

A COMPARATIVE STUDY OF ACHIEVEMENT IN ONE, TWO,
THREE, AND FOUR TEACHER SCHOOLS BY ACCREDITED
RURAL SCHOOL RATING

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RURAL SCHOOL RATING

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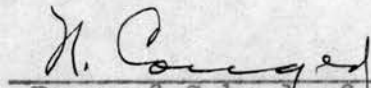
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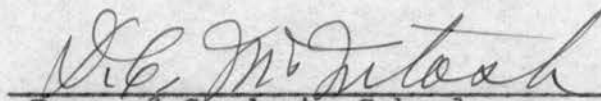
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O. B.

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Chapter I
INTRODUCTION

A commonly used measure for expressing the size of a school is the number of teachers employed in the system, and not the school enumeration nor the school enrollment. Usually additional teachers are employed to reduce the teacher pupil load or to increase efficiency in the system. In districts where the assessed valuation is high and the enumeration is low, the number of teachers employed seems to be out of proportion to the enumeration, and the primary reason for employing additional teachers apparently is to increase efficiency. On the other hand, in districts where the valuation is low and the school enumeration is high, it would seem that additional teachers are employed to decrease the teacher pupil load and incidentally to increase efficiency in the school. Out of these reasons have evolved approximately 4,400 one, two, three, and four teacher rural elementary schools in Oklahoma enrolling some 206,000 pupils and employing approximately 6,500 teachers.¹ These schools constitute a substantial portion of the state school organization when it is considered

1 Sixteenth Biennial Report of the Superintendent of Public Instruction of the State of Oklahoma, 1934-36, p. 22.

Since consolidations are being effected annually throughout the state, the number of schools, enumeration, and number of teachers for these small schools can be given in round numbers only.

that approximately one-third of all the teachers in the state are employed in these small rural schools. The State Department of Education of Oklahoma has been much concerned relative to the efficiency in these schools in recent years, and in an effort to encourage them to greater efficiency, the Model and Accredited Elementary School idea was developed. The general objective, as stated in the Model and Accredited Elementary School Bulletin for 1938-39, was the improvement of teaching in the rural schools. The specific objectives for the year were (1) the improvement of reading, and (2) the improvement of school libraries. The bulletin states:

Achievement of the general objective is to be accomplished through,

1. Improvement of the school plant along the lines indicated in the Model Score Card.
2. Improvement of teaching procedure along the lines indicated in the Instructional Score Card.
3. Improvement of the teaching of reading in accordance with current educational theory and practice.
4. Improvement of the school library, particularly, in its relation to the reading program. 2

Certain minimum requirements are set up in the Model Score Card, and the grounds, buildings, equipment, and organization are scored in detail for each school. Schools making a total score of 1250 to 1749 points are classed as Model Schools; those scoring 1750 to 2000 points are classed as Superior Model Schools.

Those schools attaining model school rating are also scored on the Instructional Score Card. Minimum requirements are also set up in this score card; and the classroom

management, classroom procedure, and classroom outcome are scored in detail for each school. Schools making as many as 3500 points are given accredited school rating and are permitted to promote eighth grade students without administering the annual eighth grade state examination. Only schools attaining Model School rating may become Accredited Schools. An additional check is also made on the Accredited Schools by means of tests which are known as Rural Accrediting Tests. These tests are constructed by the State Department of Education and administered by the County Superintendents in the counties where the schools are located. Each Accredited School is expected to achieve according to an established school norm; and each grade, from the third through the eighth, is expected to achieve according to a similar norm. For the school year of 1938-39 the first semester norms were computed from the achievement of 27,482 pupils in 913 schools representing 48 Oklahoma counties.

The tests for the third, fourth, fifth, and sixth grades were composed of sixty elements; those for the seventh and eighth grades were composed of fifty-nine elements. Since one of the general objectives for the improvement of rural schools during the school year 1938-39 was the improvement of reading, emphasis was placed upon reading comprehension. The following analysis of the tests shows the general nature of their subject matter.

TABLE I
ANALYSIS OF RURAL ACCREDITING TESTS

Grade	Subject Matter		
	Arithmetic	Word Knowledge	Comprehension
3	22%		78%
4	22%	5%	73%
5	22%	8%	70%
6	22%	22%	56%
7	22%	33%	45%
8	22%	38%	40%

The results of these tests, administered to the rural school population throughout the state, forms the basis of this study as it pertains to the achievement in the one, two, three, and four teacher schools.

The pupil is the logical unit to be used in child accounting, and this is as it should be, because the primary consideration of those charged with the administration of our schools should be concerned with those things which are to the best interest of the pupil. Furthermore, in the final analysis, the success or failure of a school organization is determined by how well the school has served the pupil and how well the pupil achieves in his course of study. For these reasons, the achievement of the pupils in its relation to the general accomplishment of the school is used as the basis of comparison among the several types of schools.

The data upon which the study is based was taken from the records of the County Superintendents in thirteen counties. These counties are Pushmataha, Bryan, Johnston, Marshall, Carter, Love, Jefferson, Stephens, Grady, Murray, Pontotoc, Payne, and Le Flore. In some counties the one teacher school predominates, and in others the two teacher school predominates; but in none of the counties visited were there many three and four teacher schools. Therefore, it was not possible to obtain records on as many three and four teacher schools as on the other two types.

Records were obtained from sixty-two one-teacher schools having a total of 907 pupils, eighty two-teacher schools with a total of 2231 pupils, forty-seven three-teacher schools with a total of 2101 pupils, and twenty-four four-teacher schools with a total of 1628 pupils. A total of 213 schools and 6867 pupils are included in the study. The records were taken entirely from rural elementary schools, and in no instance are schools offering any amount of high school work included.

There is an assumption that there is a definite relation between the efficiency of a school and the number of teachers employed in the system. Doubtless, within certain limits this assumption is true, but how much efficiency is contributed by each succeeding teacher is difficult to determine. When the one-teacher school is changed to a two-teacher school, the number of classes

is reduced one-half. When that same school is changed to a three-teacher school the reduction of classes per teacher is again approximately one-half. If a fourth teacher is now added, the number of classes is reduced approximately one-fourth. Expressed progressively as a ratio it would read thus: 1, 1.5, 2, 2.25. It would be erroneous to assume that a corresponding improvement in teaching outcomes would result in these schools, but certainly some improvement should be noted. The gist of the matter is how much improvement accrues as a result of additions to the teaching personnel, and to what extent this improvement is transmitted to pupil achievement as is reflected in pupil scores. It would not be possible to give an irrefutable answer to these questions from the limited scope of this study. It is hoped, however, to present the facts as found, and to throw some light on the subject. It may also be pointed out that this study is based solely upon the scores obtained from the State Rural Elementary Accredited Test.

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Chapter II

ANALYSIS AND INTERPRETATION OF TABLES

In the following pages are twenty-five tables each showing concretely some particular phase of the discussion. In the first four tables the scores by grades for each school in the four classifications are given. At the bottom of these tables the average grade norm and school norm for the total number of schools is given along with the state grade and school norm for all schools in the state. The average scores given in these tables form the basis for this investigation.

The tables that follow result from an analysis of the first four and they are designed to show achievement within the school group or to compare achievement between the groups.

Each table is accompanied by an explanation, and an interpretation of the facts disclosed is given only as they effect the points under discussion.

As announced in the previous chapter it is the purpose of this study to investigate the classified schools from the standpoint of comparative achievement. To do this it was necessary to use some common basis of comparison. In all cases throughout the study the state school and grade norms are used for the purpose of making comparisons in achievement.

In referring to the four school classifications the expressions one-teacher, two-teacher, etc. and one-room, two-room, etc. are used synonymously. Also, the terms "achievement" and "performance" are frequently used interchangeably.

TABLE II
SCORES OF ONE TEACHER SCHOOLS

School	Grade						
	3	4	5	6	7	8	Average
Texas	43	46	41	24			39
Opie	46	44	32	32	28		36
Major		39			39		39
Browns Chapel	37		37	32		35	35
Mud Creek	41	50		32			41
Timber Ridge	47	42	2	30	28	33	33
Burr Oak	23	27		21	20	24	23
Oak Hill	19	37	33	26	26	31	29
Arcadia	33	38	42	30	24	42	35
Gaddis	40	45	47	31	22		38
Stoner	28	42	40	24	34	34	34
Parks	35	28		26	31	32	31
Wolsey	19	33	25	35	30	33	28
Prairie Dale	42	44		37	39	32	32
Freeman	33	28	33		27	37	33
Sandy Grove	45	34	54	25	35	49	40
Union Hill	31	37	47	18	37	47	31
Ferguson	34	33	29	28		27	31
Graham	45		47			38	44
Mountain Grove	47	36		32	31		36
Thomas	25	45	46	34	52	36	40
Stene	33	36	36	28	28	20	32
Tidwell	21	24	22	26		32	26
Fairland	36	39		33	39	37	38
Rocky Point	43	38	41		35		39
Cottonwood	29	35	43		28		34
Parrish	42	29	34	27	26	34	32
Fairview	40	52	24	38	18	34	34
Beebee	37	34	37	31	32	30	30

TABLE II CONTINUED

School	Grade						Average
	3	4	5	6	7	8	
Smyrnia	36	24	40	33	23	30	30
Rocky Point		32		15		34	26
Homer	26	27	35	23	30		29
New Zion			37		23		30
Buckhart	49		40	48	43	40	46
Cedar Hill		18	20	24	28	22	25
Chowning	15	25	21	13	25	32	22
Durwood		28	20	24	28	22	25
Kinlock	24	37	42		26	31	34
Weaverton	42	31	39	31	34	29	34
Egypt	26	31	34	25	28	31	29
Jones Chapel	34	30	41		36	43	36
Koeler	34	45	34	29	37	29	34
Colbert	33	28				23	28
Horseshoe Ranch	30	33	41	30	27		32
Pleasant Valley	45			31	31		36
Brockman	49	38	36		29	31	36
Council Valley	14	32	33		29		27
Star Valley	35	40	38	26	20	36	32
North Star	28	33	38	40	27	34	33
Fair Plains	43	38	45	34	45	27	38
Cottonwood	37	39		49	38	31	39
Prairie View	31	43	28		25		32
Darnell	39	25		34	28		31
Oak Grove		38	36	31		28	31
Mound Valley	34	42	37	32	35	34	35
Pleasant Valley		40	40		37	34	36
Pleasant View	53		41			30	37
Spring View	26	40	35		34	37	34
Union Valley		46	43	31	44		40
Council Bluff		24	39	20	44	55	32
Bend	50	35	37		35	44	40
Oak Grove	37	35	36	32	35	33	35
Average	35	35	36	29	30	31	33
State Norm	39	41	40	32	34	36	36

The scores given in Table II are taken from sixty-two one-teacher schools scattered over thirteen counties. The number of pupils participating is not indicated; only the average score for each of the six grades, and the average for the school is given.

It will be observed that twenty-four, or 38.7%, of the one-teacher schools made average scores equal to or above the state norm, yet the average for the sixty-two schools is below the state norm.

TABLE III
SCORES OF TWO TEACHER SCHOOLS

School	Grade						Average
	3	4	5	6	7	8	
Mountain View	55	43	39	37	37	31	40
Little Rush	49	40	50	39	36	34	41
Valley View		33	34	31	36	29	34
Oak Dale	55	44	44	40	39	43	44
College Mound	47	46	42	41	36	38	42
Star	45	39	46	30	33	37	48
Prairie Valley	26	33	47	51	33	32	37
Sandlan	48	44	40	34	32	36	39
Lions	41	36	30	42	32		34
Hawkins	31	44	32	32	38	21	33
Union Hill	47	41	40	35	34	29	37
Oak Ridge	37	39	40	35	26	32	34
Coffett	40	38	40	35	26	42	37
Chitwood	27	45	42	34	31	34	35
Spearling	46	37	45	39	45	31	40
Pikes Peak	42	44	46	26	29	22	35
Hazel Dell		43	49	29	32	40	34
Deer Grove	40	40	38	30	44	29	37
Center Point	30	34	42	31	26	28	32
Chapel Hill	52	40	47	38	40		44
Union Hill	40	54	52	24	28	36	39
Woodrow	42	47	20	26	23	33	32
Fair Hill	44	45	38	28	30	33	36

TABLE III CONTINUED

School	Grade						Average
	3	4	5	6	7	8	
Prairie Bell	45	40	33	35	27	27	35
Number Ten	24	40	2	27	32	33	30
Page	46	46	41	28	38	38	40
Independence	38	44	37	34	27		36
Old Bokoshe	34	30	37	30	27	33	32
Spring Hill	39	47	33	26	31	44	37
Prairie Grove	39	43	38	30	36	37	37
Braden	49	36	39	31	34	29	37
Big Cedar	28	30	41	25	34	28	31
Hill	32	39	43	27	30	27	33
Victor	49	47	43	39	45	36	43
Peno	50	45	47	34	33	35	41
Pine Grove	49	46	41	37	35	42	42
Murry Spur	47	51	29	25	32	32	36
Conser	49	41	41	31	32	35	38
Plesant Valley	37	47	34	41	31	35	38
Ingalls	53	43	39	36	23	38	40
Clayton	33	45	34	45	39	42	38
Wagoza	47	48	50	35		39	45
Independence	51	50	52	36	36	38	42
Eagle	52	42	40	36	34	36	39
Schlegal	54	51	45	28	35	35	40
Petersburg	47	41	46	29		33	39
Plainview	36	39	36	32	45	39	38
Valley View	48	45	31		30	38	43
Center Grove	38	45	42	35		45	41
Deer Creek	33	37	38	27	38	24	34
Dixie	50	43	26	37	35	47	39
Rock Springs	39	31	31	31	33	30	33
Hope	16	48	21	31	27	38	29
Bear Creek	24	38	36	30			32
Sante Fe	48	50	44	33	35	30	40
Rock Creek	27	36	35	27	35	22	32
Walker Valley	44	25	38	40	34		37
Oak Cliff	45	39	35	30	30	12	34
Little Beaver	31	41	46	37	36	42	39
Summer Dale	28	43	39	35	22	37	37
Claude	20	39	42	32	28	39	36
Corum	41	44	41		31	43	39
Diamond	23	38	32	37	35	37	33
Union	55	44	36	32	42	38	40
Stage Stand	49	50	43	35	36	42	43

TABLE III CONTINUED

School	Grade						Average
	3	4	5	6	7	8	
Oak Lawn	45	47	37	26	27	36	36
Fair View	42		51	43	33	35	40
Woodlawn	23	24	36	22	22	32	28
Tucker		28	33	26	30	31	30
Harrisburg	35	27	18	22	25	34	26
Arthur		46	42	35	37		42
Alamo	25	46	34	20	22	35	29
Willow Springs	35	15	37	25	40	35	33
Beaver Springs	31	40	44	33	27	35	35
Payne	38	43	39	29	44	41	39
Oak Grove	26	33	43	27	35	31	44
Owens Prairie	39	43	35	26	38	34	37
Plato	47	44	42	37	34	26	40
Center Grove	41	43	29	31	31	37	35
Pea Ridge	56	43	48	34	35	33	42
Average	40	41	39	33	34	34	37
State Norm	39	41	40	32	34	36	36

Table III gives the average score for each grade and the norm for the entire school, also the average score for all the grades and schools. Fifty-two or 65% of the eighty two-teacher schools are equal to or above the state norm.

TABLE IV
SCORES OF THREE TEACHER SCHOOLS

School	Grade						Average
	3	4	5	6	7	8	
Harris	45	48	36	29	35	30	37
Ireton	11	39	37	29	42	39	33

TABLE IV CONTINUED

Schools	Grade						Average
	3	4	5	6	7	8	
Moran	54	45	35	37	35	36	42
Mt. Pleasant	34	32	33	23	27	30	31
Pearl & Doyle	34	41	30	31	34	33	35
Oak College	45	35	30	27	35	32	34
Weavers Chapel	33	34	37	32	37	40	35
Meridian	41	44	36	36	35	29	37
Gatlin	36	37	33	33	32	39	36
Willow Point	39	39	46	31	31	31	36
Enterprise	50	39	45	36	36	36	40
Agawan	33	30	38	30	37	34	33
Atlee	34	29	31	32	27	34	31
Harmonville	10	21	13	27	31	34	22
Tussy	39	42		27		37	35
Springdale	19	38	32	27	32	31	29
Willis	44	44	35	36	39	42	40
Plainview			33	37	23	34	33
Coleman	35	34	37	21	36	28	32
Prairie View	15	19	25	22	24	27	22
Sardis	27	29	32	24	26	38	29
Midway	26	33	34	28	46	34	34
Sugar Loaf	17	22	20	31	35	27	27
McCalls	31	47	46	33	34	35	37
Bybee	37	39	37	31	32	30	34
Maxwell	32	42	41	29	31	34	35
Honer	42	38	35	30	33	36	36
Pickett	36	30	34	27	30	38	36
Colbert	33	40	29	29	46	33	34
Union Valley	42	36	42	33	34	37	36
Ahlose	30	33	45	32	29	32	36
Laxton	35	42	44	31	19	35	33
Owl Creek	43	41	40	32	35	32	39
Cedar Grove	37	35	33	31	35	34	34
Worstell	41	42	41	31	33	31	36
Summers Chapel	51	42	46	28	32	35	36
Oakman	36	23	37	27	30	26	30
Hubbin Ridge	29	40	26	22	29	32	30
Fairview	41	43	33	33	35	39	39
Buck Creek	28	37	32	31	33	23	32
Mt. Pleasant	41	32	40	25	30	32	33
Oak Ridge	34	44	40	31	37		37
Tahoma	46	33	39	31	35	34	36
Forest Hill	19	43	27	33	33	37	32
Rock Island	40	37	31	26	28	36	33
Lone Pine	40	36	29	37	31	31	34
White Rose	41	35	45	32	32	41	37
Average	34	37	35	30	33	35	34
State Norm	39	41	40	32	34	36	36

Forty-seven three-teacher schools are included in Table IV. The average norms for each grade and for each school is given, also the average grade and school norm for the forty-seven schools is given.

The disparity in the number of three-teacher schools compared with other school types as revealed by records would indicate that the three-teacher school is less popular than the other size schools.

An inspection of Table IV reveals that twenty-two of the forty-seven three-teacher schools achieved equal to or better than the state norm. This is 46.8% as compared with 38.7% for the one-teacher schools, 65% for the two-teacher schools. From the standpoint of schools achieving accredited school rating, these figures indicate progressive improvement in the one, two, tree-teacher schools. Regardless of these facts, Table IV also reveals that in no instance did the average grade norm for the forty-seven schools equal the state norm.

TABLE V
SCORES OF FOUR TEACHER SCHOOLS

School	Grade							Average
	3	4	5	6	7	8		
Oscar	34	29	31	32	27	34	31	
Grady	46	18	35	27	29	32	31	
Oak Grove	41	48	31	32	36	41	40	

TABLE V CONTINUED

School	Grade						Average
	3	4	5	6	7	8	
Star Valley	37	45	46	37	43	39	41
Finley	39	39	40	32	32	37	37
Smith Lee	27	31	22	20	24	24	25
Roberta	16	23	19	22	22	25	21
Joy	30	40	42	35	31	33	35
Woodland	19	28	42	35	34	39	33
Connerville	46	35	35	31	31	27	34
Washita		49	54	37	47	49	47
Jessie	45	39	42	27	33	30	36
Loves Valley	51	49	40	40	39	44	44
White Oak	39	39	34	42	40	42	39
Marshall	43	50	41	44	38	45	39
Hickory	42	40	45	37	29	33	37
Summerfield	41	39	39	31	33	33	36
Arkoma	36	43	39	34	35	41	38
Tarby	37	38	40	36	31	33	36
Stapp	35	39	40	30	30	38	35
Cowlington	29	38	34	29	35	36	34
Shady Point	55	48	48	35	43	35	43
Williams	29	38	42	37	38	40	37
Hodgen	35	42	40	31	31	37	36
Average	37	38	38	34	34	36	36
State Norm	39	41	40	32	34	36	36

Table V gives the average grade and school norm for each school, also the average grade and school norm for the twenty-four schools. Fifteen of the twenty-four schools made scores equal to or above the state norm.

TABLE VI
PUPIL DISTRIBUTION TABLE FOR ONE TEACHER SCHOOLS

Score	Grade						Total
	3	4	5	6	7	8	
54			1				1
53	1						1
52		1			1		2
51							
50	2	2		2			6
49	12			1		2	15
48				1			1
47	6		11			1	18
46	8	6	7				21
45	5	15	3		1		24
44		4			2	1	7
43	9	1	8		1	2	21
42	13	6	5			1	25
41	3		17				20
40	9	7	9	1		3	29
39	1	8	10		9		28
38		12	9	2	1	3	27
37	20	7	24	1	9	7	68
36	6	4	17	1	4	5	36
35	/5	/9	6	1	12	2	35
34	16	13	12	10	9	22	82
33	9	14	15	5		9	/52
32		8	2	15	9	13	47
31	4	5		18	12	/12	51
30	2	4		8	/8	20	42
29	10	3	3	/5	7	8	36
28	5	13	4	8	10	1	41
27		6		1	9	3	19
26	13			10	5		28
25	1	7	3	3	6		20
24	3	9	1	8	3	4	28
23	5			2	3	3	13
22			4		4	3	11
21	1		2	5	5		13
20			10	1	6		17

Broken line indicates State Norm.

/ Indicates school grade norm and school norm.

TABLE VI CONTINUED

Score	Grade						Total
	3	4	5	6	7	8	
19	9						9
18		2		2	1		5
17							
16							
15	3			2			5
14	2						2
13				1			1
Total	183	166	183	113	137	125	907
School Norm	35	35	36	29	30	31	33

In Table VI is shown the distribution of pupils by grades according to achievement. There were 907 pupils included in the tests given the one teacher schools. The distribution is widely scattered throughout the six grades; the range for the six grades being 40, 35, 35, 38, 35, and 28 respectively with an average of 35. Since the distribution is so widely scattered throughout the schools, it suggests a lack of intensive teaching. According to the report of the Brooking Institution of 1935, the one-room school has on an average 28 different class recitations per day.¹ This gives an average of 9.6 minutes to each recitation. It is obvious that little individual instruction can be carried out under those conditions. Again the widely scattered distribution may be due, in some measure, to individual differences.

¹ Organization and Administration of Oklahoma, The Brookings Institution, 1935, p. 19.

Of the 907 pupils 350 or 38.5% achieved equal to or better than the state school norm of 36, while 547 or 61.5% of them fell below the state norm.

Taking the state school norm of 36 as a basis of comparison, the standard deviation for the one-teacher schools is 7.2. This will give a skewed curve with 23.6% below minus sigma and 10.7% above plus sigma.

The state required norm for each grade is given at the bottom of table five. Using these norms as a basis of comparison in the grades, the following data throws some light on pupil achievement in the six grades.

The number of pupils in each grade achieving equal to the state grade norm and the per cent each bears to the whole number is given in the following table.

TABLE VII
NUMBER AND PER CENT OF PUPILS
ACHIEVING ACCORDING TO NORM

	Grade					
	3	4	5	6	7	8
No. Above Norm	69	45	61	39	48	25
Per Cent Above Norm	33.7	27.1	33.0	34.4	38.4	20.0

The three upper grades rank higher than the three lower grades, and the seventh grade excels all the others.

If the state norms have been properly weighted and are fair indices of pupil performance in these grades, these percentages are too low. If this assumption is correct, an average of 33.5%² of the 76,592 pupils in the one-teacher schools are achieving too low; a total of 25,658 pupils.

TABLE VIII

PUPIL FREQUENCY TABLE FOR TWO TEACHER SCHOOLS

Score	Grade						Total
	3	4	5	6	7	8	
56	6						6
55	9						9
54	6	4					10
53	4						4
52	5		7				12
51	4	8	1	5			18
50	7	14	7				28
49	55		4				59
48	16	4	4				24
47	33	26	8			2	69
46	7	21	16				44
45	21	22	10	2	9	3	67
44	8	51	18		5	2	84
43		63	16	3		5	87
42	12	9	40	1	3	15	80
41	12	/32	29	4		5	82
40	/16	32	29	5	9	2	93
39	32	32	/20	12	5	8	109
38	17	18	23	2	14	26	100
37	15	12	19	32	9	16	/103
36	-----4	-----24	-----11	-----19	-----39	-----25	-----122
35	6		14	35	42	39	136
34	4	5	22	26	/28	/18	103
33	6	20	14	/15	29	15	99

Broken line indicates State Norm
/ Indicates Grade Norm

² Sixteenth Biennial Report of the Superintendent of Public Instruction of the State of Oklahoma, 1934-36, p. 22.

TABLE VIII CONTINUED

Score	Grade						Total
	3	4	5	6	7	8	
32	2	11		18	28	15	74
31	16	5	6	41	29	18	115
30	3	12	3	20	28	6	77
29			9	18	13	15	55
28	12	14		21	7	5	59
27	10	5		27	29	4	85
26	13		6	22	8	2	51
25	5	5		15	6		31
24	9	7		24		3	43
23	10				5	1	16
22			3	7	7	6	23
21			3			4	7
20	4		5	20			29
19							
18				9			9
17							
16	5						5
15		3					3
14							
13							
12						1	1
Total	399	448	367	352	394	271	2231
School Norm	40	41	39	33	34	34	37
State Norm	39	41	40	32	34	36	36

Table VIII gives the pupil distribution by grades and according to achievement in the two-teacher schools. There was a total of 2231 pupils in the eighty schools considered. The distribution is widely scattered in the third grade and tends to concentrate through the fourth, fifth, sixth, and seventh grades; and is then dispersed somewhat in the eighth.

Table VIII gives the pupil distribution by grades and according to achievement in the two-teacher schools. There was a total of 2231 pupils in the eighty schools considered. The distribution is widely scattered in the third grade and tends to concentrate through the fourth, fifth, sixth, and seventh grades; and is then dispersed somewhat in the eighth.

The school norm for the eighty two-teacher schools is thirty-seven or one above the state norm of 36. Of the 2231 pupils in the two-teacher schools, 1210 achieved equal to or above the norm. This gives 53.7% on or above the norm and 46.3% below the norm.

The state norm is given at the bottom of Table VIII. Using these norms as a basis of comparison, the following table will show the achievement of these schools within the grades.

TABLE IX
NUMBER AND PER CENT OF PUPILS ACHIEVING
ACCORDING TO FORM

	Grade					
	3	4	5	6	7	8
No. On or Above Norm	253	254	221	179	163	109
Per Cent Below Norm	63.4	56.7	55.8	45.4	46.3	40.2

In the two-teacher school, the grades are usually divided as follows between the two teachers; primer, first, second, third, and fourth are assigned to the primary teacher and the fifth, sixth, seventh and eighth are assigned to the principal. Considering pupil achievement from this divisional standpoint, the grades assigned the primary teacher performed better than those assigned the principal.

The principal has an average of 46.8% of her pupils performing above the grade norm while the primary teacher, despite the fact that she has an additional grade, has an average performance above the grade norm of 60% which is 23.2% better. There were 79,381 pupils enrolled in two-teacher schools according to the State Superintendent's Report for 1934-36. According to this figure the two-teacher schools would have 40,722 pupils achieving above their grade norm or equal to it.

The standard deviation for the two-teacher schools is 7.36 based upon the state school norm of 36. There are 1486 pupils between plus sigma 44.36 and minus sigma 28.64. There are 18.1% of the pupils above plus sigma 44.36 and 15.8% below minus sigma 28.64. The normal curve based upon this data would be almost symmetrical. On the whole it would seem that the two-teacher schools have performed fairly well.

TABLE X
PUPIL FREQUENCY TABLE FOR THREE TEACHER SCHOOLS

Score	Grade						Total
	3	4	5	6	7	8	
54	5						5
53							
52							
51	2						2
50	6						6
49							
48		14					14
47		7					7
46	6		19				25
45	10	8	28				46
44	7	15	1				23
43	11	9					20
42	14	32	5		3	5	59
41	42	27	14			7	90
40	18	16				5	39
39	5	37	22		2	16	82
38	49	28	25			32	134
37	15	/28	37	16	22	12	130
36	29	9	17	22	17	14	108
35	9	19	/17		64	/9	118
34	/49	24	15		21	61	/170
33	41	17	18	41	/39	7	163
32	10	12	26	43	37	39	167
31	10		10	89	43	29	181
30	14	16	19	/14	26	14	103
29	7	23	16	36	12	11	105
28	9	7		27	10	12	65
27	6		5	44	16	4	75
26	6		6	9	5	5	31
25			5	5			10
24				2	4		6
23							
22		11		12			23
21		6		5			11
20	12						12

Broken line indicates State Norm
/ Indicates grade and school norms

TABLE X CONTINUED
PUPIL FREQUENCY TABLE FOR THREE TEACHER SCHOOLS

Score	Grade						Total
	3	4	5	6	7	8	
19	16	6			3		25
18		12					12
17	12						12
16							
15	7						7
14							
13							
12							
11	4						4
10	11						11

Table X gives the pupil achievement distribution by grades in the three-teacher schools; 2101 pupils were included. The widest range is found in the third grade; it being 45. The range tends to diminish progressively through the other five grades. The sixth grade performance appears to be low, but any such assumption would be erroneous inasmuch as the norm for this grade is below that of the other grades. This lower norm would cause the distribution to drop down even if the grade was performing according to standard.

The school norm for the three-teacher schools is 34 or one less than the required state norm for rural accrediting.

Of the 2101 pupils in the three-teacher schools only 790 achieved equal to or better than the state norm for

the entire school. This gives a percentage of 37.6% equal or above the norm and 62.4% below the state norm. The following table will show the achievement of the three-teacher schools by comparison with the one and two-teacher schools.

TABLE XI
PUPIL ACHIEVEMENT ABOVE NORM

	1	2	3
Equal or Above Norm	38.5%	53.7%	37.6%
Below Norm	61.5%	46.3%	62.4%

When measured in terms of pupil performance relative to the state school norm, it can be seen very readily that the three-teacher schools did not achieve as well as did the one and two-teacher schools.

The standard deviation for the three teacher schools is 5.11. This is less than the deviation for the one and two-teacher schools and indicates a more central grouping of the distribution. There are 200 pupils or 9.5% above plus sigma and 500 or 23.7% below minus sigma.

The state grade norm given at the bottom of Table X is used in computing the following table showing achievement within the grades.

TABLE XII
NUMBER AND PER CENT OF PUPILS
ACHIEVING ACCORDING TO NORM

Grade	3	4	5	6	7	8
No. On or Above Norm	126	112	77	122	129	91
Per Cent	30%	30.5%	23.4	33.4	38.6	32.2

The grade division in the three-teacher school among the teachers is usually--Primer, first, second--third, fourth, fifth--sixth, seventh, eighth. Therefore the first three grades above were under the direction of one teacher and the last three grades were under the direction of another teacher. The third, fourth, and fifth grade teacher has 27.9% of her pupils performing above the grade norm; the sixth, seventh, and eighth grade teacher has 34.7% of her pupils achieving similarly. The following table will show this pupil-teacher achievement in comparison with the one and two-teacher schools.

TABLE XIII
PER CENT OF PUPILS ACHIEVING
EQUAL OR ABOVE NORM

Teacher	1	2	3	4
One Room	31%			
Two Room	60%	46.8%		
Three Room		27.9%	34.7%	

The three-teacher schools are below the one and two-teacher schools in teacher-pupil achievement. The average number of pupils per teacher in the one-room schools is 14.6; for the two-room school 13.9; and for the three-teacher school 22.3--the primary teacher is not included since none of her pupils take the test. The pupil-teacher load is somewhat greater in the three-teacher school, but the release from the additional grade in the three teacher school should overbalance the increased teacher-load.

On the whole the pupil achievement is more uniform than in the other schools, but the whole is low and is not commensurate with the added teacher.

TABLE XIV
PUPIL FREQUENCY TABLE FOR FOUR TEACHER SCHOOLS

Score	Grade						Total
	3	4	5	6	7	8	
55	8						8
54			9				9
53							
52							
51	4						4
50		8					8
49		18				9	27
48		21	14				35
47					17		17
46	17		13				30
45	11	16	16			11	54
44				15		8	23
43	17	12			17		46
42	15	16	51	14		13	109
41	23		13			17	53

TABLE XIV CONTINUED
 PUPIL FREQUENCY TABLE FOR FOUR TEACHER SCHOOLS

Score	Grade						Total
	3	4	5	6	7	8	
40		33	63	7	13	13	129
39	29	77	27		6	22	161
38		/31	/		22	7	60
37	/19			42		18	79
36	-----24	-----	-----	17	-----11	-----6	-----58
35	25	12	27	26	22	10	122
34	7		34	/10	/7	4	62
33					16	57	73
32				33	6	7	46
31		14	9	34	43		100
30	16			11	11	7	45
29	23	16		13	30		82
28		12					12
27	16			18	4	6	44
26							
25						14	14
24					16	9	25
23		10					10
22			14	13	8		35
21							
20				14			14
19	11		7				18
18		11					11
17							
16	5						5
Total	270	307	297	267	249	238	1628
School Norm	37	38	38	34	34	36	36
State Norm	39	41	40	32	34	36	36

Broken line indicates State Norm
 / Indicates grade and school norms

In Table XIV is shown the pupil achievement distribution by grades in the four-teacher schools. Since the

four-teacher schools are not as numerous as the one and two-teacher schools, only 24 schools are included. In these 24 schools were 1628 pupils in the six upper grades. The distribution is scattered. As in the other schools, the range is greatest in the lower grades and tends to diminish somewhat throughout the grades.

The norm for the four-teacher schools is 36; exactly on the state norm for all rural accredited schools.

Of the 1628 pupils in the four-teacher schools 910 ranked equal to or above the state norm. Seven hundred eighteen or 44.8% were below the norm; 55.2% were above the norm. The following table gives this achievement by schools.

TABLE XV
PER CENT OF PUPILS EQUAL TO OR ABOVE NORM

	No. Teachers in School			
	1	2	3	4
Per Cent Equal to or Above norm	38.5%	53.7%	37.6%	55.2%
Per Cent Below norm	61.5%	46.3%	62.4%	44.8%

This table presents some very interesting facts. There is a substantial improvement between the one and two-teacher schools, but the three-teacher schools are about equal to the one-teacher schools. The four-teacher

school has 1.4% more pupils above the norm and 1.5% fewer pupils below the norm than the two-teacher school.

The standard deviation for the four-teacher schools is 5.92. This is less than the two and three-teacher schools, but is slightly greater than the standard deviation for the three-teacher schools. The distribution shows 328 or 20.1% above plus sigma and 214 pupils or 13.4% below minus sigma. These facts indicate the achievement tends to uniformity and the number exceeding the standard of achievement is significant. If the excellence of performance is directly proportional to the number of teachers assigned to given grades, those significant facts are to be expected since there are three teachers who devote their time to the six upper grades. In the primary grades the four-teacher school has no advantages over the three-teacher school from the standpoint of grades taught. The primer, first, and second grades are taught by the primary teacher in the three-teacher school; and when a fourth teacher is added to the system, one grade is taken from each of the two upper teachers and assigned to the added teacher but the primary teacher retains the same grades.

The table below shows the number of pupils performing equal to the state grade norm and the per cent each number bears to the whole.

TABLE XVI
 NUMBER AND PER CENT OF PUPILS ACHIEVING
 ACCORDING TO THE NORM

Grade	3	4	5	6	7	8
No. On Or Above Norm	124	91	181	164	115	124
Per Cent	45.9%	29.6%	61.2%	61%	46.1%	52.5%

The room grade division in the four-teacher school is--Primer, first and second--third and fourth--fifth and sixth--and seventh and eighth. The pupil-teacher achievement is shown in the following table by comparing this achievement in the four types of schools.

TABLE XVII
 PUPIL ACHIEVEMENT IN PERCENTAGES BY TEACHERS

No. Teachers	Per Cent Of Pupils Equaling Norm			
School	1	2	3	4
One Room	31%			
Two Room	60%	46.8%		
Three Room		27.9%	34.7%	
Four Room		37.7%	61.0%	49.3%

In the one-room school 31% of the pupils were above the state grade norm. In the two-teacher school the primary teacher pushed 60% of the third grade above the norm and the principal has 46.8% above. In the three-room school where one teacher devotes her time to the third, fourth, and fifth grades only 27.9% of her pupils are above the norm, while only 34.7% of the sixth, seventh, and eighth grades are above the norm.

In the four-room school where one teacher devotes her time to the third and fourth grades, 37.7% of her pupils attain a rank equal to the norm; 61% of the fifth and sixth grades have attained this excellence and 49.3% of the seventh and eighth grades.

The pupil performance of the third and fourth grade in the four-teacher school is not as good as in the other grades. This is probably due to the unbalanced teacher load in the primary grades. As has been explained above, the primary teacher in the four-room school carries the same load as the primary teacher in the three-room school. Not until the pupils reach the third grade do they receive the added benefit of the fourth teacher.

Table XVIII gives a summary of pupils achieving equal to the state grade norm in the four types of schools.

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TABLE XVIII
 PERCENTAGES BY GRADES ACHIEVING
 EQUAL TO THE STATE GRADE NORM

School	Grade						Average
	3	4	5	6	7	8	
One Room	33.7%	27.1%	33.0%	34.5%	38.4%	20.0%	33.4%
Two Room	63.4%	56.7%	55.8%	45.4%	46.3%	40.2%	47.9%
Three Room	30.0%	30.5%	23.4%	33.4%	38.6%	32.2%	31.3%
Four Room	45.9%	29.6%	61.2%	61.0%	46.1%	52.8%	49.4%
State Norm	39	41	40	32	34	36	36

It will be noticed that the eighth grade is the lowest in accomplishment in the one-room school. This is not a surprising condition when teaching conditions in these schools are considered. With an average of only 9.6 minutes per class recitation the teacher is compelled to distribute her time where it is needed most and with those least able to help themselves. Eighth grade pupils are usually considered sufficiently mature to pursue their studies with the least help from the teacher. The teaching then, in this grade usually consists of general supervision by way of class assignments and occasional personal help when a student experiences some difficulty in his work. The remarkable thing is that 20% of the eighth grade students have achieved as well as they have.

Theoretically grade placement by subjects according to the elementary course of study for 1938-1939 would give the primary teacher in the two-room school 23 recitations per day and the principal 34 recitations per day. In actual practice the classes are combined whenever possible and the subject matter is correlated so that the number of class recitations per day is decreased appreciably. After all the possible correlations, combinations, and alternations have been made, the number of recitations of the upper grades in the two-room school will exceed that of the lower grades because of the additional subjects required in the upper grades. This condition will reduce the time spent on each recitation in those grades and should be reflected in the accomplishment of the pupils. The data given in Table XVII tends to substantiate this. The primary teacher in the two-room school has 60% of her pupils, included in this study, performing equal to the standard set by the state, while the principal has only 34.7% performing as well. It will also be observed in Table XVIII that the percentages for the first three grades are much higher than those for the last three grades. It will also be observed that the eighth grade performed least satisfactorily in the two-room school as was also the case in the one-room school.

Grade placement according to the Oklahoma Course of Study would give the teachers in the three-room school

fourteen, twenty-two, and twenty-six class recitations per day respectively exclusive of music and art. Here, as in the smaller schools, combinations and alternations reduce the number of recitations somewhat.

When a two-teacher school is converted into a three-teacher school, the third teacher is given two grades, the third and fourth, from the primary room and one, the fifth, from the principal's room.

This arrangement reduces the teaching load approximately forty per cent in the primary room and twenty-five per cent in the upper grades. Considering the three-room school from this standpoint, it should be more efficient than the two-room school. The percentages of accomplishment as found in this study do not seem to bear this out. Referring again to Table XVIII, it will be observed that in no grade have the three-teacher schools exceeded the two-teacher schools; and in only three grades, the fourth, seventh, and eighth have these schools exceeded the one-teacher schools. The average for these schools is also below that of the one and two-teacher schools.

Without a standard measure of accomplishment for the different types of schools, it is not possible to know how well any one type should achieve. The nearest approach to the problem would be found in a measure equally applicable to all four types. A comparison based upon this measure would show the accomplishment of one

in terms of all of them. The percentages given in Table XVIII afford a common measure by which comparisons may be made. According to these percentages the four-room school has achieved as well as might be anticipated. In grades five, six, and eight these schools exceed all the others. Grade seven is exceeded only by the two-teacher schools, and that by .2%. Grade four is exceeded by the two and three-teacher schools. The third and fourth grades are lower than the other four grades. A partial explanation for this condition may be found in the grade arrangement in the four-room school. The primary teacher carries the same load as does the primary teacher in the three-room school. The pupils do not receive the benefits of the added teacher until they reach the third and fourth grades.

Since there is a direct relation between the teacher load and the accomplishment of a class group, this teacher load should be given proper consideration in fixing the accomplishment of any group. Table XIX gives the average number of pupils per teacher in the one, two, three, and four-teacher schools.

TABLE XIX

TABLE SHOWING AVERAGE NUMBER OF PUPILS PER TEACHER

Teaching Position	1	2	3	4
One Room	/14.6			
Two Room	/10.5	17.3		
Three Room		23.8	20.8	
Four Room		24.0	23.5	20.0

The number of pupils per teacher in the one-room school and the number per primary teacher in the two-room schools can be determined only approximately from the averages given. The total average number of pupils in the one-teacher schools, computed upon the average given, would be 21.6; the total average number of pupils in the two-teacher schools similarly computed would be 25.6. The average number of pupils in no instance is excessive. The average for the eight teachers employed in the four schools is only 22.07 which is 1.37 fewer than the 24.44 average for all one, two three, four, and five teacher elementary schools as of 1934-36.³

It is obvious from the facts given that the teacher pupil load is not a determining factor in pupil accomplishment in the several schools. If it is assumed that all

³ Sixteenth Biennial Report of the Superintendent of Public Instruction of the State of Oklahoma.

/ Only the third and fourth grades are included in the average for the primary teacher in the one and two-teacher school. The number in the primer, first, and second is not known in either school.

other conditions are equal in these schools; the time element, expressed in terms of class recitations per day, probably exercises the greatest influence upon pupil achievement. There are sixty-four separate subjects listed in the elementary course of study by grades⁴ which are required to be taught.

As has been stated above, this number is reduced appreciably by a system of combinations, correlations, and alternations. But when the teacher in the one-room school complies with the State Course of Study, she has not yet complied with the letter of the law until she has taught the Effects of Alcohol on Pupils, Reverence for the Flag, Conservation of Natural Resources, Kindness, Morals, Patriotism, and Temperance.⁵ And the regrettable thing about the whole matter is that our state Legislature seemingly takes the position that there is no limit to the number of subject fields a teacher must carry in her mind sufficiently to instruct her pupils in them. Truly, a serious consideration of this array of subjects is most bewildering even to those whom experience has made adept at classroom management.

4 Elementary Course of Study, 1938-1939.

5 Oklahoma School Law: Sections 300, 553, 559, 560, 565, 574.

TABLE XX
PUPIL FREQUENCY DISTRIBUTION BY SCHOOLS

Score	Size Of School By Teachers			
	1	2	3	4
56		6		
55		9		8
54	1	10	5	9
53	1	4		
52	2	12		
51		18	2	4
50	6	28	6	8
49	15	59		27
48	1	24	14	35
47	18	69	7	17
46	21	44	25	30
45	24	67	46	54
44	7	84	23	23
43	21	87	20	46
42	25	80	59	109
41	20	82	90	53
40	29	93	39	129
39	28	109	82	161
38	27	100	134	60
37	68	103	130	79
36	36	122	108	58
35	35	136	118	122
34	82	103	170	62
33	55	99	163	73
32	47	74	167	46
31	56	115	181	100
30	42	77	103	45
29	36	55	105	45
28	41	59	65	12
27	19	85	75	44
26	28	51	31	
25	20	31	10	14
24	28	43	6	25
23	13	16		10
22	11	23	23	35
21	13	7	11	
20	17	29	12	14
19	9		25	18

TABLE XX CONTINUED
PUPIL FREQUENCY DISTRIBUTION BY SCHOOLS

Score	Size Of School By Teachers			
	1	2	3	4
18	5	9	12	1 1
17			12	
16		5		5
15	5	3	7	
14	2			
13	1			
12		1		
11			4	
10			11	
Total	907	2231	2101	1628

Table XX gives a summary of pupil distribution by schools. The range of the two and three-teacher schools--45 in each case--is the greatest, while that of the four-teacher school is the least; it being 40. The state school norm of 36 was used to show how much each school type deviated from this norm. Table XXI below gives a summary of Table XX relative to this deviation.

TABLE XXI
PERCENTAGES OF PUPILS ABOVE AND
BELOW THE STANDARD DEVIATION

School			
1	2	3	4

TABLE XXI CONTINUED

	School			
	1	2	3	4
Sigma	7.2%	7.3%	5.1%	5.9%
Above Plus 1 Sigma	10.7%	18.1%	9.5%	20.1%
Below Minus 1 Sigma	23.6%	15.8%	23.7%	13.4%

There is a general assumption that the efficiency of a school is directly proportional to the number of teachers in the system, and inversely proportional to the teacher load as is determined by the pupil-teacher load and the number of classes per day. If this assumption is accepted, it would be very difficult to measure the increased efficiency and certainly it would have an upward limit at the point of diminishing returns. But it does not seem to be an unreasonable assumption that some improvement should be expected as the number of teachers is increased. The percentages given in Table XX bears out this expectation as between the one, two, and four-teacher schools, but not with the three-teacher school.

As between the one and two-room school, the greatest improvement should occur here since the teaching load is reduced approximately fifty per cent. The reduction in teaching load resulting from a three-teacher organization is approximately 25%, and that of the four-teacher

organization approximately 33%. These facts are brought out very clearly in the following table.

TABLE XXII
DECREASED TEACHER LOAD AND INCREASED SCHOOL
EFFICIENCY EXPRESSED IN PERCENTAGES

	School			
	1	2	3	4
Loss in Teacher Load		50%	25%	33%
Increased Efficiency Above +1 σ		68%	-11%	88%
Decrease below -1 σ		33%	.1%	43%

The computations in Table XXII are based upon the achievement of the one-teacher schools. This achievement is taken as 100% and successive percentages are reckoned on this basis. The efficiency basis is the number of pupils above plus one sigma.

It will be observed that a loss of 50% in teacher load in the two-teacher school results in an increased efficiency of 68%; the four-teacher school has an increased efficiency of 88% over the one-teacher school. Expressed in another way this means that the two-teacher school is 1.68 times as efficient as the one teacher school; while the four teacher school is 1.88 times as efficient as the one teacher. The added teacher in the two-room school gave an increase of 68%, yet the three

teachers added to the four-teacher school gives an increase of only 20% over the one-teacher school. In the three-room school a loss of 11% is shown as compared with the one-room school.

A similar increase in efficiency is noted in the number below minus one sigma, except that the three-teacher school enters the picture slightly on the positive side. The added teacher in the two-teacher school decreased the number below minus one sigma by 33%; the number below minus one sigma in the three-teacher school is decreased .1%; a similar decrease of 43% is noted in the four-teacher school. It will be seen that the two-room school has a gross increase of 83% over the one-room school while the four-room school has a gross increase of 76% over the one-room school. As was suggested above, the greater gross increase in the two-room schools was to be expected since the greatest reduction in teaching load occurred at this point.

The three-room schools do not perform according to expectations. The logical assumption is that these schools should achieve equally as well as the two-room school and should achieve better. Regardless of this assumption, the assembled data does not bear it out. For some reason, inexplicable from the data assembled, the three-room schools show a loss in efficiency as compared with the two-room school. There is a loss of increased efficiency above plus one sigma by 11% and a decrease of .1% below minus one sigma; a gross loss of 10.9%

TABLE XXIII
 NUMBER OF SCHOOLS, PUPILS AND NORM SCORES
 with
 AVERAGE FOR EACH CLASSIFICATION

	No. Schools	No. Pupils	Grade						Average
			3	4	5	6	7	8	
One Teacher	62	907	35	35	36	29	30	31	33
Two Teacher	80	2231	40	41	39	33	34	34	37
Three Teacher	47	2101	34	37	35	30	33	35	34
Four Teacher	24	1628	37	38	38	34	34	36	36
Total	213	6867							
State Norm			39	41	40	32	34	36	36

Table XXIII gives a summary of the accomplishments of the four different types of schools in terms of the norm scores. These average scores represent the final accomplishment of 6867 pupils in 213 different schools. They represent in part the expended energy of 459 teachers.

It is not to be inferred from Table XXIII that no grades in the one teacher schools achieved equal to the state norm, nor that no schools achieved this standard. Twenty-four or 38.7% of these schools established scores entitling them to accredited school rating. However, the final average score is below the required norm.

The table reveals that four of the six grades in the

two-teacher schools have average scores equal to the grade norm, and the total average score for the 80 schools is one above the school norm.

The three-teacher schools, seemingly, have not achieved much better than the one teacher schools if conclusions are based upon these average scores for the 47 schools. In no grade is the average score equal to the norm and the average for the schools is too low. These figures are somewhat misleading when an analysis of the individual schools is made. Table IV reveals that 22 or 46.8% of the three-teacher schools achieved accredited school rating as compared with 38.7% for the one-room schools.

The final average scores for the four-teacher schools reveal that the three upper grades achieved accredited school rating and the average for the twenty-four schools is exactly on the state school norm.

A detailed analysis of the different types of schools revealed that not all of them performed as well as might have been expected. This analysis revealed that in some respects there was not a noticeable progressive improvement in accomplishment as the number of teachers was increased in the school systems. The facts shown in Table XXII disclose that in the final accounting, there is some improvement in this respect. In only two grades in the entire table, the third and fifth, is there a lack of progressive improvement; and despite the fact that the one and two-teacher schools did not reach the accredited

school rating in the final school average, there is some improvement shown in accomplishment in the final school norms. The two general reasons for increasing the number of teachers in a school system are to reduce the teaching load and to increase efficiency. If the latter reason is valid, the facts shown in Table XXIII array themselves according to the general expectations.

TABLE XXIV
SCHOOLS ACQUIRING ACCREDITED RANKING

Score	Number Of Teachers In School				Total
	1	2	3	4	
47				1	1
46	1				1
45		1			1
44	1	2		1	4
43		4		2	6
42		5	1		6
41	3	3		1	7
40	2	9	2	1	14
39	6	8	3	1	18
38	3	5	1	1	10
37	2	10	5	2	19
36	6	5	10	5	26
35	4	6	4	2	16
34	8	6	4	2	20
33	2	5	6	1	14
32	4	5	3		12
31	5	1	2	2	10
30	3	1	1		5
29	4	2	2		8
28	2	1			3
27	1			1	2
26	2	1			3
25	1			1	2
24					
23	1				1
22	1		2		3
21				1	1
Total	62	80	47	24	213

Broken line indicates state norm.

The school norm for the Rural Accrediting Tests as established by 27,482 pupils was thirty-six. Those schools that had amassed the requisite number of points on the Model Score Card and the Instructional Score Card were expected to equal this norm. It is not known how many, if any, of the schools included in this study achieved accredited school rating. It is known that some of them rated accredited schools during the school year of 1937-38. Since the rating lasts for one year only, it is entirely possible that a change in teacher personnel would result in a school losing its accredited rating. As yet, not all County Superintendents give their whole-hearted support to the program. One County Superintendent who was not reelected had not made any effort to place his schools on the accredited school rating. Another who was not reelected inspected about half of his schools. So it would not necessarily follow that a school that was accredited one year would be accredited the next. For those reasons it is not possible to show which schools under discussion achieved accredited school rating.

Table XXIV is a distribution table showing the number of schools in each category that achieved accredited school rating according to the Accrediting Tests. A noticeable characteristic of the one-teacher schools is their lack of uniformity in performance. The same tendency was very pronounced in the pupil distribution by grades. It would be unjust to say that the teaching in these

schools was unsuccessful because success should be measured in terms of the task to be performed. Those who are familiar with teaching conditions in the one-room school will admit that the task is an Herculean one, and whatever success attained there is truly commendable. Regardless of any assigned reason, the wide range of achievement in these schools is indicative of an unwholesome condition respecting the teaching outcomes.

It is observed that 38.7% of the one-teacher schools, 65% of the two-teacher schools, 46.4% of the three-teacher schools, and 62.4% of the four-teacher schools attained accredited school ranking according to the tests. Expressed in a simple ratio, the improvement would be as follows; 1, 1.8, 1.2, 1.7. It was pointed out that theoretically, from the increased teacher personnel standpoint, the ratio should be 1, 1.5, 2, 2.25. In the absence of any scientific information on this point, it is assumed that the accretion would not exceed fifty per cent. On this basis the facts would appear as shown in the following table.

TABLE XXV
INCREASED ACHIEVEMENT BY TEACHERS

	School			
	1	2	3	4
Actual Improvement	1	1.8	1.2	1.7
Obtained Improvement/ 1	1	1.3	1.5	1.6

/ Hypothetical and not strictly accurate.

Definite improvement is noted, but it is not exactly in proportion to the number of teachers employed. The two teacher schools exceed the other three, and the three-teacher schools again occupy the low place. Both the two and four-teacher schools exceeded the predicted gain as anticipated in the obtained improvement, while the three-teacher schools fall below. A more extensive investigation should throw some light on the unusual performance of the two and three teacher schools. In conclusion, the figures bear out the assumption that there is a definite relation between achievement and increase in teaching personnel, but the improved achievement is not transmitted to the pupils in precisely the same proportion to the number of added teachers.

Chapter III

CONCLUSIONS

An expression frequently heard is to the effect that a two-teacher school is twice as good as a one-teacher school; a three-teacher school is three times as good as a one-teacher school; and a four-teacher school is four times as good as a one-teacher school. It is not perfectly clear what is meant by the expression "good." Apparently no particular meaning is conveyed; the expression seems to be general, and the interpretation is left to the listener who interprets in the light of his own experience. And it is probable that these interpretations are in accordance with preconceived opinions growing out of certain satisfying individual experiences.

Certainly no school can be better than the other from the standpoint of the basic course of study. State law prescribes the number of subjects that shall be taught in each elementary school, and certain regulations place these subjects in the grades. Whatever the size of the school, these prescribed subjects must be taught if the provisions of the law are met, and it can be assumed that every teacher makes a conscientious effort to include all subjects in the daily program.

According to the present day philosophy of teaching, it cannot be assumed that the teaching outcomes in these four types of schools would be radically different. The teacher would not be concerned so much with teaching facts, but rather with interesting the pupils in how to

study.

Children are being taught how to make effective use of the tools of knowledge in the acquisition of useful information. The mastery of a body of factual information found in the textbook is not the chief goal. Children learn through practice how to get an item of factual information when the need for it arises. These schools are workshops where the pupils seek answers to vital problems in which they are interested, and because they are interested, the problems have meaning for them.

A teaching procedure that is concerned almost exclusively with having children master certain skills and memorize textbook information should not be given high rating on the instructional score card. 1

If this philosophy of teaching is accepted, it can be seen that the time element from the standpoint of class recitations per day is not necessarily a determining factor in teaching outcomes. To be sure, it is recognized that these teaching conditions are ideal and are dependent upon well trained teachers, a situation which cannot be assumed to exist in all small rural schools.

Again, it cannot be safely assumed that one school is better than the other if the welfare of the teacher is considered. After All, every teacher must devote approximately four and one-half hours of her time to some form of teaching. In any case the only essential difference would lie in the difference of time intervening between the beginning of successive classes. If the classes are many, the interval of time between successive classes is shortened; if the classes are few, the interval is lengthened. In all situations the day would be full,

1 Model and Accredited School Bulletin, 1938, p. 15.

and the teacher in one school should not work any harder than in another.

From the foregoing observations it might well be deduced that any variation in the amount of pupil achievement existing in different schools would be attributable to the skill and personality of the individual teacher. If this conclusion is accepted as correct, it could not be assumed that any one type of school has a monopoly on the best teachers. The law of averages would place as many good teachers in one type of school as another. These questions, then, naturally arise. Is there a difference in pupil achievement in the one, two, three, and four-teacher schools? If there is a difference in achievement, how much is the difference? It is the purpose of this study, as stated in the introduction, to seek an answer to those questions in pertinent data from these schools.

Norm scores derived from State Rural Accrediting Tests were secured from sixty-two one-teacher schools in which these tests were administered to 907 pupils. Similar norm scores were secured from 2231 pupils in 80 two-teacher schools; 2101 pupils in 47 three-teacher schools; and 1628 pupils in 24 four-teacher schools. These scores have been tabulated appropriately and each table has been analyzed completely to reveal any information bearing upon the questions at hand.

The Rural Accrediting Tests are designed for the third, fourth, fifth, sixth, seventh, and eighth grades. The scores for each of these grades in each of the four types of schools were tabulated on a frequency table to show pupil achievement in each grade. In the one and three teacher schools no grade varied very widely from the average; the seventh grade excelled in these schools. In the two and four-teacher schools the grades varied in achievement as much as 20%. In the former schools the first three grades excelled and in the latter the last three grades excelled. No dominant tendency to weakness or excellence in a particular grade was shown to exist throughout the four types of schools. The weak grades for each of the four types of schools were eighth, eighth, fifth, and fourth respectively; the grades that excelled were seven, three, seven, and five respectively. The per cent of pupils in each of the school classifications achieving equal to the state grade norm was one room, 33.4%; two room, 47.9%; three room, 31.3%; and four room, 49.4%. These percentages lead to the conclusion that, as respecting achievement within the grades, there is a definite increase in achievement in the one, two, and four-room school, but the three-room school fell behind the other three.

Because of the peculiar grade assignment in the one, two, three, and four-room schools; a comparison was made of the pupil achievement by teachers according to grades

taught. These facts are shown in Table XVII. Reference to this table reveals that there is a substantial increase in achievement per teacher as between the one and two-teacher schools. The conclusion to be reached from a study of this comparison would be that there is a definite relation between pupil achievement and an increased teaching personnel.

The two former comparisons were in terms of pupil performance. Certain tendencies were noticeable in both. The study was carried a step further in Table XXIV. Here the several schools in each classification were tabulated on a distribution table and studied as to achievement according to the state school norm. Those schools making an average score of thirty-six are entitled to Accredited School rating. A noticeable characteristic of the one and four-teacher schools is an inconsistency in achievement as revealed by the wide range, and a characteristic of the three-teacher schools, hitherto unrevealed, is their compactness in adhering to the average. The percent of the one, two, three, and four-teacher schools achieving Accredited School rating is 38.7%, 65% 46.8%, and 62.4% respectively. Here the improvement in efficiency is very apparent even though it does not occur in a mathematical ratio.

To summarize the findings relative to increased achievement, it will be recalled that in an analysis of achievement in the grades there was positive improvement

as between the one, two, and four-teacher schools, but such improvement was lacking in the three-teacher schools; in an analysis of achievement by teachers according to grades taught, progressive improvement was noticeable in the four types of schools; in an analysis of schools achieving accredited school rating, progress-improvement was very pronounced. Therefore, in the light of these findings it must be concluded that there is a difference in achievement in the one, two, three, and four-teacher schools, and the difference is positive and progressive.

It has been shown that achievement in the four schools under discussion is increased as the number of teachers is increased. The facts disclose that an increased efficiency accompanies the addition of each teacher; it is not known how much the efficiency is increased per teacher. In the absence of an exact scale for such measurements only an approximate ratio can be reached on this point.

For the purpose of comparisons in this study a scale for measuring this increased efficiency was devised. The results of these comparisons are shown in Table XXV. According to this scale the improvement in the two-teacher schools coincides very closely with the actual improvement as revealed in the previous discussions. Improvement in the three-teacher schools is below the anticipated improvement and that of the four-teacher schools exceeds slightly

the anticipated improvement. In conclusion it may be stated that the amount of improvement approximates very closely the ratio of increased achievement to increased teaching personnel.

In the absence of factual evidence it might be supposed that there should be an increase in pupil achievement as the number of teachers employed in the first eight grades is increased. However, from the hypothesis previously advanced in this chapter, it does not follow, necessarily, that such improvement should be evidenced. Despite this hypothesis, the evidence deduced from this study shows that throughout the one, two, three, and four-teacher schools there is an increase in the number of pupils achieving and an increase in the quality of the achievement. Furthermore, the increase varies directly as the number of teachers.

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