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A STUDY OF SOME OF THE FACTORS INFLUENCING THE  
ACHIEVMENT OF ELEMENTARY SCHOOL CHILDREN  
IN DENTON COUNTY

THESIS

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## TABLE OF CONTENTS

	Page
LIST OF TABLES.....	iv
LIST OF FIGURES.....	vi
Chapter	
I. INTRODUCTION.....	1
Problem	
Sources of Data	
Limitations	
Organization of the Thesis	
II. SIZE OF THE SCHOOL AS A FACTOR OF ACHIEVEMENT..	3
Reading: Meaning of Words	
Reading: Meaning of Paragraphs	
Spelling	
Geography	
Arithmetic: Computation	
Arithmetic: Reasoning Problems	
Sanitation and Hygiene	
English: Correct Use of Words	
Reading: Literature	
United States History	
Educational Achievement	
Summary	
III. TRAINING AND QUALIFICATIONS OF TEACHERS AS FACTORS OF ACHIEVEMENT.....	36
Type of Training of Teachers	
Years of Training of Teachers	
Summary	
IV. MEN AND WOMEN AS A FACTOR OF ACHIEVEMENT.....	51
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.....	55
Summary and Conclusions	
Recommendations	
BIBLIOGRAPHY.....	57

## LIST OF TABLES

Table	Page
I. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in Reading, the Meaning of Words, Taken by Children in Grades Three through Seven, in the Various Types of Schools .....	4
II. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in Reading, the Meaning of Paragraphs, Taken by Children in Grades Three through Seven, in the Various Types of Schools .....	7
III. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in Spelling, Taken by Children in Grades Three through Seven, in the Various Types of Schools .....	10
IV. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in Geography, Taken by the Children in Grades Three through Seven, in the Various Types of Schools .....	13
V. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in Arithmetic Computation, Taken by Children in Grades Three through Seven, in the Various Types of Schools .....	16
VI. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in Arithmetic Reasoning Problems, Taken by Children in Grades Three through Seven, in the Various Types of Schools .....	19
VII. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in Sanitation and Hygiene, Taken by Children in Grades Four through Seven, in the Various Types of Schools .....	21
VIII. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in English, Correct Use of Words, Taken by Children in Grades Four Through Seven, in the Various Types of Schools ..	23
IX. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme, and $Q$ of the Scores on a Test in Reading of Literature, Taken by Children in Grades Five through Seven, in the Various Types of Schools .....	26

LIST OF TABLES

Table	Page
X. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Scores on a Test in United States History, Taken by Children in Grades Five through Seven, in the Various Types of Schools .....	28
XI. Lower Extreme, $Q_1$ , Median, $Q_3$ , Upper Extreme and $Q$ of the Total Scores on the <u>Harlow Achievement Tests</u> , Taken by Children in Grades Three through Seven, in the Various Types of Schools .....	30
XII. Per Cent of Various Types of Schools Having Median Scores Above and Below the Norm .....	35
XIII. The Fields in Which the Teachers Majored in College and $Q_1$ , Median and $Q_3$ of the Scores Made by the Pupils on the <u>Harlow Achievement Tests</u> for Grades Three through Seven Inclusive	37
XIV. Pupil Achievement of Teachers with Sixty to Eighty-nine Semester Hours of College Training	46
XV. Pupil Achievement of Teachers with Ninety to One Hundred Twenty or More Semester Hours of College Training .....	47
XVI. Pupil Achievement of Teachers with One Hundred Twenty or More Semester Hours of College Training .....	48
XVII. Pupil Achievement of Men Teachers .....	51
XVIII. Pupil Achievement of Women Teachers .....	52

## LIST OF FIGURES

Figure	Page
1. Graph Showing the Rank of Each Type of School Based on the Median Score for Each Test for 1934-35 .....	32
2. Graph Showing the Rank of Each Type of School Based on the Median Score for Each Test for 1935-36 .....	33

## CHAPTER I

### INTRODUCTION

#### Problem

There are many factors that influence the achievement of school children; however it is rather difficult to determine the effect of each because of the close relationship and probable overlapping of the various factors. The problem in this study is to determine what effect the size of the school, training and qualifications of the teachers, and sex have upon the achievement of elementary school children in Denton County.

A few of the main factors involved in this study will be examined and statistically presented, so as to show their relation to the achievement of the rural children in Denton County, as revealed through the Harlow Achievement Tests.

#### Sources of Data

The data for this study were taken from the following sources: (1) The Harlow Achievement Tests given in Denton County in 1934-35 and 1935-36; (2) the county superintendent's annual report; and (3) the transcripts of approximately one hundred and fifteen teachers in the county superintendent's office.

### Limitations

The study of this problem has been limited to grades three through seven in the common schools in Denton County. For the school year 1934-35, only one-, two-, three-, and four-teacher schools were considered. There were no common schools in Denton County having five or more teachers for the 1934-35 session. For the succeeding year there were five- and seven-teacher schools in the county but no six-teacher schools. For the 1934-35 session, tests were not available for the fourth grade in the one-, three- and four-teacher schools; consequently, only the two-teacher schools were considered for this grade that year.

### Organization of the Thesis

This study is organized and presented in five chapters. The first chapter is the introduction. Chapter II includes an analysis of the achievement of the children in the various types of schools classified as to the number of teachers employed. Chapter III deals with the types of training and qualifications of the teachers as factors of pupil achievement. Chapter IV compares the educational achievement of children taught by men teachers with the achievement of children taught by women teachers. Chapter V presents a summary of the findings, conclusions, and recommendations.

## CHAPTER II

### SIZE OF THE SCHOOL AS A FACTOR OF ACHIEVEMENT

One of the important factors to be considered in this study is the effect of the size of the school upon the achievement of elementary children in Denton County. Schools varied in the number of teachers employed from the small one-teacher schools to those employing seven teachers. There were no five-, six- or seven-teacher schools for the 1934-35 school year, and there were no six-teacher schools the following year.

In 1934-35, 935 students in the common schools of Denton County took the Harlow Achievement Tests, covering the following subjects: reading, English, spelling, history, geography, sanitation and hygiene, and arithmetic. The following year, approximately 915 students took the test. The scores on each individual test through grades three, four, five, six and seven were used. Results will be shown in Tables I to X inclusive.

#### Reading: Meaning of Words

1934-35.--The data in Table I shows that the median score for the third grade in "The Meaning of Words" for the 1934-35 school year was 19 in the one-teacher schools, 20.2 in the two-teacher schools, 18 in the three-teacher schools



TABLE 1

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>3</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN READING, THE MEANING OF WORDS, TAKEN BY CHILDREN IN GRADES THREE THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPES OF SCHOOLS	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1934-35 SCORES					NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES						
			LOWER EXTREME		Q <sub>1</sub>	M	Q <sub>3</sub>				UPPER EXTREME		Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME	
			LOWER	EXTREME	UPPER	EXTREME	LOWER				EXTREME						
GRADE 3																	
1 TEACHER	11	27	9	4	19	24	29	17	22	17	12	20	25	30			
2 TEACHER	5	24	10	15.2	20.2	24.1	26	17	80	17	13	19	23.5	29			
3 TEACHER	8	100	2	18	18	28.5	30	6	34	17	17.5	23	26.5	29			
4 TEACHER	3	30	9	17.5	17.5	25.3	30	6	38	17	14.5	19.2	23	29			
5 TEACHER								2	19	17	13	19.5	23	26			
GRADE 4																	
1 TEACHER	1	10	5	8	11	14.5	31	7	17	16	13.7	20.5	24.7	35			
2 TEACHER								8	80	16	12.5	17	23	40			
3 TEACHER								5	37	16	12	15	21	27			
4 TEACHER								5	40	16	15	19.5	25	33			
5 TEACHER								3	34	16	13.5	17.3	20.5	33			
GRADE 5																	
1 TEACHER	9	24	7	9	12.5	17.5	26	8	25	13	7.3	10.8	14.3	30			
2 TEACHER	12	47	3	8.5	11.5	14.5	18	18	89	13	8.5	11.5	14.5	30			
3 TEACHER	8	60	3	9	10.2	15	27	6	44	13	9	11.5	14	26			
4 TEACHER			6	10.4	14	21.2	25	5	50	13	9.5	13.2	17.5	26			
5 TEACHER	3	27						3	38	13	9.5	13.5	20.4	30			
GRADE 6																	
1 TEACHER	11	35	11	12.5	17.5	23.5	33	7	8	23	15	20	23	35			
2 TEACHER	20	107	10	18	22	27.5	35	15	40	23	15.5	20.4	24	38			
3 TEACHER	9	87	7	18.7	23.2	27.4	31	6	13	23	13.4	18	22	27			
4 TEACHER								3	19	23	16.5	20	25	30			
5 TEACHER								2	16	23	16.5	20	25	32			
GRADE 7																	
1 TEACHER	8	16	10	10.1	13.2	17	29	8	15	14	12.5	15.1	19	25			
2 TEACHER	19	85	2	10.7	13	16.9	29	17	65	14	10	13	17.5	30			
3 TEACHER	7	72	8	11.3	14	20.5	31	6	38	14	9.2	12	14.5	19			
4 TEACHER	3	30	6	10.5	13.5	17	20	3	40	14	11.5	13.5	16.5	20			
5 TEACHER								3	27	14	9.7	13	17.3	20			
7 TEACHER								1	14	14	8	11.2	13.5	16			

and 17.5 in the four-teacher schools. The norm for this grade is 17, consequently it is seen that the median score for the third grade in "Meaning of Words," in each type of schools is above the norm. In 1934-35 the median in the fourth grade was 11 in the two-teacher schools; the norm for this grade is 16. Test scores for the other types of schools were not available for this year. In the fifth grade the median ranged from 10.2 in the three-teacher schools to 14 in the four-teacher schools; the norm for this grade is 13. Only the four-teacher schools had a median above the norm. In the sixth grade the median was 27 in the one-teacher schools, 22 in the two-teacher schools and 23.2 in the three-teacher schools. There were no other types of schools giving these tests; and in each case when a certain type of school is not mentioned, it will be understood that the test scores were not available for that particular type of school. Only the two-teacher schools are below the norm, which is 23. The median for the seventh grade was approximately the same as the norm; it was 13.2 in the one-teacher schools, 13 in the two-teacher schools, 14 in the three-teacher schools and 13.5 in the four-teacher schools. The norm for this grade is 14. The quartile deviation was rather low in each of the five grades considered. This shows that the schools had a homogeneous group of children for the 1934-35 school year.

1935-36.--For the 1935-36 school year the median was

above the norm for the third grade in every type of school. The range was from 19 in the two-teacher schools to 23.5 in the three-teacher schools. The norm is 17. In the fourth grade the median was low in the three-teacher schools and high in one-teacher schools. The median was above the norm in every type of school except the three-teacher schools. The medians were rather low in the fifth grade for the one-, two-, and three-teacher schools. The median was above the norm in the four- and five-teacher schools. The range for grade five was from 10.8 to 13.9, with a norm of 13. The norm for the sixth grade is 23. The medians for the sixth grade fell below the norm in every type of school. The range of the medians for the seventh grade was from 11.2 in the seven-teacher schools to 15.7 in the one-teacher schools. It was 12 in the three-teacher schools, 13 in the two- and five-teacher schools, and 13.5 in the four-teacher schools. The norm for this grade is 14. The one-teacher schools was the only type in which the seventh grade had a median above the norm.

#### Reading: Meaning of Paragraphs

1934-35.--Table II reveals many interesting facts about the achievement of the children in "Paragraph Meaning" in the various types of schools. For example,  $Q_1$  in the third grades of one-teacher schools for 1934-35 is 12.7, while in the two-, three- and four-teacher schools it is 21.5, 25.3 and 26.9, respectively.  $Q_1$  is higher in the

TABLE II

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>2</sub>, UPPER EXTREME AND Q<sub>3</sub> OF THE SCORES ON A TEST IN READING, THE MEANING OF PARAGRAPHS, TAKEN BY CHILDREN IN GRADES THREE THROUGH SEVEN IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOLS	NO. OF SCHOOLS	1934-35 SCORES					NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES				
		LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>2</sub>	UPPER EXTREME				LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>2</sub>	UPPER EXTREME
GRADE 3														
1 TEACHER	11	10	12.7	26.5	28.2	26	10	22	22.5	26.3	29	30	3.2	
2 TEACHER	24	7	21.5	27.6	27.6	26	20	20	19.5	22.6	28.5	30	6.2	
3 TEACHER	100	8	25.3	28.3	29.2	26	6	34	17	26.2	28.5	38	4.7	
4 TEACHER	30	7	26.9	28	29	26	5	33	14.2	25.2	29.5	30	7.6	
5 TEACHER	3					26	2	19	11.5	23.5	30.3	28	7.9	
GRADE 4														
1 TEACHER	1	7	9	20	24	21	7	17	17	26.5	30.9	36	6.9	
2 TEACHER	10					21	8	13	14.5	24.5	30	37	7.7	
3 TEACHER						21	5	19	11.5	26.5	28	38	8.2	
4 TEACHER						21	3	4	16	22.5	29.5	32	6.7	
5 TEACHER						21	3	5	11.5	23.5	30.3	37	7.9	
GRADE 5														
1 TEACHER	19	7	14	20.7	25	25	18	25	12.2	18	23.1	29	5.4	
2 TEACHER	47	8	15.5	22	26.5	25	18	89	13	18	23	31	6	
3 TEACHER	60	6	21.1	24	28.3	25	6	34	14	18	23.5	27	4.7	
4 TEACHER	27	5	19	24	27.5	25	3	50	16.3	23.8	26.5	30	6.6	
5 TEACHER	3					25	3	38	11.5	20.8	26.5	30	6	
GRADE 6														
1 TEACHER	11	5	24	31.7	36	29	7	8	11.2	13.5	20	31	4.4	
2 TEACHER	20	6	22	31.3	36	29	16	40	15	23	27.5	35	6.2	
3 TEACHER	87	2	22.5	32	37	29	5	13	12.2	16	26.9	32	7.3	
4 TEACHER						29	5	19	13.7	19	24	29	5.1	
5 TEACHER						29	2	16	18	21	28	34	5	
GRADE 7														
1 TEACHER	8	15	28	30.7	33.7	20	8	18	13.5	18	28	31	7.2	
2 TEACHER	19	10	24.7	30	34.1	20	17	65	14	19.5	23.5	39	5.1	
3 TEACHER	72	2	27	32.5	36.6	20	6	40	10.7	15.2	21	25	4.1	
4 TEACHER	30	8	24.5	30.5	33.5	20	3	27	16.3	19.6	23	24	4.5	
5 TEACHER						20	1	11	13.5	23	28	27	4.3	

four-teacher schools than the norm, 26. The medians for the four types of schools are about the same, all being just above the norm. The quartile deviation is low in the two-, three- and four-teacher schools, but is very high in the one-teacher schools.

1935-36.--The medians for the year 1935-36 were about the same as the norm or slightly under the norm. The quartile deviation was low in the one- and three-teacher schools, while it was high in the two-, four- and five-teacher schools.  $Q_3$  was especially high in every type of school. For the fourth grade the median was above the norm in every type of school except the three-teacher schools. It was 19.5 here as compared with a norm of 21. The quartile deviation was rather high in every type of school in the fourth grade, ranging from 6.7 in the four-teacher schools to 8.2 in the three-teacher schools. The norm for the fifth grade is 25. The median in every type of school was below the norm. The quartile deviations were small, ranging from 4.7 in the three-teacher schools to 5.4 in the one-teacher schools. The median for the sixth grade was below the norm in every type of school for both years. The quartile deviation was low the first year, but rather high the second year in the two and three-teacher schools. In the seventh grade  $Q_1$ , the medians, and  $Q_3$  were especially

high in every type of school the first year, while all of these were much lower and below the norm the second year. The quartile deviation was especially low in every type of school for the 1934-35 school year; it was low the second year in the one-teacher schools.

### Spelling

1934-35.--Table III gives the data on "Spelling" for grades three through seven for 1934-35 and 1935-36. The median score in the third grade for 1934-35 was 24.5 in the one-teacher schools, 25.8 in the two-teacher schools, 26.5 in the three-teacher schools, and 25 in the four-teacher schools. All of these are above the norm of 23. The quartile deviation was low in each type of school in the third grade, ranging from 3 to 4.1. The median score in the fifth grade ranged from 21 in the one-teacher schools to 29 in the four-teacher schools. The norm for this grade is 27; therefore, it may be observed that two types of schools were below the norm and two types of schools were above the norm. The quartile deviation was 10.7 in the one-teacher schools, 5.2 in the two-teacher schools, 3.1 in the three-teacher schools and 7.6 in the four-teacher schools. The one; two; and four-teacher schools had a heterogeneous group of children, while the children were closely grouped in the three-teacher schools. For the sixth grade the median score was 29.5 in the one-teacher schools, 27.5 in the two-teacher

TABLE III

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>3</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN SPELLING, TAKEN BY CHILDREN IN GRADES THREE THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOL	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1924-35					1935-36							
			LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME	NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME
GRADE 3															
1 TEACHER	1	27	3	21.4	24.5	27.5	30	23	10	22	9	21.5	25.6	29	30
2 TEACHER	5	24	10	21.4	25.8	28.3	30	23	6	80	7	17.3	24	28	30
3 TEACHER	9	100	6	23	26.5	29	30	23	5	38	7	20.3	25.6	28.5	30
4 TEACHER	3	30	3	20.3	25	28.5	30	23	2	19	18	17.3	23.5	27.5	29
GRADE 4															
1 TEACHER	1	10	11	27.5	32.5	35.8	38	28	7	17	4	23.1	35.5	35.7	37
2 TEACHER								28	8	80	3	22	32	35	38
3 TEACHER								28	5	37	4	25.7	31	32.6	34
4 TEACHER								28	3	40	12	25	31.2	34.6	37
5 TEACHER								28	3	24	1	20.4	28	35.7	38
GRADE 5															
1 TEACHER	9	24	4	9	21	30.5	36	27	8	25	2	15.2	22.3	28.1	33
2 TEACHER	12	47	4	21.5	28	32.5	35	27	18	89	2	12	19	27	37
3 TEACHER	8	60	3	23.2	26.5	29.6	32	27	6	34	3	17.5	21.5	27.5	34
4 TEACHER	3	27	3	16.2	29	31.5	36	27	5	50	1	16	26.5	31.2	34
5 TEACHER								27	3	38	1	19.5	29	35.7	37
GRADE 6															
1 TEACHER	11	35	6	19	29.5	32.5	37	25	7	8	3	15	25	30	34
2 TEACHER	20	103	4	21.2	27.5	33.5	38	25	12	40	2	15.8	20	30	34
3 TEACHER								25	6	13	1	16.2	24	29.5	35
4 TEACHER								25	5	19	9	12	22.5	31.2	35
5 TEACHER								25	2	16	1	25	28.5	32	37
GRADE 7															
1 TEACHER	18	16	12	30.6	40.3	43.6	48	27	8	18	22	30.5	35	39	46
2 TEACHER	19	85	4	30.5	31.2	43	48	27	17	65	24	30	35.9	40	49
3 TEACHER								27	6	38	22	29.3	35.5	37	45
4 TEACHER	3	30	12	35	35	40.3	45	27	6	40	26	30.5	36	40	45
5 TEACHER								27	3	27	11	30.5	35.4	39	42
7 TEACHER								27	1	14	29	30.4	35	37.5	44

schools, and 26.5 in the three-teacher schools. All of these are above the norm of 25. In the seventh grade for 1934-35 the median scores were 40.3, 31.9, 41.6 and 35, respectively, in the one-, two-, three-, and four-teacher schools. The norm for this grade is 27; consequently every type of school had a median above the norm.

1935-36.--The median scores for the third grade, in "Spelling," for 1935-36 were above the norm in every type of school. The range was from 23.3 in the four-teacher schools to 26.5 in the five-teacher schools; the norm for this grade is 23. The quartile deviations were low in every case considered. The median scores in the fourth grade are all equal to or above the norm, 28. The range of the medians was from 28 in the five-teacher schools to 35.5 in the one-teacher schools. In the fifth grade the medians were very low in the one-, two-, and three-teacher schools, being 22.5, 19, and 17.5. The four and five-teacher schools had medians of 26.5 and 29. It is observed that the median of 29 made in the five-teacher schools was the only one in this grade that was higher than the norm of 27. The quartile deviations were high in this grade in every type of school. In the sixth grade the median was 25 in the one-teacher schools, 20 in the two-teacher schools, 24 in the three-teacher schools, 22.5 in the four-teacher schools and 28.5 in the five-teacher schools. As the norm for this grade is 25, it can be seen that the two-, three-



and four-teacher schools fell below the norm, while the one- and five-teacher schools had medians equal to or above the norm. The range of the medians in the seventh grade was from 33.4 in the seven-teacher schools to 36 in the four-teacher schools. All of these were several points above the norm which is 27.

### Geography

1934-35.--Table IV gives data on the scores in "Geography" for grades three through seven for the school years, 1934-35 and 1935-36. The median in the third grade for the first year was 16 in the one-teacher schools, 18.5 in the two-teacher schools, 19 in the three-teacher schools and 18 in the four-teacher schools; all of these were above the norm, which is 15. The medians of the scores in the fifth grade were 13 in the one-teacher schools, 19 in the two-teacher schools, 21 in the three-teacher schools and 18.5 in the four-teacher schools. The norm is 18; therefore, it can be seen that the one-teacher schools were the only type that had a median below this standard. The medians in the sixth grade were 17.5, 16.5 and 21 respectively in the one-, two- and three-teacher schools. The one- and two-teacher schools had a median one point above the norm. In the seventh grade for 1934-35 the median was 27.5 in the one-teacher schools, 21 in the two-teacher schools, 31 in the three-teacher schools.

TABLE IV

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>3</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN GEOGRAPHY, TAKEN BY CHILDREN IN GRADES THREE THROUGH SEVEN, IN THE VARIOUS TYPE OF SCHOOLS

TYPE OF SCHOOL	NO. OF SCHOOLS	1934-35 SCORES					NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES														
		LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME				LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME										
		GRADE 3								GRADE 4					GRADE 5					GRADE 6				
1 TEACHER	11	27	11	16.5	20.2	28	15	10	22	4	13.5	19	24.5	29	5.5									
2 TEACHER	5	24	7	13.8	24	32	12	6	80	2	12	18	24	30	6									
3 TEACHER	9	100	5	13.6	24	29	15	6	34	1	13	17.5	23	27	7									
4 TEACHER	3	30	2	13	23	28	15	5	19	4	9.1	17.5	22.5	30	5.7									
5 TEACHER								2	19	4	12	20.2	22.5	24	5.3									
1 TEACHER	1	10	9	12.5	27.5	7.5	19	7	17	8	12.7	23	28.4	31	7.3									
2 TEACHER							19	8	80	7	15.2	19	25.4	37	5.1									
3 TEACHER							19	5	37	1	4	14	19.5	34	7.1									
4 TEACHER							19	3	40	12	15	21.2	28.5	37	6.9									
5 TEACHER							19	3	34	6	14.5	19.5	26	35	5.7									
1 TEACHER	9	24	6	10	20	28	13	8	25	4	9.4	14	18.1	26	4.3									
2 TEACHER	12	47	5	17.5	23.4	27	18	18	89	6	10.7	14	20.3	27	4.7									
3 TEACHER	6	60	2	13.3	23.3	36	18	6	34	5	11.4	16.2	22.3	32	6									
4 TEACHER	3	27	3	13.5	23	32	18	5	30	2	16	21.2	26	34	5									
5 TEACHER							18	3	38	6	12.2	19	24.2	32	5									
1 TEACHER	11	84	7	10.3	17.5	34	20	7	8	1	13	17.5	30.5	34	9.2									
2 TEACHER	20	87	4	14.4	22	31	20	12	40	6	14	18	27.5	34	4.7									
3 TEACHER	9	87	5	13.4	25.7	33	20	6	13	9	11.5	14.5	25.3	31	5.9									
4 TEACHER							20	5	19	7	11.5	14.5	25.3	31	5.2									
5 TEACHER							20	2	16	12	26	23	26.5	31	5.2									
1 TEACHER	8	16	18	22.4	27.5	40	27	8	18	12	15.4	19	31.2	39	7.9									
2 TEACHER	19	85	13	18.5	31	39	27	17	65	10	18.7	22.9	28.5	36	4									
3 TEACHER	3	30	9	19.5	28	38	27	6	40	16	20	24	26.5	34	4									
4 TEACHER							27	3	27	12	18	26	27.8	35	7.4									
5 TEACHER							27	1	24	13	20.5	24	30.8	34	6.7									

and 24 in the four-teacher schools. The norm for this grade is 27; consequently, it can be seen that the one- and three-teacher schools had medians higher than the norm, while in the two- and four-teacher schools the medians were below the norm.

1935-36.---For the 1935-36 school year the range of the medians in the third grade was from 17.5 in the three- and four-teacher schools to 20.2 in the five-teacher schools. All of these were above the norm, which is 15. The range of the medians in the fourth grade was from 14.5 in the three-teacher schools to 23 in the one-teacher schools; the norm is 19. It can be seen that the three-teacher schools were the only type falling below the norm. The medians in the fifth grade were below the norm of 18, in the one-, two-, and three-teacher schools, and above the norm in the four and five-teacher schools. The range was from 14 in the one- and two-teacher schools to 21.2 in the four-teacher schools. The one-teacher schools in the sixth grade had a median of 17.5; the two-teacher schools, 21; the four-teacher schools, 14.5; and the five-teacher schools 23. The norm for this grade is 20. The three and five-teacher schools had medians above the norm; the other types of schools fell below the norm. Each of the various types of schools in the seventh grade had a median below the norm for the last year considered. The range was from 19 in the one-teacher schools to 26

in the five-teacher schools. The norm for that grade is 27.

#### Arithmetic: Computation

1934-35.--Table V gives data in "Arithmetic: Computation" for grades three through seven, inclusive, for 1934-35 and 1935-36. The medians were very low in the third grade for the first year considered: 11.2 in the one-teacher schools, 11.5 in the two-teacher schools, 12.5 in the three-teacher schools, and 12.4 in the four-teacher schools. The norm for this grade is 18; therefore, it can be seen that the median in every type of school was several points below the norm. The quartile deviations were exceptionally low in this grade; 3.3, 1.6, 2, and 2.5, respectively in the various types of schools. The medians were rather high in the fifth grade: 24 in the one-teacher schools, 32.2 in the two-teacher schools, 32.5 in the three-teacher schools, and 27.5 in the four-teacher schools. All these were several points above the norm, which is 21. The quartile deviations were high in this grade, ranging from 5 in the three-teacher schools to 8.7 in the two-teacher schools. In the sixth grade the median was 25.5 in the one-teacher schools, 22.2 in the two-teacher schools, and 24 in the three-teacher schools; the norm is 18. Every type of school had a median higher than the norm. The quartile deviations were high, being 6.7 in the one-teacher schools, 8.5 in the two-teacher schools and 9.1 in the one-teacher schools. The medians in the seventh grade were ex-

TABLE V

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>3</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN ARITHMETIC COMPUTATION, TAKEN BY CHILDREN IN THE GRADES THREE THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOL	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1934-35					1935-36				
			SCORES					SCORES				
			LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME	LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME
GRADE 3												
1 TEACHER	11	27	2	7	11.2	13.6	8	18.5	23	28	30	
2 TEACHER	5	24	3	10.1	15.3	15	13.7	21.5	25.7	30		
3 TEACHER	5	100	3	10.5	14.8	26	13.7	21.5	27	30		
4 TEACHER	3	30	4	9.5	14.5	15	14.5	21	25.4	30		
5 TEACHER							14.5	22	25.7	28		
GRADE 4												
1 TEACHER	1	10	20	32.5	36.2	39.5	4.6	22.2	29.5	40.7	44	
2 TEACHER								22.2	32	39	44	
3 TEACHER								15.2	27	37	48	
4 TEACHER								28.5	33	41	48	
5 TEACHER								19.5	24.5	35.6	48	
GRADE 5												
1 TEACHER	9	24	12	18	24	33	7.5	12.7	15.8	20.9	40	
2 TEACHER	12	47	4	22	32.2	38.5	7.7	18.2	21	27.7	44	
3 TEACHER	8	60	10	28	32.5	38	7.7	12.3	22	32	44	
4 TEACHER	3	27	2	15.9	27.5	31	7.5	13.8	23	34	48	
5 TEACHER								17	30	34	48	
GRADE 6												
1 TEACHER	11	35	8	19	25.2	32.5	4.2	11	15	19.5	40	
2 TEACHER	20	103	2	14.5	22.2	31.5	4.2	12	20	28.5	48	
3 TEACHER	9	87	2	13.7	24	32	4.8	2.5	6.2	13	36	
4 TEACHER								8.7	14	23	36	
5 TEACHER								20	26.5	32.5	38	
GRADE 7												
1 TEACHER	8	16	10	24	28.1	32.6	36	13.5	25	29.5	38	
2 TEACHER	19	85	11	26	31.5	35.5	38	14.5	28.5	32.5	38	
3 TEACHER	9	72	14	27.5	32	35	40	20	19.5	24.5	34	
4 TEACHER	3	30	8	21.2	37	32	36	13	23.5	28.5	34	
5 TEACHER								23.5	19.5	24.5	34	

ceptionally high, all being several points above the norm, which is 23. In the one-teacher schools the median was 28.1, in the two-teacher schools 31.5, in the three-teacher schools 31, and the four-teacher schools 37.

1935-36.--In 1935-36, the medians in every type of school for the third grade were about the same, ranging from 21 in the four-teacher schools to 23.5 in the three-teacher schools. All of these were above the norm, which is 18. The range of the medians in the fourth grade was from 24.5 in the five-teacher schools to 35 in the four-teacher schools; the norm for this grade is 28. It may be noted in Table V that the one-, two- and four-teacher schools have medians above the norm while the three- and five-teacher schools have medians below the norm. The quartile deviations are especially high in grade four, ranging from 6.2 in the four-teacher schools to 10.9 in the three-teacher schools. The medians in the fifth grade range from 15.8 to 31; the norm is 21. Every type of school had a median above the norm, except the one-teacher school, which had a median of only 15.8. In the sixth grade the median was 15 in the one-teacher schools, 20 in the two-teacher schools, 6.2 in the three-teacher schools, and 26.5 in the four-teacher schools. The norm for the sixth grade is 18. The three-teacher schools had a median of only 6.2. The two- and five-teacher schools were the only two types that had medians higher than the norm. In the seventh grade the range of the medians was from 19.5 in the three- and five-

teacher schools to 28.5 in the two-teacher schools. The norm is 23. The three- and five-teacher schools were the only types that had medians lower than the norm. The quartile deviations were high in this grade for every type of school, except the seven-teacher schools, where it was only 3.5.

#### Arithmetic: Reasoning Problems

1934-35:--An examination of Table VI, showing data in "Arithmetic: Reasoning Problems," reveals that the medians in the third grade for 1934-35 were very low, all being below the norm of 12. The one-teacher schools had a median of 8.5; the two-teacher schools, 9.3; the three-teacher schools, 10.7; and the four-teacher schools, 10.3. In the fifth grade the range of the medians was from 6.5 in the one-teacher schools to 27.5 in the four-teacher schools, a difference of 21 points. Two- and three-teacher schools both had medians above the norm, which is 11. The one-, two- and three-teacher schools all had medians barely above the norm of 12 in the sixth grade. In the seventh grade every type of school had a median equal to or above the norm of 13. The range of the medians for this grade was from 13 in the four-teacher schools to 25 in the three-teacher schools.

1935-36.--In 1935-36 the range of the medians in the third grade was from 13.5 in the two-teacher schools to 21.5 in the one-teacher schools. All of these were above the norm, which is 12. In the fourth grade the range of the medians

TABLE VI

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>3</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN ARITHMETIC REASONING PROBLEMS, TAKEN BY CHILDREN IN GRADES THREE THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOLS	NO. OF SCHOOLS	1934-35 SCORES				NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES					
		LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>				LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME	Q
GRADE 3														
1 TEACHER	11	2	5.6	8.5	11.2	12	10	22	8	14	21.5	24.5	30	5.2
2 TEACHER	5	1	7.7	9.3	12.4	12	6	80	2	7.5	13.5	22	30	7.2
3 TEACHER	9	1	6	10.7	13.5	12	6	34	6	11	20.5	26	30	7.5
4 TEACHER	3	3	6	10.3	12.5	12	5	38	2	8	17	23.5	30	7.7
5 TEACHER	3				12.5	12	2	19	4	12.5	16.3	21	24	4.2
GRADE 4														
1 TEACHER	1	6	5.6	8.7	13.5	13	7	17	6	7.1	13	23	40	7.9
2 TEACHER						13	5	30	3	3.5	9.5	17.5	42	6.4
3 TEACHER						13	5	37	4	4.3	9.5	14.5	36	7.1
4 TEACHER						13	3	40	4	7	13	22.5	34	7.7
5 TEACHER						13	3	34	2	2.5	5.8	15.8	34	6.6
GRADE 5														
1 TEACHER	2	2	3.3	6.5	12.5	11	8	25	2	3	10.5	20	42	8.5
2 TEACHER	12	2	13	16.2	24.5	11	18	39	2	4	9.5	13.8	40	7.2
3 TEACHER	8	2	12	15.8	22	11	6	34	2	4.5	12.5	17	40	3.9
4 TEACHER	3	2	15.9	27.5	31	11	5	50	2	5.1	9	17.5	36	5.7
5 TEACHER	3	2				11	3	38	2	2.6	12			
GRADE 6														
1 TEACHER	11	2	4.5	12.5	24	12	7	8	6	21.2	28	33	22	5.8
2 TEACHER	20	2	4.3	13	23	12	12	40	2	4.5	11.6	22.5	46	9
3 TEACHER	9	2	8.5	14.9	24	12	6	13	2	2.5	5.4	8	12	2.7
4 TEACHER		2				12	5	16	2	2.5	6.2	15.6	24	6.5
5 TEACHER						12	2	16	8	14	25	31	30	8.5
GRADE 7														
1 TEACHER	8	2	11.8	17.5	22.7	13	8	18	2	3.5	8.5	13.5	20	5
2 TEACHER	19	4	11.8	21.1	27.5	13	17	65	2	5.6	11.2	18	32	2.5
3 TEACHER	9	4	6.5	25	30.2	13	6	33	2	3	5.5	12	26	4.5
4 TEACHER	3	2		19	18	13	6	40	2	4	10.6	21.5	24	7.4
5 TEACHER	7					13	3	27	2	5.6	13.5	22.5	24	8.4
7 TEACHER						13	1	11	2	8.5	15.5	22.5	28	7



was from 5.8 in the five-teacher schools to 13 in the one- and four-teacher schools. Only the one- and four-teacher schools reached the norm of 13. In the fifth grade the medians ranged from 9 in the four-teacher schools to 12.5 in the three-teacher schools. Only the three- and five-teacher schools had medians above the norm of 11. In the sixth grade the medians in the one-, two-, three-, four-, and five-teacher schools were 28, 11.6, 5.4, 6.2 and 25, respectively. The norm for this grade is 12. The three- and four-teacher schools fell far below this figure; the two-teacher schools were about equal to the norm; the one- and five-teacher schools were several points higher than the norm. In the seventh grade the range of the medians was from 6.5 in the three-teacher schools to 31.5 in the seven-teacher schools; the norm for this grade is 13. A study of Table VI reveals that every type of school except the seven-teacher schools had a median below the norm.

#### Sanitation and Hygiene

1934-35.--The data in Table VII show the results of the tests in "Sanitation and Hygiene," taken by fourth-, fifth-, sixth- and seventh-grade children for the 1934-35 and 1935-36 school years. In the fifth grade, for 1934-35, the median in the one-teacher schools was 15; in the two-teacher schools, 21.4; in the three-teacher schools, 18; and in the four-teacher schools, 15.4. The norm for this grade is 19;

TABLE VII

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>3</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN SANITATION AND HYGIENE, TAKEN BY CHILDREN IN GRADES FOUR THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOL	NO. OF SCHOOLS	1934-35 SCORES				NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES				
		LOWER EXTREME	Q <sub>1</sub>	Q <sub>3</sub>	UPPER EXTREME				LOWER EXTREME	Q <sub>1</sub>	Q <sub>3</sub>	UPPER EXTREME	
GRADE 4													
1 TEACHER	1	10	12.5	16.6	22.5	36	7	17	15.2	19	25.4	32	5.1
2 TEACHER	1	10	12.5	16.6	22.5	36	7	17	15.2	19	25.4	32	5.1
3 TEACHER	1	10	12.5	16.6	22.5	36	7	17	15.2	19	25.4	32	5.1
4 TEACHER	1	10	12.5	16.6	22.5	36	7	17	15.2	19	25.4	32	5.1
5 TEACHER	1	10	12.5	16.6	22.5	36	7	17	15.2	19	25.4	32	5.1
GRADE 5													
1 TEACHER	9	24	10.5	15	18.5	29	8	25	10.8	14.7	18.6	36	3.9
2 TEACHER	12	17	13	21.4	27.5	36	18	89	10.4	14.5	22.5	31	6.5
3 TEACHER	8	60	15.6	18	20	34	6	34	8	15	17	26	5.5
4 TEACHER	3	27	15.9	15.4	21.5	33	5	50	13.7	23	34	34	10.1
5 TEACHER	2	27	15.9	15.4	21.5	33	5	38	13.2	17.5	21.5	35	11.1
GRADE 6													
1 TEACHER	11	35	15.5	19.5	23.5	34	7	8	11.2	13.5	20	25	4.4
2 TEACHER	20	103	14.5	19.5	26.5	38	15	40	15.3	19	25	38	5.4
3 TEACHER	9	87	16	22	27.5	34	5	17	13.5	17.5	24.5	26	4.6
4 TEACHER	9	87	16	22	27.5	34	5	16	17	22	24.5	29	3.7
5 TEACHER	9	87	16	22	27.5	34	5	16	17	22	24.5	29	3.7
GRADE 7													
1 TEACHER	8	16	30.2	35.5	41.7	37	8	18	21.2	28	32.5	39	5.8
2 TEACHER	19	85	32.8	37.7	41.5	50	17	65	30.3	32.5	36.5	44	4.5
3 TEACHER	2	72	32.5	37	43.7	49	6	38	25	33	37.5	47	4.1
4 TEACHER	3	30	31.2	37	42.1	47	3	40	22	27	31.3	43	6.2
5 TEACHER	7	30	31.2	37	42.1	47	3	27	22	27	31.3	44	6.6
7 TEACHER	7	30	31.2	37	42.1	47	3	27	22	27	31.3	44	6.6

it is observed that every type of school except the two-teacher schools fell below the norm. The median in the one- and two-teacher schools in the sixth grade was 19.5; it was 22 in the three-teacher schools. Only the last named school had a median above the norm of 21. In the seventh grade the medians were all several points above the norm of 26. The median was 35.5 in the one-teacher schools, 37.7 in the two-teacher schools, 39 in the three-teacher schools and 37 in the four-teacher schools.

1935-36.--In 1935-36 the medians in the fourth grade ranged from 14.5 in the three-teacher schools to 21.5 in the four-teacher schools. The norm is 20. Every type of school except the four-teacher schools fell below the norm. The range of the medians in the fifth grade was from 14.5 to 23. All were below the norm of 19, except the four-teacher schools. The medians were below the norm in the sixth grade in every type of school except five-teacher schools. The median here was 22 as compared with a norm of 21. The range in the other types of schools was from 13.5 in the one-teacher schools to 19.5 in the three-teacher schools. In the seventh grade the median in every type of school was above the norm of 26. The range in this grade was from 27 in the five-teacher schools to 37 in the seven-teacher schools.

English: Correct Use of Words

1934-35.--Table VIII gives data on the achievement of

TABLE VIII

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>2</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN ENGLISH, CORRECT USE OF WORDS, TAKEN BY CHILDREN IN GRADES FOUR THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOLS	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	NORM	1934-35 SCORES					1935-36 SCORES						
				LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME	LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME		
GRADE 4															
1. TEACHER	1	10	23	8	17	20	30.8	30	6.9	6	21.2	25.3	26	27	2.4
2. TEACHER			23							1	20.3	27	31.5	30	5.5
3. TEACHER			23							12	18.5	26	29	35	5.2
4. TEACHER			23							8	18	27	32	35	7.7
5. TEACHER			23							6	18	26	29.5	28	5.7
GRADE 5															
1. TEACHER	2	24	23	2	12.5	20.5	25.5	28	6.5	8	16.2	21.5	26.1	28	4.9
2. TEACHER	12	47	23	4	20.4	26.5	29.5	30	4.5	1	19.2	23.5	26.8	31	3.8
3. TEACHER	8	60	23	8	20.5	23.5	26	29	2.7	4	17.5	11.5	15.3	28	3.9
4. TEACHER			23							12	16.2	23	27	37	3.2
5. TEACHER	3	27	23	6	19.5	24	28	36	4.2	7	20.4	28	35	30	7.6
GRADE 6															
1. TEACHER	11	35	25	3	24.5	28.5	31.7	37	3.6	13	17.5	25	27.5	26	5
2. TEACHER	20	100	25	4	24.5	28	31.5	36	3.5	7	20	24	30.5	32	5.2
3. TEACHER			25							5	19	20.6	24.5	32	2.7
4. TEACHER			25							2	21.5	24.5	30.2	30	5.6
5. TEACHER			25							13	21.5	24.5	27.5	30	3
GRADE 7															
1. TEACHER	8	15	26	16	26	29.6	34.7	36	4.3	23	28.5	35.5	29.5	46	5.5
2. TEACHER	19	85	26	8	28.1	32.4	36.8	50	4.3	5	30.7	33.5	37.5	46	5.3
3. TEACHER			26							25	29.7	33.4	36.2	42	3.2
4. TEACHER			26							21	31.5	34	37.5	42	3.3
5. TEACHER			26							17	29	33	38.5	45	4.6
7. TEACHER	3	30	26	20	31.5	34.6	37.5	45	3.3	25	30.6	35	39.5	42	4.6

the children in "Correct Use of Words." The medians in the fifth grade for 1934-35 were 20.5 in the one-teacher schools, 26.5 in the two-teacher schools, 23.5 in the three-teacher schools, and 24 in the four-teacher schools. Only the one-teacher schools fell below the norm, 23. The medians in the sixth grade were 28.5 in the one-teacher schools, 28 in the two-teacher schools, and only 16.1 in the three-teacher schools. The norm is 25; the three-teacher schools were the only type that failed to reach the norm. The medians were high in every type of school in the seventh grade. The median was 29.6 in the one-teacher schools, 32.4 in the two-teacher schools and 34.6 in the four-teacher schools; the norm is 26.

1935-36.--In 1935-36 the range of the medians in the fourth grade was from 25.3 in the one-teacher schools to 27 in the two and four-teacher schools. Each median was above the norm of 23. In the fifth grade there was a wide variation in the medians. The range was from 11.5 in the three-teacher schools to 28 in the four-teacher schools. The norm for this grade is 23. It is noticed that the one and three-teacher schools fell below the norm; the other types had medians higher than the norm. In the sixth grade the medians were approximately equal to the norm in every type of school except the three-teacher schools. The norm is 25. The median in the three-teacher schools was 20.6. The range of the medians in the seventh grade was from 33 in the three- and

five-teacher schools to 35.5 in the one-teacher schools. Every type of school had a median much higher than the norm, which is 26.

#### Reading: Literature

1934-35.--Table IX shows that the medians in "Literature," for the fifth grade, were very low, ranging from 7.1 in the four-teacher schools to 11.5 in the two- and three-teacher schools. All were below the norm of 14. The medians were also exceptionally low in the sixth grade, all far below the norm of 21. The median was only 14.5 in the one-teacher schools, 17.5 in the two-teacher schools, and 16.1 in the three-teacher schools. In the seventh grade the median in the one-teacher schools was 17.5; in the two-teacher schools, 19.4; in the three-teacher schools, 16; and in the four-teacher schools 20.4. Only the one-teacher schools ranked below the norm of 19.

1935-36.--In 1935-36 the medians in the fifth grade were all almost up to the norm, ranging from 11.5 to 14.3 as compared with a norm of 14. In the sixth grade the medians are several points below the norm. They range from 11.2 in the three-teacher schools to 17 in the five-teacher schools. The norm for this grade is 21. In the seventh grade the range of the medians is from 16.5 to 19.6; the norm for this grade is 19. It is observed that the median in every type of school is below the norm except in the four-teacher schools.

TABLE IX

LOWER EXTREME, Q, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN THE READING OF LITERATURE, TAKEN BY CHILDREN IN GRADES FIVE THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOL	NO. OF SCHOOLS	NO. OF PUPILS	1931-35 SCORES				NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES			
			Q1	M	Q3	Q				LOWER EXTREME	Q1	M	Q3
GRADE 5													
1 TEACHER	9	24	6.5	9.5	13	14	8	25	9.4	13.5	17.4	22	
2 TEACHER	12	47	8	11.5	14	14	18	39	8	12	16.4	30	
3 TEACHER	8	60	7.5	11.5	14.6	14	6	34	7.5	11.5	15.3	21	
4 TEACHER	3	27	3.3	7.1	11.5	14	5	38	11.2	14.3	16	30	
5 TEACHER						14	3			14.3	19	27	
GRADE 6													
1 TEACHER	11	35	4.5	14.5	20.5	21	7	8	11.8	17.5	23.5	36	
2 TEACHER	20	103	13.4	17.5	22.6	21	13	40	11.8	16.5	23.5	38	
3 TEACHER	9	87	11.8	16.1	21	21	5	13	6.5	11.5	18	28	
4 TEACHER						21	2	12	14	16.5	21.2	27	
5 TEACHER						21	2	16	14	17	20	32	
GRADE 7													
1 TEACHER	8	16	13	17.3	23.7	19	18	18	12.5	17	23.5	39	
2 TEACHER	19	85	16	19.4	24.4	19	17	65	12	17.3	21.5	40	
3 TEACHER	9	72	14.5	21.1	26.6	19	6	38	13	18.2	20.3	28	
4 TEACHER	3	30		20.4	25.5	19	3	40	14	19.5	23.2	30	
5 TEACHER	3	30		20.4	25.5	19	3	27	12.5	18.5	25.2	39	
7 TEACHER						19	1	14	12.5	18.5	19	23	

## United States History

1934-35.--Table X gives data for the children in "United States History" for the fifth and seventh grades. The median in the fifth grade for the one-teacher schools was 13, for the two-teacher schools 19.5, for the three-teacher schools 22, and for the four-teacher schools 18.5. All of these are above the norm of 18, except the one-teacher schools. In the seventh grade the median was high in every type of school: 34.5 in the one-teacher schools, 35 in the two-teacher schools, 41.2 in the three-teacher schools and 36.6 in the four-teacher schools. The norm for this grade is 27.

1935-36.--In 1935-36 the range of the medians in the fifth grade was from 18.5 in the three-teacher schools to 23.5 in the five-teacher schools; the norm is 18. Every type of school had a median above the norm. The range of the medians in the seventh grade was from 24.5 in the five-teacher schools to 31.5 in the four-teacher schools. The three- and five-teacher schools had medians below the norm of 27; all the other types of schools had medians above the norm. The quartile deviations were especially high in this grade, ranging from 7.5 in the seven-teacher schools to 11.4 in the five-teacher schools.



TABLE X

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>3</sub>, UPPER EXTREME AND Q OF THE SCORES ON A TEST IN UNITED STATES HISTORY, TAKEN BY CHILDREN IN GRADES FIVE AND SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOL	NO. OF SCHOOLS	1934-35 SCORES					NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES					
		LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME				Q	LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME
1. TEACHER	9	7	10.4	13.5	17	24	18	8	25	6	12.1	18.7	23.7	37	5.8
2. TEACHER	12	7	14.4	19.5	24	33	18	18	39	6	12.5	19.2	26.7	37	6.7
3. TEACHER	6	3	18.5	22	25.7	36	18	6	34	5	13	18.5	24.5	31	5.7
4. TEACHER	3	3	13.5	18.5	23	30	18	3	50	2	17.5	22.5	27.5	35	5
5. TEACHER							18	3	38	2	14.5	23.5	29	36	7.2
GRADE 5															
1. TEACHER	8	12	28	34.5	44.5	39	27	8	18	7	22	28	42.5	51	10.2
2. TEACHER	9	13	34.5	35	41.4	56	27	17	65	11	19	29.5	40	59	10.5
3. TEACHER	2	12	33	41.2	48.7	52	27	6	33	8	16.7	25	32.5	46	7.3
4. TEACHER	3	12	29	36.6	46	50	27	3	40	11	21.5	31.5	39	58	8.6
5. TEACHER							27	1	27	15	17.4	27.5	40.3	49	11.4
7. TEACHER							27	1	14	12	22.5	27.5	37.5	45	7.5

## Educational Achievement

1934-35.--Table XI gives the data on the total scores made by the students in the various types of schools for 1934-35 and 1935-36. For the first year in the third grade the median in the one-teacher schools was 154; it was 150 in the two-teacher schools, 162 in the three-teacher schools and 163 in the four-teacher schools. All of these were above the norm of 125. In the fifth grade the median is 152 in the one-teacher schools, 198 in the two-teacher schools, 200 in the three-teacher schools and 180 in the four-teacher schools. The norm for the fifth grade is 190; consequently, it is observed that the medians in the two- and three-teacher schools were below the norm. The medians in the one-, two-, and three-teacher schools in the sixth grade were 212, 206 and 224 respectively. The one- and two-teacher schools were above the norm. The medians in the seventh grade were high and above the norm in every type of school. The one-teacher schools had a median of 285; the two-teacher schools, 318; the three-teacher schools, 345; and the four-teacher schools, 290. The norm for the seventh grade is 258.

1935-36.--In 1935-36 the medians in the third grade ranged from 130 in the two-teacher schools to 158 in the one-teacher schools. Each median in this grade was above the norm of 125. In the fourth grade the median in the one-teacher schools was 197; in the two-teacher schools, 173; in the

TABLE XI

LOWER EXTREME, Q<sub>1</sub>, MEDIAN, Q<sub>2</sub>, UPPER EXTREME AND Q OF THE TOTAL SCORES ON THE HARLOW ACHIEVEMENT TESTS, TAKEN BY CHILDREN IN GRADES THREE THROUGH SEVEN, IN THE VARIOUS TYPES OF SCHOOLS

TYPE OF SCHOOL	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1934-35 SCORES				NORM	NO. OF SCHOOLS	TOTAL NO. OF PUPILS	1935-36 SCORES					
			LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>				UPPER EXTREME	LOWER EXTREME	Q <sub>1</sub>	M	Q <sub>3</sub>	UPPER EXTREME
GRADE 3															
1 TEACHER	11	27	57	104	154	173	184	10	22	122	51	122	155	184	205
2 TEACHER	5	24	65	127	150	171	205	6	80	125	26	98	120	161	195
3 TEACHER	2	100	64	130	162	181	208	6	34	125	48	116	148	177	193
4 TEACHER	3	30	69	125	163	176	207	5	38	125	45	91	138	170	201
5 TEACHER								2	19	125	75	133	148	161	178
GRADE 4															
1 TEACHER	1	10	100	125	160	185	210	7	17	170	60	142.4	197	218.7	279
2 TEACHER								8	30	170	22	135	173	212.5	290
3 TEACHER								5	37	170	36	118	161	183	230
4 TEACHER								5	40	170	99	150	188	226.6	262
5 TEACHER								3	34	170	77	114	165	214	275
GRADE 5															
1 TEACHER	3	24	94	120	152	190	276	3	25	190	76	112.5	164	179.4	268
2 TEACHER	12	47	97	154	198	228.5	317	18	89	190	26	98	120	161.6	195
3 TEACHER	8	60	116	183.8	200	226	331	6	34	190	63	109	153	205	275
4 TEACHER	3	27	91	143.8	180	202.5	294	5	50	190	97	153.4	196	218	283
5 TEACHER								3	38	190	72	150	205	238	340
GRADE 6															
1 TEACHER	11	35	107	175	212.5	256	334	7	8	214	94	202	246	310	387
2 TEACHER	20	103	66	178.8	206.6	252	321	15	40	214	25	136.6	193.4	232	367
3 TEACHER	9	87	62	183.5	224	260.6	337	5	13	214	67	105	162.5	192	239
4 TEACHER								5	16	214	96	153	175.2	201.2	281
5 TEACHER								2	16	214	149	200	228	246	271
GRADE 7															
1 TEACHER	8	16	170	256.2	285	338	415	8	18	258	94	202	246	310	387
2 TEACHER	19	85	175	306.6	345	345	390	17	65	258	184	226	258	298	459
3 TEACHER	2	72	98	261.6	290	334	380	6	40	258	111	200	262	271	366
4 TEACHER								3	27	258	177	198	215	323	386
5 TEACHER								1	14	258	158	225	260	295	355

three-teacher schools, 161; in the four-teacher schools, 188; and in the five-teacher schools, 165. The three and five-teacher schools fell below the norm of 170, while the one-, two- and four-teacher schools had medians above the norm. In the fifth grade the median was below the norm of 190 in the one-, two- and three-teacher schools, while it was above the norm in the four and five-teacher schools. The medians in the one-, two-, three-, four- and five-teacher schools, respectively, were 164, 130, 153, 196 and 205. In the sixth grade the range of the medians was from 162.5 in the three-teacher schools to 246 in the one-teacher schools. The norm for this grade is 214; it is observed that the one and five-teacher schools were above the norm, while the other types of schools fell below the norm. The quartile deviation in this grade ranged from 23 in the five-teacher schools to 54 in the one-teacher schools. In the seventh grade the one-teacher schools had a median of 246; the two-teacher schools 258; the three-teacher schools 230.2; the four-teacher schools, 262; the five-teacher schools, 275; and the seven-teacher schools, 260. The norm for this grade is 258; therefore, it is seen that the one- and three-teacher schools fell below the norm, while the other types of schools had medians above the norm. The quartile deviations ranged from 34 in the four-teacher schools to 62.5 in the five-teacher schools.

## Summary

Figure 1 gives a summary of the rank of the schools covering tests 1 through 10 inclusive for 1934-35.

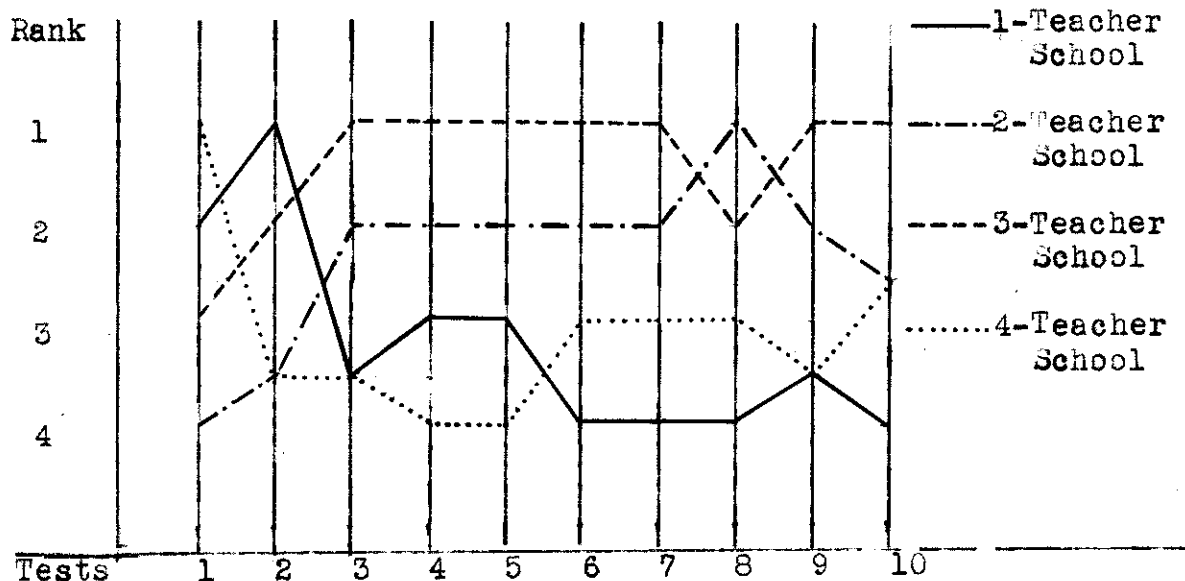


Figure 1.--Graph showing the rank of each type of school based on the median score for each test for 1934-35.

By studying the above figure it is seen that the one-teacher schools ranked second on test one, first on test two, tied for third and fourth on test three, ranked third on tests four and five, fourth on test six, seven and eight, tied for third and fourth on test nine, and ranked fourth on test ten.

The two-teacher schools ranked fourth on test one, tied for third and fourth on test two, ranked second on tests three, four, five, six and seven, first on test eight, second on test nine, and tied for second and third on test ten.

The three-teacher schools ranked third on test one, second on test two, first on tests three through seven,

second on test eight, and first on tests nine and ten.

The four-teacher schools ranked first on test one, tied for third and fourth on tests two and three, ranked fourth on tests four and five, third on test six, seven and eight, tied for third and fourth on test nine, and tied for second and third on test ten.

The three-teacher schools ranked first on seven different tests, while the one-, two- and four-teacher schools ranked first in only one test each. From this it may be concluded that the three-teacher school was the most efficient type in 1934-35.

Figure 2 gives a summary of the rank of the schools covering test one through ten, inclusive, for 1935-36.

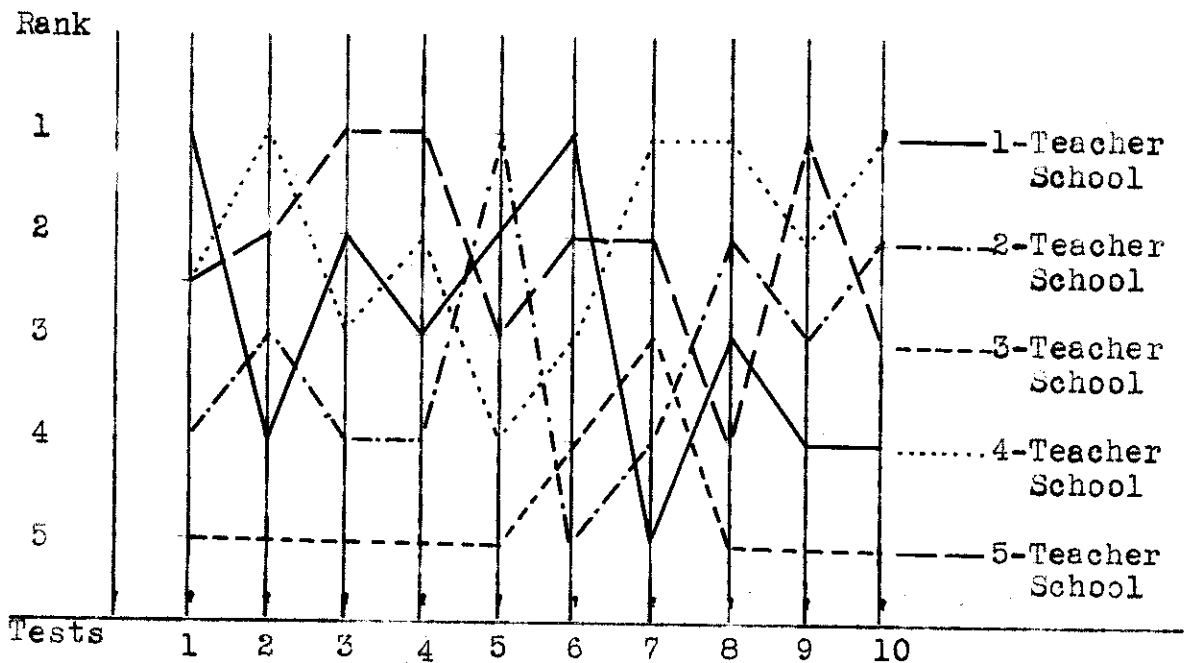


Figure 2.--Graph showing the rank of each type of school based on the median score for each test for 1935-36.

A study of figure 2 shows that the one-teacher schools rank first on test one, fourth on test two, second on test three, third on test four, second on test five, first on test six, fifth on test seven, third on test eight, and fourth on tests nine and ten.

The two-teacher schools rank fourth on test one, third on test two, fourth on tests three and four, first on test five, fifth on test six, fourth on test seven, second on test eight, third on test nine, and second on test ten.

The three-teacher schools ranked fifth on test one through five inclusive, fourth on test six, third on test seven, and fifth on tests eight, nine and ten.

The four-teacher schools tied for second and third on test one, ranked first on test two, third on test three, second on test four, fourth on test five, third on test six, first on tests seven and eight, second on test nine, and first on test ten.

The five-teacher schools tied for second and third on test one, ranked second on test two, first on tests three and four, third on test five, second on tests six and seven, fourth on test eight, first on test nine, and third on test ten.

The four-teacher schools ranked first on four different tests; the five-teacher schools ranked first on three different tests. From this it may be concluded that the larger schools were the most efficient types in 1935-36.

TABLE XII

PER CENT OF VARIOUS TYPES OF SCHOOLS HAVING MEDIAN SCORES ABOVE AND BELOW THE NORM

Type of School	1934-35		1935-36	
	Per cent of schools above norm	Per cent of schools below norm	Per cent of schools above norm	Per cent of schools below norm
1 Teacher	51	49	57	43
2 Teacher	63	37	51	49
3 Teacher	69	31	37	63
4 Teacher	73	27	63	37
5 Teacher			63	37

In 1934-35 the median score fell above the norm in 51 per cent of the cases in the one-teacher schools, in 63 per cent of the cases in the two-teacher schools, in 69 per cent of the cases in the three-teacher schools, and in 73 per cent of the cases in the four-teacher schools.

In 1935-36 the median score fell above the norm in 57 per cent of the cases in the one-teacher schools, in 51 per cent of the cases in the two-teacher schools, in 37 per cent of the cases in the three-teacher schools, and in 63 per cent of the cases in the four- and five-teacher schools.

In examining Table XII it is concluded that the larger the school the more often the median scores will fall above the norm.



## CHAPTER III

### TRAINING AND QUALIFICATIONS OF TEACHERS

#### AS FACTORS OF ACHIEVEMENT

##### Type of Training of Teachers

The type of training of each teacher in Denton County was carefully checked from the transcripts in the County Superintendent's office to see what had been the teacher's major subject while he was attending college. It was found that many teachers had majored in the following subjects: English, education, government, economics, geography, business administration, and history. The scores on the Harlow Achievement Tests of students having English majors as teachers were grouped together; frequency tables were made; and  $Q_1$ , the median, and  $Q_3$  were calculated for each grade taught, based upon the type of training of the teachers. Teachers that had majored in each of the other fields were handled in the same manner, to determine, if possible, what effect the training of the teacher in some particular field might have had upon the achievement of the students. Table XIII gives a summary of the results found.

Third Grade.---The norm for the third grade comprehensive achievement tests is 125. It is observed that students in the third grade having teachers that had majored in business administration had the highest median, 176, 51

TABLE XIII

THE FIELDS IN WHICH THE TEACHERS MAJORED IN COLLEGE AND Q. MEDIAN, AND Q. OF THE SCORES MADE BY PUPILS ON THE HANLOW ACHIEVEMENT TESTS FOR GRADES THREE THROUGH SEVEN INCLUSIVE

MAJOR FIELD	GRADE 3			GRADE 4			GRADE 5			GRADE 6			GRADE 7								
	NO. OF T. I. P. *	Q1	M	Q3	NO. OF T. I. P.	Q1	M	Q3	NO. OF T. I. P.	Q1	M	Q3	NO. OF T. I. P.	Q1	M	Q3					
ENGLISH	5	69	105	147	189	6	79	142	188	227	4	53	117	156	183	241	4	73	208	253	296
EDUCATION	12	50	121	156	180	10	25	132	177	209	8	27	172	220	230	251	12	32	208	245	290
EL. EDUCATION	19	69	95	130	155	17	61	123	168	213	14	68	118	158	180	237	10	36	207	247	316
GOVERNMENT	1					3	7	127	147	162	2	13	113	135	153	220	6	32	243	275	316
HOME EC.	4	7	65	157	176	5	34	121	165	214	5	10	102	115	135						
BUSINESS AD.	1	11	155	176	189	2	8	200	220	260	1	3	235	290	305	367					
GEOGRAPHY	2	27	75	116	146	5	13	136	180	203	2	14	166	180	230	157	3	23	224	238	257
HISTORY	2	26	95	127	152	4	27	123	148	182	5	7	146	190	227	183	3	43	219	270	307
ECONOMICS	2	7	65	76	105	2	4	160	190	200	2	7	155	215	252		1	20	250	293	320

\*NUMBER OF TEACHERS  
\*NUMBER OF PUPILS

points above the norm. A factor that should be considered, however, is that there were only eleven students in this group. Had there been many more students, the median might have been different. The fact is mentioned because the probable error is greater when there is only a small number of students. Students having home economics majors as teachers had a median of 32 points above the norm or a median of 157. There were 44 students that took the third-grade tests, making the probable error less than for the business administration group. There were 50 students having teachers with a major in education. The median score for this group of students was 156, 26 points above the norm. The median for the group of 69 students having English majors as teachers was 147, 122 points above the norm. Third-grade students that had elementary education majors as teachers had a median score of 130, five points above the norm. 69 children in the county had history majors as teachers. The median score for this group was 127; only two points above the norm. The median score for 27 children having teachers that had majored in geography was 116, 9 points below the norm. The lowest median was 76, made by a group of children that had teachers with a major in economics. The probable error here is very great because there were only seven students. Using the medians as the basis, teachers with majors rated in the following order: business administration, home economics, education, English,

history, geography, elementary education, and economics. There were no pupils in the third grade having teachers with a major in government.

Fourth Grade.--The norm for the fourth grade is 170. It is observed that teachers majoring in English, education, economics, geography, and business administration had students with medians above the norm. Eight students having business administration teachers had a high median of 220. This is 50 points above the norm; but the probable error is too great, as only eight students took the test. Four students having an economics major teacher reached a median of 190, 20 points above the norm. The median for English majors was 188, 18 points above the norm. There were 79 students taking this test; therefore, the median is more nearly accurate. The fifth highest median, 177 was made by students having education majors for teachers. There were 25 students in this group. The median for 18 pupils having teachers with geography as a major was 180, 10 points above the norm. The median for students having elementary education teachers was 168. There were 61 students in this group. The median is 2 points below the norm. There were 34 students having teachers with a major in history. The median for 7 pupils having teachers with a major in government was 147. This is 22 points below the norm. The rank of the medians in the fourth

grade according to the major of the teacher is as follows: business administration, first; economics, second; English, third; geography, fourth; education, fifth; elementary education, sixth; home economics, seventh; history, eighth; and government, ninth.

Fifth Grade.--The norm for the fifth grade is 190. In considering nine different types of teachers based upon the major field of the teacher, it is noticed that in only four types of teachers did the median score fall above the norm for the various groups of students. Five types had children with medians below the norm. There were only three students that had a teacher who had majored in business administration. The median for these three students was 290. This is exceptionally high, exactly 100 points above the norm. However, the median is unreliable because of the small number of students. Students having teachers with education as a major had a median of 220, 30 points above the norm. There were 27 students in this group. The economics majors also had 7 students with a high median; it was 215, or 25 points above the norm. The small number of students also makes this median unreliable. The history majors had 78 students that had a median exactly equal to the norm of 190. This group of students is larger making the median more reliable than for the smaller groups. The median for geography majors was 180, 10 points below the

norm. There were 14 students that took this test. There were 68 students having elementary education majors as teachers. The median score for this group was 158, 32 points below the norm. Students having teachers that had majored in English had a median score of 156. This is 34 points below the norm. There were 53 pupils in this group. The median for 13 pupils having teachers that had majored in government was 135. This is 55 points below the norm. Teachers majoring in home economics had 10 pupils with a median of 115, 75 points below the norm. The rank of the medians in the fifth grade according to the major of the teacher is as follows: business administration, first; education, second; economics, third; history, fourth; geography, fifth; elementary education, sixth; English, seventh; government, eighth; and home economics, ninth.

Sixth Grade.--The norm for the sixth grade is 214. Students having teachers that had majored in business administration and education had median scores above the norm. Students having teachers that had majored in the other fields had median scores below the norm. The median for the students having teachers that had majored in business administration was 350; this is 136 points above the norm. There were only five students in this group. Nineteen pupils with teachers whose major subject was education had a median score of 230. This is 16 points above the norm. The median for children having teachers with a major of government was

200, 14 points below the norm. Students having teachers that had majored in English and those having teachers that had majored in history had a median score of 183, 31 points below the norm of 214. The median for 22 students having teachers with a major in elementary education was 180. This is 34 points below the norm. Students having teachers that had majored in geography had a rather low median of 145, 69 points below the norm. There were five students in this group. The rank of the medians in the sixth grade according to the major of the teacher is as follows: business administration, first; education, second; government, third; English and history, tied for fourth and fifth; elementary education, sixth; and geography, seventh.

Seventh Grade.--The norm for the seventh grade is 258. Students with teachers that had majored in the following fields had medians above the norm: economics, government and history; students under the other types of teachers fell below the norm. There were 20 students under the economics majors that had a median of 293. This is the highest median in the seventh grade, and is 35 points above the norm. 32 students having government majors as teachers had a median of 275. This is 17 points above the norm. Teachers majoring in history had 43 students in the seventh grade; the median for this group of students was 270. This is 12 points above the norm. The median for 73 students having

teachers with a major in English was 253, 5 points below the norm. Teachers majoring in elementary education had 36 pupils in the seventh grade; the median for this group was 247. This is 11 points below the norm. Teachers with a major in education had 32 pupils in the seventh grade with a median of 245, 13 points below the norm. Teachers with geography as a major had students with the lowest median in the seventh grade, the median for the 23 students in this group was 238. The rank of the medians in the seventh grade according to the major of the teacher is as follows: economics, first; government, second; history, third; English, fourth; elementary education, fifth; education, sixth; and geography, seventh.

Since the data in this part of the study are insufficient, it does not seem advisable to draw a conclusion at this point.

After a consideration of the median scores made by the students under teachers that had majored in each of the various fields, the scores of the students having teachers that had majored in English, government, home economics, business administration, geography, history, and economics were thrown together in each grade, the median scores were calculated and compared with the median scores of the students having education majors as teachers.

It is interesting to note that in the third grade the median score of students having teachers that had majored in



education was 143; the median score of students having teachers that had majored in the other fields was 144. In the fourth grade the median score for both groups of students was the same, 172. In the fifth grade the pupils with education majors as teachers had a median score of 189; the group having teachers that had majored in the other fields had a median of 168. In the sixth grade the medians score of the students under the teachers that had majored in education was 205; the median for the other group was 190. In the seventh grade the median was 246 for the group of students having teachers with a major in education; the median for the group of students having teachers that had majored in the various other fields was 258.

If the data presented in this part of the study may be considered representative, it may be concluded that the type of training of the teacher as to major field studied in college has practically no effect on the educational achievement of elementary school children. It is suggested that a more thorough investigation be made to determine, if possible, what effect the type of training of the teacher has upon the achievement of the pupil.

#### Years of Training

A factor that might influence the achievement of elementary school children in Denton County is the number of semester hours of college work which the teachers have com-

pleted. All teachers having completed from sixty through eighty-nine semester hours of college work were placed in one group, and the achievement of the pupils under this group of teachers studied. A second group of teachers having completed from ninety through one hundred nineteen semester hours were placed in a second group, and the achievement of the pupils studied. All teachers having completed one hundred twenty or more semester hours were placed in a third group, and the achievement of the pupils studied. The results of the achievement of the children under the three groups mentioned above will be found in Tables XIV, XV, and XVI.

Table XIV shows the mean and median of 197 pupils working under 27 different teachers who had completed from sixty through eighty-nine semester hours of college work. The average months' progress per pupil ranged from 34.5 to -14.5. The mean of the average months' progress per pupil was 9.27. The median, which is probably more accurate than the mean, was 6.9.

Table XV shows the mean and median of 104 pupils having work under 22 different teachers who had completed from ninety through one hundred nineteen semester hours of college work. The range in the average months' progress per pupil was from 53.9 to -9.8. The mean of the average months' progress per pupil was 9.73. The median was 8.74.

TABLE XIV

PUPIL ACHIEVEMENT OF TEACHERS WITH SIXTY THROUGH  
EIGHTY-NINE SEMESTER HOURS OF  
COLLEGE TRAINING<sup>1</sup>

Teacher	Total Months' Progress	Number of Pupils	Average Months' Progress Per Pupil in 1 Yr.
A	138.3	4	34.57
B	132.3	4	33.7
C	29.1	1	29.1
D	111.6	4	27.9
E	90.5	5	18.1
F	35.3	2	17.65
G	206.1	12	17.7
H	52.3	4	13.07
I	11.4	1	11.4
J	21.5	2	10.74
K	9.3	1	9.3
L	17.8	2	8.9
M	67.7	8	8.46
N	27.6	4	6.9
O	6.9	1	6.9
P	20.1	3	6.7
Q	91.7	15	6.11
R	12.8	3	4.26
S	14	4	3.5
T	3.2	1	3.2
U	3.4	6	.56
V	8	2	.4
W	-6.7	8	-.84
X	-4.1	4	-1.02
Y	-3.5	2	-1.75
Z	-19.9	2	-9.75
AA	-29	2	-14.5
Total 27		107	
Mean .....			9.27
Median .....			6.9

Table XVI shows the mean and median of 100 pupils under 21 different teachers who have completed one hundred

<sup>1</sup>John Allen Rucker, An Analysis of Some Factors Associated With Pupil Achievement, Unpublished Master's Thesis, North Texas State Teachers College, 1937, p. 11.

twenty or more semester hours work in college. The range in the average months' progress per pupil was from 35.65 to -9.6. The mean was 11.52, and the median was 12.05.

TABLE XV

PUPIL ACHIEVEMENT OF TEACHERS WITH NINETY THROUGH ONE HUNDRED NINETEEN SEMESTER HOURS OF COLLEGE TRAINING<sup>2</sup>

Teacher	Total Months' Progress	Number of Pupils	Average Months' Progress Per Pupil in 1 Yr.
A	53.9	1	53.9
B	113.2	4	28.3
C	108.7	5	21.74
D	97.5	5	19.5
E	57.6	4	14.4
F	71.4	5	14.28
G	94.9	7	13.55
H	48.9	4	12.25
I	58.5	5	11.7
J	62.9	6	10.48
K	81.2	9	9.02
L	59.3	7	8.47
M	24.9	3	8.3
N	27.5	6	4.58
O	25.5	6	4.25
P	18.4	10	1.84
Q	0	1	0
R	-2	4	-.5
S	-15.2	7	-2.17
T	-11.3	5	-2.65
U	-7.2	1	-7.2
V	-9.8	1	-9.8
Total 22		104	
Mean .....			9.73
Median .....			8.74

<sup>2</sup>Ibid., p. 12.

TABLE XVI

PUPIL ACHIEVEMENT OF TEACHERS WITH ONE HUNDRED  
 TWENTY OR MORE SEMESTER HOURS OF  
 COLLEGE TRAINING<sup>3</sup>

Teacher	Total Months' Progress	Number of Pupils	Average Months' Progress Per Pupil in 1 Yr.
A	71.3	2	35.65
B	83.7	3	27.9
C	45.1	2	22.5
D	84.3	4	21.07
E	55.8	3	18.6
F	89	6	14.83
G	126.9	9	14.1
H	125.4	9	13.9
I	110	8	13.75
J	39	3	13
K	48.1	4	12.05
L	29.3	3	9.76
M	8.2	1	8.2
N	76	12	6.23
O	27.1	5	5.42
P	50.6	11	4.6
Q	4.1	1	4.1
R	9.8	3	3.26
S	9.6	7	1.37
T	4	3	1.33
U	-9.6	1	-9.6
Total 21		100	
Mean .....			11.52
Median .....			12.05

A comparison of the mean and median in Tables XIV, XV, and XVI shows conclusively if this number can be considered as representative, that the amount of college training that the teachers have had is an important factor in the achieve-

<sup>3</sup>Ibid., p. 13.

ment of the pupils, and that the greater the amount of college training, the greater the achievement of the pupils. The mean of the group of students having teachers that had completed from sixty through eighty-nine semester hours of college work was 9.27; the mean of the group of students having teachers who had completed from ninety through one hundred nineteen semester hours college work was 9.73; the mean for those having completed one hundred twenty or more semester hours work in college was 11.52. The medians for the same three groups were 6.9, 8.74 and 12.05. These figures show a gradual rise in direct proportion to the amount of training of the teacher. The median of pupils with teachers who had completed one hundred twenty or more semester hours college work was almost twice as high as that of those in the first named group.

If the statistics presented in tables XIV, XV, and XVI are representative findings generally, it may be concluded that the educational achievement of the pupils rises in direct proportion to the amount of college training of the teachers. On this basis it is recommended that only teachers with a college degree be employed to teach in the elementary schools.

### Summary

The data in this chapter tends to show that the educational achievement of the children is not dependent to a noticeable extent upon the major subject of the children's teacher, and that it makes little difference as far as the achievement of the children is concerned what field the teacher majored in while attending college. Since the number of teachers and students considered is limited, the results obtained in this section may not be considered as representative.

The educational achievement of the children increases in direct proportion to the amount of college training of the teachers.

CHAPTER IV

MEN AND WOMEN AS A FACTOR OF ACHIEVEMENT

The question of the relative worth of men and women as teachers has never been settled. This investigation deals with the scores made by one hundred ten pupils under eighteen men teachers, and two hundred four pupils under

TABLE XVII  
PUPIL ACHIEVEMENT OF MEN TEACHERS<sup>1</sup>

Teacher	Total Months' Progress	Number of Pupils	Average Months' Progress Per Pupil in 1 Yr.
A	113.2	4	28.3
B	83.7	3	27.9
C	45.1	2	22.55
D	84.3	4	21.7
E	90.5	5	18.1
F	206.1	12	17.17
G	125.4	9	13.9
H	110	8	13.75
I	94.9	7	13.55
J	48.9	4	12.25
K	81.2	9	9.02
L	59.3	7	8.47
M	76	12	6.23
N	27.1	5	5.43
O	50.6	11	4.6
P	4.1	1	4.1
Q	14	4	3.5
R	9.8	3	3.26
Total 18		110	
Mean .....			12.96
Median .....			13.05

<sup>1</sup> John Allen Rucker, An Analysis of Some Factors Associated With Pupil Achievement, Unpublished Master's Thesis, North Texas State Teachers College, 1937, p. 11.



fifty-two women teachers. The mean and median for the average months' progress per pupil were computed, and the complete results shown in Tables XVII and XVIII.

Table XVII shows the achievement of 110 pupils under 18 men teachers. The range in the average months' progress per pupil was from 28.3 to 3.26. The mean was 12.96; the median was 13.05. Not a single student had an achievement that was less than 3.26.

TABLE XVIII  
PUPIL ACHIEVEMENT OF WOMEN TEACHERS<sup>2</sup>

Teachers	Total Months' Progress	Number of Pupils	Average Months' Progress Per Pupil in 1 Yr.
A	53.9	1	53.9
B	71.3	2	35.65
C	138.3	4	34.57
D	132.3	1	33.7
E	29.1	4	29.1
F	111.6	5	27.9
G	108.7	5	21.74
H	97.5	3	19.5
I	55.8	2	18.6
J	35.3	6	17.65
K	89	4	14.83
L	57.6	5	14.4
M	71.4	9	14.28
N	126.6	4	14.1
O	52.3	3	13.07
P	39	4	13
Q	48.1	5	12.5
R	58.5	1	11.7
S	11.4	2	11.4
T	21.5	6	10.75

<sup>2</sup>Ibid., p. 36.

TABLE XVIII CONTINUED

Teacher	Total Months' Progress	Number of Pupils	Average Months' Progress Per Pupil in 1 Yr.
U	62.9	3	10.48
V	29.3	1	9.76
W	9.3	2	9.3
X	17.8	8	8.9
Y	67.7	3	8.46
Z	24.9	1	8.3
AA	38.2	4	8.2
BB	27.6	1	6.9
CC	5.9	3	6.7
DD	20.1	15	6.11
EE	91.7	6	4.58
FF	27.5	3	4.26
GG	12.8	6	4.25
HH	25.5	3	3.2
II	3.2	6	1.84
JJ	18.4	1	1.37
KK	9.6	10	1.33
LL	4	7	.56
MM	3.4	3	-.4
NN	.8	2	0
OO	0	1	-.5
PP	-2	4	-.84
QQ	-6.7	2	- 1.02
RR	-4.1	7	- 1.75
SS	-3.5	5	- 2.17
TT	-15.2	1	- 2.65
UU	-11.3	1	- 7.2
VV	-7.2	1	- 9.6
WW	-9.6	2	- 9.8
XX	-9.8	2	- 9.95
YY	-19.9	2	-14.5
ZZ	-29	2	
Total 52		204	
Mean .....			9.10
Median .....			8.25

Table XVIII shows the mean and median of 204 pupils under 52 women teachers. The average months' progress per pupil ranged from 53.9 to -14.5. Several of these students fell below zero. The mean was 9.10; the median was 8.25.

In comparing the achievement of the students under men and women teachers it is observed that the mean under the men teachers was 12.96 as compared with 9.10 for the women teachers. The median under the men teachers was 13.05; the median under the women was 8.25. The mean under the men teachers was 3.86 higher than under the women teachers. The median was 4.8 higher for the students having men teachers than it was for students having women teachers.

The pupil achievement is greater under men teachers than under women teachers. The mean of pupil achievement under men teachers is 12.96; the mean of pupil achievement under women teachers is 9.10. The median under men teachers is 12.05; the median under women teachers is 8.25.

If the data in this part of the study are sufficient to warrant conclusions, there is a positive indication that the educational achievement of the children is greater under men teachers than under women teachers. On this basis it is concluded that school boards should employ a greater proportion of men to teach in the elementary grades than is now practiced.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Summary and Conclusions

The facts revealed in this study seem to indicate that the educational achievement of the children was greater in the three-teacher schools in 1934-35 than in any other type of school. In 1935-36 the educational achievement of the children was greater in the four- and five-teacher schools. This investigation allows the conclusions that the major subject pursued in college by a teacher does not influence the child's achievement. Pupil achievement was greater in direct proportion to the number of semester hours of college work completed by the teachers. The educational achievement of the students under men teachers was greater than under women teachers.

#### Recommendations

The facts revealed in this investigation seem to justify the following recommendations: First, the small rural schools should be eliminated through consolidation; second, a further investigation should be made to determine what effect the type of training of the teacher has upon the educational achievement of the children; third, only teachers with a degree should be employed to teach in the grades since the data show that the achievement of the children in-

creases in direct proportion to the number of semester hours of college work completed by the teacher; fourth, more men should be employed to teach in the elementary grades since there is an indication that the achievement of the children is greater under men teachers than under women teachers.

## BIBLIOGRAPHY

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