

An Analysis of Reading Test Results
in Several Kansas High Schools.



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I-The Problem and the Data

Although many studies have been made of the achievement of elementary school pupils in the subject of reading, fewer studies have been made of the reading ability of high school students. Because of this fact and because of the general recognition of the importance of reading as a tool-subject in other fields of study, the writer decided to make a study of the reading ability of the students in certain Kansas high schools.

It seems to the writer that too little attention and thought has in general been given to reading as related to the success of students in other school subjects, especially subjects in the high school.^{1.}

When one realizes that there may be a vital relation between ability to comprehend the printed page and successful school achievement, he more clearly sees the need of careful and extensive study of the reading

1. An Analysis of Some Reading Difficulties of High School Students. An unpublished master's thesis by George G. Struble, University of Kansas, 1925.

situation in high schools.

Reading is generally taught in the high school only incidently in connection with English or some other subject. Improvement in reading in these schools probably comes from the attempt of students to exercise whatever reading skill has been acquired by them in the grades below the high school and through incidental reading in high school.

The data for this study were obtained from standardized reading tests given in twenty-nine Kansas high schools from November to February during the school year 1922-23, under the supervision of the Bureau of School Service of the Kansas State University. Eight of the high schools are located in cities of the second class, one in a community high school district, formerly called a county high school, and twenty in cities of the third class.

The Thorndike-McCall Silent Reading Scale, Form I, was given to 3114 students in sixteen high school from November to February, 1922-23. During the same period the Monroe Standardized Silent Reading Test, Form I, Test III, was given to 1207 students in thirteen high schools. The Monroe tests supplied scores in both

reading comprehension and reading rate.

In addition to the scores in these silent reading tests Terman Group Intelligence test scores were also available for a greater part of the high school students who had been tested in silent reading. The mental age of students determined from the group mental test scores were used in conjunction with the reading age of those students in securing their reading quotients as based on the Thorndike-McCall silent reading test. The thirteen high schools which had not taken the Thorndike-McCall reading test were not included in this treatment of reading quotients as no technique was available for securing reading age from the Monroe silent reading test scores.

Questionnaires asking in what kind of elementary school each student had received his reading training and the time spent therein were sent to the superintendents or principals of the twenty-nine high schools included in this study. The names of the students in each school for whom reading test scores were available were listed by school grades and in alphabetical order by the writer for the convenience of those asked to furnish additional information. These superintendents and principals were asked to indicate which

students had received one half or more of their elementary school training in one teacher schools and which students had received less than one-half but some part of their elementary school training in one teacher schools. To this request, twenty-eight of the twenty-nine schools addressed, returned the lists of names wholly or partially checked.

The Monroe Reading Test probably does not adequately measure rate, because of the brevity of the time for the test. It is believed that five minutes is not sufficient time to secure a true measure of reading rate, especially when a part of the time is required for answering the questions following the test paragraphs. The Monroe test also lacks continuity in the test material. The short paragraphs treating in a brief manner different subjects do not provide continuity of thought or content. It is the opinion of the writer that the highest rate of silent reading is not attainable with test material of this nature. Monroe in a recent revision of Educational Tests and Measurements mentions a number of limitations of his silent reading tests.^{1.}

1. Educational Tests and Measurements by Monroe, DeVoss and Kelly, Revised Edition, pages 101 and 102.

Another objection to the Monroe test is that the norms for the high school are not comparable with the norms for the grades. Reading test material for the four grades of the high school is not the same as the reading test material for the sixth, seventh and eighth grades as a different form of test is used and consequently the norms in reading rate and comprehension are not based on the same material. The January norms for the eighth grade are 106 in reading rate and 26 in reading comprehension, while the January norms for rate and comprehension for the ninth grade or first year of high school are 83 and 23 respectively.

However, the limitations of the Monroe test for rate of reading do not affect the reliability of comparisons with other schools of the same character that have been tested by the Monroe tests since all are presumably affected alike by the limitations mentioned above.

II-Presentation and Analysis of Material

For purposes of comparison the twenty-nine high schools from which test results were secured were divided into two classes, large high schools and small high schools. Eleven high schools each having 150 or more students enrolled in grades IX to XII inclusive are designated large high schools in this study. This group included the high schools of the eight second class cities, two third class cities and one community high school. Eighteen high schools each having fewer than 150 students taking the reading tests were classed as small high schools. This group includes only high schools in third class cities of the state, many of which are rural high schools.

Such a classification of high schools into large and small correspond in general with the fact that the high schools of third class cities in the state have an enrollment of less than 150, while high schools of second class cities have an enrollment of 150 or more. Of the 607 schools designated as third class city high schools in the Kansas Educational Directory for 1924-25, only twenty-five had an enrollment in September, 1924 of 150 or more. Of the 72

schools listed in that directory as second class city high schools, only eight had an enrollment of less than 150 pupils.

Table I. Median Rate Scores in Silent Reading.
(Monroe Test)

| Grades | IX | X | XI | XII | Total |
|--------------------|-------|-------|-------|-------|-------|
| Number Tested | 406 | 326 | 307 | 168 | 1207 |
| In 13 High Schools | 74.18 | 81.37 | 81.32 | 82.63 | |
| Standard Scores | 83.00 | 85.00 | 90.00 | 96.00 | |

Table I shows the median scores in reading rate of 1207 pupils in thirteen high schools in the Monroe Silent Reading Test. In January norms for reading rate are used, as the tests were given near the middle of the school year. The norms were taken from the Monroe Class Record Sheet for Monroe's Silent Reading Test, Form I.

An examination of Table I shows that the median rate scores for the four grades of the high school, indicated little progress by grades and all are less than the standard rate score for the ninth grade. The rate for the ninth grade is exceptionally low as compared

with the standard score for that grade and with the median scores for the other grades. Since the norms are not comparable for different forms of the test, no direct comparison with achievement in the elementary school grades can be made.

Table II. Median Comprehension Scores in Silent Reading.

| | (Monroe Test) | | | | |
|--------------------|---------------|-------|-------|-------|-------|
| Grades | IX | X | XI | XII | Total |
| Number Tested | 406 | 326 | 307 | 168 | 1207 |
| In 13 High Schools | 20.60 | 23.69 | 24.87 | 29.17 | |
| Standard Scores | 23.00 | 25.40 | 27.20 | 30.00 | |

In Table II the median comprehension scores are compared by grades for the same test as in Table I and with the standard norms in comprehension.

Table II shows successively higher scores in reading comprehension by grades, but in no grade does the median achievement score reach the established norm. The ninth, tenth and eleventh grades are retarded almost a whole year as measured by the Monroe standard median scores. Only in the twelfth grade does the median comprehension score in reading approach closely the established norm for that grade. The gain in comprehension

may be due in part to progressive growth in reading through the high school grades, but it may also be due in part to the factor of selection.

It is quite probable that a greater per cent of the poorer students, than of the better ones have dropt out of school before reaching the senior year in high school. For this reason a greater per cent of the senior students than of the students of any other grade are among the more capable. Rudolf Pintner in discussing "Madsen's survey by means of the Army Alpha test of 7168 students in four cities" states that "in each there is an increase of score as we ascend from the freshmen to the seniors, with the exception of the Madison seniors. The less intelligent students are eliminated from year to year----Many other reports of intelligence tests of high school students show the same results."¹ It is quite possible that all the improvement shown by the median scores of comprehension In Table II may be due to the elimination of the poorer students.

1. Pintner's Intelligence Testing, page 249.

Table III. Median Rate and Comprehension Scores
in Silent Reading. Compared with Reference to Size of
High Schools. (Monroe Test)

| Grades | IX | X | XI | XII | |
|--------------------------|-------|-------|-------|-------|------|
| Rate | | | | | |
| In 2 Large High Schools | 82.86 | 81.18 | 78.81 | 83.27 | |
| In 11 Small High Schools | 66.45 | 80.95 | 82.79 | 81.25 | |
| Standard Scores | 83.00 | 85.00 | 90.00 | 96.00 | |
| Comprehension | | | | | |
| In 2 Large High Schools | 22.00 | 25.08 | 25.58 | 29.11 | |
| In 11 Small High Schools | 19.90 | 22.74 | 24.32 | 28.59 | |
| Standard Scores | 23.00 | 25.40 | 27.00 | 30.00 | |
| Number Tested in | | | | | |
| Large High School | 248 | 191 | 192 | 67 | |
| Number Tested in | | | | | |
| Small High Schools | 158 | 135 | 115 | 101 | |
| Totals | 406 | 326 | 307 | 168 | 1207 |

In Table III the medians for rate and comprehension are shown separately by grades for ^{the} two large high schools

~~that compose~~ ^{included in} the group of thirteen high schools that took the Monroe tests.

The median reading rate of each of the four grades in the eleven smaller high schools with 732 individuals as shown in Table III is below the norm for the ninth grade. This is also true for the median reading rates of the two larger high schools, having 475 individuals, with the exception of the twelfth grade where the median rate of reading is a little above the ninth grade norm. In other words, the pupils of these high schools are nearly three full years behind the standard reading rate as measured by the Monroe ~~for~~ silent reading test.

The median comprehension score for the tenth and eleventh grades of the eleven small schools is in each case more than a year below the norms for these grades, while the twelfth grade median does not reach the established norm for that grade. The medians of each of the four grades of the two large high schools of this group are also below the standard medians, but they are somewhat better grade by grade than the medians for the small high schools.

In the analysis of the scores in the Thorndike-McCall reading test the January mean was computed and compared with the January norms, as most of the tests were given about the middle of the year.

Table IV. Mean Scores in Comprehension in Silent Reading.

| (Thorndike-McCall Scale) | | | | | | |
|--------------------------|-------|-------|-------|-------|-------|-------|
| Grades | VIII | IX | X | XI | XII | Total |
| In 16 High Schools | | 56.89 | 59.53 | 62.34 | 64.72 | |
| Number Tested | | 1032 | 874 | 680 | 528 | 3114 |
| In 9 Large High Schools | | 56.95 | 59.71 | 62.94 | 64.94 | |
| Number Tested | | 900 | 777 | 579 | 452 | 2708 |
| In 7 Small High Schools | | 56.44 | 58.12 | 61.06 | 63.15 | |
| Number Tested | | 132 | 97 | 101 | 76 | 406 |
| Standard Scores | 59.60 | 61.50 | 62.90 | 64.50 | 66.80 | |
| A Year's Progress | | 1.90 | 1.40 | 1.60 | 2.30 | |

In Table IV, it may be observed that the mean reading scores of the sixteen high schools are considerably below the established norms in each of the four

grades. The ninth grade mean score of 56.89 is but slightly better than the standard for the seventh grade (56). This means that these students on entering high school were nearly two years below the average reading ability of students that reach the standard in reading as measured by the Thorndike-McCall Reading Scale.

The mean score of the tenth grade is more than two years below the eighth grade standard score, that is, the tenth grade or second year high school students in the sixteen high schools of this study at the middle of their tenth grade could not comprehend or interpret the reading material of the Thorndike-McCall tests as well as eighth grade students of standard reading achievement can at the middle of the eighth grade. In each of the four years of the high school except the twelfth, the reading ability of the students is more than a year below the norm for their grade as measured by the Thorndike-McCall Reading Scale. The Twelfth grade is only a little less than a year below the standard.

Table IV also shows that there is a difference between the mean reading comprehension scores of the large

high schools and the mean reading comprehension scores of the small high schools. Combining all four grades the mean score of the large high schools is 60.36 and in the small high schools, 59.28. The difference is 1.08. This difference indicates that the students of the small high schools are approximately from one-half to two-thirds of a school grade behind the students of the large high schools in reading ability. An examination of the mean scores for each grade of the two classes of schools when tabulated separately reveals more clearly the difference in reading ability of the students of the large and the small high schools.

Only in the ninth grade are the mean scores of the two classes of schools nearly equal while in the tenth and eleventh grades the students of the large high schools are more than a year in advance of the students of the small high schools in reading comprehension. In the twelfth grades of the two classes of high schools, while the difference does not equal a whole year it is marked. Here even the seniors of the large high schools in their ability to comprehend printed material as measured by the Thorndike-McCall Reading Scale are nearly a whole year in advance of the seniors of the

small high schools. These differences probably can not be ascribed to any one cause.

A comparison of the number of high school students tested by grades in Table IV shows that in the large high schools the number dropping out is a little greater than in the small ones. The number of students in the twelfth grade of the large high schools taking the reading test was almost exactly 50% of the number of students in the ninth grade taking it, while the number of students in the twelfth grade of the small high schools taking the same test was 57.5% of the number in the ninth grade taking it. The difference is not great enough however, to account for the superiority of silent reading comprehension in the large high schools. Some of it is probably due to better organization and instruction and to the stimulus of larger numbers.

An examination of the comprehension scores in Table IV shows a marked increase in reading comprehension scores during each of the four high school years. The increase is 7.83 while the normal progress as measured by the Thorndike-McCall reading standard is 7.20. This is a little better on the average, than a year's progress for each of the four high school grades. This

increase in reading comprehension may be due to a number of factors such as the elimination of the poorer students and to the exercise of the ability of high school students to comprehend printed matter in the pursuit of their school work. In fact, the increase in the mean score from year to year in reading comprehension as measured by the Monroe and the Thorndike-McCall reading tests in both large and small high schools is marked. There is, however, little or no increase in reading rate as disclosed by the Monroe tests.

In Table V a comparison of the mean scores of high school pupils in reading is made with reference to *their* elementary school training.

Tables I, II, III, and IV show that the average rate and comprehension scores of the pupils in the high schools included in this study are below the standard scores. They also show that the average rate and comprehension scores of the large city high schools more nearly approach the standard scores than do those of the smaller high schools. These findings are in substantial agreement with a number of studies that involve reading in Kansas high schools.

1-2-3-

1. Survey Report of the Chanute Kansas high school System. F. P. OBrien, H. G. Lull, C. V. Williams and H. P. Smith. Pages 7 and 8.

2. A Cooperative Study of Achievement in English in Junior and Senior High Schools. F. P. OBrien, Director of Educational Research and Service Bureau, University of Kansas. This is an unpublished report.

3. Report of a Survey of Instruction in the Junior and Senior High Schools of Lawrence, Kansas. Pages 29 and 30. This is an unpublished report.

Table V. Mean Scores in Reading Comprehension of High School Students with Reference to Elementary School Training.

(Thorndike-McCall Scale)

| | Reading Training in Two or more Teacher Schools. | Less than Half of Reading Training in one Teacher Schools | One-half or more of Reading Training in one Teacher Schools |
|----------------------|--|---|---|
| 9 Large High Schools | 61.81 | 61.56 | 60.72 |
| Number of Students | 1410 | 210 | 738 |
| 7 Small High Schools | 59.98 | 59.93 | 58.54 |
| Number of Students | 149 | 49 | 185 |
| 16 High Schools | 61.63 | 61.25 | 60.28 |
| Number of Students | 1559 | 259 | 923 |

This table shows that the students receiving all of their reading training in two or more teacher elementary schools are superior in reading comprehension to those who received all or a part of their reading training in one-teacher elementary schools. This is in agreement in the main with studies that have been made of reading in a number of Kansas elementary schools.

1. The Results of Instruction, by F. P. OBrien, D. A. Worcester, E. N. Mendenhall. Page 9.

Table V also shows that the students who received less than half of their reading training in one teacher elementary schools have superior scores in reading comprehension to those who received one half or more of their reading training in one-teacher elementary schools.

Table VI showing the reading quotients for a greater part of the students tested in the Thorndike-McCall Reading Scale also points to the conclusion that pupils read better in the large high schools than in the small. The mean reading quotient of pupils in the large high schools is 99.71 and of those in the small high schools 98.68.

The reading quotients were found by dividing the reading age by the mental age. The mental age for each pupil was obtained by transmuting his intelligence score into the mental age equivalents ~~as~~ stated by Terman in his Manual of Directions. Terman recognizes the tentative nature of these equivalents because they are based on so few cases. ^{1.} The reading age was found by comparing each students' reading score with the reading ^{2.} score in McCall's table for reading age equivalents.

1. See page 10 of the ~~Manual~~^{Manual} of Directions for Terman Group Test of Mental Ability.

2. McCall's "How to Measure in Education," page 73.

In Table VI the mean reading quotients of the students who received all their reading training in two or more teacher elementary schools are compared with those of students who received a part of their reading training in one-teacher elementary schools.

Table VI. Mean Reading Quotients of High School Pupils Grouped According to Their Elementary School Training.

(Thorndike-McCall *Scale*)

| | Reading Train- ing in two or more Teacher Schools | Less than Half of Reading Train- ing in one Teacher Schools | One-half or more of Read- ing Training in one Teach- er Schools |
|-------------------------|--|---|---|
| 6 Large High Schools | 99.71 | 100.98 | 98.70 |
| Number of Students | 1170 | 166 | 564 |
| 7 Small High Schools | 98.68 | 101.76 | 98.685 |
| Number of Students | 149 | 46 | 178 |
| 13 High Schools | 99.66 | 101.15 | 98.697 |
| Number of students | 1319 | 212 | 832 |

In discussing reading quotients McCall in his "How to Measure in Education" says that "There are at least two useful ways of expressing the reading ability of a pupil (or of a class). How well a pupil reads is shown, first by a comparison of his reading score with the norm for his grade"----"How well a pupil reads is shown, second, by a comparison of his reading score with the norm for his age. This is just what is expressed^{1.} by the Reading Quotient."

Three of the large high schools included in the tabulation of Table IV were not included in Table VI. There were no Terman mental test scores available for two of these high schools and one failed to return the questionnaire. Table VI shows the mean reading quotients of 1319 students who had received all of their reading training in two or more teacher elementary schools; for 212 students who had received less than one-half, but a part of their reading training in one-teacher elementary schools; and for 832 students who had received one-half or more of their training in reading in one-teacher elementary schools.

1. See McCall's "How to Measure in Education."

In both the large and the small high schools the reading quotients of students who had received less than one-half, but a part of their reading instruction in one-teacher elementary schools are higher than those of either of the other two groups. Students who received half or more of their reading training in one-teacher elementary schools have lower reading quotients generally than those of either of the other groups who received all of their reading training in two or more teacher elementary schools or less than one half but a part of their reading training in one-teacher elementary schools. This agrees in the main with the findings published in a bulletin setting forth the results of instruction in different types of elementary schools in the state of Kansas.¹

The superiority of the students who had less than one-half but a part of their reading training in one-teacher elementary schools cannot be accounted for by supposing this training to have been of a superior type to that in two or more teacher schools. If this supposition were correct then those students who had

1. F. P. OBrien, D. A. Worcester, E. N. Mendenhall, "The Results of Instruction." page 9.

one-half or more of their reading training in one-teacher elementary schools should be the best readers instead of being among the poorest. Probably this is a highly selected group. Their parents, no doubt were ambitious to give them the best opportunity that a graded school system offered and accordingly placed them in such a system at an early age. This factor of selection is in addition to the one that operates all pupils of the upper elementary grades and the high school, namely, the dropping out of school a greater per cent of the poorer students.²

The students in the small high schools who received less than one-half but a part of their training in reading in one-teacher elementary schools appear from Table VI to have a higher mean reading quotient than the students in the large high schools with the same elementary training in reading. This may be due to their finding more congenial and familiar surroundings in the small high schools than in the large high schools. It is very likely that proportionally more rural pupils attend these schools than the larger ones. For this reason there would be less difference in their new surroundings

2. See reference to Pintner page 10 of this study.

in the elementary grades and high schools of small towns and their old surroundings in the rural or one-teacher schools than in larger school systems.

In eleven large high schools of this study, for which accurate data were obtained, there were 1645 students, or 60% who had received all of their elementary school training in reading in two or more teacher schools. There were in the same high schools 1086 students or 40% who had received a part or all of their training in reading in one-teacher elementary schools. Of 1146 students in the small high schools 690 or 60% received all or a part of their training in reading in one-teacher elementary schools. Practically three-fifths of the students in the smaller town high schools received all or a part of their reading training in rural one-teacher elementary schools, while only two-fifths in the large high schools, received all or a part of their reading training in rural one teacher elementary schools.

Table VII. Comparison of Averages of Boys and Girls in Reading Comprehension and Rate. (Monroe Test)

| | | Comprehension | Rate |
|----------------------|--------|---------------|-------|
| 547 Boys in 13 H. S. | Mean | 23.93 | 80.14 |
| | Median | 22.68 | 79.23 |
| 630 Girls in 13 H.S. | Mean | 26.19 | 80.91 |
| | Median | 24.45 | 80.19 |

Table VIII. Comparison of Averages of Boys and Girls in Reading Comprehension. (Thorndike-McCall)

| | | |
|------------|--------|--------|
| 1404 Boys | Mean | 59.32 |
| | Median | 58.75 |
| 1710 Girls | Mean | 60.96 |
| | Median | 60.195 |

Tables VII and VIII show that the girls in this study are better readers in both rate and comprehension than the boys. J. A. O'Brien of the University of Illinois in his experiment to improve silent reading in twenty schools located in nine cities of Illinois found that the girls at the beginning of the experiment in all of the elementary school grades except the eighth read at a higher rate than did the boys. The third to the

eight grades inclusive were included in his experiment. At the end of the experiment the girls read at a higher rate in all grades save the fifth and eighth. ^{1.} M. C. Haggerty in his study of the Ability to Read in Eighteen Indiana Cities ² gives the results of a vocabulary test in which the girls were superior in the test as a whole in fourteen out of eighteen cities. He states that "the margin of superiority of the girls is not great but it is constant and therefore significant. It tends to confirm a rather widespread notion that girls have superior language ability."

The results of an examination of the data as to the relation of chronological age to reading rate and comprehension follows.

1. O'Brien, J. A. Silent Reading, page 231
2. Haggerty, M. C. The Ability to Read, Indiana University Studies, Volume, IV, pages 33, 34.

Table IX. Median Scores in Reading Rate Tabulated
According to Chronological Ages.
(Monroe Test)

| Ages | 13 yrs. or less | 14 yrs. | 15 yrs. | 16 yrs. |
|-----------------------|--------------------|---------|---------|---------|
| Median Scores | 84.25 | 80.97 | 80.61 | 80.26 |
| Number of Students | 21 | 136 | 241 | 269 |

Table IX continued

| Ages | 17 yrs. | 18 yrs. | 19 yrs. | 20 to 24 yrs. |
|-----------------------|---------|---------|---------|---------------|
| Median Scores | 80.39 | 79.23 | 76.33 | 68.13 |
| Number of Students | 255 | 180 | 67 | 37 |

The Monroe reading rate and comprehension scores were tabulated according to the chronological age of the students. A thirteen year age group, for instance, includes the reading scores of all students ranging in age from twelve years and five months to thirteen years and six months.

Table X. Median Scores in Reading Comprehension
Tabulated According to Chronological Ages.
(Monroe Test)

| Ages | 13 yrs. or less | 14 yrs. | 15 yrs. | 16 yrs. |
|-----------------------|--------------------|---------|---------|---------|
| Median Scores | 27.50 | 23.03 | 23.96 | 24.01 |
| Number of Students | 21 | 136 | 241 | 269 |

Table X continued

| Ages | 17 yrs. | 18 yrs. | 19 yrs. | 20 to 24 yrs. |
|-----------------------|---------|---------|---------|---------------|
| Median Scores | 23.66 | 21.43 | 20.08 | 27.17 |
| Number of Students | 255 | 180 | 67 | 37 |

Table IX shows that each succeeding age group, with the exception of the seventeen year age group, has a lower median reading rate score. The group thirteen years or less in age has the highest median reading rate and the group twenty to twenty-four years of age, the lowest.

The two groups, "13 years or less" and "20 to 24 years", in Table X have the highest medians in reading comprehension, the latter being only a little less than the age group 13 year or less. Of the twenty-one in this younger age group only one had an intelligence

quotient below 100, while the intelligence quotients of the others in that group ranged from 102 to 134. The mean intelligence quotient of the pupils 13 year or less in age was 113. The median reading comprehension score of the 20 to 24 year age group (24.17) may be due to both maturity and a high average mentality. The education of members of this group probably was begun late and it may have been interfered with by other demands.

Table XI. Mean Scores in Reading Comprehension
 Tabulated According to Chronological Age and Compared
 with Reading Age.

(Thorndike-McCall Test)

| Chronological Age in Years | 12 yrs. | 13 yrs. | 14 yrs. | 15 yrs. | 16 yrs. |
|-----------------------------------|---------|---------|---------|---------|---------|
| Mean Scores | 61.75 | 57.36 | 60.03 | 58.68 | 59.45 |
| Reading Age Norms in Months | 181 | 169 | 178 | 175 | 175 |
| Chronological Age in Months | 144 | 156 | 168 | 180 | 192 |
| Number of Pupils | 9 | 73 | 391 | 645 | 754 |

Table XI continued

| Chronological Age in Years | 17 yrs. | 18 yrs. | 19 yrs. | 20 yrs. | 21-34 yrs. |
|-----------------------------------|---------|---------|---------|---------|------------|
| Mean Scores | 59.55 | 60.85 | 58.95 | 61.50 | 58.92 |
| Reading Age Norms in Months | 178 | 181 | 175 | 184 | 175 |
| Chronological Age in Months | 204 | 216 | 228 | 240 | 252 |
| Number of Pupils | 58 | 383 | 188 | 57 | 25 |

In Table XI the ages are stated to the nearest

birthday in the same manner as in Tables IX and X.

In this table the mean scores in reading comprehension have been reduced to reading age ~~equivalents~~^{1.} by the use of Table III, page 73 of McCall's "How to Measure in Education."

In this table the 12 year and 20 year age groups have the highest mean scores. The mean of the 20 year age group is a very little higher than that of the 12 year age group.

Table XI shows that there is no general improvement in reading comprehension with the increase of chronological age. This is more evident when a comparison of the reading age of each age group is made with the chronological age expressed in months. This probably means that there was a considerable number of poor readers in the Thorndike-McCall comprehension scores studied whose mental age was somewhat below the average. The greater number of them probably were in the first year of the high school as Table IV indicates that there is a continued increase of scores through the high school grades with reference to reading comprehension.

1. McCall, W. A. "How to Measure in Education," page 73.

III-Findings and Conclusions

1. It is evident from this study of the reading comprehension scores of 3114 students in sixteen Kansas high schools that they entered high school with a mean reading comprehension score nearly two years below the mean reading standards as measured by the Thorndike-McCall Reading Scale.

2. A progressive increase in scores in reading comprehension is shown for each of the four years for the twenty-nine high schools of this study but in no year do the average scores in reading comprehension or reading rate reach the established norms of the Thorndike-McCall and the Monroe Silent Reading Tests.

3. In the reading rate of the 1207 students tested there was not much increase in score by successive grades. In general these students were slow plodding readers and probably remained so throughout their entire high school career.

4. The data quite clearly show that the students of the large high schools read better than the students of the small high schools and that the students who received a greater part or all of their training in reading in two or more teacher elementary schools read better

than those who received all or a greater part of their training in reading in one teacher rural schools.

5. The data of this study show that the girls are slightly better readers than the boys as measured in rate and comprehension tests.

6. This study shows that the older age groups of the high schools are generally poorer readers than the younger age groups.

7. The low mean and median reading scores in comprehension in the ninth grade of the twenty-nine high schools of this study indicate inefficient reading instruction in the elementary grades preceding the high school years.

8. The deficiencies of high school students in reading as disclosed in this study suggests to the writer the need of a more extensive and thorough study into the reading situation in both elementary and high schools of the state. The scope of such a study should include not only the reading results obtained but also a survey of the methods generally employed in the teaching of reading.

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