general, a test must sample carefully and extensively into the field which it measures in order to secure reliable results. Only when this is done can it secure from the pupil tested a response representative of his true ability. This means tests of many exercises and long listing periods. It means that chance factors, such as temporary physical disturbances, fatigue, etc., will be more largely eliminated from the results."

"High reliability, while desirable, is not the most significant feature of a useful classroom test. In fact, recent evidence shows that it is possible to add test items to a test which will distinctly step up its reliability coefficients of reliability which are spuriously high. Apparently these high coefficients are forced by the very length of the test itself. In order to give a true picture of the reliability of the Iowa Silent Reading Tests, the coefficients reported were obtained by the correlation of one form of the test with the other form. Naturally,

⁶L. C. Pressey, The Special Vocabularies of Public School Subjects Educational Research Bulletin of the Ohio University, Volume 3, pp. 182-185, April, 1924.

this has resulted in reliability coefficients for certain of the test parts which are somewhat lower than might be expected from a test this length. They do reveal, however, a true picture of the actual performance of the test."⁷

"These data show that reliability coefficients were obtained for the Total Comprehension scores on these tests ranging from 78 up to 95, with a typical or median reliability of 90. In view of the criteria enforced in the determination of these reliabilities, this median coefficient of 90 is very significant. The small Probable Error of the Total Comprehension score of 6.3 points indicates that scores on these tests may be accepted with a large measure of confidence that they represent approximately true measure of the students ability to respond to reading situations of the type represented by these tests."

These tests therefore should test satisfactorily the improvement set up for this study.

⁷ Manual - Iowa Silent Reading Tests, H. A. Greene and V. H. Kelly. Table I page 6.

CHAPTER 2

TEST ANALYSIS

There were three tests given, Form A was given at the beginning of the first semester and at the end of the second semester, Form B was given at the end of the first semester.

Each form of the Iowa Silent Reading Test consists of six different tests, namely:

1) Test 1, Part A is composed of a selection in Science. The pupil is required to read the selection and answer the twenty questions immediately following the selection. Test 1, Part B is constructed in the same manner as Part A, except a selection in History is used. This part of test is designed to test the ability of pupil as to paragraph meaning. Comprehension is tested by more than one type of material. There is no general silent reading ability, but one who reads one kind of material well may read another kind poorly, and the ability to read well depends largely upon the nature of the selection read. In using selections from both history and science the test measures comprehension more satisfactorily and accurately.

The questions used in this part of test are of the one or more word answer type. In the test the pupil reads the selection and answers the questions. He may read parts of selection again if necessary to answer the questions. The pupil is allowed six minutes for Part A and seven minutes for Part B.

2) Test 2 is divided into two parts, Part A tests general vocabulary and Part B tests for subject matter vocabulary. The difficulty pupils have in comprehending material presented in textbooks is due to

a lack of knowledge of technical words in a subject, rather than a lack of any general "silent reading ability." Children must be trained for assimilative reading in each subject, and this training must consist of a development of a vocabulary in that subject.

In this test the pupil has five minutes for Part A and five minutes for Part B. The pupil is required in Part A to select one word out of four, which means almost the same as the first word in the exercise. In Part B pupil is required to do the same as in Part A.

3) Test 3 is an exercise in selecting the central idea of a paragraph. The selection of the central idea of a paragraph is a very important ability necessary for effective study. This part of the test is very brief, but it adds considerable to the value and effectiveness of the test. The pupil is allowed four minutes, to read the paragraphs and pick out the sentence at the right of each paragraph, which most nearly gives the central thought of the paragraph.

4) Test 4 tests for sentence meaning. The sentences are planned so that the meaning of the sentence as a whole must be comprehended in order to give the correct answer. Sentences are arranged in order of difficulty. The pupil is required to read each question and answer it by underlining yes or no. Five minutes is allowed for the test.

5) Test 5 is used to test the pupil's ability to locate information. One of the chief objectives of the work-study type of reading is to acquire the ability to locate information quickly and accurately. The two elements involved are the ability to alphabetize and the use of the index. Therefore, we find this part of the test divided into two parts. In Part A, the pupil is required to arrange words in

alphabetical order according to a numbered list. In Part B he is required to work out the answers to a set of questions by the use of an index. The pupil is allowed four minutes for Part A and four minutes for Part B.

6) Test 6 is devised to measure the rate of reading in one specific respect. The conditions under which the people reads are controlled. The object is to hold the rate down to a definite type of comprehension. The pupil is allowed two minutes to read the selection and answer the simple questions which are devised not to interfere with his reading rate. The reading rate at the end of the first minute is checked. Part 6 is a separate and distinct part and the score is not added to total of the other five parts.

It is possible to obtain a total score of 220 points on the comprehension section of the test. The highest reading rate score is 44. A total time of forty-two minutes is required to administer the test.

An analysis made of the test shows that the following skills, knowledges, attitudes and abilities involved in typical silent reading situations are tested by the various test items.¹

- 1-Skill in recognizing new words
- 2-Ability to locate material quickly
 - a-Knowledge of and ability to use an index
 - b-Ability to use table of contents
 - c-Ability to use dictionary
 - d-Ability to use library card files
 - e-Ability to use reference material
 - f-Ability to use keys, tables, graphs, etc.
 - g-Ability to skim

¹Ernest Horn and Maude McBroom, A Survey of a Course of Study in Reading Extension Bulletin No. 93, College of Education, Series No. 3 (University of Iowa 1924)

- 3-Ability to comprehend quickly what is read
 - a-Rhythmic and rapid eye movements
 - b-Absence of lip reading
 - c-Knowledge of meaning
- 4-Ability to select and evaluate material needed.
- 5-Ability to organize what is read
 - a-To summarize
 - b-To assign topics to proper order or place
 - c-To discover related material
 - d-To outline
- 6-Remembrance of material read
- 7-Knowledge of sources
- 8-Attitude of attacking reading with vigor
- 9-Attitude of proper care of books

In the test every item contributes toward the correct evaluation of the pupil's silent reading ability of the work-study type. This test is therefore best suited for the purpose of the study.

CHAPTER 3

PRELIMINARY GROUPINGS AND COMPARISONS

The preliminary groupings and comparison of scores for Test A given in the beginning of the first semester is presented by a series of twenty-four charts. The charts contain the following information:

The median and quartile scores for a normal group, for Test A.

A graphic distribution showing a normal distribution curve of each group.

The percentage of pupils attaining a definite grade ability for the test.

The percentile rank of a normal group as compared with percentile rank of students in Test A.

The data is very conveniently arranged in the charts for the purpose of making the necessary comparisons. The scores used in this series of charts were obtained by giving the Iowa silent Reading Test, Elementary Form B, at the beginning of the first semester.

The first eight charts are a comparison of ability in reading comprehension and reading rate of 226 freshmen. The charts show the reading comparisons of students entering high school from the local district, from the rural districts and from sources outside of the local and rural districts.

Each group, namely Group A and Group B was divided into three divisions based upon intelligence quotients, namely below normal I.Q. 71-90, normal I.Q. 91-110, and above normal I.Q. 111-150. The intelligence quotients were obtained when the students first entered high school by the "Terman's Group Test of Mental Ability" for grades 7 to 12.

In the comparison, Group B is the control group. Group A is to receive the instruction in improvement of study and reading during the first semester. Sixteen charts are used to indicate the reading ability of students comprising Group A and Group B at the beginning of the ninth grade. The purpose of the study is to compare the advancement made by each group in one semester. This comparison will be made at the end of the first semester.

Comparing Individual Pupils in Comprehension

Chart 1 shows the comparison for reading comprehension of 226 ninth grade students. The normal reading ability for ninth grade students in comprehension is a score of 158 which is equivalent to a grade median of 9.10 grade. The ninth grade of 226 freshmen has a median score of 132.5 or a grade median of 8.6 grade. The grade median of quartile 1 is 7.5 grade and for quartile 3 the grade median is 9.7 grade. The freshmen class is approximately 1.4 grade below normal ability in comprehension. By grade ability is meant the students do as well as the average of pupils who have completed four tenths or six tenths of the particular grade.

Table 1

Distribution of Two Hundred Twenty-Six Freshmen

According to Reading Comprehension

	Number	Per Cent
From fifth to sixth grade ability	3	1.1
From sixth to seventh grade ability	29	12.8
From seventh to eighth grade ability	40	17.7
From eighth to ninth grade ability	59	26.5
From ninth to tenth grade ability	48	21.2
Above tenth grade ability	47	20.7
Total	226	100.0

Graphic Distribution Chart 1

Reading Comprehension

Class Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution Score	Fre- quency	Numerical Distribution		Percentiles Normal Group
		Grade Ability	Percent	
** 195-191	2			90 100
**** 190-186	4			80 99
***** 185-181	5			75 97
***** 180-176	5	above 10	7.0	95
***** 175-171	8			94
***** 170-166	10			60 89
**** 165-161	4			85
***** 160-156	9	10	13.7	50 83
***** 155-151	14			79
***** 150-146	22			40 73
***** 145-141	12	9	21.2	63
***** 140-136	12			58
***** 135-131	17			30 53
***** 130-126	17			25 49
***** 125-121	13	8	26.5	20 33
***** 120-116	11			31
**** 115-111	4			10 37
***** 110-106	13			25
***** 105-101	12	7	17.7	19
**** 100- 96	4			14
***** 95- 91	5			12
***** 90- 86	9			9
***** 85- 81	8			6
*** 80- 76	3	6	12.8	2
75- 71	0			1 1
* 70- 66	1			1
65- 61	0			.8
** 60- 56	2	5	1.1	.8
Total		226		

Normal - Median - 158 Quartile 1 - 129 Quartile 3 - 184

Group - Median - 132.5 Quartile 1 - 110.6 Quartile 3 - 153.9

A score of 160-156 in a normal group is equal to a percentile rank of 50. The percentile rank for the same score in the class of 226 freshmen is 83 which means that 17 per cent of the group is above the normal median and 83 per cent of the group is below the normal median.

Chart 2 compares the reading comprehension of 103 ninth grade students who completed their elementary grades in the local district. The normal median for this group of 103 students is 134.2 which is equivalent to a grade median of 8.7 grade. The quartile 1 grade median is 7.5 grade and the quartile 3 grade median is 9.4 grade. The students from the local district are 1.3 grade below normal in the ability of reading comprehension. This is .1 grade below the average for the entire freshmen class.

Table 2

Distribution of One Hundred Three Freshmen from Local District
According to Reading Comprehension

	Number	Per Cent
From fifth to sixth grade ability	1	1.3
From sixth to seventh grade ability	18	17.4
From seventh to eighth grade ability	16	15.5
From ninth to tenth grade ability	22	21.3
Above tenth grade ability	15	14.5
Total	103	100.0

A score of 160-156 has a percentile rank of 50 in a normal group which means that 50 per cent of the group have attained a score equal to 160-156 or better. The 103 students have a percentile rank of 89 for the above score. This means that 11 per cent of the group has attained a score equal to 160-156 or better. The group of 103 students has 6 per

Graphic Distribution Chart 2

Reading Comprehension

District Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution			Numerical Distribution			
Score	Fre- quency	Grade Ability	Percent	Percentiles Normal	Group	
* 195-191	1			90	100	
*** 190-186	3			80	99	
* 185-181	1			75	96	
* 180-176	1	Above 10	5.8		95	
*** 175-171	3				94	
** 170-166	2			60	91	
165-161	0				89	
**** 160-156	4	10	8.7	50	89	
***** 155-151	7				85	
***** 150-146	9			40	78	
***** 145-141	6	9	21.3		70	
***** 140-136	7				64	
***** 135-131	10			30	57	
***** 130-126	9			25	47	
***** 125-121	5	8	30.0	20	40	
***** 120-116	6				34	
** 115-111	2			10	28	
**** 110-106	4				26	
**** 105-101	4	7	15.5		22	
** 100- 96	2				18	
**** 95- 91	4				16	
***** 90- 86	5				12	
***** 85- 81	5				8	
** 80- 76	2	6	17.4		3	
75- 71	0			1	1	
70- 66	0				1	
65- 61	0				1	
* 60- 56	1	5	1.3		1	
Total		103				

Normal - Median - 158 Quartile 1 - 129 Quartile 3 - 184

Group - Median - 134.2 Quartile 1 - 108.8 Quartile 3 - 148.5

cent less of the group equal to or above the 50 percentile in comparison to the class of 226 students.

Chart 3 is a comparison of reading comprehension of 88 students who completed their elementary grades in the rural schools of the county or nearby districts. The median for the group of 88 students is 135.5, or a grade median of 8.7 grade. This is .1 grade above the grade median of the entire ninth grade group, and equal to the grade median of the 103 students from the local district. The quartile 1 grade is 7.9 grade and the quartile 3 grade is 9.9 grade.

Table 3

Distribution of Eighty-eight Freshmen from Rural
Districts According to Reading Comprehension

	Number	Per Cent
From fifth to sixth grade ability	1	1.3
From sixth to seventh grade ability	8	9.0
From seventh to eighth grade ability	14	16.0
From eighth to ninth grade ability	21	23.8
From ninth to tenth grade ability	21	23.8
Above tenth grade ability	23	26.1
Total	88	100.0

For a score of 160-156, the group of ninth grade students from the rural districts has a percentile rank of 80, which means that 20 per cent of the group has attained a score of 160-156 or better.

Chart 4 is a comparison for reading comprehension of 35 ninth grade students who completed their training in the parochial, college elementary, and in urban districts of the state or some other state. The median for the group of 35 students is 121 equivalent to a grade

Graphic Distribution Chart 3

Reading Comprehension

Rural Comparison

Test - Silent Reading - Elementary Form A

Graphic Distribution	Score	Fre- quency	Numerical Distribution			
			Grade Ability	Percent	Percentiles Normal Group	
*	195-191	1			90	100
*	190-186	1			80	99
**	185-181	2			75	97
***	180-176	3	Above 10	8.0		95
****	175-171	4				92
*****	170-166	5			60	87
***	165-161	3				82
****	160-156	4	10	18.1	50	80
*****	155-151	6				74
*****	150-146	10			40	67
*****	145-141	5	9	23.8		56
****	140-136	4				50
*****	135-131	5			30	45
*****	130-126	8			25	40
****	125-121	4	8	23.8	20	30
***	120-116	3				26
*	115-111	1			10	22
****	110-106	4				21
*****	105-101	6	7	16.0		17
*	100- 96	1				10
*	95- 91	1				9
****	90- 86	4				8
**	85- 81	2				3
	80- 76	0	6	9.0		1
	75- 71	0			1	1
	70- 66	0				1
	65- 61	0				1
*	60- 56	1	5	1.3		1
Total		88				

Normal - Median - 158 Quartile 1 - 129 Quartile 3 - 184

Group - Median - 135.5 Quartile 1 - 118.8 Quartile 3 - 156.8

median of 7.1 grade. The quartile 1 median grade is 7.4 grade and the quartile 3 median is 9.8 grade.

Table 4

Distribution of Thirty-five Freshmen from Schools Outside
the Local District, According to Reading Comprehension

	Number	Per Cent
From fifth to sixth grade ability	1	2.4
From sixth to seventh grade ability	3	8.9
From seventh to eighth grade ability	10	28.5
From eighth to ninth grade ability	7	20.0
From ninth to tenth grade ability	5	14.2
Above tenth grade ability	9	26.0
Total	35	100.0

For a score of 160-156 the group of 35 students has a percentile rank of 78, which means that 22 per cent of the pupils have attained a score of 160-156 or better.

The students from the three sources are all below normal ability in reading comprehension. The difference in the per cent of each group below grade is slight. This difference is not great enough to warrant additional remedial work for any particular group. The purpose of the above comparisons was to discover if certain deficiencies existed, in the groups which would require additional instruction. A large number of the students in the group are in the lower quartile of the group of average intelligence. This fact is the reason for a large number of the group below normal ability in reading comprehension.

Graphic Distribution Chart 4

Reading Comprehension

Outside District

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution			Numerical Distribution			
Score	Fre- quency	Grade Ability	Percent	Percentiles Normal	Group	
		P G M				
195-191				90		
190-186				80		
** 185-181	1 1			75	100	
* 180-176	1	Above 10	8.9		96	
* 175-171	1				93	
*** 170-166	2 1			60	90	
* 165-161	1				81	
* 160-156	1	10	17.1	50	78	
* 155-151	1				75	
*** 150-146	1 2			40	72	
* 145-141	1	9	14.2		63	
** 140-136	2				61	
* 135-131	1			30	55	
130-126				25	52	
**** 125-121	1 2 1	8	20.0	20	52	
*** 120-116	1 1 1				41	
115-111				10	32	
***** 110-106	2 3				32	
** 105-101	1 1	7	28.5		17	
* 100- 96	1				11	
95- 91					9	
90- 86					9	
* 85- 81	1				9	
* 80- 76	1	6	8.9		6	
75- 71				1	3	
* 70- 66	1				3	
65- 61						
60- 56		5	2.4			
Total		17 4 14				

Normal - Median - 158

Quartile 1 - 129

Quartile 3 - 184

Group - Median - 121

Quartile 1 - 107.2

Quartile 3 - 155.6

Table 5^a

Number and Percentage of Freshmen Received from Each of Three Sources and Number and Percentage of Each Group Deficient in Reading Comprehension

	Num- ber	Percent- age of Total	Number Deficient in Compre- hension	Percentage Deficient in Compre- hension
Local District	103	45.6	66	64
Outside District				
Including parochial school	35	15.4	20	57
Ungraded rural schools	88	39.0	44	50
Total	226	100.0	130	57

^aA score below ninth grade level is considered deficient in reading comprehension.

The condition revealed by the tests is serious. A large number of pupils are deficient in the ability of reading comprehension. Since the curriculum is primarily a reading program, success in school subjects depends largely upon the pupil's ability to read with understanding. Failure in school work is increasingly being traced to serious disabilities in reading. This study is an attempt to remedy the condition by improving the reading and study habits of the students.

Chart 5 is the reading comprehension comparison for Group A at the beginning of the experiment. Group A has a median of 131.2, equivalent to a grade median of 8.5 grade. The quartile 1 grade equivalent is 7.7 grade and the quartile 3 grade equivalent is 9.7 grade. Group A is 1.5 grade below the normal grade median of 9.10 grade.

Graphic Distribution Chart 5

Reading Comprehension

Group A. Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution Score	Fre- quency	Numerical Distribution		
		Grade Ability	Percent	Percentiles Normal Group
195-191	0			90
** 190-186	2			80 100
**** 185-181	4			75 98
*** 180-176	3	Above 10	7.6	94
*** 175-171	3			91
***** 170-166	5			60 90
** 165-161	2			85
***** 160-156	5	10	12.8	50 83
***** 155-151	8			79
***** 150-146	6			40 73
**** 145-141	4	9	15.3	67
***** 140-136	7			64
***** 135-131	11			30 58
***** 130-126	13			25 48
***** 125-121	7	8	32.4	20 37
***** 120-116	7			31
*** 115-111	3			10 25
***** 110-106	6			23
**** 105-101	4	7	17.3	18
** 100- 96	2			14
** 95- 91	2			12
***** 90- 86	5			11
***** 85- 81	5			7
* 80- 76	1	6	12.8	2
75- 71	0			1 2
* 70- 66	1			2
65- 61	0			2
* 60- 56	1	5	1.7	1
Total	117			

Normal Median - 158 Quartile 1 - 129 Quartile 3 - 184

Group Median - 131.2 Quartile 1 - 113.8 Quartile 3 - 153.4

Table 6
Distribution of One Hundred Seventeen Freshmen
Group A According to Reading Comprehension

	Number	Per Cent
From fifth to sixth grade ability	2	1.7
From sixth to seventh grade ability	15	12.8
From seventh to eighth grade ability	20	17.3
From eighth to ninth grade ability	38	32.4
From ninth to tenth grade ability	18	15.3
Above tenth grade ability	24	10.5
Total	117	100.0

Group A has a percentile rank of 83 which is equivalent to 17 per cent of the ranking equal to or above the normal 50 percentile for a score of 160-156.

Chart 6, 7, and 8 is a division of Group A in the three levels of intelligence. Chart 6 compares the reading comprehension of 38 freshmen whose I.Q. is 111-150. The median score of this group is 153.75, equivalent to a grade median of 9.7 grade. Quartile 1 has a grade equivalent of 8.7 grade, and quartile 3 has a grade equivalent of 10.0 grade. Chart 7 is the reading comprehension comparison of 65 freshmen of the average I.Q. level of 91-110. The median score of the group is 127.56 equivalent to a grade median of 8.3 grade. Quartile 1 has a grade equivalent of 8.9 grade. Chart 8 is the reading comprehension comparison of 14 freshmen whose I.Q. is between 71-90. The median score of the group is 87.8 or a grade median of 6.6 grade. Quartile 1 has a grade equivalent of 6.1 grade and quartile 3 has a grade equivalent of 7.1 grade.

Graphic Distribution Chart 6

Reading Comprehension

Group A. I.Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Score	Fre- quency	Numerical Distribution		
			Grade Ability	Percent	Percentiles Normal Group
	195-191				90
*	190-186	1			80
***	185-181	3			75
***	180-176	3	Above 10	13	90
*	175-171	1			83
*****	170-166	5			60
	165-161	0			66
*****	160-156	5	10	30	50
****	155-151	4			53
**	150-146	2			40
*	145-141	1	9	18	37
****	140-136	4			34
*	135-131	1			30
*****	130-126	5			25
	125-121	0			20
*	120-116	1	8	30	8
*	115-111	1			10
*	110-106	1			3
	105-101		7	4	
	Total	38			

Normal Median - 158

Quartile 1 - 129

Quartile 3 - 184

Group Median - 153.75

Quartile 1 - 135

Quartile 3 - 169

Graphic Distribution Chart 7

Reading Comprehension

Group A. I. Q. 91-110

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Fre- quency	Grade Ability	Percent	Normal Percentiles	Group
195-191				90	
* 190-186	1			80	100
* 185-181	1			75	98
180-176	0	Above 10	3		97
** 175-171	2				97
* 170-166	1			60	94
* 165-161	1				92
160-156	0	10	6	50	90
*** 155-151	3				90
**** 150-146	4			40	86
*** 145-141	3	9	15		80
** 140-136	2				75
***** 135-131	10			30	72
***** 130-126	8			25	56
***** 125-121	7			20	45
***** 120-116	6	8	50		34
*** 115-111	3			10	25
**** 110-106	4				20
*** 105-101	3	7	15		14
* 100- 96	1				9
95- 91	0				7.5
** 90- 86	2				7.5
* 85- 81	1				4.5
* 80- 76	1	6	9		3
75- 71	0			1	1.5
* 70- 66	1		2		1.5
65- 61					
Total		65			

Normal Median - 158

Quartile 1 - 129

Quartile 3 - 184

Group Median - 127.56

Quartile 1 - 115.6

Quartile 3 - 140

Graphic Distribution Chart 8

Reading Comprehension

Group A. I.Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Fre- quency	Grade Ability	Percent	Percentiles Normal Group	
145-141		9			
* 140-136	1				100
135-131				30	93
130-126				25	93
125-121				20	93
120-116		8	7		93
115-111				10	93
* 110-106	1				93
* 105-101	1	7	14		85
* 100- 96	1				80
** 95- 91	2				71
*** 90- 86	3				57
**** 85- 81	4				35
80- 76		6	72		7
75- 71				1	7
70- 66					7
65- 61					7
* 60- 56	1	5	7		7
Total	14				

Normal Median - 158

Quartile 1 - 129

Quartile 3 - 184

Group Median - 87.8

Quartile 1 - 77.5

Quartile 3 - 99.5

Table 7

Distribution of One Hundred Seventeen Freshmen in Group A in
the Three Levels of I.Q. According to Reading Comprehension

	I.Q. 111-150		I.Q. 91-110		I.Q. 71-90	
	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent
From 5th to 6th grade ability			1	2	1	7
From 6th to 7th grade ability			5	9	9	72
From 7th to 8th grade ability	2	4	10	15	2	14
From 8th to 9th grade ability	11	30	33	50	1	7
From 9th to 10th grade ability	7	18	10	15	0	0
Above 10th grade ability	18	48	6	9	0	0
Total	38	100	65	100	14	100

The group with I.Q. of 111-150 has a percentile rank of 66 which is equivalent to 34 per cent of the group ranking equal to or above the normal 50 percentile for a score of 160-156.

The group with an I.Q. of 91-110 has a percentile rank of 90 which is equivalent to 10 per cent of the group ranking equal to or above the normal 50 percentile.

The group with an I.Q. of 71-90 did not have a score which ranked near the normal 50 percentile. No ninth grade student out of 14 students in the I. Q. of 71-90 group tested above ninth grade ability in reading comprehension.

Chart 9 compares the reading comprehension for Group B at the beginning of the experiment. Group B has a median of 136, equivalent to a grade median of 8.8 grade. Quartile 1 has a grade equivalent of 7.4 grade and quartile 3 has a grade equivalent of 9.3 grade. Group B

Graphic Distribution Chart 9

Reading Comprehension

Group B Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution				
Score	Fre- quency	Ability	Grade Percent	Normal	Percentiles Group	
** 195-191	2			90	100	
** 190-186	2			80	98	
* 185-181	1			75	96	
** 180-176	2	Above 10	6.4		95	
***** 175-171	5				93	
***** 170-166	5			60	89	
** 165-161	2				84	
**** 160-156	4	10	14.6	50	82	
***** 155-151	6				79	
***** 150-146	16			40	73	
***** 145-141	8	9	27.5		59	
***** 140-136	5				51	
***** 135-131	6			30	47	
**** 130-126	4			25	41	
***** 125-121	6			20	37	
**** 120-116	4	8	19.0		32	
* 115-111	1			10	28	
***** 110-106	7				27	
***** 105-101	8	7	18.1		26	
** 100- 96	2				13	
*** 95- 91	3				12	
**** 90- 86	4				9	
*** 85- 81	3				5	
** 80- 76	2	6	12.7		3	
75- 71	0			1	1	
70- 66	0				1	
65 -61	0				1	
* 60- 56	1	5	1.7		1	
Total		109				

Normal Median - 158

Quartile 1 - 129

Quartile 3 - 184

Group Median - 136

Quartile 1 - 107.8

Quartile 3 - 146.3

was used as a control group the first semester. The grade ability in reading comprehension of Group B is .3 grade greater than Group A.

Table 8

Distribution of One Hundred Nine Freshmen in Group B

According to Reading Comprehension

	Number	Per Cent
From fifth to sixth grade ability	1	1.7
From sixth to seventh grade ability	14	12.7
From seventh to eighth grade ability	16	18.1
From eighth to ninth grade ability	25	19.0
From ninth to tenth grade ability	30	27.5
Above tenth grade ability	23	21.0
Total	109	100.0

Group B has a percentile rank of 82 which is equivalent to 18 per cent of the group ranking equal to or above the normal 50 percentile for a score of 160-156. Group B has a percentile rank of 0.1 per cent greater than Group A.

Charts 10, 11, and 12 compare the reading comprehension of 33 freshmen whose I.Q. is 111-150. The median score of the group is 150.5, equivalent to a grade median of 9.5 grade. Quartile 1 has a grade equivalent of 9.3 grade and quartile 3 has a grade equivalent of 10.8 grade.

Chart 11 is a reading comprehension comparison of 62 freshmen with I.Q. of 91-110. The median score is 133, equivalent to a grade median of 8.6 grade. Quartile 1 has a grade equivalent of 7.5 grade and quartile 3 has a grade equivalent of 9.4 grade.

Chart 12 is a reading comprehension comparison of 15 freshmen with I.Q. of 71-90. The median score of this group is 101.75, equivalent to a

Graphic Distribution Chart 10

Reading Comprehension

Group B. I.Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Score	Fre- quency	Numerical Distribution				
			Grade	Ability	Percent	Percentiles Normal Group	
** 195-191		2				90	100
** 190-186		2				80	94
* 185-181		1				75	88
** 180-176		2	Above 10		22.5		84
** 175-171		2					80
*** 170-166		3				60	72
* 165-161		1					61
* 160-156		1	10		22.5	50	59
** 155-151		2					56
***** 150-146		8				40	50
*** 145-141		3	9		40		25
* 140-136		1					16
* 135-131		1				30	12
130-126		0				25	
** 125-121		2				20	8
120-116		0	8		12.5		
115-111						10	
110-106							
105-101			7				
100- 96							
95- 91							
90- 86							
* 85- 81		1					3
80- 76			6		2.5		
75- 71						1	
70- 66							
65- 61							
60- 56			5				
Total		32					

Normal Median - 158

Quartile 1 - 129

Quartile 3 - 184

Group Median - 150.5

Quartile 1 - 145.5

Quartile 3 - 173

Graphic Distribution Chart 11

Reading Comprehension

Group B. I. Q. 91-110

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Fre- quency	Grade Ability	Percent	Percentiles Normal	Group
195-191				90	
190-186				80	
185-181				75	
180-176		Above 10			
*** 175-171	3				100
* 170-166	1			60	95
** 165-161	2				93
*** 160-156	3	10	14.5	50	90
*** 155-151	3				85
***** 150-146	8			40	80
***** 145-141	5	9	26.0		70
**** 140-136	4				60
**** 135-131	4			30	53
**** 130-126	4			25	46
**** 125-121	4	8	26.0	20	40
**** 120-116	4				34
* 115-111	1			10	27
*** 110-106	3				25
***** 105-101	6	7	22.5		21
** 100- 96	2				11
* 95- 91	1				8
*** 90- 86	3				6.4
85- 81	0				
* 80- 76	1	6	11.0		1.6
75- 71				1	
70- 66					
65- 61					
60- 56		5			
Total	62				

Normal Median - 156

Quartile 1 - 129

Quartile 3 - 184

Group Median - 133

Quartile 1 - 109.6

Quartile 3 - 148.3

Graphic Distribution Chart 12

Reading Comprehension

Group B. I.Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Fre- quency	Grade Ability	Percent	Percentiles Normal Group	
195-191				90	
190-186				80	
185-181				75	
180-176		Above 10			
175-171					
170-166				60	
165-161					
160-156		10		50	
* 155-151	1				100
150-146				40	
145-141		9	6.6		
140-136					
* 135-131	1			30	93
130-126				25	
125-121		8	6.6	20	
120-116					
115-111				10	
**** 110-106	4				87
** 105-101	2	7	40.1		60
100- 96					
** 95- 91	2				46
** 90- 86	2				33
* 85- 81	1				20
* 80- 76	1	6	40.1		13
75- 71				1	
70- 66					
65- 61					
* 60- 56	1	5	6.6		6.6
Total	14				

Normal Median - 158 Quartile 1 - 129 Quartile 3 - 184

Group Median - 101.75 Quartile 1 - 87.4 Quartile 3 - 108.3

grade median of 7.1 grade. Quartile 1 has a grade equivalent of 6.5 grade, and quartile 3 has a grade equivalent of 7.6 grade.

The ability in reading comprehension is greater for Group B. Since the average gain is to be used as the measure of comparison, the greater ability will have to be taken into consideration in the comparisons. The groups were not selected on the basis of I.Q. or reading ability.

Table 9

Distribution of One Hundred Nine Freshmen in Group B in the Three Levels of I.Q. According to Reading Comprehension

	I.Q. 111-150		I.Q. 91-110		I.Q. 71-90	
	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent
From fifth to sixth grade ability	0	.0	0	.0	1	6.6
From sixth to seventh grade ability	1	2.5	7	11.0	6	40.1
From seventh to eighth grade ability	0	.0	14	22.5	6	40.1
From eighth to ninth grade ability	4	12.5	16	26.0	1	6.6
From ninth to tenth grade ability	13	40.0	16	26.0	1	6.6
Above tenth grade ability	14	45.0	9	14.5	0	.0
Total	32	100.0	62	100.0	15	100.0

The group with I.Q. of 111-150 has a percentile rank of 59 which is equivalent to 41 per cent of the group ranking, equal to or above the normal 50 percentile. The group with I.Q. of 91-110 has a percentile rank of 90 which is equivalent to 10 per cent of the group ranking equal to or above the normal 50 percentile.

The group with I.Q. of 71-90 did not have a score which ranked close to the normal 50 percentile. No freshmen out of 15 students in the I.Q. 71-90 group tested above ninth grade ability in reading comprehension. This is true for Group A and Group B.

The I. Q. scores and percentiles indicate possible gains in ability of reading comprehension for all levels of intelligence. The students with higher intelligence quotients will improve with ordinary remedial work or little work in the improvement of study. The instruction for improvement of reading and study is not directed to any one group of intelligence. The object of the study is to measure gains made by each group receiving instruction directed toward no particular group. The instruction given is the same as used in an ordinary class composed of students of varying intelligence and ability.

Table 10^a

Number and Percentage of Freshmen in Group A. and B. Number and Percentage of Each Group Deficient in Reading Comprehension

	Num- ber	Percent- age of Total	Number Deficient in Comprehension	Percentage Deficient in Comprehension
Group A	117	52	75	64
Group B	109	48	56	51
Total	226	100	131	57

^aBelow ninth grade ability is considered to be deficient in Reading Comprehension for the above table.

Sixty-four per cent of Group A is deficient in ability for reading comprehension as compared with fifty-one per cent in Group B. The difference is due because of a greater number of students in Group B who have intelligence quotients in the higher level of intelligence.

Comparing Individual Pupils in Reading Rates

Chart 13 through 24 compares the reading rate of individual pupils for each group used as a basis of comparison. A normal percentile ranking for the reading rate was not available. The percentile rank for each group was calculated and charted. The percentile ranks are available for use on the charts for the second and third test.

Chart 13 is the class comparison for reading rate. The normal reading rate score is 31, which is equivalent to a grade ability of 9.10 grade. The reading rate median for 226 freshmen is 29.3 equivalent to a grade ability of 8.10 grade. The group is .1 grade below normal in reading rate. Quartile 1 is a score of 20.1 or equivalent to 5.7 grade and quartile 3 is a score of 32.8 or equivalent to 10.5 grade.

Table 11

Distribution of Two Hundred Twenty-six Freshmen According to Rate of Silent Reading

	Number	Per cent
Below third grade ability	16	7.0
From third to fourth grade ability	15	6.5
From fourth to fifth grade ability	18	8.5
From fifth to sixth grade ability	20	8.9
From sixth to seventh grade ability	11	5.1
From seventh to eighth grade ability	26	11.0
From eighth to ninth grade ability	20	8.9
From ninth to tenth grade ability	16	7.0
Above tenth grade ability	84	37.1
Total	226	100.0

A reading rate score of 30 is equivalent to ninth grade ability. A pupil with a score of 30 falls into the 60 percentile. Forty per cent of 226 freshmen has a reading rate ability equal to or above ninth grade

Graphic Distribution Chart 13

Rate of Silent Reading

Class Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Fre-		Numerical Distribution		
	Score	quency	Grade Ability	Percent	Percentile
*****	44	11			100
	43	0			95
*****	42	7			95
****	41	4			92
****	40	4			90
*****	39	5			88
***	38	3			86
***	37	3			85
*****	36	5			83
*****	35	6			81
*****	34	12	Above 10	26.5	78
*****	33	8			73
*****	32	16	10	10.6	70
*****	31	7			62
*****	30	9	9	7.0	60
*****	29	16			55
****	28	4	8	8.9	49
*****	27	9			47
*****	26	9			43
*****	25	8	7	11.0	39
*****	24	7			35
*	23	1			33
***	22	3	6	5.6	32
*****	21	11			30
****	20	4			25
*****	19	5	5	8.9	23
*****	18	6			21
*****	17	12	4	8.5	19
***	16	3			13
*****	15	5			12
**	14	2			10
*****	13	5	3	6.1	9
**	12	2			7
**	11	2			6
****	10	4			5
***	9	3			3
*	8	1			2
***	7	3			1.7
	6	0			0
*	5	1	Below 3	7.0	1

Total 226

Normal - Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group - Median - 29.3

Quartile 1 - 20.1

Quartile 3 - 32.8

ability. The reading rate scores range from 5 to 44, which is an ex-distribution. Seven per cent of the 226 freshmen has a reading rate ability below third grade.

The students in the local high school come from three sources: the local district, rural districts, and outside districts or private schools. In the out of the district group are included the students from the college, elementary grades, and the local parochial school.

Chart 14 is the district reading rate comparison. The median score is 28.9, equivalent to a grade ability of 8.10 grade. This is the same grade ability as the group of 226 freshmen. Quartile 1 is a score of 20, equivalent to a grade ability of 5.7 grade, and quartile 3 is a score of 33.6, equivalent to a grade ability of 10.10 grade. The upper quartile of the 103 freshmen from the local district has a reading rate ability greater than tenth grade ability.

Table 12

Distribution of One Hundred Seventeen Freshmen from the Local District According to Rate of Silent Reading.

	Number	Per Cent
Below third grade ability	8	7.7
From third to fourth grade ability	8	7.7
From fourth to fifth grade ability	6	5.8
From fifth to sixth grade ability	7	6.8
From sixth to seventh grade ability	5	4.8
From seventh to eighth grade ability	11	10.5
From eighth to ninth grade ability	12	11.5
From ninth to tenth grade ability	18	7.7
From tenth grade ability	38	37.5
Total	103	100.0

A reading rate score of 30 equivalent to ninth grade ability falls in the 60 percentile. No comparison with a normal percentile is

Graphic Distribution Chart 14

Rate of Silent Reading

District Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Fre-		Numerical Distribution		
	Score	quency	Grade	Percent	Percentile
*****	44	5			100
	43	0			95
**	42	2			95
**	41	2			93
***	40	3			91
***	39	3			88
*	38	1			85
	37	0			84
**	36	2			84
****	35	4			82
****	34	4	Above 10	25.2	79
***	33	3			74
*****	32	9	10	11.6	71
****	31	4			64
****	30	4	9	7.8	60
*****	29	10			55
**	28	2	8	11.6	46
**	27	2			43
****	26	4			41
*****	25	5	7	10.7	38
****	24	4			33
*	23	1			29
	22	0	6	4.9	28
**	21	2			28
***	20	3			26
**	19	2	5	6.8	23
*	18	1			21
*****	17	5	4	5.8	20
*	16	1			15
***	15	3			14
**	14	2			11
**	13	2	3	7.8	10
**	12	2			8
	11	0			6
**	10	2			6
*	9	1			4
*	8	1			3
*	7	1			2
	6	0			1
*	5	1	Below 3	7.8	1

Total 103

Normal - Median - 31 Quartile 1 - 24 Quartile 3 - 37
 Group - Median - 28.9 Quartile 1 - 20.0 Quartile 3 - 33.6

possible at this time.

Chart 15 is the rural reading rate comparison. The median score is 30.1, equivalent to a grade ability of 9.5 grade. This is .5 grades above the grade ability for the entire freshmen class and the group from the local district. Quartile 1 is a score of 21.2 equivalent to a grade ability 5.10 grade and quartile 3 is a score of 35.5, equivalent to a grade ability of 10.1 grade.

Table 13

Distribution of Eighty-eight Freshmen from the Rural Districts
According to Rate of Silent Reading

	Number	Per Cent
Below third grade ability	6	6.0
From third to fourth grade ability	5	7.0
From fourth to fifth grade ability	6	7.0
From fifth to sixth grade ability	6	7.0
From sixth to seventh grade ability	2	2.0
From seventh to eighth grade ability	10	11.0
From eighth to ninth grade ability	6	7.0
From ninth to tenth grade ability	7	8.0
Above tenth grade ability	40	45.0
Total	88	100.0

A reading rate score of 30, equivalent to ninth grade ability, has a percentile rank of 53. Therefore, forty-seven per cent of 88 freshmen from rural schools have a reading rate equal to or above ninth grade ability.

Chart 16 is the outside district comparison of 35 freshmen from the parochial school, college elementary school and other schools not in the local district. The median score is 22, equivalent to a grade

Graphic Distribution Chart 15

Rate of Silent Reading

Rural Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Score	Fre- quency	Numerical Distribution		
			Grade Ability	Percent	Percentile
*****	44	6			100
	43	0			93
*****	42	5			93
*	41	1			87
*	40	1			86
***	39	3			85
**	38	2			82
*	37	1			79
***	36	3			78
*	35	1			75
*****	34	8	Above 10	35.2	74
****	33	4			65
*****	32	5	10	10.2	60
**	31	2			54
*****	30	5	9	8.0	53
*****	29	5			46
*	28	1	8	6.8	41
****	27	4			40
****	26	3			35
***	25	3	7	11.4	31
**	24	2			28
	23	0			26
	22	0	6	2.3	26
****	21	4			26
	20	0			21
**	19	2	5	6.8	21
***	18	3			20
***	17	3	4	6.8	16
**	16	2			12
*	15	1			10
	14	0			9
**	13	2	3	5.7	9
	12	0			7
*	11	1			7
**	10	2			5.7
**	9	2			2.2
	8	0			1
*	7	1	Below 3	6.8	1
Total		88			

Normal - Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group - Median - 30.1

Quartile 1 - 21.2

Quartile 3 - 35.5

Graphic Distribution Chart 16

Rate of Silent Reading

Outside District

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution			Numerical Distribution			
Score	Fre- quency			Grade Ability	Percent	Percentile
	P	C	M			
*	42	1				100
*	41	1				97
	40					94
*	39		1			94
	38					91
**	37	1	1			91
	36					86
*	35	1				86
*	34	1		Above 10	20.0	83
*	33	1				80
	32			10	2.9	77
*	31	1				77
	30			9	2.9	74
*	29		1			74
*	28	1		8	5.7	70
**	27	1	1			69
**	26		1	1		65
	25			7	11.4	57
*	24		1			57
	23					54
***	22	2	1	6	11.7	54
****	21	1	1	2		46
*	20		1			34
*	19	1		5	17.15	31
**	18	1	1			28
****	17	2	2	4	17.15	23
	16					10
*	15		1			10
	14					9
*	13	1		3	5.7	9
	12					6
*	11		1			6
	10					3
	9					3
	8					3
*	7		1	Below 3	5.7	3
Total 17 4 14						

Normal - Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group - Median - 22

Quartile 1 - 17.9

Quartile 3 - 30.8

ability of 6.4 grade. Quartile 1 is a score of 17.9, equivalent to a grade ability of 4.10 grade, and quartile 3 is a score of 30.8, equivalent to a grade ability 9.10 grade.

The students from the outside districts have a lower rate of reading. The students attending schools in various places have suffered particularly in this respect.

Table 14

Distribution of Thirty-five Freshmen from the Outside
Districts According to Rate of Reading

	Number	Per Cent
Below third grade ability	2	6.0
From third to fourth grade ability	2	6.0
From fourth to fifth grade ability	6	17.0
From fifth to sixth grade ability	6	11.0
From sixth to seventh grade ability	4	11.0
From seventh to eighth grade ability	4	6.0
From eighth to ninth grade ability	1	2.2
From ninth to tenth grade ability	8	23.8
Above tenth grade ability	2	17.0
Total	35	100.0

A reading rate score of 30, equivalent to ninth grade ability, has a percentile rank of 74. Therefore 26 per cent of the 35 freshmen from outside districts has a reading rate equal to or above ninth grade ability. The analysis of the reading ability charts indicates that approximately 50 per cent of each group is deficient in reading ability.

Table 15^a

Number and Percentage of Freshmen Received from Each of Three Sources and Number and Per Cent of Each Group Deficient in Silent Reading Rate

	Num- ber	Percent- age of Total	Number Deficient in Rate	Percentage Deficient in Rate
Local District	103	45.6	54	52.3
Outside District	35	15.4	26	74.2
Ungraded Rural Schools	88	39.0	41	46.6
Total	226	100.0	121	53.5

^aAll students below ninth grade ability are considered deficient in reading rate.

Students from all three sources are deficient in reading rate. Fifty-three per cent of the students of the entire group of 226 freshmen are deficient in rate of reading. The students coming from the rural schools have the least number of students deficient in rate of reading. The group of students from the local district are one per cent below the average for all freshmen. The students, in the group from outside districts are particularly deficient in rate of silent reading. The students who have moved from place to place are the students which seem to increase this percentage.

Chart 17 is a comparison of reading rate of 117 freshmen designated as Group A. The normal median for reading rate is a score of 31, equivalent to a grade ability of 9.10 grade. The reading rate median for 117 freshmen in this group is 25.2, equivalent to a grade ability of 8.10 grade. Quartile 1 is a score of 20.8, equivalent to a grade ability of 5.9 grade, quartile 3 is a score of 33.4, equivalent to a grade ability of 10.10 grade.

Graphic Distribution Chart 17

Rate of Silent Reading

Group A. Comparison

Test - Iowa Silent Reading - Elementary Form A

	Graphical Distribution		Numerical Distribution		
	Score	Frequency	Grade Ability	Percent	Percentiles
**	44	2			100
	43	0			98
**	42	2			96
****	41	4			93
**	40	2			89
***	39	3			88
*	38	1			87
	37	0			85
***	36	3			82
****	35	4			75
*****	34	8	Above 10	24.9	70
****	33	4			61
*****	32	12	10	14.5	60
**	31	2			54
*****	30	6	9	6.6	48
*****	29	7			46
***	28	3	8	8.3	43
****	27	4			38
*****	26	5			36
***	25	3	7	10.2	35
*****	24	5			31
*	23	1			30
**	22	2	6	6.6	29
*****	21	7			22
**	20	2			21
****	19	4	5	11.1	18
***	18	3			15
**	17	2	4	4.3	14
**	16	2			12
***	15	3			9
*	14	1			8
***	13	3	3	7.6	6
*	12	1			5
*	11	1			4
***	10	3			1.7
	9	0			1.7
	8	0			1.7
*	7	1			.0
	6	0			.1
*	5	1	Below 3	5.9	

Total 117

Normal Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group Median - 29.2

Quartile 1 - 20.8

Quartile 3 - 33.4

Table 16
 Distribution of One Hundred Seventeen Freshmen
 According to Rate of Silent Reading

	Number	Per Cent
Below third grade ability	7	5.9
From third to fourth grade ability	9	7.6
From fourth to fifth grade ability	5	4.8
From fifth to sixth grade ability	13	11.1
From sixth to seventh grade ability	8	6.6
From seventh to eighth grade ability	12	10.2
From eighth to ninth grade ability	10	8.3
From ninth to tenth grade ability	8	6.6
Above tenth grade ability	45	39.4
Total	117	100.0

In Group A, 70 freshmen or 60 per cent have a reading rate below 31, which is equivalent to 60 per cent of the group deficient in reading rate. Percentile ranks were calculated for this group. No normal percentile rank is available for a comparison. The percentile rank will be used in the comparisons to be made at the end of the first and second semester.

Charts 18, 19 and 20 show a division of Group A into the three levels of intelligence for a comparison of reading rate. Chart 18 is a comparison of the reading rate of 38 freshmen whose I.Q. is 110-150. The median score of the group is 30.7, equivalent to a grade ability of 9.10 grade. Quartile 1 is a score of 26.6, equivalent to a grade ability of 7.9 grade and quartile 3 is a score of 34.8, equivalent to a grade ability of more than 10.10 grade.

Chart 19 is the reading rate comparison of 65 freshmen whose I.Q. is 91-110. The median score of the group is 28.8, equivalent to a grade

Graphic Distribution Chart 18

Rate of Silent Reading

Group A. I. Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Frequency	Ability	Grade	Percent	Percentiles
* 44	1				100
43	0				
42	0				
** 41	2				97
* 40	1				92
*** 39	3				89
* 38	1				81
37					
36					
** 35	2				79
***** 34	5	Above 10	40		73
** 33	2				60
** 32	2	10	10.5		55
31					
**** 30	4	9	10.5		50
** 29	2				40
* 28	1	8	8		34
*** 27	3				31
26					
25		7	8		
* 24	1				23
23					
* 22	1	6	5		21
**** 21	4				18
20					
* 19	1	5	13		8
* 18	1				5
17		4	2.5		
16					
* 15	1	3	2.5		2.6
Total		38			

Normal Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group Median - 30.7

Quartile 1 - 26.6

Quartile 3 - 34.8

Graphic Distribution Chart 19

Rate of Silent Reading

Group A. I.Q. 91-110

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Frequency	Ability	Grade	Percent	Percentiles
* 44	1				100
43					
** 42	2				98
*** 41	3				95
* 40	1				90
39					
38					
* 37	1				89
*** 36	3				87
** 35	2				83
*** 34	3	Above 10	25		60
33					
***** 32	9	10	14		75
** 31	2				60
** 30	2	9	6		58
***** 29	5				55
*** 28	3	8	11		48
* 27	1				43
**** 26	4				41
**** 25	4	7	14.5		35
**** 24	4				30
* 23	1				23
* 22	1	6	9.5		21
21					
* 20	1				20
*** 19	3	5	6.5		18
** 18	2				14
* 17	1	4	4.5		11
16					
15					
14					
* 13	1	3	1.5		9
* 12	1				7
* 11	1				6
** 10	2				4
9					
8					
* 7	1	Below 3	7.5		1.5
6					

Total 65

Normal Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group Median - 28.8

Quartile 1 - 24.9

Quartile 3 - 32.5

Graphic Distribution Chart 20

Rate of Silent Reading

Group A. I. Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Fre- quency	Grade	Percent	Percentile	
	30	9			
*	29	1		100	
	28	8	7		
	27				
	26				
	25	7			
	24				
	23				
	22	6			
**	21	2		92	
*	20	1		80	
	19	5	21		
	18				
*	17	1	7	71	
**	16	2		64	
**	15	2		50	
*	14	1		35	
**	13	2	3	28	
	12				
	11				
*	10	1		14	
	9				
	8				
	7				
	6				
*	5	1	Below 3	7	
	4				
Total		14			

Normal Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group Median - 15.5

Quartile 1 - 13.2

Quartile 3 - 21

ability of 7.4 grade. Quartile 3 is a score of 32.5, equivalent to a grade ability of 10.8 grade.

Chart 20 is the reading rate comparison of 14 freshmen whose I.Q. is 71-90. The median score of this group is 15.5, equivalent to a grade ability of 3.7 grade. Quartile 1 score is 13.2, equivalent to below third grade ability. Quartile 3 is a score of 21, equivalent to a grade ability of 5.10 grade.

Table 17

Distribution of One Hundred Seventeen Freshmen in Group A in the Three Levels of I.Q. According to Rate of Reading

	I.Q. 111-150		I.Q. 91-110		I.Q. 71-90	
	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent
Below third grade ability			5	8	2	14
From third to fourth grade ability	1	2.6	1	1.5	7	50
From fourth to fifth grade ability	1	2.6	3	5.0	1	7
From fifth to sixth grade ability	5	15.6	4	6.0	3	22
From sixth to seventh grade ability	1	2.6	6	9.0		
From seventh to eighth grade ability	3	8.0	9	14.0		
From eighth to ninth grade ability	3	8.0	8	12.0	1	7
From ninth to tenth grade ability	4	10.6	4	6.0		
Above tenth grade ability	19	50.0	25	38.5		
Total	38	100.0	65	100.0	14	100

No normal percentile ranks are available for reading rate. The percentile rank calculated in the charts were used for comparisons for the tests given at the end of the first and second semester. The average grade ability for all levels of intelligence is I. Q. 111-150, ninth grade, I.Q. 91-110, eighth grade, and I.Q. 71-90, fourth grade.

Graphic Distribution Chart 21

Rate of Silent Reading

Group B Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Score	Fre- quency	Numerical Distribution		
			Grade	Percent	Percentile
*****	44	9			100
	43	0			91
****	42	5			91
	41	0			87
**	40	2			87
**	39	2			85
**	38	2			83
***	37	3			81
**	36	2			79
**	35	2			77
****	34	4	Above 10	28.4	75
****	33	4			72
****	32	4	10	7.4	68
****	31	5			64
**	30	3	9	7.4	60
*****	29	9			57
*	28	1	8	9.2	48
****	27	5			47
****	26	4			43
****	25	5	7	12.8	40
**	24	2			35
	23	0			33
*	22	1	6	2.8	33
****	21	4			32
**	20	2			28
*	19	1	5	6.4	26
***	18	3			25
*****	17	10	4	12.8	23
*	16	1			14
**	15	2			13
*	14	1			11
**	13	2	3	4.5	10
*	12	1			8
*	11	1			7
*	10	1			6
***	9	3			5
*	8	1			3
**	7	2	Below 3	8.3	1.7
Total		109			

Normal Median - 31

Quartile 1 - 24

Quartile 3-37

Group Median - 28.7

Quartile 1 - 18.2

Quartile 3-34.4

The I. Q. group of 111-150 has 50 per cent of the group equal to or above ninth grade ability in reading rate. The I. Q. group of 91-110 has 42 per cent of the group equal to or above ninth grade ability in reading rate. The I.Q. group of 71-90 does not have a score above ninth grade ability in reading rate.

Chart 21 is a comparison of 109 freshmen designated as Group B, in reading rate. The normal median for reading rate is a score of 31, equivalent to a grade ability of 9.10 grade. The reading rate median of 109 freshmen is a score of 28.7, equivalent to a grade ability of 8.9 grade. Group A exceeds the reading rate median of Group B by .1 grade. The quartile 1 score is 18.2, equivalent to a grade ability of 5.1 grade. Quartile 3 is a score of 34.4, equivalent to above 10.10 grade.

Table 18

Distribution of One Hundred Nine Freshmen
According to Rate of Silent Reading

	Number	Per Cent
Below third grade ability	9	8.5
From third to fourth grade ability	6	5.5
From fourth to fifth grade ability	10	12.0
From fifth to sixth grade ability	7	6.5
From sixth to seventh grade ability	3	1.5
From seventh to eighth grade ability	14	13.5
From eighth to ninth grade ability	10	9.5
From ninth to tenth grade ability	8	7.0
Above tenth grade ability	39	36.0
Total	109	100.0

In Group B, 65 freshmen or 60 per cent have a reading rate below 31, which means that 60 per cent of the group is deficient in rate of reading.

In Group A, a reading rate score of 30 has a percentile rank of 48 whereas in Group B the same reading rate score has a percentile rank of 60.

Charts 22, 23 and 24 are a division of Group B into the three levels of intelligence for a comparison of rate of reading. Chart 22 is the comparison of the reading rate of 32 freshmen in the I.Q. level of 111-150. The median score is 30, equivalent to a grade ability of 9.5 grade. The quartile 1 score is 24, equivalent to a grade ability of 6.10 grade. Quartile 3 is a score of 42, equivalent to a grade ability above 10.10 grade.

Chart 23 is the rate of reading comparison of 62 freshmen in Group B. I.Q. level of 91-110. The median score of the group is 27, equivalent to a grade ability of 7.10 grade. Quartile 1 is a score of 20, equivalent to a grade ability of 5.7 grade. Quartile 3 is a score of 33, equivalent to a grade ability above 10.10 grade.

Chart 24 is a comparison of 15 freshmen whose I.Q. ranges from 71 to 90. The median score of the group is 16.7, equivalent to a grade ability of 4.4 grade. Quartile 1 is a score of 13.2, equivalent to a grade ability of 3.1 grade. Quartile 3 is a score of 27.2, equivalent to a grade ability of 7.10 grade.

Group B exceeds Group A in reading rate ability. This factor will be taken into consideration in comparing the groups at the end of the first semester. The reading rate is affected greatly by the I.Q. of the individual.

Graphic Distribution Chart 22

Rate of Silent Reading

Group B. I. Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Score	Fre- quency	Numerical Distribution		
			Ability	Grade Percent	Percentiles
*****	44	7			100
*	43	1			79
*	42	1			
	41	0			71
*	40	1			
	39	0			68
*	38	1			65
**	37	2			
	36	0			60
*	35	1			56
*	34	1	Above 10	47	
	33	0			
	32	0	10		
	31	0			
**	30	2	9	6	53
***	29	3			47
*	28	1	8	12	40
	27	0			
*	26	1			34
**	25	2	7	10	31
*	24	1			25
	23	0			
*	22	1	6	6	22
**	21	2			20
	20	0			
	19	0	5	6	
	18	0			
***	17	3	4	10	12
	16	0			
	15	0			
	14	0			
*	13	1	3	3	3
	12	0			
	11				
	10				
Total		32			

Normal Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group Median - 30

Quartile 1 - 24

Quartile 3 - 42

Graphic Distribution Chart 23

Rate of Silent Reading

Group B. I. Q. 91-110

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution		Numerical Distribution			
Score	Frequency	Grade	Ability	Percent	Percentiles
**	44	2			100
	43	0			
***	42	3			96
	41	0			
*	40	1			92
**	39	2			90
	38	0			
**	37	2			87
**	36	2			84
	35	0			
***	34	3	Above 10	24	80
****	33	4			76
****	32	4	10		70
**	31	2			63
*	30	1	9	17	60
*****	29	5			58
	28	0	8	8	
***	27	3			50
*****	26	6			45
***	25	3	7	20	35
*	24	1			31
	23				
	22		6	1	
**	21	2			29
*	20	1			25
*	19	1	5	6	24
**	18	2			22
*****	17	5	4	11	19
*	16	1			11
	15				
	14				
	13		3	1	
	12				
*	11	1			9
	10				
***	9	3			8
	8				
**	7	2			3
Total		62			
Normal Median -	31	Quartile 1 -	24	Quartile 3 -	37
Group Median -	27	Quartile 1 -	20	Quartile 3 -	33

Graphic Distribution Chart 24

Rate of Silent Reading

Group B. I. Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form A

Graphic Distribution	Score	Fre- quency	Ability	Percent	Numerical Distribution Grade Percentiles
	44				
	43				
	42				
	41				
	40				
	39				
*	38	1			100
	37	0			93
	36	0			93
	35	0			93
	34	0	Above 10	7	93
	33	0			93
	32	0	10		93
**	31	2			93
	30	0	9	13	80
	29	0			80
	28	0	8		80
**	27	2			80
	26	0			66
	25	0	7	13	66
	24	0			66
	23	0			66
	22	0	6		66
	21	0			66
*	20	1			66
	19	0	5	7	60
	18	0			60
**	17	2	4	13	60
	16	0			46
**	15	2			46
*	14	1			33
*	13	1	3	26	26
*	12	1			20
	11	0			13
*	10	1			13
	9	0			6
*	8	1			6
	7	0	Below 3	21	
Total		15			

Normal Median - 31

Quartile 1 - 24

Quartile 3 - 37

Group Median - 16.7

Quartile 1 - 13.2

Quartile 3 - 27.2

Table 19

Distribution of One Hundred Nine Freshmen in Group B in the
Three Levels of I.Q. According to Rate of Reading

	I.Q. 111-150		I.Q. 91-110		I.Q. 71-90	
	Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent
Below third grade ability			6	10.4	3	20.0
From third to fourth grade ability	1	4.0	1	1.6	4	26.0
From fourth to fifth grade ability	3	9.7	7	11.0	2	13.0
From fifth to sixth grade ability	2	6.3	4	6.4	1	7.5
From sixth to seventh grade ability	2	6.3	1	1.6		
From seventh to eighth grade ability	3	9.7	12	19.0	2	13.0
From eighth to ninth grade ability	4	12.6	5	8.0		
From ninth to tenth grade ability	2	6.3	3	5.0	2	13.0
Above tenth grade ability	15	47.1	23	37.0	1	7.5
Total	32	100.0	62	100.0	15	100.0

No normal percentile ranks are available for a comparison. The percentile rank calculated will be used in the comparison at the end of the first and second semester. In Group B the average grade for each level of intelligence is I.Q. 111-150 - 9.0 grade, I.Q. 91-110 - 7.5 grade, and I.Q. 71-90 - 4.0 grade.

Table 20^a

Number and Percentage of Freshmen in Group A and B Number and
Percentage of Each Group Deficient in Reading Rate

	Number	Percent- age of Total	Number Deficient in Rate	Percentage Deficient in Rate
Group A	117	52	64	54.7
Group B	109	48	62	56.8
Total	226	100	126	52

^aA score below ninth grade ability is considered deficient in reading rate.

Summary of Chapter 3

The charts reveal the following facts:

1- As revealed by a study of chart 1, 2, 3 and 4, students in the ninth grade are below normal ability in reading comprehension when compared with standard scores and norms set up for the test used in this experiment.

2- The students are deficient in rate of reading. This deficiency is not as great as the deficiency in reading comprehension.

3- All groups, regardless of where students attended school, previous to attending the local high school have a large percentage of the group deficient in reading rate and comprehension.

4- In reading comprehension, there is a difference of 25.5 points between the normal median of 158 and the class median of 132.5, equivalent to a grade ability difference of 1.4 grade.

5- In reading rate, there is a difference of .7 points between the normal median of 31 and the class median of 29.3, equivalent to a grade ability difference of .7 grade.

6- Approximately forty-two per cent of the class has a reading comprehension ability equal to ninth grade ability or greater, fifty-eight per cent has a reading comprehension ability below ninth grade ability of which twenty-six per cent has eighth grade ability, eighteen per cent has seventh grade ability, thirteen per cent has sixth grade ability and about one per cent has fifth grade ability.

7- The standard score for ninth grade ability in reading comprehension is 142. This score is exceeded by sixty-eight per cent of

students in a normal group. A score of 141 was exceeded by twenty-seven per cent of 226 freshmen.

8- Approximately forty-three per cent of 226 freshmen has a reading rate ability equal to or above ninth grade ability. Fifty-three per cent has reading rate ability below ninth grade ability. Of this per cent, eight and nine-tenths per cent has eighth grade ability, eleven per cent has seventh grade ability, five and six-tenths per cent has sixth grade ability, eight and nine-tenths per cent fifth grade ability, six and one-tenth per cent third grade ability and seven per cent has below third grade ability in reading rate.

9- In a standard group a score of 31 for rate of reading is equivalent to ninth grade ability. The score is exceeded by forty per cent of the 226 freshmen.

10- Group B exceeds Group A in reading ability. This fact will be considered in calculating gains made by each group.

The deficiency in reading comprehension and rate of reading is serious. This study is an attempt to test what effect the teaching of technique in reading and study will have in the improvement of reading ability.

CHAPTER 4

COMPARISONS AT END OF FIRST SEMESTER

The comparison of scores for test B, given at end of first semester is presented by a series of sixteen charts. The charts contain the following information:

The median and quartile scores for a normal group, for Test A and Test B.

A graphic distribution, showing a normal distribution curve of each group.

The per cent of pupils attaining a definite grade ability for each test.

The percentile rank for a normal group, for Test A and for Test B.

The data necessary for comparisons used in charts for the preliminary comparisons have been transferred to these charts. This makes it possible to determine gains made without referring to the previous charts. The scores used in this series of charts were obtained by giving the Iowa Silent Reading Test, Elementary Form B, the last week of the first semester.

In the comparisons Group B is the control group. The purpose of the comparisons is to show the gains made by Group A over Group B in one semester's work. Individual gains will be indicated for each group of students.

Comparison of Gains in Reading Comprehension

Chart 25 is a comparison of 116 freshmen designated as Group A, in the comprehension of reading. The median score for the group is 155, an increase of 23.8 points. The group increased their grade ability

Graphic Distribution Chart 25

Reading Comprehension

Group A. Comparison

Test - Iowa Silent Reading - Elementary Form B.

Graphic Distribution			Numerical Distribution					
Score	Fre- quency	Grade Ability	Percent		Percentiles			
			Test A	Test B	Normal	Test A	Test B	
* 205-201	1						100	
*** 200-196	3						99	
** 195-191	2					90	96	
***** 190-186	6					80	100 94	
***** 185-181	5					75	98 90	
***** 180-176	8	Above 10	7.6	21			94 85	
** 175-171	2						91 78	
***** 170-166	10					60	90 77	
***** 165-161	6						85 68	
***** 160-156	14	10	12.8	27	50		83 63	
***** 155-151	10						79 50	
***** 150-146	5					40	73 42	
***** 145-141	7	9	15.3	19			67 38	
*** 140-136	3						64 32	
***** 135-131	7					30	58 29	
***** 130-126	5					25	48 23	
* 125-121	1					20	37 19	
**** 120-116	4	8	32.4	18			31 18	
*** 115-111	3					10	25 14	
**** 110-106	4						23 12	
*** 105-101	3	7	17.1	9			18 9	
**** 100- 96	4						14 6	
95- 91							12	
*** 90- 86	3						11 2.5	
85- 81							7	
80- 76		6	12.8	6			2	
Total	116							

Normal - Median - 158 Quartile 1 - 129 Quartile 3 - 184
 Test A - Median - 131.2 Quartile 1 - 113.8 Quartile 3 - 153.4
 Test B - Median - 155 Quartile 1 - 131.9 Quartile 3 - 168.5

in reading comprehension to 9.8 grade, a gain of 1.3 grade in grade ability. The quartile 1 score increased to 131.9 or a gain of 18.1 points. The gain in grade ability is .9 grade. The quartile 3 score increased to 168.5 or a gain of 15.1 points. The gain in grade ability is equal to .8 grade.

Table 21

Distribution of One Hundred Sixteen Pupils According to Ability
in Reading Comprehension for Test A and Test B.

	Test A		Test B	
	Number	Per Cent	Number	Per Cent
Below seventh grade ability	17	14.5	7	6.5
From seventh to eighth grade ability	20	17.3	10	8.5
From eighth to ninth grade ability	38	32.4	20	17.
From ninth to tenth grade ability	18	15.3	22	19.
Above tenth grade ability	24	10.5	57	49.
Total	117	100.0	116	100.

The per cent of pupils equal to and above ninth grade ability increased from 25.7 per cent to 67 per cent. The percentile rank for scores in Test B correspond considerably nearer to the normal percentile ranks. In a normal group a score of 160-156 has a percentile rank of 50. In Test A a score of 160-156 is equal to a percentile rank of 83, in Test B the same score is equal to a percentile rank of 63. The number of students in Group A with scores above the normal percentile increased from 17 per cent to 37 per cent, a gain of 20 per cent.

Chart 26, 27, and 28 are the division of Group A into the three levels of intelligence for Test A and Test B. Chart 26 is the reading comprehension comparison of 39 freshmen with an I.Q. 111-150. The group increased their median 16.85 points, equivalent to an increase in grade ability of .9 grade. The quartile 1 increased 28.5 points, equivalent

Graphic Distribution Chart 26

Reading Comprehension

Group A. I.Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution

Numerical Distribution
Grade Percent Percentiles

Score	Fre- quency	Ability	Test A	Test B	Normal	Test A	Test B
* 205-201	1						100
* 200-196	1						98
*** 195-191	3				90		95
***** 190-186	5				80	100	87
**** 185-181	4				75	97	74
**** 180-176	4	Above 10	18	46		90	64
** 175-171	2					83	54
***** 170-166	8				60	80	50
** 165-161	2					66	30
**** 160-156	4	10	30	41	50	66	24
* 155-151	1					53	13
150-146	0				40	42	10
145-141	0	9	18	2.5		37	10
** 140-136	2					34	10
* 135-131	1				30	23	5
* 130-126	1				25	21	2.5
125-121					20	8	
120-116		8	30	10.5		8	
115-111					10	6	
110-106						3	
105-101		7	4				
100- 96							
95- 91							
90- 86							
85- 81							
80- 76		6					
75- 71							
Total	39						

Normal, Median - 158

Quartile 1 - 129

Quartile 3 - 184

Test A, Median - 153.75

Quartile 1 - 135

Quartile 3 - 169

Test B, Median - 170.5

Quartile 1 - 163.5

Quartile 3 - 185.8

Graphic Distribution Chart 27

Reading Comprehension

Group A. I. Q. 91-110

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution	Score	Fre- quency	Ability	Numerical Distributions				
				Grade Percent		Percentiles		
				Test A	Test B	Nor- mal	Test A	Test B
**	200-196	2						100
	195-191	0				90		97
	190-186	0				80	100	97
*	185-181	1				75	98	97
****	180-176	4	Above 10	3	11		97	95
	175-171	0					97	90
**	170-166	2				60	94	90
****	165-161	4					92	85
*****	160-156	10	10	6	25	50	90	80
*****	155-151	9					90	63.5
*****	150-146	5				40	86	50
*****	145-141	7	9	15	33		80	41
*	140-136	1					75	31.5
****	135-131	4				30	72	30
***	130-126	3				25	56	22
*	125-121	1				20	45	16.5
***	120-116	3	8	50	19		34	15
*	115-111	1				10	25	11.5
***	110-106	3					20	10
*	105-101	1	7	15	8		14	4.5
*	100-96	1					9	3
	95-91						7.5	1.5
*	90-86	1			4		7.5	1.5
	85-81						4.5	
	80-76		6	9			3	
	75-71						1.5	
	70-66			2			1.5	
	65-61							
Total		63						

Normal - Median - 158 Quartile 1 - 129 Quartile 3 - 184

Test A - Median - 127.56 Quartile 1 - 115.6 Quartile 3 - 140

Test B - Median - 151 Quartile 1 - 135.1 Quartile 3 - 159.2

Graphic Distribution Chart 28

Reading Comprehension

Group A. I.Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution

Numerical Distribution

Score	Fre- quency	Grade Ability	Percent		Percentiles			
			Test A	Test B	Nor- mal	Test A	Test B	
180-176		Above 10						
175-171								
170-166						60		
165-161								
160-156		10				50		
155-151								
150-146						40		
145-141		9						
140-136							100	
** 135-131	2					30	93	100
* 130-126	1					25	93	86
125-121	0					20	93	80
* 120-116	1	8	7	30			93	80
** 115-111	2					10	93	70
* 110-106	1						93	59
** 105-101	2	7	14	35			85	50
*** 100- 96	3						80	36
95- 91	0						71	14
** 90- 86	2						57	14
85- 81							35	
80- 76		6	72	35			7	
75- 71							7	
70- 66							7	
65- 61							7	
60- 56		5	7				7	
55- 51								
Total	14							

Normal - Median - 158

Quartile 1 - 129

Quartile 3 - 184

Test A - Median - 87.8

Quartile 1 - 77.5

Quartile 3 - 99.5

Test B - Median - 105.5

Quartile 1 - 98

Quartile 3 - 118

to an increase in grade ability of 1.5 grade. The increase in the score of quartile 3 is 16.8, equivalent to an increase in grade ability above eleventh grade ability.

Chart 27 is the reading comprehension comparison of 63 freshmen with an I.Q 91-110. The group increased their median score 23.44 points, equivalent to an increase in grade ability of 1.3 grade. The quartile 1 score increased 19.5 points, equivalent to an increase in grade ability of .9 grade. The quartile 3 score increased 19.2 points, equivalent to an increase in grade ability of 1.1 grade. Chart 28 is the reading comprehension comparison of 14 freshmen with an I.Q of 71-90. The group increased their median 17.7 points, equivalent to an increase in grade ability of .8 grade. The quartile 1 score increased 20.5 points, equivalent to an increase in grade ability of .9 grade. The quartile 3 score increased 18.5 points, equivalent to an increase in grade ability of .9 grade.

In the I.Q group 111-150, the number of 39 freshmen increased from 63 per cent to 90 per cent of the group equal to or above ninth grade ability, in reading comprehension. In the I.Q group 91-110, the number of 63 freshmen increased from 20 per cent to 59 per cent of the group equal to or above ninth grade ability in reading comprehension. Of the 14 freshmen in the lower level of intelligence no student obtained a score equivalent to ninth grade ability in reading comprehension. The number of students from eighth to ninth grade ability increased 400 per cent, from seventh to eighth grade ability increased about 250 per cent, from sixth to seventh grade ability the number of students decreased from 72 per cent to 36 per cent.

Table 22

Percentage of Freshmen In Group A For Each of the Three Levels of
Intelligence Who Had the Designated Grade
Abilities in Reading Comprehension.

	I.Q. 111-150	I.Q. 91-110	I.Q. 71-90
Test A			
From fifth to sixth grade ability		2.0	7.0
From sixth to seventh grade ability		9.0	72.0
From seventh to eighth grade ability	4.0	15.0	14.0
From eighth to ninth grade ability	30.0	50.0	7.0
From ninth to tenth grade ability	18.0	15.0	
Above tenth grade ability	48.0	9.0	
Total	100.0	100.0	100.0
Test B			
From fifth to sixth grade ability			
From sixth to seventh grade ability		2.5	36.0
From seventh to eighth grade ability		8.0	36.0
From eighth to ninth grade ability	10.0	20.0	23.0
From ninth to tenth grade ability	2.5	33.0	
Above tenth grade ability	87.5	36.5	
Total	100.0	100.0	100.0

In Test A in the low level of intelligence seven per cent had scores equivalent to fifth grade ability in reading comprehension. No student had a score below sixth grade ability in reading comprehension in Test B.

Chart 29 is a comparison of 100 freshmen, designated as Group B, in reading comprehension. The median score for the group is 149.7, an increase of 13.7 points, equivalent to an increase in grade ability of .7 grade. Quartile 1 increased 16.8 points, equivalent to an increase in grade ability of .6 grade. Quartile 3 increased 20.5 points,

Graphic Distribution Chart 29

Reading Comprehension

Group B. Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution			Numerical Distribution				
Score	Fre- quency	Ability	Grade Percent		Percentiles		
			Test A	Test B	Nor- mal	Test A	Test B
** 205-201	2						100
* 200-196	1						98
***** 195-191	5					90	100 97
** 190-186	2					80	98 92
** 185-181	2					75	96 90
***** 180-176	5	Above 10	6.4	15			95 88
***** 175-171	5						93 83
**** 170-166	4					60	89 78
*** 165-161	3						84 74
***** 160-156	6	10	14.6	18		50	82 71
***** 155-151	14						79 65
***** 150-146	7					40	73 51
***** 145-141	6	9	27.5	27			59 44
***** 140-136	6						51 38
*** 135-131	3					30	47 32
*** 130-126	3					25	41 29
***** 125-121	6					20	37 26
* 120-116	1	8	19	19			32 20
** 115-111	2					10	28 19
*** 110-106	3						27 17
**** 105-101	4	7	18.1	9			26 14
***** 100- 96	6						13 10
*** 95- 91	3						12 4
* 90- 86	1						9 1
85- 81							5
80- 76		6	12.7	10			3
75- 71		5	1.7				1
70- 66							
Total		100					

Normal - Median - 158	Quartile 1 - 129	Quartile 3 - 184
Test A - Median - 136	Quartile 1 - 107.8	Quartile 3 - 146.3
Test B - Median - 149.7	Quartile 1 - 124.6	Quartile 3 - 166.8

equivalent to an increase in grade ability of 1.1 grade in reading comprehension.

Table 23

Distribution of One Hundred Pupils According to Ability
in Reading Comprehension

	Test A.		Test B.	
	Number	Per Cent	Number	Per Cent
Below seventh grade ability	15	13.9	10	10
From seventh to eighth grade ability	16	14.6	9	9
From eighth to ninth grade ability	25	23.0	19	19
From ninth to tenth grade ability	30	27.5	27	27
Above tenth grade ability	23	21.0	35	35
Total	109	100.0	100	100

The per cent of pupils equal to and above ninth grade ability increased from 18 per cent to 29 per cent of Group B. A score of 160-156 has a normal percentile rank of 50. The increase of number of students above the 50 percentile was 100 per cent greater for Group A than for Group B.

Charts 30, 31 and 32 show the division of Group B in the three levels of intelligence. Chart 30 is the comparison in reading comprehension of 32 freshmen in the group I.Q. 111-150. The group median score increased 15 points, equivalent to an increase in grade ability of .8 grade. The quartile 1 score increased 8 points, equivalent to an increase in grade ability of .5 grade. The quartile 3 score increased 10 points, equivalent to an increase in grade ability above eleventh grade ability in reading comprehension.

Chart 31 is the comparison in reading comprehension of 56 freshmen in the group I.Q. 91-110. The group median score increased

Graphic Distribution Chart 30

Reading Comprehension

Group B. I.Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form B

Score	Fre- quency	Ability	Numerical Distribution					
			Grade Percent		Percentiles		Test	
			Test A	Test B	Normal	Test A	Test B	
** 205-201	2						100	
* 200-196	1						95	
**** 195-191	4				90	100	93	
** 190-186	2				80	94	80	
* 185-181	1				75	88	73	
** 180-176	2	Above 10	22.5	40		84	70	
*** 175-171	3					80	60	
* 170-166	1				60	72	53	
** 165-161	2					61	50	
**** 160-156	4	10	22.5	30	50	59	44	
***** 155-151	5					56	31	
* 150-146	1				40	50	15	
* 145-141	1	9	40	21		25	12	
* 140-136	1					16	9	
* 135-131	1				30	12	6	
130-126					25		3	
125-121			12.5		20		3	
120-116		8		6			3	
115-111					10		3	
* 110-106	1			3			3	
105-101		7	2.5					
100- 96								
Total	32							

Normal Median - 158 Quartile 1 - 129 Quartile 3 - 184
 Test A. Median- 150.5 Quartile 1 - 145.5 Quartile 3 - 173
 Test B. Median- 165.5 Quartile 1 - 153.5 Quartile 3 - 183

Graphic Distribution Chart 31

Reading Comprehension

Group B. I.Q. 91-110

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution	Score	Fre- quency	Ability	Numerical Distribution				
				Grade	Percent	Test A	Test B	Percentiles
						Normal	Test A	Test B
	200-196							
	* 195-191	1				90		100
	190-186	0	Above 10			80		98
	* 185-181	1				75		98
	*** 180-176	3						96
	* 175-171	1					100	92
	*** 170-166	3				60	95	90
	* 165-161	1					93	83
	** 160-156	2	10	14.5	20	50	90	82
	***** 155-151	9					85	78
	***** 150-146	6				40	80	62
	**** 145-141	4	9	26	34		70	51
	***** 140-136	5					60	44
	** 135-131	2				30	53	35
	*** 130-126	3				25	46	32
	**** 125-121	4				20	40	26
	* 120-116	1	8	26	26		34	20
	* 115-111	1				10	27	18
	** 110-106	2					25	16
	** 105-101	2	7	22.5	9		21	12
	*** 100- 96	3					11	9
	* 95- 91	1					8	3.5
	* 90- 86	1					6.4	1.8
	85- 81						1.6	
	80- 76		6	11	9			
	75- 71						1	
	70- 66							
	Total	56						

Normal Median - 158 Quartile 1 - 129 Quartile 3 - 184
 Test A Median - 133 Quartile 1 - 109 Quartile 3 - 148.3
 Test B Median - 144.2 Quartile 1 - 124.2 Quartile 3 - 154.4

Graphic Distribution Chart 32

Reading Comprehension

Group B. I.Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution		Numerical Distribution						
Score	Fre- quency	Ability	Grade Test A	Percent Test B	Nor- mal	Test A	Test B	
180-176		Above 10						
* 175-171	1			8			100	
170-166					60			
165-161								
160-156		10			50			
155-151						100		
150-146					40			
* 145-141	1	9	6.6	8			91	
140-136								
135-131					30	93		
130-126					25			
** 125-121	2	8	6.6	17	20		80	
120-116								
* 115-111	1				10		66	
110-106						87		
** 105-101	2	7	40.1	25		60	60	
*** 100- 96	3						42	
** 95- 91	2					46	16	
90- 86						33		
85- 81						20		
80- 76		6	40.1	42		13		
75- 71					1			
70- 66								
65- 61								
60- 56		5	6.6				6.6	
Total	12							

Normal Median - 158

Quartile 1 - 129

Quartile 3 - 184

Test A Median - 101.75

Quartile 1 - 87.4

Quartile 3 - 108.3

Test B Median - 103

Quartile 1 - 97.1

Quartile 3 - 123

11.2 points, equivalent to an increase in grade ability of .6 grade. The quartile 1 score increased 15.2 points, equivalent to a grade increase of .7 grade. The quartile 3 score increased 6.1 points, equivalent to an increase in grade ability of .4 grade.

Chart 32 is the comparison in reading comprehension of 12 freshmen in the level of I.Q. 71-90. The group median score increased 1.25 points, equivalent to an increase in grade ability of .1 grade. The quartile 1 score increased 9.7 points, equivalent to an increase in grade ability of .3 grade. The quartile 3 score increased 14.7 points, equivalent to an increase in grade ability of .6 grade in reading comprehension.

The number of students in the I.Q. level 111-150 increased from 75 per cent to 88 per cent of the group equal to or above ninth grade ability in reading comprehension. The number of students, for the second level of I.Q. 91-110 increased from 20 per cent to 38 per cent of the group above ninth grade ability in reading comprehension. In the low level I.Q. 71-90 one of the 12 freshmen scored above tenth grade ability. The group gained to this extent in reading comprehension, that the number of students equal to or above eighth grade ability increased from 13 per cent to 33 per cent.

The gains made by the students in Group A are approximately 50 per cent greater than the gains made by Group B in reading comprehension. The fact is particularly true for students in the higher and middle levels of intelligence. The students in the low I.Q. level in Group B increased the reading comprehension very little, approximately .1 grade.

Table 24

Percentage of Freshmen in Group B For Each of the Three Levels of Intelligence Who Had the Designated Grade Abilities in Reading Comprehension.

	I.Q. 111-150	I.Q. 91-110	I.Q. 71-90
Test A			
From fifth to sixth grade ability			6.6
From sixth to seventh grade ability	2.5	11.0	40.1
From seventh to eighth grade ability		22.5	40.1
From eighth to ninth grade ability	12.5	26.0	6.6
From ninth to tenth grade ability	40.0	26.0	6.6
Above tenth grade ability	45.0	14.5	
Total	100.0	100.0	100.0
Test B			
From fifth to sixth grade ability			41.0
From sixth to seventh grade ability	2.9	8.9	25.0
From seventh to eighth grade ability	6.2	8.9	16.6
From eighth to ninth grade ability	22.2	26.8	8.7
From ninth to tenth grade ability	31.2	34.0	8.7
Above tenth grade ability	37.5	21.4	
Total	100.0	100.0	100.0

The gains consisted chiefly in the shifting of students from a lower grade ability to a higher grade ability, that is the percentage of students in the lower grade abilities decreases, while the percentage of students in the higher grade abilities increases. The shifting of students to higher grade abilities is more pronounced in Group A than in Group B. The shifting of students to higher grade abilities was more pronounced in the upper and middle levels of intelligence. Higher grade abilities were obtained by students in the lower level of intelligence but the gain is not as large as in the other levels of intelligence.

Table 25^a

Number and Percentage of Freshmen in Group A and B. Number and Percentage of Each Group Deficient in Reading Comprehension.

	Number		Percentage		Number		Percentage	
	Test Test		of Total		Deficient in		Deficient in	
	A	B	A	B	Test Test	Test Test	Test Test	Test Test
Group A	117	116	56	53.7	75	37	64	32
Group B	109	100	48	46.3	56	38	51	38
Total	226	216	100.0	100.0	131	75	57	34.7

a- Below ninth grade ability is considered to be deficient in reading comprehension for the above table.

Comparison of Gains in Rate of Reading

Chart 33 is a comparison of 116 freshmen, designated as Group A, in rate of silent reading. The median score decreased .3 points. The quartile 1 score increased 3.5 points, equivalent to an increase in grade ability of 1 grade. The quartile 3 score increased 1.6 points, equivalent to an increase in grade ability of .2 grade. The grade ability of students in the upper quartile is above eleventh grade ability in rate of silent reading. The rate of reading is quite satisfactory, even though some students in the group experienced a slight loss. The students should show a better score in reading comprehension for their reading rate score.

A silent reading rate of 30 is equivalent to ninth grade ability. Group A for a reading rate score of 30 increased the percentile rank 11 per cent. The students in the lower grade abilities made considerable gains in rate of reading. The seven students with a score of below third grade ability for Test A increased their rate of reading above third grade ability. In Test A, 52 per cent of 116 freshmen

Graphic Distribution Chart 33

Rate of Silent Reading

Group A Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution	Score	Fre- quency	Ability	Numerical Distribution			
				Grade Percent		Percentiles	
				Test A	Test B	Test A	Test B
***	44	3				98	100
	42	0				96	97
****	41	4				93	97
****	40	4				89	94
***	39	3				88	90
***	38	3				87	88
*****	37	5				85	85
*****	36	5				82	81
****	35	4				75	76
***	34	3	Above 10	24.9	29.3	70	73
*****	33	6				61	70
	32	0	10	14.5	5.1	60	65
*****	31	8				54	65
*****	30	5	9	6.6	11.2	48	59
*****	29	9				46	54
*****	28	6	8	8.3	13.0	43	47
****	27	4				38	43
*****	26	6				36	38
*****	25	8	7	10.2	15.5	35	33
*****	24	5				31	26
**	23	2				30	21
****	22	4	6	6.6	9.4	29	20
*****	21	6				22	16
***	20	3				21	11
****	19	4	5	11.1	12.9	18	8.6
**	18	2				15	5.1
*	17	1	4	4.3	1.8	14	3.4
*	16	1				12	2.5
	15	0				9	1.7
**	14	2	3	7.6	1.8	8	1.7
	13					6	
	12					5	
	11					4	
	10					1.7	
	9						
	8		Below 3	5.9			
	7						
Total				116			

Normal Median - 31

Quartile 1 - 24

Quartile 3 - 37

Test A. Median - 29.2

Quartile 1 - 20.8

Quartile 3 - 33.4

Test B. Median - 28.9

Quartile 1 - 24.3

Quartile 3 - 35

had a score below ninth grade ability. In Test B the number below ninth grade ability was 41 per cent.

Table 26

Distribution of One Hundred Sixteen Freshmen in Group A According to Rate of Silent Reading for Test A and Test B.

	Test A		Test B	
	Num- ber	Per Cent	Num- ber	Per Cent
Below third grade ability	7	5.9	0	0
From third to fourth grade ability	9	7.6	3	2.5
From fourth to fifth grade ability	5	4.3	3	2.5
From fifth to sixth grade ability	13	11.1	13	11.0
From sixth to seventh grade ability	8	6.6	11	9.4
From seventh to eighth grade ability	12	10.2	18	15.5
From eighth to ninth grade ability	10	8.3	15	13.0
From ninth to tenth grade ability	8	6.6	13	11.0
Above tenth grade ability	45	39.4	40	35.1
Total	117	100.0	116	100.0

Charts 34, 35, and 36 are a division of Group A into the three levels of intelligence for a comparison of rate of silent reading for Test B. Chart 34 is the rate of silent reading comparison of 39 freshmen in the level of I.Q. 111-150. The median score increased .3 points. The quartile 1 score increased 1.2 points, equivalent to an increase in grade ability of 1.3 grade. The quartile 3 score increased 1.9 points, equivalent to an increase in grade ability above eleventh grade. The median of the group equals the normal median; the quartile 1 score is 1.4 points above the normal quartile 1 score of 24. The quartile 3 score is .3 points below the normal quartile score of 37.

Chart 35 is the rate of silent reading comparison of 63 freshmen in the level of I.Q. 91-110. The median score increased .2 points. The quartile 1 score increased .3 points. The quartile 3 score increa-

Graphic Distribution Chart 34

Rate of Silent Reading

Group A. I. Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution

Numerical Distribution

Score	Fre- quency	Grade Ability	Grade Percent		Percentiles	
			Test A	Test B	Test A	Test B
*** 43	3					100
42	0					92
** 41	2				97	92
** 40	2				92	87
* 39	1				89	82
** 38	2				81	80
** 37	2					74
** 36	2					70
** 35	2				79	64
* 34	1	Above 10	40	43	73	61
** 33	2				60	57
32	0	10	10.5	5	55	51
*** 31	3					51
** 30	2	9	10.5	13	50	45
** 29	2				40	43
* 28	1	8	8	8	34	37
27	0				31	34
** 26	2					34
*** 25	3	7	8	13		25
** 24	2				23	18
23	0					13
*** 22	3	6	5	13	21	13
21	0				18	6
* 20	1					6
* 19	1	5	13	5	8	3
18					5	
17		4	2.5			
16						
15					2.6	
14		3	2.5			
13						
12						
11						
10						
9						
8						
7						
6						
Total		39				
Normal - Median - 31		Quartile 1 - 24	Quartile 3 - 37			
Test A - Median - 30.7		Quartile 1 - 26.6	Quartile 3 - 34.8			
Test B - Median - 31		Quartile 1 - 25.4	Quartile 3 - 36.7			

Graphic Distribution Chart 35

Rate of Silent Reading

Group A. I. Q. 91- 110

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution	Fre-	Numerical Distribution				
		quency	Ability	Grade Percent	Percentiles	
Score			Test A	Test B	Test A	Test B
43						
42	0				98	
** 41	2				95	100
** 40	2				90	96
** 39	2					93
* 38	1					91
*** 37	3				89	90
*** 36	3				87	84
** 35	2				83	80
** 34	2	Above 10	25	27	80	76
*** 33	3					73
32		10	14	5	75	68
***** 31	5				60	68
*** 30	3	9	6	13	58	60
***** 29	6				55	55
***** 28	5	8	11	17	48	46
*** 27	3				43	38
**** 26	4				41	33
**** 25	4	7	14.5	17	35	27
* 24	1				30	20
* 23	1				23	19
* 22	1	6	9.5	5	21	17
**** 21	4					16
* 20	1				20	9
*** 19	3	5	6.5	12	18	8
* 18	1				14	2
17		4			11	1.5
* 16	1					
15						
14						
13		3	1.5	4	9	
12					7	
11					6	
10					4	
9						
8						
Total		63				
Normal - Median -	31	Quartile 1 -	24	Quartile 3 -	37	
Test A - Median -	28.8	Quartile 1 -	24.9	Quartile 3 -	32.5	
Test B - Median -	29	Quartile 1 -	25.2	Quartile 3 -	35	

Graphic Distribution Chart 36

Rate of Silent Reading

Group A. I. Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution	Score	Fre- quency	Grade Ability	Numerical Distribution			
				Percent Test A	Percent Test B	Percentiles Test A	Percentiles Test B
	40						
	39						
	38						
	37						
	36						
	35						
	34						
	* 33	1					100
	32		10		8		
	31						
	30		9		0		
	* 29	1				100	92
	28		8	7	8		
	* 27	1					85
	26						
	* 25	1	7		14		78
	** 24	2					71
	* 23	1					57
	22		6		21		
	** 21	2				92	49
	* 20	1				80	35
	19		5	21	21		
	* 18	1					28
	* 17	1	4	7	14	71	21
	16					64	
	15					50	
	** 14	2				35	14
	13		3	50	14	28	
	12						
	11						
	10					14	
	9						
	8						
	7		Below 3	15			
	Total	14					
	Normal - Median	- 31	Quartile 1	- 24	Quartile 3	- 37	
	Test A - Median	- 15.5	Quartile 1	- 13.2	Quartile 3	- 21	
	Test B - Median	- 22.5	Quartile 1	- 18	Quartile 3	- 26	

sed 2.5 points, equivalent to an increase in grade ability of above eleventh grade ability.

Table 27.

Percentage of Freshmen in Group A for Each of the Three Levels of Intelligence Who Had the Designated Grade Abilities in Rate of Silent Reading.

	I.Q. 111-150	I.Q. 91-110	I.Q. 71-90
Test A			
Below third grade ability		8.0	14.0
From third to fourth grade ability	2.6	1.5	50.0
From fourth to fifth grade ability	2.6	5.0	7.0
From fifth to sixth grade ability	15.6	6.0	22.0
From sixth to seventh grade ability	2.6	9.0	
From seventh to eighth grade ability	8.0	14.0	
From eighth to ninth grade ability	8.0	12.0	7.0
From ninth to tenth grade ability	10.6	6.0	
Above tenth grade ability	50.0	38.0	
Total	100.0	100.0	100.0
Test B			
Below third grade ability			
From third to fourth grade ability		1.6	14.0
From fourth to fifth grade ability		1.6	14.0
From fifth to sixth grade ability	5.0	12.6	21.0
From sixth to seventh grade ability	13.0	4.8	21.0
From seventh to eighth grade ability	13.0	17.4	14.0
From eighth to ninth grade ability	8.0	17.4	3.0
From ninth to tenth grade ability	12.0	12.6	
Above tenth grade ability	48.0	32.0	3.0
Total	100.0	100.0	100.0

Chart 36 is the rate of silent reading comparison of 14 freshmen in the level of I.Q. 71-90. The median score increased 7 points, equivalent to an increase in grade ability of 3.6 grade. The quartile 1 score increased 4.8 points, equivalent to an increase in grade ability of 1.8 grade. The quartile 3 score increased 5 points, equi-

valent to an increase in grade ability of 1.7 grade. The students in this group show a remarkable increase in grade ability. Fifteen per cent were below third grade ability in rate of silent reading for Test A. The students below third grade increased their ability above third grade.

In the upper level of intelligence a reading rate score of 30, equivalent to ninth grade ability, was equal to a percentile rank of 50 for Test A. In Test B the percentile rank of a reading rate score of 30 increased to a percentile rank of 45. The number of students above or equal to ninth grade ability increased 5 per cent. In the second level of intelligence the number of students above or equal to ninth grade ability increased 2 per cent in rate of reading. In the lower level of intelligence the number of students above or equal to ninth grade ability increased 8 per cent in rate of reading.

Chart 37 is a comparison of 100 freshmen, designated as Group B, in rate of silent reading. The median score increased .3 points. The quartile 1 score increased 4.1 points, equivalent to an increase in grade ability of 1.6 grade. The quartile 3 score increased .6 points, equivalent to an increase in grade ability of .5 grade.

A silent reading rate of 30 is equivalent to ninth grade ability. Group B for a reading rate score of 30 increased the percentile rank 7 per cent. The greatest gains in rate of silent reading were made by students in the lower grade abilities. The number of students below third grade ability decreased 7 per cent. In Test A, 60 per cent of 100 freshmen had a score below ninth grade ability. In Test B, the number below ninth grade ability was 53 per cent.

Graphic Distribution Chart 37

Rate of Silent Reading

Group B. Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution	Score	Fre- quency	Numerical Distribution				
			Grade Ability	Percent Test A	Percent Test B	Percentiles Test A Test B	
*****	43	9				91	100
	42					91	
***	41	3				87	91
	40					87	
*	39	1				85	88
****	38	4				83	87
**	37	2				81	83
**	36	2				79	81
*****	35	7				77	79
****	34	4	Above 10	28.4	32	75	72
*****	33	5				72	68
****	32	4	10	7.4	9	68	63
*****	31	6				64	59
*	30	1	9	7.4	7	60	53
*****	29	6				57	52
****	28	5	8	9.2	11	48	46
**	27	2				47	41
***	26	3				43	39
***	25	3	7	12.8	8	40	36
***	24	3				35	33
****	23	4				33	30
*****	22	6	6	2.8	13	33	26
****	21	4				32	20
*****	20	5				28	16
**	19	2	5	6.4	11	26	11
*****	18	5				25	9
	17		4	12.8	5	23	
	16					14	
*	15	1				13	4
**	14	2				11	3
	13		3	4.5	3	10	
	12					8	
	11					7	
	10					6	
	9					5	
*	8	1				3	1
	7		Below 3	8.3	1	1.7	
Total		100					

Normal - Median - 31

Quartile 1 - 24

Quartile 3 - 37

Test A - Median - 28.7

Quartile 1 - 18.2

Quartile 3 - 34.4

Test B - Median - 29.1

Quartile 1 - 22.3

Quartile 3 - 35

Table 28

Distribution of One Hundred Freshmen in Group B According to
Rate of Silent Reading for Test A and Test B.

	Num- ber	Per Cent	Num- ber	Per Cent
Below third grade ability	9	8.5	1	1
From third to fourth grade ability	6	5.5	3	3
From fourth to fifth grade ability	10	12.0	5	5
From fifth to sixth grade ability	7	6.5	11	11
From sixth to seventh grade ability	3	1.5	13	13
From seventh to eighth grade ability	14	13.5	8	8
From eighth to ninth grade ability	10	9.5	11	11
From ninth to tenth grade ability	8	7.0	7	7
Above tenth grade ability	39	36.0	41	41
Total	109	100.0	100	100.0

Charts 38, 39, and 40 are a division of Group B into the three levels of intelligence for a comparison of rate of silent reading for Test B. Chart 38 is the rate of silent reading comparison of 32 freshmen in the level of I.Q. 111-150. The median score increased 4 points, equivalent to an increase above eleventh grade ability. The quartile 1 score increased 5.2 points, equivalent to an increase in grade ability of 2 grades. The quartile 3 score decreased 2.7 points, equivalent to a decrease in grade ability of an estimated 2 grades.

Chart 39 is the rate of silent reading comparison of 56 freshmen in the level of I.Q. 91-110. The median score increased 1 point, equivalent to an increase in grade ability of .5 grade. The quartile 1 score increased 2.1 points, equivalent to an increase in grade ability of .7 grade. The quartile 3 score increased 2 points, which is equivalent to a grade ability above the eleventh grade.

Graphic Distribution Chart 36

Rate of Silent Reading

Group B. I. Q. 111-150

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution		Numerical Distribution					
Score	Fre- quency	Grade Ability	Percent Test A	Percent Test B	Percentiles Test A	Percentiles Test B	
***** 43	6				79	100	
42							
* 41	1				71	83	
40							
39					68		
**** 38	4				65	80	
37							
** 36	2				60	66	
** 35	2				56	60	
** 34	2	Above 10	47	53		53	
** 33	2					47	
* 32	1	10		10		43	
** 31	2					40	
* 30	1	9	6	10	53	31	
**** 29	4				47	28	
28		8	12	12	40		
27							
26					34		
* 25	1	7	10	3	31	15	
* 24	1				25	12	
23							
* 22	1	6	6	6	22	9	
21					20		
* 20	1					6	
19		5	6	3			
* 18	1					3	
17		4	10	3	12		
16							
15							
14							
13		3	3		3		
12							
11							
10							
Total		32					

Normal - Median - 31

Quartile 1 - 24

Quartile 3 - 37

Test A - Median - 20

Quartile 1 - 24

Quartile 3 - 42

Test B - Median - 34

Quartile 1 - 29.2

Quartile 3 - 39.3

Graphic Distribution Chart 39

Rate of Silent Reading

Group B. I. Q.91-110

Comparison

Test - Iowa Silent Reading - Elementary Form B

Graphic Distribution	Score	Fre- quency	Numerical Distribution				
			Grade Ability	Percent		Percentiles	
				Test A	Test B	Test A	Test B
***	43	3					100
	42					96	
**	41	2					94
	40					92	
*	39	1				90	92
	38						
**	37	2				87	90
	36					84	
*****	35	5					86
**	34	2	Above 10	24	27	80	76
***	33	3				76	71
**	32	2	10	12	9	70	68
****	31	4				63	64
	30		9	17	7	60	
**	29	2				58	57
****	28	4	8	8	10		53
**	27	2				50	46
***	26	3				45	43
**	25	2	7	20	13	35	38
*	24	1				31	34
***	23	3					32
***	22	3	6	1	13		26
****	21	4				29	20
**	20	2				25	14
**	19	2	5	6	14	24	10
**	18	2				22	7
	17		4	11	3	19	
	16					11	
	15						
*	14	1			2		4
	13		3	1			
	12						
	11					9	
	10						
	9					8	
*	8	1	Below 3		2		2
Total		56					

Normal - Median - 31

Quartile 1 - 24

Quartile 3 - 37

Test a - Median - 27

Quartile 1 - 20

Quartile 3 - 33

Test B - Median - 28

Quartile 1 - 22.1

Quartile 3 - 35

Graphic Distribution Chart 40

Rate of Silent Reading

Group B. I. Q. 71-90

Comparison

Test - Iowa Silent Reading - Elementary Form B

Score	Fre- quency	Grade Ability	Numerical Distribution			
			Percent Test A	Percent Test B	Percentiles Test A	Percentiles Test B
43						
42						
41						
40						
39						
38						100
37						
36						
35						
34		Above 10	7			
33						
* 32	1	10		8		100
31					93	
30		9	13			
29						
* 28	1	8		8		91
27					80	
26						
25		7	13			
* 24	1					83
* 23	1					75
** 22	2	6		33		66
21						
** 20	2				66	50
19		5	7	17		
** 18	2					33
17		4	13	17	60	
16						
* 15	1				46	17
* 14	1				33	8
13		3	26	17		
12					20	
11						
10					13	
9						
8		Below 3	21		6	
Total	12					

Normal - Median - 31
 Test A - Median - 16.7
 Test B - Median - 20.5

Quartile 1 - 24
 Quartile 1 - 13.2
 Quartile 1 - 18

Quartile 3 - 37
 Quartile 3 - 27.2
 Quartile 3 - 23

Table 29
 Percentage of Freshmen in Group B for Each of the Three Levels of
 Intelligence Who Had the Designated Grade Abilities
 in Rate of Silent Reading.

	I.Q. 111-150	I.Q. 91-110	I.Q. 71-90
Test A			
Below third grade ability	4.0	10.4	20.0
From third to fourth grade ability	4.0	1.6	26.5
From fourth to fifth grade ability	9.7	11.0	13.0
From fifth to sixth grade ability	6.3	6.4	7.5
From sixth to seventh grade ability	6.3	1.6	
From seventh to eighth grade ability	9.7	19.0	13.0
From eighth to ninth grade ability	12.6	8.0	
From ninth to tenth grade ability	6.3	5.0	13.0
Above tenth grade ability	47.1	37.0	7.5
Total	100.0	100.0	100.0
Test B			
Below third grade ability		1.8	
From third to fourth grade ability		1.8	16.7
From fourth to fifth grade ability	3.5	3.7	16.7
From fifth to sixth grade ability	3.5	14.2	16.7
From sixth to seventh grade ability	7.5	12.5	34.3
From seventh to eighth grade ability	3.5	12.5	
From eighth to ninth grade ability	12.5	10.7	8.3
From ninth to tenth grade ability	9.5	7.0	
Above tenth grade ability	60.0	35.8	8.3
Total	100.0	100.0	100.0

Chart 40 is the rate of silent reading comparison of 12 freshmen in the level of I.Q. 71-90. The median score increased 3.8 points, equivalent to an increase in grade ability of 1.7 grade. The quartile 1 score increased 5.8 points, equivalent to an increase in grade ability of 1.9 grade. The quartile 3 score increased 5.2 points, equivalent to an increase in grade ability of 1.3 grade.

In the upper level of intelligence a reading rate score of 30, equivalent to ninth grade ability was equal to a percentile rank of 53 for Test A. In Test B the percentile rank of a reading rate score of 30 increased to a percentile rank of 31. The number of students equal to or above ninth grade ability increased 27 per cent. In the second level of intelligence the number of students equal to or above ninth grade ability decreased 4 per cent in rate of reading. In the lower level of intelligence the number of students equal to or above ninth grade ability increased 1 per cent in rate of reading.

Table 30^a

Percentage of Freshmen in the Three Levels of Intelligence for
Group A and Group B Deficient in Rate of Reading

	Per Cent Deficient Test A	Per Cent Deficient Test B
Group A	48	41
I.Q. 111-150	50	45
I.Q. 91-110	58	60
I.Q. 71-90	100	92
Group B	60	53
I.Q. 111-150	53	51
I.Q. 91-110	60	57
I.Q. 71-90	93	91

a- Below ninth grade ability is considered deficient in rate of reading in the table.

Summary of Chapter 4

The comparisons of the various groups reveal the following facts:

1-The gain in reading comprehension of Group A is approximately fifty per cent greater than the gain of Group B.

2-The gain in reading comprehension is more pronounced in the middle and lower levels of intelligence in Group A. The factor of in-

telligence is of great importance in reading comprehension.

3-Reading ability is greatly increased by the proper remedial instruction.

4-Gains in reading ability are made by students doing the regular work in the various subjects.

5-A definite rate of reading must be attained in order to increase the ability in reading comprehension. Once a fair rate of reading is attained increased comprehension can be obtained by application of proper habits of reading and study.

Practice in the improvement of study and reading must be continued during the second semester for Group A. This group will continue the improvement by applying the principles of "reading for study." In the following chapter it will be possible to determine the improvement of the students by a further application of the methods of study acquired the first semester.

Some changes in presentation of subject matter and additional drill is necessary during the second semester to make possible greater gains by students who will attempt to improve their reading and study habits during the second semester.

CHAPTER 5

COMPARISON AT END OF SECOND SEMESTER

The comparison of scores for Test C at the end of second semester is presented by a series of sixteen charts. Eight charts are used to present the gains scored in reading comprehension and eight charts are used to indicate the increase in rate of silent reading. The charts contain the following information:

The median and quartile scores for a normal group, Test A, Test B and Test C.

A graphic distribution, indicating a distribution curve for each group.

The percentile rank for a normal group, Test A, Test B and Test C.

The data necessary for comparisons used in the charts for the preliminary comparisons and the comparisons at the end of first semester have been transferred to these charts. This makes it possible to determine gains made without referring to the previous charts. The scores used in this series of charts were obtained by giving the Iowa Silent Reading Test, Elementary Form A, the last six weeks period of the second semester. In the comparison Group A is the control group. Group A completed the course in reading and study the first semester. The students in Group A were required to apply the principles of study and reading in their study of Business Training during the second semester. The purpose of the comparisons is to determine what gains were made by Group A and Group B during the second semester. Individual gains are indicated for each group of students.

For the comparisons of scores in the first semester a score of 160-156 was considered a normal score. The students, in the group tested, have completed the work of the ninth grade. A score of 160-156 will be considered the normal score for the comparisons for determining the number deficient in reading comprehension.

Comparison of Gain in Reading Comprehension

Chart 41 is a comparison of 107 freshmen, designated as Group A, in the comprehension of reading. The median score for the group is 179, equivalent to a grade ability of above eleventh grade. The quartile 1 score is 156.4, equivalent to a grade ability of 9.9 grade. The quartile 3 score is 192, which is above a grade ability of 10.10 grade. The group gained 24 points in the median score the second semester as compared with a gain of 23.8 points the first semester. The total gain in median score is 47.8 points, equivalent to an average increase in grade ability of 2.4 grade.

Table 31

Per Cent of Pupils for Different Grade Abilities for Group A in Reading Comprehension

	Test A Per Cent	Test B Per Cent	Test C Per Cent
Below seventh grade ability	14.5	6.5	1.0
From seventh to eighth grade ability	17.3	8.5	0.0
From eighth to ninth grade ability	32.4	17.0	10.0
From ninth to tenth grade ability	15.3	19.0	9.0
Above tenth grade ability	20.5	49.0	80.0
Total	100.0	100.0	100.0

Eighty per cent of 107 freshmen have tenth grade or above tenth grade ability in reading comprehension. A score of 160-156 has a percentile rank of 50 in a normal distribution. In Test A, a score of

Graphic Distribution Chart 41

Reading Comprehension

Group A Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution						
Score	Fre- quency	Ability	Grade Per Cent			Percentiles			
			Test A	Test B	Test C	Normal	Test A	Test B	Test C
*** 215-211	3						99		100
***** 210-206	7								97
**** 205-201	4							100	90
***** 200-196	6							99	87
***** 195-191	10						90	96	81
***** 190-186	9						80	100	72
***** 185-181	8						75	98	63
***** 180-176	13	Above 10	7.6	21	57		94	85	56
***** 175-171	9						91	78	44
***** 170-166	6						60	90	35
***** 165-161	6							85	30
**** 160-156	4	10	12.8	27	23	50	83	63	24
***** 155-151	7						79	50	20
** 150-146	2						40	73	14
* 145-141	1	9	15.3	19	9		67	38	12
*** 140-136	3							64	11
* 135-131	1						30	58	8
*** 130-126	3						25	48	7
** 125-121	2						20	37	5
** 120-116	2	8	32.4	18	10		31	18	3
115-111							10	25	1
110-106								23	1
105-101		7	17.1	9	0		18	9	1
100- 96							14	6	1
* 95- 91	1						12		1
90- 86							11	2.5	
85- 81							7		
80- 76		6	12.8	6	1		2		
75- 71									
70- 66									
65- 61									
Total		107							

Normal, Median - 158	Quartile 1 - 129	Quartile 3 - 184
Test A, Median - 131.2	Quartile 1 - 113.8	Quartile 3 - 153.4
Test B, Median - 155	Quartile 1 - 131.9	Quartile 3 - 168.5
Test C, Median - 179	Quartile 1 - 156.4	Quartile 3 - 192

160-156 was attained or exceeded by 17 per cent of the group, in Test B, by 37 per cent of the group, and in Test C by 76 per cent of the group.

Chart 42, 43, and 44 are the division of Group A in the three levels of intelligence. Chart 44 is the reading comprehension comparison of 37 freshmen with an I.Q. of 111-150. The median score for the group is 195.9, equivalent to above eleventh grade ability in reading comprehension. The quartile 1 and quartile 3 scores of 187 and 206 exceed eleventh grade ability in reading comprehension. The entire group of 37 freshmen equals or exceeds tenth grade ability in reading comprehension.

Chart 43 is the reading comprehension comparison of 57 freshmen with an I.Q. of 91-110. The median score for the group is 174.2, equivalent to a grade ability of 10.8 grade. The quartile 1 score is 154.6, equivalent to a grade ability of 9.8 grade. The quartile 3 score is 183.1, equivalent to above eleventh grade ability in reading comprehension. The group was 31 points below the normal median for Test A. In Test B, the group was 7 points below normal, and in Test C, the group advanced to 16.2 points above the normal median score of 158.

Chart 44 is the reading comprehension comparison of 13 freshmen with an I.Q. of 71-90. The median score for the group is 138 points, equivalent to a grade ability of 8.9 grade. The group advanced 2.4 grade in reading comprehension. The quartile 1 score is 121.7, equivalent to a grade ability of 7.10 grade.

Graphic Distribution Chart 42

Reading Comprehension

Group A I. Q. 111-150

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution								
Score	Fre- quency	Ability	Grade Per Cent			Percentiles					
			Test A	Test B	Test C	Nor- mal	Test A	Test B	Test C		
220-216											
*** 215-211	3						99				100
***** 210-206	7										90
*** 205-201	3									100	73
***** 200-196	6									98	69
***** 195-191	6						90			95	50
**** 190-186	4						80	100		87	25
* 185-181	1						75	97		74	22
** 180-176	2	Above 10	18	46	86			90		64	19
*** 175-171	3							83		54	14
* 170-166	1						60	80		50	5
* 165-161	1							66		30	3
160-156		10	30	41	14	50		66		24	
155-151								53		13	
150-146								40		10	
145-141		9	18	2.5	0			37		10	
140-136								34		10	
135-131								30		5	
130-126								25		2.5	
125-121								20		8	
120-116		8	30	10.5	0			8		8	
115-111								10		6	
110-106										3	
105-101		7	4	0	0						
100- 96											
95- 91											
90- 86											
85- 81											
80- 76		6	0	0	0						
Total	37										

Normal, Median-158	Quartile 1 -129	Quartile 3 - 184
Test A, Median-153.75	Quartile 1 -135	Quartile 3 - 159
Test B, Median-170.5	Quartile 1 -163.5	Quartile 3 - 185
Test C, Median-195.9	Quartile 1 -187	Quartile 3 - 206

Graphic Distribution Chart 43

Reading Comprehension

Group A I.Q. 91-110

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution							
Score	Fre- quency	Ability	Grade Per Cent			Percentiles				
			Test A	Test B	Test C	Normal	Test A	Test B	Test C	
220-216										
215-211							99			
210-206										
* 205-201	1									100
200-196	0								100	98
**** 195-191	4						90		97	98
***** 190-186	5						80	100	97	90
***** 185-181	7						75	98	97	82
***** 180-176	10	Above 10	3	11	48			97	95	70
***** 175-171	6							97	90	50
***** 170-166	5						60	94	90	42
**** 165-161	4							92	85	33
**** 160-156	4	10	6	25	33	50		90	80	26
***** 155-151	6							90	64	20
150-146							40	86	50	9
* 145-141	1	9	15	33	12			80	41	9
* 140-136	1							75	32	7
135-131								30	72	30
* 130-126	1							25	56	22
** 125-121	2							20	45	17
120-116		8	50	19	7			34	15	
115-111								10	25	12
110-106									20	10
105-101		7	15	8	0			14	5	
100- 96								9	3	
95- 91									7.5	1.5
90- 86									7.5	1.5
85- 81									4.5	
80- 76		6	9	4	0				3	
75- 71								1	1.5	
70- 66		5	2	0	0				1.5	
Total	67									

Normal, Median - 158	Quartile 1 - 129	Quartile 3 - 184
Test A, Median - 127.56	Quartile 1 - 115.6	Quartile 3 - 140
Test B, Median - 151	Quartile 1 - 135.1	Quartile 3 - 159.2
Test C, Median - 174.2	Quartile 1 - 154.6	Quartile 3 - 183.1

Graphic Distribution Chart 44

Reading Comprehension

Group A I.Q. 71-90

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution							
Score	Fre- quency	Ability	Grade Per Cent			Percentiles				
			Test A	Test B	Test C	Normal	Test A	Test B	Test C	
195-191							90			
190-186							80			
185-181							75			
* 180-176	1	Above 10	0	0	8					100
175-171										92
170-166							60			92
* 165-161	1									92
160-156		10	0	0	8	50				84
* 155-151	1									84
** 150-146	2						40			76
145-141		9	0	0	23					61
** 140-136	2							100		61
* 135-131	1						30	93	100	46
** 130-126	2						25	93	86	38
125-121							20	93	80	23
** 120-116	2	8	7	30	53			93	80	23
115-111							10	93	70	8
110-106								93	59	8
105-101		7	14	35	0			85	50	8
100-96								80	36	8
* 95-91	1							71	14	8
90-86								57	14	
85-81								35		
80-76		6	72	35	8			7		
75-71							1	7		
70-66								7		
65-61		5	7	0	0			7		
60-56								7		
Total	13									

Normal, Median - 158

Test A, Median - 87.8

Test B, Median - 105.5

Test C, Median - 138

Quartile 1 - 129

Quartile 1 - 77.5

Quartile 1 - 98

Quartile 1 - 121.7

Quartile 3 - 184

Quartile 3 - 99.5

Quartile 3 - 118

Quartile 3 - 147.4

Table 32

Percentage of Freshmen in Group A for Each of the Three Levels of Intelligence Who Had the Designated Grade Abilities in Reading Comprehension.

	I.Q. 111-150	I.Q. 91-110	I.Q. 71-90
Test A			
From fifth to sixth grade ability		2.0	7.0
From sixth to seventh grade ability		9.0	72.0
From seventh to eighth grade ability	4.0	15.0	14.0
From eighth to ninth grade ability	30.0	50.0	7.0
From ninth to tenth grade ability	18.0	15.0	
Above tenth grade ability	48.0	9.0	
Total	100.0	100.0	100.0
Test B			
From fifth to sixth grade ability			
From sixth to seventh grade ability		2.5	36.0
From seventh to eighth grade ability		8.0	36.0
From eighth to ninth grade ability	10.0	20.0	28.0
From ninth to tenth grade ability	2.5	33.0	
Above tenth grade ability	87.5	36.5	
Total	100.0	100.0	100.0
Test C			
From fifth to sixth grade ability			
From sixth to seventh grade ability			4.0
From seventh to eighth grade ability			
From eighth to ninth grade ability		7.0	53.0
From ninth to tenth grade ability		12.0	23.0
Above tenth grade ability	100.0	81.0	16.0
Total	100.0	100.0	100.0

The quartile 3 score is 147.4, equivalent to a grade ability of 9.4 grade. In Test A and Test B none of the students scored above the normal median score of 158. In Test C, 16 per cent of the group obtained a score equal to or above the normal median.

In the I.Q. group of 111-150, every one of the 37 freshmen increased their score in reading comprehension equal to or above tenth grade ability in reading comprehension. In the I.Q. group 91-110, 81 per cent of the group of 57 freshmen increased their score equal to or above tenth grade ability in reading comprehension. Of the 13 freshmen in the lower level of intelligence 16 per cent of the group increased their score equal to or above tenth grade ability in reading comprehension.

Chart 45 is a comparison of 103 freshmen designated as Group B in the comprehension of reading. The median score for the group is 181, equivalent to a grade ability above eleventh grade ability. The quartile 1 score is 163.25, equivalent to a grade ability of 10.2 grade. The quartile 3 score is 196.6, which is above a grade ability of 10.10 grade. The group gained 31.3 points in the median score the second semester as compared with a gain of 13.7 points the first semester. The total gain is 43.3 points, equivalent to an average increase in grade ability of 2.3 grade.

Table 33

Per Cent of Pupils for Different Grade Abilities for
Group A in Reading Comprehension

	Test A Per Cent	Test B Per Cent	Test C Per Cent
Below seventh grade ability	13.9	10.0	
From seventh to eighth grade ability	14.6	9.0	1.0
From eighth to ninth grade ability	23.0	19.0	7.0
From ninth to tenth grade ability	27.5	27.0	13.0
Above tenth grade ability	21.0	35.0	79.0
Total	100.0	100.0	100.0

Graphic Distribution Chart 45

Reading Comprehension

Group B Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution							
Score	Fre- quency	Ability	Grade Per Cent			Percentiles			Test C	
			Test A	Test B	Test C	Nor- mal	Test A	Test B		
* 220-216	1								100	
*** 215-211	3						99		99	
***** 210-206	9								97	
***** 205-201	8								100	
***** 200-196	6								98	
***** 195-191	9						90	100	97	
***** 190-186	11						80	98	92	
***** 185-181	6						75	96	90	
***** 180-176	13	Above 10	6.4	15	64			95	88	
***** 175-171	5							93	83	
**** 170-166	4						60	89	78	
***** 165-161	5							84	74	
* 160-156	1	10	14.6	18	15	50		82	71	
**** 155-151	4							79	65	
***** 150-146						40		73	51	
**** 145-141	4	9	27.5	27	13			59	44	
** 140-136	2							51	38	
*** 135-131	3						30	47	32	
** 130-126	2						25	41	29	
125-121							20	37	26	
* 120-116	1	8	19	19	7			32	20	
115-111						10		28	19	
110-106								27	17	
* 105-101	1	7	18.1	9	1			26	14	
100- 96								13	10	
95- 91								12	4	
90- 86								9	1	
85- 81								5		
80- 76		6	12.7	10	0			3		
75- 71		5	1.7	0	0	1		1		
Total		103								

Normal, Median - 158

Quartile 1 - 129

Quartile 3 - 184

Test A, Median - 136

Quartile 1 - 107.8

Quartile 3 - 146.3

Test B, Median - 149.7

Quartile 1 - 124.6

Quartile 3 - 166.8

Test C, Median - 181

Quartile 1 - 163.25

Quartile 3 - 196.6

Seventy-nine per cent of 103 freshmen have tenth grade or above tenth grade ability in reading comprehension. A score of 160-156 has a percentile rank of 50 in a normal distribution. In Test A, a score of 160-156 was attained or exceeded by 18 per cent of the group; in Test B by 29 per cent and in Test C by 77 per cent of the group.

Chart 46, 47 and 48 are the division of Group B in the three levels of intelligence. Chart 46 is the reading comprehension comparison of 35 freshmen with an I.Q. of 111-150. The median score for the group is 195.0, equivalent to above eleventh grade ability in reading comprehension. The quartile 1 and quartile 3 scores of 186.25 and 206.4 exceed eleventh grade ability in reading comprehension. Thirty-four of the thirty-five students equal or exceed tenth grade ability in reading comprehension. (One boy failed to score above ninth grade ability. The boy became ill the same day).

Chart 47 is the reading comprehension comparison of 58 freshmen with an I.Q. of 91-110. The median score for the group is 177.5, equivalent to a grade ability of 10.10 grade. The quartile 1 score is 158, equivalent to a grade ability of 9.10 grade. The quartile 3 score is 190, equivalent to above eleventh grade ability in reading comprehension. The group was 25 points below the normal median for Test A. In Test B, the group was 13.8 points below normal, and in Test C, the group advanced to 19.5 points above the normal median score of 158.

Chart 48 is the reading comprehension comparison of 10 freshmen with an I.Q. of 71-90. The median score for the group is 145.5 points, equivalent to a grade ability of 9.2 grade. The group advanced 2.1

grade in reading comprehension.

Table 34

Percentage of Freshmen in Group B for Each of the Three Levels of Intelligence Who Had the Designated Grade Abilities in Reading Comprehension

	I.Q. 111-150	I.Q. 91-110	I.Q. 71-90
Test A			
From fifth to sixth grade ability			6.6
From sixth to seventh grade ability	2.5	11.0	40.1
From seventh to eighth grade ability		22.5	40.1
From eighth to ninth grade ability	12.5	26.0	6.6
From ninth to tenth grade ability	40.0	26.0	6.6
Above tenth grade ability	45.0	14.5	
Total	100.0	100.0	100.0
Test B			
From sixth to seventh grade ability	2.9	8.9	41.0
From seventh to eighth grade ability	6.2	8.9	25.0
From eighth to ninth grade ability	22.2	26.8	16.6
From ninth to tenth grade ability	31.2	34.0	8.7
Above tenth grade ability	37.5	21.4	8.7
Total	100.0	100.0	100.0
Test C			
From seventh to eighth grade ability			20.0
From eighth to ninth grade ability	3.0	8.0	10.0
From ninth to tenth grade ability		16.0	40.0
Above tenth grade ability	97.0	76.0	30.0
Total	100.0	100.0	100.0

The quartile 1 score is 123, equivalent to a grade ability of 8.1 grade. The quartile 3 score is 173, equivalent to a grade ability of 10.8 grade. In Test A, no student of this group scored above the normal median score of 158. In Test B, eight per cent, and in Test C, 30 per cent of the group obtained a score equal to or above the normal median.

Graphic Distribution Chart 46

Reading Comprehension

Group B I.Q. 111-150

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution						
Score	Fre- quency	Ability	Grade Per Cent			Percentiles			
			Test A	Test B	Test C	Normal	Test A	Test B	Test C
* 220-216	1								100
** 215-211	2						99		97
***** 210-206	7								91
*** 205-201	3							100	71
**** 200-196	4							95	63
***** 195-191	5						90	100	51
***** 190-186	5						80	94	37
** 185-181	2						75	88	23
** 180-176	2	Above 10	22.5	40	88		84	70	17
* 175-171	1						80	60	11
170-166							60	72	9
** 165-161	2							61	9
160-156		10	22.5	30	9	50	59	44	3
155-151							56	31	3
150-146							40	50	3
145-141		9	40	21	0		25	12	3
* 140-136	1						16	9	3
135-131							30	12	6
130-126							25		3
125-121							20		3
120-116		8	12.5	6	3				3
115-111							10	10	3
110-106									3
105-101		7	2.5	3	0				
Total	35								

Normal, Median - 158

Quartile 1 - 129

Quartile 3 - 184

Test A, Median - 150.5

Quartile 1 - 145.5

Quartile 3 - 173

Test B, Median - 165.5

Quartile 1 - 153.5

Quartile 3 - 183

Test C, Median - 195

Quartile 1 - 186.25

Quartile 3 - 206.4

Graphic Distribution Chart 47

Reading Comprehension

Group B I.Q. 91-110

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution

Score	Pre- quency	Ability	Numerical Distribution						
			Grade Per Cent Test Test Test			Percentiles Nor- Test Test Test			
			A	B	C	mal	A	B	C
220-216									
* 215-211	1					99			100
** 210-206	2								98
***** 205-201	5								95
** 200-196	2								86
**** 195-191	4					90		100	83
***** 190-186	5	Above 10	0	2	33	80		98	79
**** 185-181	4					75		98	67
***** 180-176	10							96	60
*** 175-171	3						100	92	43
**** 170-166	4					60	95	90	38
*** 165-161	3						93	83	31
* 160-156	1	10	14.5	20	43	50	90	82	26
** 155-151	2						85	78	24
***** 150-146	5					40	80	62	20
** 145-141	2	9	26.0	34	16		70	51	12
* 140-136	1						60	44	8.6
*** 135-131	3					30	53	35	7
* 130-126	1					25	46	32	1.7
125-121						20	40	26	
120-116		8	26.0	26	8		34	20	
115-111						10	27	18	
110-106							25	16	
105-101		7	22.5	9	0		21	12	
100-96							11	9	
95-91							8	3.5	
90-86							6.4	1.8	
85-81							1.6		
80-76		6	11.0	9	0				
75-71							1		
Total	58								

Normal, Median - 158
 Test A, Median - 133
 Test B, Median - 144.2
 Test C, Median - 177.5

Quartile 1 - 129
 Quartile 1 - 109
 Quartile 1 - 124.2
 Quartile 1 - 158

Quartile 3 - 184
 Quartile 3 - 148.3
 Quartile 3 - 154.4
 Quartile 3 - 190

Graphic Distribution Chart 48

Reading Comprehension

Group B I. Q. 71-90

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution

Score	Fre- quency	Ability	Numerical Distribution							
			Grade Per Cent			Percentiles				
			Test A	Test B	Test C	Normal	Test A	Test B	Test C	
195-191							90			
* 190-186	1						80			100
185-181							75			
* 180-176	1	Above 10		8	20					90
* 175-171	1								100	80
170-166							60			
165-161										
160-156		10			10		50			
** 155-151	2							100		70
150-146							40			
** 145-141	2	9	6.6	8	40				91	50
140-136										
135-131							30	93		
* 130-126	1						25			30
125-121		6	6.6	17	10		20		80	
* 120-116	1									20
115-111							10		66	
110-106								87		
* 105-101	1	7	40.1	25	20			60	60	10
100-96									42	
95-91								46	16	
90-86								33		
85-81								20		
80-76		6	40.1	42	0			13		
75-71								1		
70-66										
65-61										
60-56		5	6.6		0				6.6	
Total	10									

Normal, Median - 158

Quartile 1 - 129

Quartile 3 - 184

Test A, Median - 101.75

Quartile 1 - 87.4

Quartile 3 - 108.3

Test B, Median - 103

Quartile 1 - 97.1

Quartile 3 - 128

Test C, Median - 145.5

Quartile 1 - 123

Quartile 3 - 173

In the I.Q. group of 111-150, all but one of the 35 freshmen increased their scores in reading comprehension equal to or above tenth grade ability in reading comprehension. In the I.Q. group of 91-110, seventy-six per cent of the group of 58 freshmen increased their scores equal to or above tenth grade ability in reading comprehension. Of the 10 freshmen in the lower level of intelligence, thirty per cent of the group increased their scores equal to or above tenth grade ability in reading comprehension.

Table 35^a

Number and Percentage of Freshmen in Group A and B. Number and Percentage of Each Group Deficient in Reading Comprehension.

	Number For Test			Per Cent of Total for Test			Number Deficient In Comprehension For Test			Per Cent Deficient in Comprehension for Test		
	A	B	C	A	B	C	A	B	C	A	B	C
Group A	117	116	107	56	54	51	75	37	12	64	32	11
Group B	109	100	103	44	46	49	56	38	9	51	38	9
Total	226	216	210	100	100	100	131	75	21	57	35	10

The per cent of 226 freshmen deficient in reading comprehension decreased from 57 per cent in Test A to 34.7 per cent in Test B, and to 10 per cent in Test C. The amount of decrease for each semester is approximately the same. However, in comparing the decrease for each group, it is evident the greatest decrease in deficiency of the reading comprehension was accomplished during the semester, in which the group was given remedial instruction in the improvement of reading and study. In respect to Group A, the above observation is not as evident because the group shows a greater improvement than Group B during the semester the group was taking the course in Business Train-

ing. Group A had the advantage of applying the principles of reading and study during the semester the group was studying the work of the first semester. Group B did not have this advantage.

Comparison of Gains in Rate of Reading

Chart 49 is a comparison of 107 freshmen, designated as Group A, in rate of silent reading. The median score is 37, equivalent to above eleventh grade ability in rate of reading. The quartile 1 score is 31, equivalent to a grade ability of 9.10 grade. The quartile 3 score is 43, which is one point less than a perfect score on the test. Thirteen students scored below ninth grade ability in rate of reading.

Table 36

Distribution of Freshmen in Group A According to Rate of Silent Reading

	Test A		Test B		Test C	
	Num	Per	Num	Per	Num	Per
	ber	Cent	ber	Cent	ber	Cent
Below third grade ability	7	5.9				
From third to fourth grade ability	9	7.6	3	2.5		
From fourth to fifth grade ability	5	4.3	3	2.5		
From fifth to sixth grade ability	13	11.1	13	11.0		
From sixth to seventh grade ability	8	6.6	11	9.4	1	1
From seventh to eighth grade ability	12	10.2	18	15.5	9	8.3
From eighth to ninth grade ability	10	8.3	15	13.0	3	3
From ninth to tenth grade ability	8	6.6	13	11.0	10	9.3
Above tenth grade ability	45	39.4	40	35.1	84	78.4
Total	117	100.0	116	100.0	107	100.0

The normal median rate of reading is 31. In Test A, forty-six per cent of Group A scored equal to or above the normal median score. In Test B, thirty-five of the group, and in Test C, seventy-nine per cent of Group A scored equal to or above the normal median score.

Graphic Distribution Chart 49

Rate of Silent Reading

Group A Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution

Numerical Distribution

	Score	Fre- quency	Ability	Grade Per Cent			Percentiles		
				Test A	Test B	Test C	Test A	Test B	Test C
9-*****	44	27							100
	** 43	2					98	100	75
	***** 42	5					96	97	73
	** 41	2					93	97	68
	***** 40	10					89	84	66
	***** 29	6					88	90	57
	** 38	2					87	88	51
	**** 37	4					85	85	50
	***** 36	5					82	81	46
	***** 35	5					75	76	41
	***** 34	8	Above 10	24.9	29.3	71	70	73	36
	** 33	2					61	70	29
	***** 32	6	10	14.5	5.1	7.4	60	65	27
	***** 31	6					54	65	21
	**** 30	4	9	6.6	11.2	9.3	48	59	16
	** 29	2					46	54	12
	* 28	1	8	8.3	13.0	3.0	42	47	10
	27						38	43	9
	*** 26	3					36	38	9
	***** 25	6	7	10.2	15.5	8.3	35	33	7
	* 24	1					31	26	1
	23						30	21	
	22		6	6.6	9.4	1	29	20	
	21						22	16	
	20						21	11	
	19		5	11.1	12.9	0	18	8.6	
	18						15	5.1	
	17		4	4.3	1.8	0	14	3.4	
	16						12	2.5	
	15						9	1.7	
	14		3	7.6	1.8	0	8	1.7	
	13						6		
	12						5		
	11						4		
	10						1.7		
	9								
	8		Below 3	5.9	0	0			

Total 107

Normal, Median - 31	Quartile 1 - 24	Quartile 3 - 37
Test A, Median - 29.2	Quartile 1 - 20.8	Quartile 3 - 33.4
Test B - Median - 28.9	Quartile 1 - 24.3	Quartile 3 - 35
Test C, Median - 37	Quartile 1 - 31	Quartile 3 - 43

(The students were too cautious or conservative in Test B. This was due to a false impression that the students obtained in a discussion of reading rate.)

Chart 50, 51, and 52 is a division of Group A into the three levels of intelligence for a comparison of rate of silent reading. Chart 50 is the rate of silent reading comparison in the level of I.Q. 111-150. The median score is 40, which is nine points above the normal median score. It is equivalent to above eleventh grade ability in rate of reading. The quartile 1 score is 35, equivalent to a grade ability of 10.10 grade. The quartile 3 score is 44, which is the highest score attainable in the test.

Chart 51 is the rate of silent reading comparison of 57 freshmen in the level of I.Q. 91-110. The median score is 37, which is equivalent to a grade ability of above the eleventh grade. The quartile 1 score is 33, equivalent to a grade ability of 10.10 grade. The quartile 3 score of 43 is one point below a perfect score for the test.

Chart 52 is the rate of silent reading comparison of 13 freshmen in the level of I.Q. 71-90. The median score is 25, equivalent to a grade ability of 7.4 grade. The quartile 1 score is 24, equivalent to a grade ability of 6.10 grade. The quartile 3 score is 30, equivalent to a grade ability of 9.5 grade.

The median score of the students in the upper level of I.Q. advanced 9 points, equivalent to an increase in grade ability of 3 grades. The students in the average level of intelligence increased their median score 10 points, equivalent to an increase in grade

Graphic Distribution Chart 50

Rate of Silent Reading

Group A. I. Q. 111-150

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution		Numerical Distribution						
Score	Fre- quency	Ability	Grade Per Cent			Percentiles		
			Test A	Test B	Test C	Test A	Test B	Test C
***** 44	12							100
* 43	1						100	68
** 42	3						92	65
* 41	1					97	92	57
**** 40	4					92	87	54
*** 39	3					89	82	40
* 38	1					81	80	35
37	0						74	32
*** 36	3						70	32
* 35	1					79	64	24
** 34	2	Above 10	40	43	82	73	61	21
* 33	1					60	57	16
* 32	1	10	10.5	5	6	55	51	13
** 31	2						51	11
* 30	1	9	10.5	13.0	9	50	45	5
* 29	1					40	43	3
28		8	8	8	3	34	37	
27						31	34	
26							34	
25		7	8	13.0	0		25	
24						23	18	
23							13	
22		6	5	13.0	0	21	13	
21						18	6	
20							6	
19		5	13	5.0	0	8	3	
18						5		
17		4	2.5	0	0			
16								
15							2.6	
14		3	2.5	0	0			
Total		37						

Normal, Median - 31

Quartile 1 - 24

Quartile 3 - 37

Test A, Median - 30.7

Quartile 1 - 26.6

Quartile 3 - 34.8

Test B, Median - 31

Quartile 1 - 25.4

Quartile 3 - 36.7

Test C, Median - 40

Quartile 1 - 35

Quartile 3 - 44

Graphic Distribution Chart 51

Rate of Silent Reading

Group A. I.Q. 91-110

Comparison

Iowa Silent Reading Test - Elementary Form A

Score	Fre- quency	Ability	Grade Per Cent			Percentiles		
			Test A	Test B	Test C	Test A	Test B	Test C
***** 44	15							100
* 43	1							74
** 42	2					98		71
* 41	1					95	100	69
***** 40	5					90	96	67
*** 39	3						93	58
* 38	1						91	52
**** 37	4					89	90	50
* 36	1					87	84	44
**** 35	4					83	80	41
***** 34	6	Above 10	25	27	76	80	76	35
* 33	1						73	25
**** 32	4	10	14	5	8.5	75	68	22
*** 31	3					60	68	16
* 30	1	9	6	13	7.0	58	60	10
* 29	1					55	55	9
* 28	1	8	11	17	3.5	48	46	7
27						43	38	5
26						41	33	5
*** 25	3	7	14.5	17	5.0	35	27	5
24						30	20	
23						23	19	
22		6	9.5	5	0	21	17	
21							16	
20						20	9	
19		5	6.5	12	0	18	8	
18						14	2	
17		4	0	0	0	11	1.5	
16								
15								
14								
13		3	1.5	4	0	9		
12						7		
11						6		
10						4		

Total	57		
Normal, Median - 31	Quartile 1 - 24	Quartile 3 - 37	
Test A, Median - 28.8	Quartile 1 - 24.9	Quartile 3 - 32.5	
Test B, Median - 29	Quartile 1 - 25.2	Quartile 3 - 35.0	
Test C, Median - 37	Quartile 1 - 33	Quartile 3 - 43	

Graphic Distribution Chart 52

Rate of Silent Reading

Group A. I.Q. 71-90

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution

Numerical Distribution

Score	Fre- quency	Ability	Grade Per Cent			Percentiles		
			Test A	Test B	Test C	Test A	Test B	Test C
* 40	1							100
39								
38								
37								
* 36	1							
35								90
34		Above 10	0	0	15			
33							100	
* 32	1	10	0	8	8			80
* 31	1							76
** 30	2	9	0	0	23			70
29						100	92	
28		8	7	8	0			
27							85	
*** 26	3							54
*** 25	3	7	0	14	46		78	30
* 24	1						71	8
23							57	
22		6	0	21	8			
21						92	49	
20						80	35	
19		5	21	21	0			
18							28	
17		4	7	14	0	71	21	
16						64		
15						50		
14						35	14	
13		3	50	14	0	28		
12								
11								
10							14	
9								
8								
7		Below 3	15	0	0			
Total	13							
Normal, Median -	31	Quartile 1 -	24	Quartile 3 -	37			
Test A, Median -	15.5	Quartile 1 -	13.2	Quartile 3 -	21			
Test B, Median -	22.5	Quartile 1 -	18	Quartile 3 -	26			
Test C, Median -	25	Quartile 1 -	24	Quartile 3 -	30			

ability of 3.5 grade. The students in the lower level of I.Q. increased their median score 10 points, equivalent to an increase in grade ability of 3.7 grade.

Table 37

Percentage of Freshmen in Group A for Each of the Three Levels of Intelligence Who Had the Designated Grade Abilities in Rate of Silent Reading.

	111-150	91-110	71-90
Test A			
Below third grade ability		8.0	14.0
From third to fourth grade ability	2.6	1.5	50.0
From fourth to fifth grade ability	2.6	5.0	7.0
From fifth to sixth grade ability	15.6	6.0	22.0
From sixth to seventh grade ability	2.6	9.0	
From seventh to eighth grade ability	8.0	14.0	
From eighth to ninth grade ability	8.0	12.0	7.0
From ninth to tenth grade ability	10.6	6.0	
Above tenth grade ability	50.0	38.5	
Total	100.0	100.0	100.0
Test B			
From third to fourth grade ability		1.6	14.0
From fourth to fifth grade ability		1.6	14.0
From fifth to sixth grade ability	5.0	12.6	21.0
From sixth to seventh grade ability	13.0	4.8	21.0
From seventh to eighth grade ability	13.0	17.4	14.0
From eighth to ninth grade ability	8.0	17.4	3.0
From ninth to tenth grade ability	13.0	12.6	
Above tenth grade ability	48.0	32.0	3.0
Total	100.0	100.0	100.0
Test C			
From sixth to seventh grade ability			8.0
From seventh to eighth grade ability		5.0	46.0
From eighth to ninth grade ability	3.0	3.5	
From ninth to tenth grade ability	9.0	7.0	23.0
Above tenth grade ability	88.0	84.5	23.0
Total	100.0	100.0	100.0

In the upper level of intelligence ninety-seven per cent of the group scored above ninth grade ability in rate of reading. In the average level of intelligence ninety-one per cent of the group scored above ninth grade ability in rate of reading. In the lower level of intelligence, forty-six per cent of the group scored above ninth grade ability in reading.

Chart 53 is a comparison of 103 freshmen, designated as Group B, in rate of silent reading. The median score is 38, equivalent to above eleventh grade ability in rate of reading. The quartile 1 score is 32, equivalent to a grade ability of 10.5 grade. The quartile 3 score is 44, which is the highest rate of reading for the test. Fourteen students scored below ninth grade ability in rate of reading.

Table 38

Distribution of Freshmen in Group B According to Rate of Reading.

	Test A		Test B		Test C	
	Num ber	Per Cent	Num ber	Per Cent	Num ber	Per Cent
Below third grade ability	9	8.5	1	1		
From third to fourth grade ability	6	5.5	3	3		
From fourth to fifth grade ability	18	12.0	5	5	1	1
From fifth to sixth grade ability	7	6.5	11	11	1	1
From sixth to seventh grade ability	3	1.5	13	13	1	1
From seventh to eighth grade ability	12	13.5	8	8	4	4
From eighth to ninth grade ability	10	9.5	11	11	7	7
From ninth to tenth grade ability	8	7.0	7	7	8	8
Above tenth grade ability	39	36.0	41	41	81	81
Total	109	100.0	100	100.0	103	100

The normal median rate of reading is 31. In Test A, forty per cent of Group A scored equal to or above the normal median score. In Test B, forty-seven per cent of the group, and in Test C, eighty-one per cent of Group B scored equal to or above the normal median score.

Graphic Distribution Chart 53

Rate of Silent Reading

Group B. Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution	Numerical Distribution								
	Score	Fre- quency	Ability	Grade Per Cent			Percentiles		
				Test A	Test B	Test C	Test A	Test B	Test C
16-*****	44	30							100
**	43	2					91	100	72
*	42	1					91		70
*****	41	5					87	91	69
*****	40	5					87		64
*****	39	6					85	88	59
*****	38	7					83	87	53
*****	37	6					81	83	46
*	36	1					79	81	40
****	35	4					77	79	39
*****	34	5	Above 10	28.4	32	69	75	72	35
*****	33	5					72	68	30
****	32	4	10	7.4	9	9	68	63	25
**	31	2					64	59	21
*****	30	6	9	7.4	7	8	60	53	19
*****	29	5					57	52	13
**	28	2	8	9.2	11	7	48	46	8.7
**	27	2					47	41	6.8
**	26	2					43	39	5
	25		7	12.8	8	4	40	36	
	24						35	33	
	23						33	30	
*	22	1	6	2.8	13	1	33	26	3
	21						32	20	
	20						28	16	
*	19	1	5	6.4	11	1	26	11	2
	18						25	9	
*	17	1	4	12.8	5	1	23		1
	16						14		
	15						13	4	
	14						11	3	
	13		3	4.5	3	0	10		
	12						8		
	11						7		
	10						6		
	9						5		
	8						3	1	
	7		Below 3	8.3	0	0	1.7		

Total 103

Normal, Median - 31	Quartile 1 - 24	Quartile 3 - 37
Test A, Median - 27.7	Quartile 1 - 18.2	Quartile 3 - 34.4
Test B, Median - 29.1	Quartile 1 - 22.3	Quartile 3 - 35
Test C, Median - 38	Quartile 1 - 32	Quartile 3 - 44

Chart 54, 55, and 56 is a division of Group B into the three levels of intelligence for a comparison of rate of silent reading. Chart 54 is the rate of reading comparison in the level of I.Q. 111-150. The median score is 42, which is eleven points above the normal median score. It is equivalent to above eleventh grade ability in rate of reading. The quartile 1 score is 38, equivalent to above eleventh grade in ability in rate of reading. The quartile 3 score is 44, which is the highest score attainable in the test.

Chart 55 is the rate of silent reading comparison of 58 freshmen in the level of I.Q. 91-110. The median score is 37, which is equivalent to a grade ability above the eleventh grade. The quartile 1 score is 32, equivalent to a grade ability of 10.10 grade. The quartile 3 score is 41, which is equivalent to above eleventh grade ability in rate of reading.

Chart 56 is the rate of silent reading comparison of 10 freshmen in the level of I.Q. 71-90. The median score is 30, equivalent to a grade ability of 9.5 grade. The quartile 1 score is 28, equivalent to a grade ability of 8.5 grade. The quartile 3 score is 34, equivalent to above eleventh grade ability in rate of reading.

The median score of the students in the upper level of I.Q. advanced 8 points, equivalent to an increase in grade ability of 2.7 grade. The students in the average level of intelligence increased their median score 9 points, equivalent to an increase in grade ability of 3 grades. The students in the lower level of I.Q. increased their median score 9.5 points, equivalent to an increase in grade ability of 3.5 grade.

Graphic Distribution Chart 54

Rate of Silent Reading

Group B. I. Q. 111-150

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution					
Score	Fre- quency	Ability	Grade Per Cent			Percentiles		
			Test A	Test B	Test C	Test A	Test B	Test C
***** 44	17							100
* 43	1					79	100	54
* 42	1							51
* 41	1					71	83	48
** 40	2							45
**** 39	4					68		40
*** 38	3					65	80	25
* 37	1							18
36						60	66	
35						56	60	
34		Above 10	47	53	85			
* 33	1						47	15
* 32	1	10	0	10	6		43	12
31							40	
* 30	1	9	6	10	3	53	31	9
* 29	1					47	28	6
28		8	12	12	3	40		
27								
26						34		
25		7	10	3	0	31	15	
24						25	12	
23								
22		6	6	6	0	22	9	
21								
20							6	
19		5	6	3	0		3	
18								
* 17	1	4	10	3	3	12		3
16								
15								
14								
13		3	3	0	0	3		
12								

Total	35		
Normal, Median -	31	Quartile 1 -	24
Test A, Median -	30	Quartile 1 -	24
Test B, Median -	34	Quartile 1 -	29.2
Test C, Median -	42	Quartile 1 -	38
		Quartile 3 -	37
		Quartile 3 -	42
		Quartile 3 -	39.3
		Quartile 3 -	44

Graphic Distribution Chart 55

Rate of Silent Reading

Group B. I.Q. 91-110

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution					
Score	Fre- quency	Ability	Grade Per Cent			Percentiles		
			Test A	Test B	Test C	Test A	Test B	Test C
***** 44	12							100
* 43	1						100	79
42						96		77
**** 41	4						94	77
*** 40	3					92		70
* 39	1					90	92	65
**** 38	4							63
***** 37	5					87	90	57
* 36	1					84		48
**** 35	4						86	46
**** 34	4	Above 10	24	27	66	80	76	40
** 33	2					76	71	33
*** 32	3	10	12	9	9	70	68	30
** 31	2					63	64	24
**** 30	4	9	17	7	10	60		20
** 29	2					58	57	13
* 28	1	8	8	10	5		53	10
* 27	1					50	46	9
** 26	2					45	43	7
25		7	20	13	5	35	38	
24						31	34	
23							32	
* 22	1	6	1	13	3.3		26	3.3
21						29	20	
20						25	14	
* 19	1	5	6	14	1.7	24	10	1.7
18						22	7	
17		4	11	3	0	19		
16						11		
15								
14							4	
13		3	1	2	0			
12								
11						9		
10								
9						8		
8		Below 3	0	2	0		2	
Total		58						
Normal, Median - 31			Quartile 1 - 24		Quartile 3 - 37			
Test A, Median - 27			Quartile 1 - 20		Quartile 3 - 33			
Test B, Median - 28			Quartile 1 - 22.1		Quartile 3 - 35			
Test C, Median - 37			Quartile 1 - 32		Quartile 3 - 41			

Graphic Distribution Chart 56

Rate of Silent Reading

Group B. I. Q. 71-90

Comparison

Iowa Silent Reading Test - Elementary Form A

Graphic Distribution			Numerical Distribution					
Score	Frequency	Ability	Grade Per Cent			Percentiles		
			Test A	Test B	Test C	Test A	Test B	Test C
* 44	1							100
43								
42								
41								
40								
* 39	1							
38							100	90
37								
36								
35								
* 34	1	Above 10	7	0	30			80
** 33	2							70
32		10		8	20		100	
31							93	
* 30	1	9	13		10			50
** 29	2							40
* 28	1	8		8	30			20
* 27	1						80	10
26								
25		7	13	0	10			
24								83
23								75
22		6	0	33	0			66
21								
20							66	50
19		5	7	17	0			
18								33
17		4	13	17	0	60		
16								
15							46	17
14							33	8
13		3	26	17	0			
12							20	
11								
10							13	
9								
8		Below 3	21	0	0	6		
Total			10					
Normal - Median -			31	Quartile 1 -	24	Quartile 3 -	37	
Test A - Median -			16.7	Quartile 1 -	13.2	Quartile 3 -	27.2	
Test B - Median -			20.5	Quartile 1 -	18	Quartile 3 -	23	
Test C - Median -			30	Quartile 1 -	28	Quartile 3 -	34	

Table 39
 Percentage of Freshmen in Group A for Each of the Three Levels
 of Intelligence Who Had the Designated Grade Abilities
 in Rate of Silent Reading.

	I.Q. 111-150	I.Q. 91-110	I.Q. 71-90
Test A			
Below third grade ability	4.0	10.4	20.0
From third to fourth grade ability	4.0	1.6	26.5
From fourth to fifth grade ability	9.7	11.0	13.0
From fifth to sixth grade ability	6.3	6.4	7.5
From sixth to seventh grade ability	6.3	1.6	
From seventh to eighth grade ability	9.7	19.0	13.0
From eighth to ninth grade ability	12.6	8.0	
From ninth to tenth grade ability	6.3	5.0	13.0
Above tenth grade ability	47.1	37.0	7.5
Total	100.0	100.0	100.0
Test B			
Below third grade ability		1.8	
From third to fourth grade ability		1.8	16.7
From fourth to fifth grade ability	3.5	3.7	16.7
From fifth to sixth grade ability	3.5	14.2	16.7
From sixth to seventh grade ability	7.5	12.5	34.3
From seventh to eighth grade ability	3.5	12.5	
From eighth to ninth grade ability	12.5	10.7	8.3
From ninth to tenth grade ability	9.5	7.0	
Above tenth grade ability	60.0	35.8	8.3
Total	100.0	100.0	100.0
Test C			
From fourth to fifth grade ability	3.0		
From fifth to sixth grade ability		1.7	
From sixth to seventh grade ability		3.3	
From seventh to eighth grade ability		5.0	10
From eighth to ninth grade ability	3.0	5.0	30
From ninth to tenth grade ability	3.0	10.0	10
Above tenth grade ability	91.0	75.0	50
Total	100.0	100.0	100

In the upper level of intelligence ninety-four per cent of the group scored above ninth grade ability in rate of reading. In the average level of intelligence, eighty-five of the group scored above ninth grade ability in rate of reading. In the lower level of intelligence, sixty per cent of the group scored above ninth grade ability in reading.

Table 40^a

Percentage of Freshmen in the Three Levels of Intelligence for Group A and Group B Deficient in Rate of Reading.

	Per Cent Deficient Test A	Per Cent Deficient Test B	Per Cent Deficient Test C
Group A	48	41	11.3
I.Q. 111-150	50	45	3.0
I.Q. 91-110	58	60	8.5
I.Q. 71-90	100	92	54.0
Group B	60	53	14.0
I.Q. 111-150	53	31	6.0
I.Q. 91-110	60	57	15.0
I.Q. 71-90	93	91	40.0

a- Below ninth grade ability is considered deficient in rate of reading in the table.

SUMMARY OF CHAPTER 5

The comparisons of the various groups reveal the following facts:

1. The gain in reading comprehension of Group A and Group B is approximately equal for the period of the experiment.
2. Greater gains in reading ability are made by students, who are properly trained in the fundamentals of study and reading. The students will be able to attain the proper level of reading ability as they advance from year to year.
3. Reading ability for study is greatly increased by instruction in reading for study.
4. Intelligence is an important factor in increasing the ability of pupils to use the proper habits of study and reading to the best advantage.

Pupils, if given the opportunity, will develop the necessary ability in "reading for study" required for each stage in their development. This factor is often overlooked. No pupil can comprehend the subject matter in any study unless he is given the proper study technique required in the subject he is attempting to master.

CHAPTER 6

CONCLUSIONS AND INTERPRETATIONS

The improvement of reading and study is a vital problem. Many high school students are seriously handicapped by the inability to read and study. Two problems exist; 1) to teach students how to read, 2) to teach students how to study. The first problem is usually remedied by giving students remedial drill in reading. The second problem has been quite difficult to remedy. This study has been an attempt to discover proper methods which can be used in solving the study problem.

For this purpose the ninth grade was divided into the following divisions; 1) class comparison, which included 226 ninth grade students 2) group A and group B. Group B was used as the control group the first semester. Group A is used as the control group during the second semester. 3) intelligence quotients form the basis for determining groups a) I 2.71-90 b) I.2. 91-110 c) I.2. 111-150.

Before giving the results of this study, it seems desirable to consider certain factors pertaining to the importance of reading for study. The importance of reading is indicated in many ways. That teachers and supervisors recognize its importance is indicated by the large time allotment and the great number of teaching devices originated for study. Research students realize the importance of reading and study. This is evidenced by the fact that many investigations are made each year. School experience and research have added new evidence of great importance to reading and study. Spelling is

partly dependent upon effective reading and study, good methods of study in many subjects are due largely to types of reading technique, difficulties in problem solving frequently result from faulty reading habits; these facts have resulted from the research work that emphasizes the value of teaching "reading for study".

Teachers are expected to develop the required efficiency in reading and study at each stage of development of the pupil. Too often school teachers claim that the teaching of reading and study development of the pupil belongs in the elementary grades. The fundamental habits should have been developed in the elementary grades. Various additional techniques are required by high school students as they progress in the various high school subjects. The teachers in these subjects should develop the additional necessary skills and habits of reading and study in their subject.

Our problem is concerned with the remedies that can be used successfully to improve reading and study for high school students who are deficient in reading and study habits. The problem was approached through the knowledge of Psychology in habit formation. Careful study of many attempts to improve study practices reveals the lack of consideration of a principle which is fundamental in habit formation. The psychologist tells us that habits are formed only through a repetition of the elements comprising the habit, and that the ease with which the habit is formed is determined by the degree of satisfaction attending the effort. This is not something new. However well this principle has been accepted and made part of the laws of learning, with the excep-

tion of our half-hearted attempts at supervised study, it has been left out of most programs of improving study habits.

In this experiment reading and study are considered as "reading for study". Our problem was therefore chiefly concerned with the improvement of study and its effect on reading ability. For the above reason no specific remedial drill was provided for the improvement of reading. Study habits are closely concerned with and effect reading habits to a large extent. Then in turn reading ability greatly effects study.

There are other activities in study than those included in the printed page. In the minds of many teachers and pupils study has meant the reading and rereading of a lesson. Some of the other activities are attitude toward work, knowledge of sources of information, skills in the use of books and library, and training in organizing material. Also, powers of observation must be trained, and the student must be trained to think.

One attitude which seems to prevail is to do enough work "to get by". There is not enough of the honest pride in doing good work and too little responsibility on the part of the individual making a worth while contribution to the welfare of his group.

Yoakim says the teacher needs to consider the following factors in an analysis of the attitude of a student to study:¹

- 1-Motives for study
- 2-Satisfactions
- 3-Influence of home
- 4-Atmosphere of the school

¹Gerald Allan Yoakim, Reading And Study. The Macmillan Company 1928. pp.454-455.

Right attitudes toward study must be developed as a groundwork for good study. Some of our difficulties have come about because of attempting to train students before we have developed the proper attitudes.

In regards to study we must be able to analyze the knowledge about study that a student possesses to determine whether or not this is the cause of his failure. The following knowledges are a few that must be analyzed in order to determine the type of aid a failing student needs: 1-his knowledge of study methods, 2-his knowledge of the use of books, 3-his knowledge of the value of the library for study 4-his knowledge of outlining and note taking 5-his knowledge in respect to reproducing and reporting, and 6-his knowledge about writing.

A student must develop good habits of study. In the process he may have developed some good and some bad habits, or he may have formed no definite system of habit development. Then too, knowledge of what is right does not always mean that the right thing will be done. In the development of skill in reading and study the following habits are important; the habit of: 1-attention 2-using books and the library 3-being open-minded 4-note-taking 5-using correct methods of study 6-proper summarizing 7-reading for ideas 8-judging the value of what is read 9-having an effective reading rate 10-thinking 11-follow directions 12-reading for a purpose 13-maintaining good health. A proper diagnosis of a student's difficulties will be of great aid in the development of his study and reading habits. These skills should be properly practiced in order that they may become habits.

Having set up certain factors considered important which were developed as part of the instruction, it is time to turn to a discussion of the various groups and comparisons. The preliminary grouping and comparisons pointed out a serious deficiency in reading ability. From the 1-development of proper habits of reading and study 2-study of the various tables and charts, the following conclusions may be drawn:

1-Students who were subjected to the practice technique in study mastery showed a very marked improvement in the ability to read for study.

2-Effect on different levels of intelligence for group subjected to the practice of study technique. If we determine the relative gains or losses for a-students of low I.Q. of 71 - 90, b-students of average I.Q. of 91-110, and c-students of high I.Q. of 111-150, we find that each intelligence level made a gain of approximately one grade in reading ability. The group not subjected to the practice made a gain of approximately .7 grade in reading ability for each level of intelligence. About equal gains in test scores were made by students in the various levels of intelligence in reading ability. This would indicate a lack of correlation between mental ability and gain in reading ability.

3-During the first semester, the control group made a gain of .7 grade in reading ability. This would indicate a-the 20 minutes typewriting period in some way aided in improving their reading ability, b-in regular class work the usual effort was made to improve and develop the necessary skills in reading and study required by the subject. In respect to typewriting having some effect on reading ability further work should be done. We expect to check for this in a study of first year typing during the next school year.

4-Students grouped in the three levels of intelligence showed a wide distribution as compared with the average or class distribution.

5-In the first semester, the increase in average reading ability in Group A over Group B is at least double in all cases in which pupils of below average intelligence are concerned. The difference is less noticeable as intelligence increases.

6-In the upper level of intelligence the gains of Group A over Group B are not so pronounced, indicating their ability to develop skills in reading and study as necessity demands the learning of additional skills.

7-Throughout the study there is a general increase in reading ability in the experimental and control groups. This would indicate

a development of skills and techniques as required by the various studies. Students in the upper half of intelligence get sufficient benefit from the class instruction, for the student in the lower group it is not so effective.

The experiment was continued in the second semester. The factors involved in the improvement of reading for study, discovered in the study the first semester were carefully checked. Improvement of work habits was emphasized to a greater extent in the second semester. From the study the following additional conclusions may be drawn at the end of the second semester:

1-Students who were subjected to the practice technique in study mastery showed greater improvement in the ability to read for study during the second semester in the course of Business Training, than the students who completed the course in Business Training in the first semester.

2-Fewer students failed in Business Training because of a lack of proper study and reading habits.

3-Failures in other studies were reduced to a minimum.

4-More efficient habits of study were demonstrated by the students in all of their other studies.

Some general conclusions are as follows:

1. The reading and study habits of ninth grade students can be improved if students are specifically and definitely informed of what they should do.

2. The reading and study habits can be improved to a much greater extent, if instead of informing pupils of what they should, they are provided with correct practice in the various elements of the particular reading or study technique or skill to be developed.

3. Practise exercises are a greater aid to pupils of below average intelligence.

4. Pupils of above average intelligence can be developed with less drill.

5. The increased effect extended to create better study habits in the daily class period results in greater development of the skills required in a given subject.

6. Remedial reading must be included in the improvement of

study, especially for students of below average mental ability.

In conclusion, it is stated that the curriculum as set up for the inclusion of work in the improvement of reading and study has been of great benefit in equipping the students with proper attitudes, correct habits and method of study suitable to their ability. These students are therefore, better able to continue their work in high school. The number of failures in the control group for other subjects has declined consistently as they have progressed in their work. From indications, the 226 freshmen have gained much learning which we are unable to measure by a test score.

In the light of the above findings, the following recommendations are given:

1-Rate of reading is an important factor in the development of reading comprehension. Therefore, an effort to increase reading rate is necessary in order to increase comprehension

2-For the below normal students remedial work in reading must be added to improvement of study. Improving study habits greatly benefits students but remedial reading must not be forgotten.

3-Reading ability should be improved from year to year. The required ability or efficiency in reading and study should be developed in each stage of development of the student. By this is meant that as the student progresses in school additional reading and study skills are required. Then when the student enters college, he will have at least a majority of the proper habits of reading and study. This will reduce the number of first year failures in college because of improper study technique.

In the light of the facts revealed by the study, it is planned to include improvement of study and the necessary remedial reading in the first, second and third year of the junior high school. This will fit the student to do the required work as he progresses in work, which will require additional skills in "reading for study".

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APPENDIX

List of pupils in Group A and Group B, their I. Q. and scores for the Iowa Silent Reading Test, Elementary Form A and B. Form A was used for Test A and Test C. Form B was used for Test B.

D - Pupil dropped out of school.

X - Not in school the first six weeks.

Student	I.Q.	COMPREHENSION			READING RATE		
		A	Test B	C	A	Test B	C
A, Ruth	124	160	170	200	39	28	40
B, Harriet	111	181	185	195	39	31	44
B, Richard	120	159	166	195	29	30	39
B, Phyllis	116	151	166	196	35	33	43
B, Robert	120	154	193	196	32	33	44
B, Fern	98	131	150	175	34	34	34
B, Dorothy	98	133	D	D	35	D	D
B, Patricia	102	126	143	167	29	28	44
B, George	104	130	155	152	32	25	42
B, Charles	100	123	142	168	32	29	39
C, Jean	122	173	177	210	35	35	44
C, Patsy	120	168	182	208	34	34	44
C, Donna Marie	111	152	180	195	32	36	39
C, Roberta	104	153	159	189	32	35	37
C, William	91	124	129	151	25	28	32
C, George	100	121	132	157	7	31	40
C, Delores	90	109	109	135	17	20	35
C, Lorraine	103	104	111	155	26	23	25
C, Edward	76	85	98	117	5	25	25
C, Marion	84	83	D	D	10	D	D
C, Donald	81	82	D	D	15	D	D
D, Elaine	143	179	190	209	34	43	44
D, Wendell	125	169	177	209	22	38	42
D, Kenneth	144	149	159	177	30	25	35
D, North	96	131	151	169	42	33	35
D, Alma	102	130	133	154	41	33	34
D, Avalone	93	116	158	176	29	29	34
D, Bernice	109	120	148	162	29	31	44
D, Russell	79	57	89	92	13	18	26
E, Wayne	81	86	86	128	16	23	25
E, Merlyn	107	110	148	154	26	28	40
E, David	94	114	D	D	24	D	D
F, Ila	100	123	130	171	26	26	32
F, Ardel	119	186	187	208	33	39	36
G, Dorothy	109	128	163	133	31	27	44
G, Alice	120	130	159	179	24	24	34

Student	I.Q.	Test			Test		
		A	B	C	A	B	C
G, Jean	112	135	162	187	30	29	33
G, Gerald	110	131	161	193	32	29	34
G, James	86	136	135	151	21	27	32
G, Earl	110	146	169	174	23	39	42
H, Evelyn	94	127	133	144	13	21	25
H, Joseph	93	89	D	D	11	D	D
H, Doris	80	84	105	127	20	24	26
H, Margaret	85	110	115	176	17	33	36
H, Roger	114	137	133	195	18	25	36
H, Arvilla	93	141	148	184	26	26	44
H, Lillian	102	146	156	190	35	35	44
I, Robert	111	127	152	171	27	20	31
J, Florine	109	131	157	165	24	26	38
J, Leonette	129	130	160	189	21	22	32
J, Vivian	97	89	130	155	29	25	35
J, Albert	88	87	98	118	15	20	30
J, Erma	118	184	202	208	34	38	44
K, Lucine	104	190	196	201	41	38	44
K, Ardythe	104	151	156	184	44	37	44
L, Elsie	96	155	154	193	17	22	30
L, Margaret	78	80	99	102	15	23	30
L, Vernie	98	145	141	179	21	31	38
L, Robert	131	166	178	208	29	38	44
L, Mina	101	147	151	186	33	32	41
L, Arlene	108	174	177	201	39	43	44
L, Donald	90	107	104	154	27	18	33
L, Helen	114	149	151	188	38	36	42
L, Betty	106	115	123	186	9	14	32
L, Hazel	88	59	D	D	12	D	D
M, Opal	88	153	171	186	38	32	44
M, Viola	82	110	92	130	15	14	28
M, Helen	104	122	D	D	37	D	D
M, Gladen	110	135	151	201	27	34	44
M, Loretta	137	176	187	206	43	38	44
M, Donna	102	136	124	145	33	31	34
M, Donald	116	167	186	198	34	43	44
M, Ruth	126	175	174	207	44	38	44
M, Roger	113	124	147	162	13	29	29
N, Solveig	110	161	174	202	26	19	30
N, Gerald	106	127	137	159	19	21	28
N, Garnet	110	161	174	198	26	19	34
O, Lila	110	103	121	170	18	23	32
P, Margaret	96	145	151	179	33	25	38
P, Marjorie	101	147	154	210	32	37	41
R, Laura	111	125	154	180	21	20	33
S, Edna	95	85	106	D	17	21	D
S, Doroth	103	143	148	186	32	19	35

Student	I.Q.	Test			Test		
		A	B	C	A	B	C
S. Donald	118	142	153	182	30	36	44
S. Aurora	89	92	95	152	31	23	34
S. Wilfred	99	126	129	143	25	26	29
S. Thomas	94	105	100	139	40	20	26
S. Dorothy	82	109	111	175	20	23	39
S. Alice	99	110	129	146	31	33	29
S. Hazel	108	117	124	D	20	23	D
S. Arthur	98	78	106	149	21	23	35
S. Jack	100	166	169	180	42	35	44
S. Luverne	103	140	145	173	29	27	34
T. James	120	82	110	136	17	18	17
T. Gilbert	104	147	146	188	44	31	44
T. Dorothy	96	147	146	183	44	31	37
T. Donald	96	102	99	163	13	18	19
T. Helen	96	107	D	D	25	D	D
T. Bob	117	149	169	200	21	31	30
U. Elisha	92	96	D	D	7	D	D
U. Morgan	96	105	115	150	18	26	30
U. Earl	92	101	D	D	11	D	D
U. Victor	114	147	157	187	24	32	37
V. Gen	113	153	155	193	40	33	44
V. Marjorie	114	149	153	179	17	28	32
W. Clements	92	86	99	133	17	28	26
W. Helen	114	143	156	200	37	41	44
W. Jack	105	147	153	166	29	25	37
W. Donald	107	149	151	185	27	26	31
Z. Norma	122	167	176	201	22	30	44
P. Shorley	111	X	175	198	X	30	38
S. Leon	108	X	177	197	X	41	44
M. Wilbur	119	X	159	193	X	31	39
B. Ruby	101	X	120	166	X	21	22
H. Bernard	96	X	153	162	X	30	40
H. Marles	110	X	178	181	X	37	37

GROUP B

COMPREHENSION

READING RATE

A. Norma	97	103	104	176	26	28	33
A. Ellora-Mae	106	130	131	152	35	33	44
B. Dorothy	98	131	131	131	31	29	37
B. Alice	104	137	155	178	29	29	34
B. Elaine	112	140	197	184	44	35	44
B. Edon	87	93	D	117	31	D	29
B. Eleanor	96	130	149	165	34	20	40
B. Martha	114	157	193	210	34	31	44
B. Grace	110	138	146	190	29	29	32
B. Paul	99	135	140	175	32	32	39
B. Bernice	102	172	183	203	34	35	44
B. George	95	142	147	180	29	39	41

Student	I.Q.	Test			Test		
		A	B	C	A	B	C
B. Anna	111	146	141	165	25	24	38
B. Harry	117	172	204	215	44	43	44
C. Mayaland	118	134	136	172	25	34	40
C. Gerald	90	131	143	180	8	20	27
C. Dorothy	107	117	130	154	17	28	35
C. Dorothy	121	149	151	202	29	29	41
C. Esther	114	166	195	207	42	29	40
C. Gloria	110	160	194	195	36	43	41
D. Grace	78	110	122	D	17	24	D
D. Opal	108	158	166	189	34	35	44
D. Norine	99	153	152	172	42	33	44
D. Rolland	89	102	103	145	27	22	29
E. Easten	106	150	160	181	17	35	38
E. Pat	133	182	172	195	37	43	44
E. Floyd	97	93	96	149	26	34	30
E. Dorothy	101	145	150	D	39	35	D
E. Norryle	132	190	191	210	44	43	44
F. Ann	110	174	180	205	42	41	44
F. Walter	109	153	142	176	32	37	43
F. Richard	112	155	163	190	29	34	39
F. Helen Marie	111	193	194	214	44	43	44
G. Eleanor	120	177	174	202	17	25	39
G. Kathleen	111	146	135	186	29	29	38
G. Cyrus	105	131	143	193	36	31	36
G. Kay	116	189	201	208	30	38	44
H. Lowell	103	158	164	193	33	22	35
H. Doris	99	119	95	134	9	8	33
H. Faye	98	101	D	D	D	D	D
H. Dorothy	90	85	124	144	17	20	33
I. Margie	106	123	140	177	27	21	37
I. Jallen	82	89	D	D	10	D	D
J. Joe	97	87	89	127	9	22	27
J. Eunice	97	116	D	D	31	D	D
J. Deane	99	109	118	207	29	35	44
J. Olivia	108	165	170	212	44	43	44
J. Howard	91	100	105	146	16	18	31
J. Ruby	103	123	136	166	25	27	40
K. Kathryn	120	194	188	218	44	43	44
K. Marion	113	144	156	195	26	33	39
K. Alta	105	143	158	177	24	18	38
L. Morley	118	147	186	190	44	35	44
K. Betty	106	132	147	178	32	31	37
K. Joyce	103	135	142	171	32	36	32
K. Noel	117	126	140	169	21	26	31
K. Margaret	116	127	130	171	27	25	36
K. Lila	99	120	124	160	22	19	40
L. Harlan	96	121	153	178	18	29	37
L. Edward	131	170	196	204	30	40	40

Student	I.Q.	Test			Test		
		A	B	C	A	B	C
L. Jane	132	173	190	211	44	36	44
L. Robert	121	167	168	196	41	34	44
L. Martha	106	162	166	194	33	33	44
L. Donna	109	152	185	192	36	40	44
L. Theresa	104	141	153	180	36	37	31
L. Cecil	112	144	183	196	28	31	39
L. Robert	110	109	160	181	34	21	44
L. Julian	116	106	157	164	21	22	30
L. Donald	98	76	98	136	19	29	35
M. Arlene	103	171	176	187	28	28	44
M. Lillian	109	148	162	184	32	34	44
M. Gloria	95	125	133	156	25	26	31
M. Ella	101	101	D	D	24	D	D
M. Meinke	95	102	D	D	27	D	D
M. Betty	76	95	97	138	29	29	31
M. Ted	85	95	105	150	16	14	24
N. Ruth	122	183	195	205	38	43	40
O. Marvin	100	117	151	172	30	28	40
O. Orland	90	90	108	140	13	21	30
O. Harold	112	160	189	195	19	19	40
O. Donald	108	184	196	203	34	40	44
P. Margaret	95	97	105	126	10	19	33
P. Beatrice	101	118	107	164	25	21	40
P. Raymond	106	127	145	171	30	27	35
P. Farrel	101	131	142	178	28	31	32
P. Cliff	117	140	186	194	34	37	44
P. Julia	106	148	151	179	28	24	34
P. Robert	114	167	173	190	41	37	44
Q. Byron	93	113	129	156	20	18	30
R. Norman	104	164	169	179	32	27	43
R. Lawrence	97	145	154	178	31	39	44
R. Mary	110	135	158	186	32	29	37
R. Clarence	96	135	D	D	42	D	D
R. Mabel	115	118	139	174	21	22	29
R. Lloyd	92	84	117	124	10	16	31
S. Pat	91	69	90	125	19	19	25
S. Lynn	81	96	196	165	21	24	40
S. Robert	96	115	132	161	26	22	29
S. John	96	118	162	188	19	25	34
S. Gerald	103	136	144	182	40	41	41
S. Chester	114	140	163	184	15	24	34
S. Della	96	136	143	167	36	31	36
S. Doris	119	151	170	207	30	29	44
S. Donna	114	160	D	D	33	D	D
T. Lucille	117	139	168	212	33	26	38
T. Richard	82	103	108	150	14	14	26
U. Alice	113	152	167	190	40	43	42