THE RELATION OF THE EDUCATIONAL AGE OF THE NEW STANFORD ACHIEVEMENT TEST TO THE VARIOUS SUBJECT AGES IN AN OKLAHOMA SCHOOL.

The Relation of the Educational Age of the New Stanford Achievement Test to the Various Subject Ages in an Oklahoma School.

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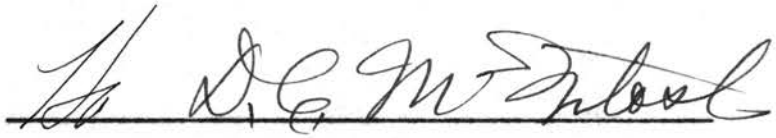

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PREFACE

The writer wishes to acknowledge the kind assistance of Professor Vera Jones, Dr. Marlin Ray Chauncey, and Dr. Haskell Pruett in the preparation of this study. Their many kind suggestions have shown the way. Acknowledgement is also due Dr. Frank Paulley of the Tulsa Public Schools for his very helpful assistance in statistical questions.

Lloyd Power.

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Chapter I. Introduction.

Dr. Paul McKee says, "So far as the writer knows there is little valid evidence of the value of reading in relation to achievement when that achievement is measured by objective tests rather than by teacher's marks."[1.]

This study will attempt to show the relation between the various subject scores of the New Stanford Achievement Test and the general achievement score, or between the various subject-ages and the general educational age. The study was begun on the premise that reading achievement most nearly determines the general educational achievement of the child--at least as far as the New Stanford Achievement Test is concerned.

The Stanford Achievement Test, both new and old forms, is a battery test. It is composed of tests in reading, spelling, and arithmetic in the elementary test used in Grades 2 and 3. The advanced test, used from Grade 4 on, is made up of tests in reading, spelling, language usage, literature, history and civics, geography, physiology and hygiene, and arithmetic. The raw score of each test is converted into an equated score. The average of these equated scores is the general achievement score. Each subject score is convertible into a "subject-age" and the total, or average score, is convertible into an "educational-age". There are two tests in reading and two in arithmetic. The reading score used in this study is the average of the scores on the two reading tests; the arithmetic score is the average of the scores on the two arithmetic tests.

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1. Paul McKee, Reading and Literature in the Elementary School, p. 39. Houghton Mifflin Company.

The New Stanford Achievement Test is quite a reliable test. The test was first constructed in 1923 by three nationally known authors, Truman L. Kelley, Giles M. Ruch, and Lewis M. Terman. Since that time it has undergone two extensive revisions, one in 1925 and one in 1929. The New Stanford Achievement Test emerged from the 1929 revision. Table I shows the reliability coefficients of this test by grades and for the whole.

Table I.

Grade	Reading	Dictation	Lang. Usage	Literature	Hist.&Civics	Geography	Phy.& Hyg.	Arithmetic	Total Score
4 to 9	.951	.96	.84	.74	.81	.89	.82	.941	.98
9	.930	.93	.71	.76	.86	.83	.77	.773	.94
8	.914	.89	.82	.70	. 79	.87	.75	.929	.96
7	.945	.83	.69	.71	.71	.82	.68	.888	.95
6	.916	.90	.81	.66	.70	.92	.72	.865	.95
5	.872	.92	.74	.54	.72	.79	.65	.878	.95
4	.876	.887	.53	.31	.34	.51	.53	.768	.89
2 & 3	.968	.92						.878	.96
3	.938	.90						.829	.95
2	.943	.93						.839	.95

Reliability Coefficients of the Separate Tests and Total Score by Grades of the New Stanford Achievement Tests.[2]

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[2] New Stanford Achievement Test. Guide for Interpreting. World Book Company

Chapter II. Sources and Methods of Securing Data.

The source of the data for this study is approximately 1000 New Stanford Achievement Tests, Form W, given in the Sulphur Public Schools beginning January 17, 1938. The administering of the tests was supervised by the writer as superintendent of schools. The tests were actually administered by 31 teachers and the scoring was done by them. Approximately 260 of these tests were the elementary form given in Grades 2 and 3; the remainder were the advanced form given in Grades 4 to 12, inclusive. The Stanford Achievement Tests are really not designed to be given in Grades 10, 11, and 12, but since they carry their tables of norms to an equated score of 120, an educational age of 19 years, 2 months, they were used in these grades. Due to illness and other causes, some children did not get to complete the test but there were 969 completed tests. This number of cases was used in all computations dealing with reading, spelling, and arithmetic. In computations on the other tests, 724 cases were used. The difference is due to the fact that the elementary test does not have individual tests in language usage, literature, history and civics, geography, and physiology and hygiene.

Sulphur, the county seat of Murray County, has a population of 4242 according to the census of 1930. That figure is still very close to the actual population.

The town is served by branch lines of the Sante Fe and Frisco Railways. Two state highways, Numbers 18 and 22, pass through the city. Highway 22 is paved and affords easy access to the larger towns and cities nearby.

The Platt National Park adjoins the southern edge of the town.

Consequently, the tourist trade and people coming for the mineral baths are among the town's chief assets. Two state institutions, the Oklahoma School for the Deaf and the state Veteran's Hospital, are located in Sulphur.

There is very little industry as such. A small cheese plant and an ice cream plant are the only manufacturing industries, although an asphalt plant which manufactures road-building materials is located 12 miles away and has it's offices in Sulphur. The business men are largely small merchants and professional men. The principal industries of the surrounding country are ranching and dairying.

The school population is of American stock--there is no foreign element. Economically, they come from homes which vary from relief clients and share-croppers to homes which are very comfortable. None are from wealthy homes.

The public school system is made up of two elementary schools and one combined Junior-Senior High School. The two elementary schools have a combined enrollment of about 700 pupils; the enrollment of the Junior-Senior High School is approximately 500. Some 250 pupils are transported from surrounding rural districts. Sixty of these are elementary grade children; the remainder are high school transfers.

Chapter III . Treatment of Data.

In order to determine the relation between the total score and the various subject scores, the coeffieients of correlation between total achievement score and each subject score were computed. The Pearson product-moment method was used. Table II shows the results.

Reading has the highest coeffieient of correlation, .98. Arithmetic and spelling are next with a correlation of .94 each. The others range on down to a low of .82 in geography.

Naturally, all the correlations are rather high but that is expected since the total achievement score is an average of the ten individual subject scores. Too, computing all the grade scores together instead of each grade separately makes for an artificially high correlation. But the relation between the various items should be fairly constant. In other words, if the correlation between reading and total achievement is artificially high due to the two factors mentioned above, the correlation between arithmetic and total achievement should be artificially high in the same proportion and the relation between the correlation in reading and the correlation in arithmetic should be as indicated in Table II.

It might be argued that the correlations of arithmetic and spelling, being almost as high as the correlation of reading, would indicate that they were as important as reading in determining the total achievement. The correlations between reading and the other subject scores, spelling, language usage, lite ature, history and civics, geography, physiology and hygiene, and arithmetic were found by the same product-moment method. The results are to be seen in Table III.

It will be noted that the two subjects whose correlation with total achievement most nearly approached that of reading, have by far the highest correlation with reading. So, their high correlation with total achievement might be attributed to their high correlation with reading.

Table II.

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1. Total Achievement and Achievement in Reading	.98
2. Total Achievement and Achievement in Spelling	.94
3. Total Achievement and Achievement in Language Usage	.86
4. Total Achievement and Achievement in Literature	.92
5. Total Achievement and Achievement in History and Civics	.86.
6. Total Achievement and Achievement in Geography	.82
7. Total Achievement and Achievement in Phy. and Hygiene	.85
8. Total Achievement and Achievement in Arithmetic	.94

Correlation of Total Achievement Scores and Scores on Achievement Tests in Various Subjects--New Stanford Achievement Test.

Table III.

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1. Achievement in Reading and Achievement in Spelling	.928
2. Achievement in Reading and Achievement in Language Usage	.84
3. Achievement in Reading and Achievement in Literature	.85
4. Achievement in Reading and Achievement in History & Civ.	.82
5. Achievement in Reading and Achievement in Geography	.82
6. Achievement in Reading and Achievement in Phy. & Hygiene	.85
7. Achievement in Reading and Achievement in Arithmetic	.906

Correlation of Achievement Scores in Reading and Achievement Scores in Various Other Subjects--New Stanford Achievement Test.

It is to be regretted that, in making this study, the factors of intelligence and chronological age, could not have been held constant. The study would have had more value if only children of an I.Q. of say 95 to 105 could have been used. If in the same group, children of approximately the same chronological age could have been tested, the results might have been more significant. However, under the circumstances, it would have been very difficult to do this.

Chapter IV. Summary and Conclusions.

Coefficients of correlation between total achievement and achievement in the various subjects were worked out for 969 cases from New Stanford Achievement Tests administered in the Sulphur Public Schools. From these correlations it was found:

(1). Reading showed the highest correlation with total achievement, having a coefficient of .98.

(2). Spelling and arithmetic were next to reading showing a coefficient of .94 each.

(3). Literature showed a coefficient of .92 and the other subjects ranged on down to a low coefficient of .82 for geography.

Coefficients of correlation between achievement in reading and achievement in the other subjects showed that:

(1). Spelling and arithmetic, which ranked next to reading in closeness to total achievement, have the highest correlation with reading, .928 and .906, respectively. No other subject approached reading nearly so closely.

From the above facts, it is concluded that achievement in reading most nearly determines general or total achievement--at least as far as the New Stanford Achievement Test is concerned. There is reason to be that the above conclusion would hold good generally because of the high reliability of the Stanford Test.

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1. W. S. Gray. Summary of Investigations Relating to Reading.

2. Paul McKee. Reading and Literature in the Elementary School.

3. New Stanford Achievement Test. Guide for Interpreting.

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