

EFFECTIVENESS OF ACTIVITY
UNITS VERSUS BASIC TEXT INSTRUCTION

by

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INTRODUCTION

Early in the thirties Kansas entered upon the unit plan of teaching the social studies in the elementary grades of the public schools. It was not started as a compulsory plan, but each county was free either to adopt the new plan or to follow the basic text plan as previously taught.

The unit plan as referred to here is that method of assembling an organized body of information and experiences designed to effect significant outcomes for the learner by his having had a part in assembling and organizing the information.

The basic text plan, on the other hand, is that teaching procedure wherein the mastery of information is the main objective, and the source of information is a book.

Within the next few years most of the county school systems of Kansas had adopted the unit system and were teaching the social studies by the new method. For several years most of the elementary schools were ill equipped with library facilities and other equipment to follow properly such a teaching method. The teachers of the state were poorly prepared, as most of them had received little or no training in teaching by any method other than the basic text plan.

By the middle forties practically all of the elementary teachers of the state had received training in teaching by the unit plan, and the libraries of the elementary schools had accumulated suitable types of reference books, maps, charts, globes, and other material for teaching the unit plan. Some schools were not

equipped with sufficient material, but with few exceptions what material had been provided was chosen as suitable for teaching by the unit plan. Also by that time all of the counties in Kansas, with the exception of Washington County, had adopted the unit plan of teaching in the elementary schools.

In an effort to assist the teachers in the new method of teaching, the state department of education set up a series of organized units as a course of study for the various grades, and each teacher in the county organizations was provided a copy.

Since its first adoption there had been much controversy as to the quality of teaching done by the new plan and as to the advisability of using it as a method of teaching. Therefore, it seemed that a comparison of the results of these two methods might prove to be an interesting and worthwhile study.

As Washington was the only county still using the basic text plan, its schools were chosen to be compared with the schools of its neighbor, Marshall County, which was using the unit plan. These two counties were similar in number and types of people and rural background and seemed, therefore, to be the best available for a testing program. An attempt was made to determine whether or not there was any pronounced difference in the results of teaching by the two methods. Since the data were at hand for the city schools of Washington County, it also appeared worth while to include a comparison of their results, where teachers and equipment were better than in the rural schools.

The tests secured for this purpose had been given in both counties to the seventh- and eighth-grade pupils in the spring of

1945, which was the second year that the state of Kansas had provided standardized tests for the elementary schools. The tests referred to were the Stanford Achievement Tests used in a state-wide testing program arranged by the state department of education. Form H was given to the rural schools of the state and Form F was given to the city schools. Equated scores were furnished with the tests so their scores are of equal value. These tests were objective measurements in subject matter fields. While other types of tests undoubtedly would have added much to this study, at the time it was planned they were no longer possible. After the tests had been given they were scored and placed on file in the office of the county superintendent of each county. These were the tests secured from the county superintendents of Washington and Marshall Counties in order to compare the effects of the unit plan of teaching as used in Marshall County with the basic text plan of teaching as used in Washington County. The county superintendent of each county stated that the name of the tests given was not announced until the time of the examinations, and hence the examinations were a fair test of the ability of each pupil. It was also learned from the state department of education that the testing program for 1945 was considered to have been successful.

As the three or more teacher schools of Marshall County conducted their own examinations and advanced their own pupils, only the tests from the one- and two-teacher schools were available from the county superintendent of that county. All of the schools of Washington County had taken the examinations under the county plan

and these tests were obtained from the county superintendent. This made it possible to compare the unit plan of the one- and two-teacher schools of Marshall County with the basic text plan of the one- and two-teacher schools of Washington County. It was also possible to compare the city schools of Washington County with the rural schools of each of the two counties, so as to make evident any improved results because of better teachers and equipment in the city schools and to secure further evidence on the still-debated question as to which, the city or the rural schools, get the better results. By uniting the scores of the city and the rural schools of Washington County, it was possible to compare the rural schools of Marshall County with the schools of Washington County as a whole.

In the spring of 1945 when these tests were given, there were 126 eighth-grade pupils in the rural schools of Marshall County and 126 eighth-grade pupils in the rural schools of Washington County. That spring there were 127 seventh-grade pupils in the rural schools of Marshall County and 128 seventh-grade pupils in the rural schools of Washington County. Since the rural schools of Washington and Marshall Counties are nearly identical in the number of pupils and the type of schools, this should add to the validity of the study.

Data also were collected as to the certification and experience of the teachers who were teaching in Marshall and Washington Counties in the school year of 1944-1945, in order to compare the quality of teachers in the two counties. The results of this study are discussed later.

REVIEW OF LITERATURE

The unit plan, as adopted by the state of Kansas, was sponsored by Mies May Hare, the Elementary School Supervisor of the state at that time. The adoption of the system by Kansas was only following the lead of many of the other states in the union.

This plan is not a new idea. Wesley (14, p. 471) stated:

The modern origin of the unit idea may be found in the writings of Herbert, who formulated his method early in the nineteenth century. According to his plan the five steps were (1) Preparation, (2) Presentation, (3) Comparison, (4) Generalization, and (5) Application. Steps 1, 2, and 3 lead up to a general principle, which the pupil is expected to recognize and state. The recognition constitutes the fourth step. The fifth step is an instance of the direct application of the principle. Thus the whole series consists of an inductive-deductive process.

Also according to Wesley (14, p. 468) "the unit method has become the most popular form of organization in the social studies and the various ways of teaching it may be designated collectively as the unit method." He defined the unit as "an organized body of information and experiences designed to effect significant outcome for the learner" (14, p. 469).

The unit method, often referred to as the progressive method or the democratic process, also includes "fusion courses, broad fields, cultural-epochs, career-centered courses, core curriculum - all are designed to meet the youth's needs more directly" (1, p. 37).

Herbart's theory was revived late in the nineteenth century. Between that time and 1926, when Morrison's book appeared, a number of modifications had been made by Herbart's successors. Wesley (14, p. 471) further stated:

Charles A. McMurray stressed the desirability of the progressive step-by-step development of large topics. John Dewey stressed the successive steps in problem solving. W. H. Kilpatrick and others stressed the project. And lastly in 1926 Morison announced his five steps, namely (1) Exploration, (2) Presentation, (3) Assimilation, (4) Organization, and (5) Reiteration.

The unit plan is still in the process of evolution and development. It has not reached that stage of development where it is widely practiced effectively. According to a statement by Youch (18, p. 65):

It all boils down to one point. It is much too early to evaluate the results of the change which have taken place in education in the past twenty years. In the first place not even the wildest enthusiast for Progressive Education claims that more than three per cent of the nation's schools practice it effectively. In the second place, even those schools, that have made rapid progress in developing an educational program which truly meets the need of children, have no more than scratched the surface of the most complex problem in human society - adequate guidance of children.

An experiment in progressive education, known as the Eight-Year Study, was started in 1933, in 30 schools widely scattered over the United States. The schools were chosen as representative of a cross section of the schools of America. The experiment was carried on under the leadership of excellent teachers, with the understanding that the schools were to have complete freedom in planning the program. A group of colleges agreed to cooperate in accepting the graduates of these schools on an equal basis with students from the traditional schools. The study was made for high school graduates of 1937. After three years in experimental schools the graduates then in college were compared with the graduates of the nonexperimental schools, who were also enrolled in college. The

students from both types of schools were matched as exactly as possible in terms of age, sex, race, aptitudes, interests, size and type of home, community and family background.

In the study which followed three kinds of conclusions were drawn (1, p. 117):

First, the graduates of the Thirty Schools were not handicapped in their college work.

Second, departures from the prescribed pattern of subjects and units did not lessen the student's readiness for the responsibilities of college.

Third, students from the participating schools which made most fundamental curriculum revision achieved in college distinctly higher standing than that of students of equal ability with whom they were compared.

Wesley (14, p. 478) believed that the unit method was the best method of teaching the social studies; however, he admitted that there were almost as many disadvantages to it as advantages. He also listed more advantages to the textbook method than against it. Nevertheless he thought that the unit plan as a whole overbalanced the textbook method.

In contrast to Wesley's arguments for the unit method, Braed (4, p. 111) criticized it as being "radical and revolutionary," as "bartering liberty for equality." He thought the plan to be "not sanely experimental but rashly speculative." He also branded it as being socialistic instead of democratic.

Davis (6, p. 449), in a survey on the Major Teaching Problem, found that over a thousand teachers in Colorado thought that the newer education was cheapening the general quality of the education process, that education was being made too easy, that pupils were

not receiving enough discipline in the school and in the home, and that the schools were spending "too much time in trying to educate the whole child, mentally, physically, socially, and emotionally."

Reeder (10, p. 66) listed five criticisms to progressive education, summarized as follows:

(1) Children need to be disciplined.

(2) If allowed too much freedom in choice of subjects they neglect to take some courses which they should take and therefore lack a well-rounded education.

(3) Progressive educational techniques in lower grades conflict with the more formal techniques of high school and college. The elementary system lacks "exact objective measurements of the child's progress or retrogression." He contended: "True progressive education can be justified only in terms of its actual results. Does it enable the student to progress and gain his full intellectual stature?"

(4) Too many students are "without adequate mastery of the basic Three R's of Education."

(5) He would have us disregard old worn-out methods and the "loose methods" of teaching, but preserve the best of the old.

Reeder's general criticism of progressive education was its lack of philosophy (10, p. 461).

Lynch (9, p. 610), in a reply to Reeder, stated that "we really do not have a philosophy of progressive education but rather the philosophies of progressive education." He stated that there is no one philosophy of progressive education but a number of them, each claiming to be progressive. He believed that philosophy and method

cannot be separated, for when one starts using a method of teaching, a philosophy is either stated or implied. Lynch maintained that the important thing was the school's "basic conception of the individual and of learning", and that it was the school's philosophy that really counts.

According to Rugg (15, p. 267) the purpose of the school and education is "to produce a society of men and women each of whom is developed to his very highest potential stature."

There has been much discussion as to the qualifications of the teachers who are trying to teach progressively. Broady (5, p. 27), of the University of Nebraska Teachers College, stated that there was no shortage of good teachers. He maintained that there was a good supply available but that there should be more time per pupil and that this could be accomplished by combining classes, merging subjects, and alternating subjects. His opinion, as to the supply of teachers, was expressed before the war. With many teachers and potential teachers going into other lines of work during the war, surely there would be a need for even more time per pupil because of the shortage of teachers which has since developed.

Gwynn (8, p. 252), associate professor of education in the University of Nebraska, thought that there was definite need of revision of the school curriculum, which could be improved in five ways. A summary of these suggested improvements follows:

- (1) by improving the textbooks.
- (2) by revising the curriculum based on subject matter.
- (3) by adopting the activity or fusion approach.
- (4) by using center of interest plan.

(5) by using the experience curriculum approach.

In this same discussion Gwynn suggested testing for evaluation of curriculum development and attitude and interests. Some of the tests suggested for evaluation were New Stanford Achievement Tests, Metropolitan Achievement Tests, and the Iowa Every Pupil Tests. For attitude and interests tests he suggested:

- (1) Brainard and Steward: Specific Interest Inventory.
- (2) Teachers College Columbia University's Tests of Critical Thinking in the Social Studies.

(3) Haggerty-Olson-Wickman: Behavior Rating Scales.

(4) California Tests of Personality.

Progressive teaching is most highly concentrated on the unit plan in the social studies. According to Bining and Bining (3, p. 76), there is no best method of teaching the social studies. Their theory was that the successful teacher "discriminately uses the various methods to suit his aims and needs." In their opinion the "learn by doing" method is carried to extremes.

Fanelor and Crawford (7, p. 119), in a discussion on teaching the social studies, quoted a 1929 issue of the High School Journal, where, in a discussion of the "Morrison Mastery Technique", four difficulties were pointed out in the teaching of history by the unit plan. A summary of these difficulties is as follows:

- (1) Teachers do not understand the mastery idea.
- (2) Pupils are not accustomed to the necessary study habits for such a plan.
- (3) Many schools lack library facilities and equipment.
- (4) Administrative problems such as length of periods, organi-

nation of library, and teaching load should be adjusted.

Ruediger, Professor Emeritus of Education of George Washington University (12, p. 117), thought that if teachers did not go to the extreme in either the "progressive or the essentialist" method of teaching there would be no argument. He thought that good teachers usually found the good median. He believed it inadvisable to do away with the extreme progressives, as they carry on social experiments and might find something later which will be definitely good and worthy of adoption.

Bagley (2, p. 325), editor of School and Society, quoted the belief expressed by the First Forum held on October 11, 1945, and which was attended by 100 public school executives of New York City and neighboring communities and sponsored by the Teachers College of Columbia University. The belief expressed was as follows:

Progressive education has not clearly defined its aims, and the lack of clarity has confused parents and others interested in the work of the schools, and has given some effective ammunition to those who wish to curtail educational expenditures.

In contrast to this belief expressed by the First Forum, Bagley stated that in his opinion the progressives have definite aims, "clear cut and relatively unequivocal" and have "exerted, at times, a most helpful and wholesome influence upon educational practices." He also indicated that education should seek the median and not hit the extreme in either traditional or progressive education.

RESULTS OF TESTING PROGRAM

Eighth Grade

In order to make comparisons the tests were arranged according to grade. Within each grade the rural schools were ranked separately and the city schools of Washington County were ranked by themselves.

The examination scores of each group were separated into 12 divisions as follows: total average of all scores, paragraph meaning, word meaning, average reading, language usage, arithmetic reasoning, arithmetic computation, average arithmetic, literature, social studies, elementary science, and spelling. Frequency distributions based upon equated scores were included in Tables 1 to 4. Also included in the tables were the grade equivalents, the median, and the mean of each of the 12 divisions, and the standard deviation of each total average.

The standard deviations were found to be almost identical in the rural schools of the two counties. This would indicate that they are practically alike in the rather wide dispersion noted in detail later.

If one considers the median scores of the two rural groups of the eighth grade, one will find that the scores made by the pupils taught by the unit plan of Marshall County were in each division higher than the scores made by the pupils of Washington County, Tables 1, 2; Figs. 1, 2. The difference of the median scores of the total averages was 3.5. The smallest difference in medians was in word meaning where a difference of one in score was shown. Among

Table 1. Marshall county eighth grade analysis chart.

Grade equiv.	Equated score	Total av.	Per-meaning	Word meaning	Av. reading	Lang. usage	Arith. reas.	Arith. comp.	Av. arith.	Literature	Social st.	Elem. sci.	Spelling
103													
102													
101						1	1						
100							1			1			
99													
98						1	5		1				
97						1		1	1	2			
96							3	2	2	1	1		
94						1	2	2	2	4	4		
93						1	5	2	2	3	1		
92						2	2	2	2	3	1		7
91		1				3	1	4	3	3			
90				1		2	3	1	2	3	1	1	
89			2			2	3	1	5	1	2	1	3
88		2				1	5	5	4	1	2		
87		1			3	3	5	3	5	1	1	4	
86		1	2	1		1	3	1	1	1		4	5
85		4	2		2	6	7	4	4		1	2	
84		5	4	5	2		5	3	6	7	5	1	9
83		2	3	2	1	3	6	6	4	6	4	1	
82		2		1	2		6	5	6	2	5	5	6
81		3	1	1	2	2	3	4	4	4	2	3	
80		2	5	3	3	4	4	3	4	2	3	7	4
79		7	10	2	4		1	3	1	2	2	4	1
11.0	78	2	5	3	4	5	3	4	5	2	1	4	2
10.9	77	6		3	4	2		4	4	3	3	7	
10.6	76	3	3		3	1	7	6	4	1	6	1	10
10.3	75	4	1	1	4		4	2	5	8	1	8	6
10.0	74	3	5	3	6	5		6	5	2	2	1	3
9.8	73	5	7	6	4		3	3	2		5	3	4
9.5	72	4	2	6	4	2		3	3	3	2	7	3
9.3	71	2	4	3	6	5	5	2	4		4		2
9.0	70	3	4	3	7	1	4	4	1	7	3	2	5
8.8	69	3	7	4	5	2		2	4		4	3	9
8.5	68	7	5	7	8	5	4	4	1	3	6	5	1
8.3	67	7	4	9	5	4	5	2	4		3	1	5
8.1	66	7	5	5	5	2	5	3	5	1	1	4	4
7.8	65	3	2	2	4	3	1	7	1	8	4	3	1
7.6	64	4	6	5	2	3		3	3		4	5	2
7.4	63	3	6	2	6	2	6	4	4	3	3	5	6
7.2	62	2	5	12	3	2	2		2	1	5	3	1
7.0	61	3	1	4	5	7		1	1		5	1	5

Table 2. Eighth grade analysis chart for rural schools of Washington county.

Grade equiv.	Equivalent score	Total av.	Par. meaning	Word meaning	Av. reading	Lang. usage	Arith. reas.	Arith. comp.	Av. arith.	Literature	Social st.	Elem. sci.	Spelling
	103												
	102												
	101												
	100						2						
	99												
	98								1				
	97												
	96									1			1
	95						1	1	1				
	94						1	1		1			
	93						4	1	2			1	
	92						2	2	1	1			
	91		1				1	3	2	2	1		3
	90							3	3	3			
	89				1			4	2	2	1		3
	88		1				2	6	2	1			3
	87		2				3	1	6	4	1		
	86	4		2				2	2	2			4
	85			1	2			1	6	7	2		1
	84	1	2	4	4	1		4	2	2	4		7
	83	2	4	3	1	3		4	2	2	1		
	82	1		1		1		7	2	1	3		2
	81	2	1		2	3		5	4	4	3		
	80	2			2	3		4	12	3	3		3
	79	2	6	2		3		2	2	4	1		
11.0	78	3	4			4		2	5	5	2		5
10.9	77	2		3	1	1		4	5	6	1		4
10.6	76	9	6		5	1	6	3	3	3	4		4
10.3	75	1	1	4	3	1	5	3	3	4	4		3
10.0	74	8	3		2	2		5	4	1	4		4
9.8	73	3	5	3	6	1	3	6	6	4	9	3	2
9.5	72	5	2	4	8	3		5	4	4	1	7	4
9.3	71	5	2	4	3	3	11	6	3	4	5	1	2
9.0	70	3	2	3	2	2		4	2	4		4	2
8.8	69	5	6	3	3	3		4	3		3	5	10
8.5	68	5	9	11	7	2	4	1	7	2	5	6	2
8.3	67	4	9	10	7	1	3	3	10		2		4
8.1	66	1	3	5	6	7	9	4	2	2		7	5

Table 3. Eighth grade analysis chart for city schools of Washington county.

Grade equiv.	Equated score	Total av.	Par. meaning	Word meaning	Av. reading	Lang. usage	Arith. reas.	Arith. comp.	Av. arith.	Literature	Social st.	Elem. sci.	Spelling
	103												
	102					1							
	101						2						
	100												
	99												
	98						1		1				
	97					1	3		1				
	96					3							8
	95							1	2				
	94						3		1				
	93						1		3	1			
	92						4		2	4			7
	91	1	1	1		2			1		1		
	90	1	1		1				1	2			
	89		2	1	2		3		2	1	1	1	3
	88			1	1	2			2	1			
	87		2	1	1				3	3		2	
	86	3			1		3		1	3	2	1	
	85	2	1	4	1	2	3		4	2	3	3	3
	84	1			2		5		1	3	2	4	
	83	2	4	1	3	4			2	4	3	1	
	82	1		1	1	2	5		7	4	1	5	7
	81	3	5		2	1	3		5	3	3	1	
	80	5			2	1	2		7	4	2		4
	79	2	3		1	1	2		2		2	6	1
11.0	78	4	3	7	3	1	3		3	2	2	5	3
10.9	77	2		2	3	1	1		3		3	1	1
10.6	76	2	3	1	1	1	1		2			6	4
10.3	75	4		2	2		2		2		1	1	2
10.0	74		3	1	1	2			3	2	4	1	
9.8	73	2		2	1	1	5		5		1	2	1
9.5	72	2	3	1	4	1	1		3	7	1	5	2
9.3	71	4	7	2	1	5	5		3		2	2	2
9.0	70	9	6	1	5		2		1	1	3	1	5
8.8	69	4	4	3	3	2			1		1	6	4
8.5	68	5	3	5	6	1	2		3	7	3	2	5
8.3	67	1	6	3	4	2	6	1	1		3		
8.1	66	1	3	3	5	7	1	1		4	3	5	7

Table 4. Eighth grade analysis chart for all schools of Washington county.

Grade equiv.	Equated score	Total Av.	Par. meaning	Word meaning	Av. reading	Lang. usage	Arith. reas.	Arith. comp.	Av. arith.	Literature	Social st.	Elem. sci.	Spelling
103													
102						1							
101							2						
100							2						
99													
98							1		2				
97						1	3		1				
96						3				1			9
95							1	3	3				
94							4		1	1			
93							5	4	5	1		1	
92							4	3	1	5			10
91	1	2		1		2	1	5	3	2	1		
90	1				1	1	1	3	4	2	1		
89			2	1	2	1	6	6	2	2	2	1	3
88	1		1					7	4	2	1		6
87	1	4		1	1	4	8	2	9	4	1	2	
86	7			3	1		4	3	5	7	2	1	4
85	2	1	5	5	3	2	9	4	9	5	5	3	4
84	2	2	4	4	6	1	9	3	5	4	5	4	7
83	4	8		4	4	7	2	6	6	3	5	2	
82	2		2		1	3	12	10	8	7	2	11	9
81	5	6			4	4	8	5	6	4	6	2	
80	7		1		4	4	6	19	7		5	4	7
79	4	9	2		1	1	4	4	4	6	3	15	1
78	7	7	7	7	3	5	5	8	7	7	3	8	8
77	4			5	4			7	9		4	7	5
76	11	9	1	6	2	2	7	6	5	2	4	9	8
75	0	1	8	3	1	1	7	5	4	4	4	7	3
74	8	6	1	1	5	4		8	9	3	8	2	6
73	5	5	5	5	7	2	8	9	11		10	5	3
72	7	5	5	5	12	4		9	7	11	2	12	6
71	9	6	6	4	4	13	16	8	6		7	1	4
70	12	8	4	7	2	6	6	6	3	5	3	5	7
69	9	9	7	6	5		4	4	4		4	11	14
68	10	12	16	13	13	3	6	1	10	9	8	8	7
67	5	14	13	11	3	9	4	11			6		4
66	2	6	8	11	14	10	5	2	6	4	12	12	

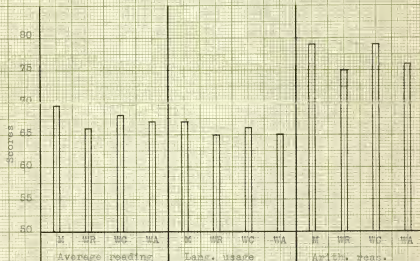
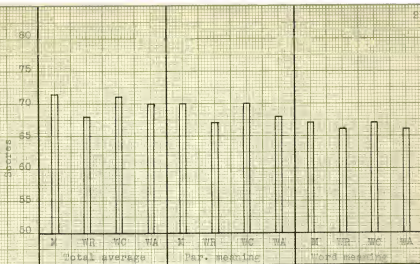


Fig. 1. Median scores for Marshall and Washington counties, eighth grades.

M = Marshall county rural schools
 WR = Washington county rural schools
 WC = Washington county city schools
 WA = Washington county all schools

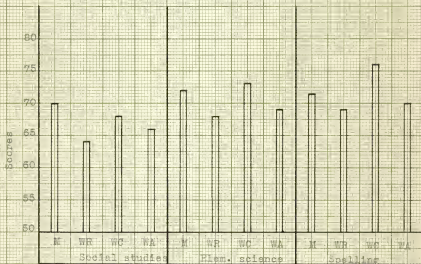
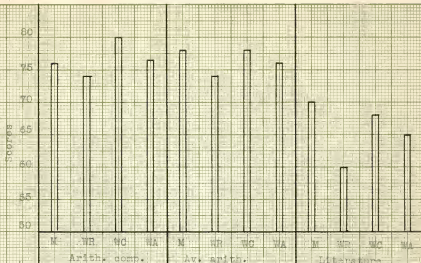


Fig. 2. Median scores for Marshall and Washington counties, eighth grades.

M = Marshall county rural schools
 WR = Washington county rural schools
 WC = Washington county city schools
 WA = Washington county all schools

Table 5. Per cent ranking of eighth grade of Marshall County Rural Schools (133 pupils).

Grade and rank	Total : av.	Par. : mean.	Word. : mean.	Av. : read.	Lang. : usage.	Arith. : reas.	Arith. : comp.	Av. : arith.	Lit. : st.	Social : Elem.	Spelling : sci.
11 & above	30.2	27.0	19.8	18.3	22.4	54.8	46.0	50.8	32.5	31.0	29.4
10 & above	42.9	38.1	25.4	31.7	35.7	63.5	60.3	65.1	43.7	40.5	44.4
9 & above	54.0	51.5	39.7	50.0	42.1	73.0	69.8	73.0	51.6	51.6	55.6
8.0 - 8.9	19.0	16.7	19.8	18.3	10.3	11.1	8.7	11.1	3.2	11.1	10.3
7.0 - 7.9	11.9	15.9	19.8	15.9	15.5	7.1	11.9	8.7	9.5	15.7	11.9
6.0 - 6.9	7.9	7.9	16.7	9.5	15.1	7.1	5.6	3.2	19.0	7.1	12.7
5.0 - 5.9	5.6	7.1	4.0	6.3	11.9	1.6	3.2	3.2	10.3	10.3	7.9
4.0 - 4.9	1.6	0.7	-	-	7.1	-	0.7	0.7	6.3	3.2	3.2
3.0 - 3.9	-	-	-	-	-	-	-	-	-	-	-

Table 6. Per cent ranking of eighth grade of Washington County Rural Schools (125 pupils).

Grade and rank	Total : av.	Par. : mean.	Words : av.	Lang. : usage.	Arith. : reas.	Arith. : comp.	Av. : arith.	Lit. : st.	Social : Elem.	Spelling		
11 & above	15.2	16.8	11.2	9.5	20.8	42.4	40.0	40.0	24.8	16.0	20.0	25.6
10 & above	31.2	24.8	16.8	18.4	24.8	51.2	52.0	52.8	30.4	25.6	31.2	37.6
9 & above	44.0	33.6	28.0	33.5	36.0	66.6	68.8	64.8	36.8	37.6	43.2	45.8
8.0 - 8.9	12.0	20.0	23.2	18.4	10.4	12.8	9.6	17.6	3.2	8.8	14.4	16.8
7.0 - 7.9	19.2	18.4	22.4	22.4	13.6	12.0	12.0	9.6	9.6	19.2	20.8	18.4
6.0 - 6.9	14.4	8.8	15.2	16.0	16.0	6.4	4.0	4.8	16.0	14.4	12.0	7.2
5.0 - 5.9	8.8	15.2	11.2	12.0	18.4	3.2	5.6	3.2	18.4	14.4	7.2	8.0
4.0 - 4.9	1.6	4.0	-	0.8	5.6	-	-	-	10.4	5.6	2.4	4.0
3.0 - 3.9	-	-	-	-	-	-	-	-	5.6	-	-	-

Table 7. Per cent ranking of eighth grade of Washington County City Schools (81 pupils).

Grade and rank	Total : av.	Par. : mean.	Word. : mean.	Av. : read.	Lang. : usage.	Arith. : reas.	Arith. : comp.	Av. : arith.	Lit. : st.	Social : Elem.	Spell- ing
11 & above	30.9	27.2	22.3	24.8	25.9	54.3	56.8	51.9	37.0	28.4	35.8
10 & above	40.7	34.6	29.6	33.3	30.9	56.0	70.4	65.4	39.5	38.3	49.4
9 & above	61.7	54.3	37.0	46.9	39.5	72.8	82.8	80.2	49.4	46.9	59.3
8.0 - 8.9	39.3	45.7	63.0	53.1	60.5	27.2	17.3	19.8	50.6	53.1	40.7
7.0 - 7.9	24.8	25.9	44.4	30.9	45.7	16.0	14.3	13.6	37.0	40.7	24.8
6.0 - 6.9	9.9	19.8	19.8	14.8	34.6	8.6	7.4	3.7	30.8	23.5	11.1
5.0 - 5.9	3.7	7.4	7.4	6.2	24.8	2.5	3.7	2.5	16.0	8.6	6.2
4.0 - 4.9	-	2.5	-	-	6.2	-	-	-	4.9	1.2	1.2
3.0 - 3.9	-	-	-	-	-	-	-	-	-	-	-

Table 8. Per cent ranking of eighth grade of Washington County All Schools (206 pupils).

Grade and rank	Total : : av. :	Par. : : mean. :	ord. : : mean. :	Lang. : : read. :	Arith. : : reas. :	Comp. : : arith. :	Av. : : arith. :	Lit. : : st. :	Social : : Elem. :	Spelling : : sci. :		
11 & above	21.4	20.9	15.5	15.5	22.8	47.1	46.8	44.7	29.6	20.9	26.2	33.0
10 & above	35.0	28.6	21.8	24.3	27.2	53.9	59.8	57.8	34.0	30.6	38.3	43.7
9 & above	51.0	41.7	31.6	39.9	37.4	68.4	74.3	70.9	41.7	41.2	49.5	53.4
8.0 - 8.9	12.6	19.9	21.4	19.9	12.1	12.1	6.8	13.1	7.3	10.2	15.0	18.0
7.0 - 7.9	17.5	13.6	23.3	19.0	12.6	10.2	10.2	9.7	8.3	12.4	18.0	0.3
6.0 - 6.9	11.2	10.2	14.1	13.1	13.6	6.3	3.9	3.4	15.5	14.6	9.2	6.8
5.0 - 5.9	6.9	12.2	9.7	9.7	10.4	2.9	4.9	2.9	16.5	11.7	6.3	6.3
4.0 - 4.9	1.0	3.4	-	0.5	5.8	-	-	-	0.3	3.9	1.9	2.4
3.0 - 3.9	-	-	-	-	-	-	-	-	3.4	-	-	-

Table 9. Comparison of percentages of eighth grade pupils in higher and lower grade placements.

Schools:	av.:	mean:	read.:	usare:	rears:comp.:	ariths:	lit.:	st.:	sol.:	ing
type of total:	par.:	top.:	av.:	lang.:	fig.:	av.:	iv.:	iv.:	iv.:	iv.:
Per cent of pupils ranking two grades or more above their grade placement										
M	30.2	27.0	19.8	18.3	29.4	54.8	46.0	50.8	32.5	31.0 29.4 29.4
WR	15.2	16.8	11.2	9.6	20.9	42.4	40.0	40.0	24.8	16.0 20.0 25.6
WC	30.9	27.2	22.3	24.8	25.9	54.3	56.8	51.9	37.0	28.4 35.8 44.4
WA	21.4	20.8	15.5	15.5	22.8	47.1	46.6	44.7	29.6	20.9 26.2 33.0
Per cent of pupils ranking two grades or more below their grade placement										
M	15.1	15.7	20.7	15.8	34.1	8.7	9.5	7.1	35.6	20.6 33.8 17.4
WR	24.8	28.0	26.4	28.8	40.0	9.6	9.6	8.0	50.4	34.4 21.6 19.2
WC	15.6	29.7	27.2	21.0	65.6	11.1	11.1	6.2	51.7	33.3 15.5 13.6
WA	19.0	25.3	23.9	23.3	37.8	9.2	8.8	6.3	42.7	30.2 17.4 15.5
Per cent of pupils ranking two or more grades outside their grade placement										
M	45.3	42.7	40.5	34.1	63.5	63.5	55.5	57.9	68.1	51.6 63.2 46.8
WR	40.0	44.9	37.6	38.4	60.8	52.0	49.6	49.0	75.2	50.4 41.6 44.6
WC	44.5	56.9	49.5	45.8	91.5	65.4	67.9	59.1	88.7	61.7 54.3 58.0
WA	40.4	46.7	39.5	38.8	60.6	56.3	55.4	51.0	72.3	51.1 43.6 48.5

* M = Marshall County Rural Schools
 WR = Washington County Rural Schools
 WC = Washington County City Schools
 WA = Washington County All Schools

special subjects the greatest difference in median scores was a difference of 10 in literature. The second high was a difference of six in social studies, where the major stress was placed on teaching by the unit plan.

Since these tests were given at the close of the school year as a basis for promotion, one might expect the eighth-grade pupils to rank in the ninth grade or above. Tables 1, 2, 5, and 6 show that 54 per cent, or 65 pupils, of the 126 rural pupils of Marshall County ranked ninth grade or better. In the corresponding group of Washington County, 44 per cent, or 55 pupils, of the 125, ranked ninth grade or better. Of the rural schools in Marshall County all of the pupils but one were promoted. In the Washington County rural schools 17 pupils who took the examinations failed to graduate.

A glance at Table 9 will readily show a large percentage of the pupils of the various types of schools to be scored two or more grades above and below their grade placement.

It is interesting to note that in Marshall County's eighth grades 30.2 per cent of the pupils ranked two or more grades above the ninth grade, and 15.1 per cent of the pupils ranked two or more grades below the ninth grade. This makes a total of 45.3 per cent of the pupils as indicated by the test ranking two or more grades outside their grade placement.

The Washington County rural schools placed 15.2 per cent of their eighth-grade pupils two or more grades above ninth grade. This is only one-half as large as the percentage in Marshall County. Washington County rural schools had 24.5 per cent of their

eighth grade ranking two or more grade levels below their grade placement, as compared with 15.1 per cent for Marshall County. Both cases indicate superior work in Marshall County.

The total per cent of the pupils in Washington County varying from standard by two grade levels or more was 40.0. This was 5.3 less than shown by Marshall County. While Marshall County had more students varying from standard by two grade levels or more, this came about because it had two times as many exceptional students. The city schools of Washington County showed a trend almost identical to the rural schools of Marshall County. Of the pupils varying from standard by two or more grade levels the major part was in the upper group. The percentage shown in Table 9 was 30.9 per cent in the upper level and 13.6 per cent in the lower level, making a total of 44.5 per cent varying from standard by two or more grade levels. This would indicate more efficient teaching in Marshall County and in the city schools of Washington County. This is possibly due to the effectiveness of the unit plan in Marshall County and to the quality of teachers and equipment in the city schools of Washington County.

Of the 24.8 per cent of the pupils in the Washington County rural schools ranking two or more grade levels below ninth grade, the 19 failures would account for 15.6 per cent. The one failure in the Marshall County rural schools would account for .8 per cent of their 15.1 per cent ranking two or more grade levels below ninth grade. This would mean that 11.2 per cent of Washington County and 14.3 per cent of Marshall County eighth-grade rural school pupils were promoted into high school, even though they were

ranking below the seventh grade. The promoting of those ranking two or more grades below their grade placement and leaving the superior students two or more grade levels below their capabilities would indicate the possible need for revision of the promotion system.

Tables 3 and 7, and Figs. 1 and 2 show that the eighth-grade rural school pupils of Marshall County were approximately midway between the city schools of Washington County and the rural schools of Washington County. The same tables and figures, therefore, show about twice as much difference in the rural and city schools of Washington County as there was between the rural schools of Marshall County and either the rural or the city schools of its neighboring county. One would, therefore, expect the Marshall County schools to rank almost the same as the combined scores of all of the schools of Washington County. There is a striking similarity, but, although Washington County had almost three times as many rural-school pupils as city-school pupils, Marshall County pupils still scored one and a half points higher in total average. Scores on the other divisions show Marshall County pupils similarly ahead.

All else being equal, the rural schools of both counties should rank very nearly alike. According to the grade equivalents furnished with the tests, Tables 1 to 4, the difference of 10 in score, as shown between the median literature scores of the two rural groups, would show a difference of two and a half years in grade rank in favor of the unit plan. Grade differences in the other subjects tested, all of which favor Marshall County, are as follows: paragraph meaning, three-fourths of one school year; word meaning,

one-fourth of one school year; language usage, one-half of one school year; arithmetic reasoning, one school year; arithmetic computation, one-half of one school year; social studies, one and a half school years; elementary science, one school year; spelling, five-eighths of one school year; and total average, seven-eighths of one school year.

It should be noted that in the subjects of word meaning, arithmetic computation, and spelling, where drill work and memorization are common, the differences in grade rank are not so great. In the subjects of paragraph meaning, arithmetic reasoning, literature, social studies, and elementary science, all of which are likely to be affected by the wide reading and organization done under the unit plan, the spread is much more evident. One striking difference in the eighth-grade comparisons is that in total average almost twice as many Marshall County pupils ranked in the eleventh grade or above as did in the corresponding group in Washington County. The city schools of Washington County ranked only .7 per cent above rural Marshall County. One might easily conclude that the difference between the two eighth-grade rural groups is marked where reasoning and constructive thinking are involved and not so significant in courses involving memoriter processes for the most part. Having reached these conclusions, let us now turn to the seventh grade.

Seventh Grade

A comparison of the seventh-grade pupils of the two counties showed a different picture. The two rural groups were closely

matched in median scores, with Washington County slightly out in front. In no subject did the median scores show a wide difference. The only subject showing a difference of more than one score was spelling where a difference of two, one-half of a grade difference, was found in favor of Marshall County. In no other subject did the medians show over one-fourth of a grade difference, Tables 10, 11, Figs. 3, 4.

As one might expect, the median scores made by the pupils of the city schools were higher than those made by either of the two rural groups, Tables 9, 10, 11. On the other hand, they showed no wide differences. The united median scores of the rural and city schools of Washington County ranked higher than those made by the rural schools of Marshall County. One striking observation was that the two rural groups had the same medians for social studies and for elementary science, the two subjects around which the unit plan has been formed in Kansas. Without considering outside influences, if the unit plan is much superior, one would expect it to be revealed in these two subjects in the seventh grade also.

As in the case of the eighth grade, these examinations were given to seventh-grade pupils at the close of the school year. Therefore, the pupils should rank eighth grade or better. Table 14 shows that in total average 40.9 per cent, or 52 pupils, of the 127 pupils in the rural schools of Marshall County ranked eighth grade or better. The corresponding group in Washington County shows, Table 15, that 43.0 per cent, or 55 pupils, of the 128 ranked eighth grade or better. Again the city schools outranked the two rural groups. Table 16 shows that 52.7 per cent, or 58 pu-

Table 11. Seventh grade analysis chart for rural schools of Washington county.

Grade equiv.	Equivalent score	Total av.	Par. meaning	Word meaning	Av. reading	Lang. usage	Arith. read.	Arith. comp.	Av. arith.	Literature	Social st.	Elem. sci.	Spelling
	103						1						
	102												
	101								1				
	100						1						
	99							1					
	98						1						
	97								1	1			
	96					3							
	95									1			
	94										1		
	93							1					
	92									4	1		3
	91	1								1			
	90			1									
	89								1		1		
	88			1		1							5
	87	1			1		1			4		1	
	86						2						
	85		2			1	2				1	2	4
	84		3	1			2		3	3		1	
	83		1			2	4	4	2	3	1	1	
	82	1					4	2	4	1	2	3	5
	81		3	1	2	1	1	1	1	3	1	3	
	80	3	3		1	2	3	3	3		1	6	4
	79	1	1		1			2	2	3	1	3	
11.0	78	5	1	4	2	3	4	3	4	1	2	3	4
10.9	77	3		1				3	1	5	1	4	2
10.6	76	2	2	2	3	3	7	2	2		2		
10.3	75	2	2	1	2		7	3	3	6	1	1	2
10.0	74	1		2	7			1	4		1	2	3
9.8	73	1	4	1	2	5	6	3	6		5	1	1
9.5	72	1		4	2	2		8	8	2	4	3	
9.3	71	2	4	5	2	5	7	4	3				3
9.0	70	2	4	1	3		5	5	5	3	6		5
8.8	69	6	3	2	7			6	4			15	2
8.5	68	10	2	4	1	1	6	6	4	1	1	10	3
8.3	67	2	3	4	4	3	4	4	5		5	1	6
8.1	66	11	3	10	5		4	6	5		3	7	1
7.8	65	3	5	3	4	6		6	3	10	4	8	3
7.6	64	6	8	4	4	3	6	4	5		8		2
7.4	63	6	8	7	9	4	11	10	6	8	2	7	5
7.2	62	5	5	12	6	1	10	2	9	1	3	3	6
7.0	61	5	5	9	11	2		7	5		8	1	1

Table 12. Seventh grade analysis chart for city schools of Washington county.

Grade equiv.	Equated score	Total av.	Per. meaning	Word meaning	Av. reading	Lang. usage	Arith. reas.	Arith. comp.	Av. arith.	Literature	Social st.	Elem. sci.	Spelling
	103												
	102												
	101												
	100												
	99												
	98												
	97					1	1						
	96					1							
	95						1				1		
	94												
	93												
	92					1			1	3			8
	91						1	2	2				
	90	1				1							
	89	1				1			1		1		
	88							1		3	1		2
	87		1	1		2	4		1			2	
	86			2	2	1	1	2	1	3			
	85		2		1	1	1	3	1	2		2	
	84	1	1	1	1	1	2		3		1		
	83				1	1			1	6	1		
	82	1		1		1	2	3	1	4	1	1	3
	81	1	5			1	4	1			1	3	1
	80	2		1		1	3	2	3		1		
	79	2	2		4	2	3	2	4	3	5	6	5
	78	1	1	1		5	7	3	3	2		6	13
11.0	77			1		2		1	2			1	2
10.9	76	2	3	2	2		6	6	2	1	1	7	1
10.6	75	3		1	3		7	3	7		1	4	
10.3	74	3	4	2	5	2		7	5	6	5	2	3
10.0	73	4		1	2	1	1	3	6		3	2	3
9.8	72	5	4	3	1	4	2	2	5	4	1	14	
9.5	71	4	6	3	3	3	3	6	2		5	4	4
9.3	70	4	4	4	4	3	7	4	3	2	2	7	1
9.0	69	5	7	2	8	4		4	6		7	5	3
8.5	68	6	7	8	7		7	7	8	4	1	2	1
8.3	67	3	3	7	6	2	6	4	5		5		6
8.1	66	7	6	7	5	4	5	6	6	3	3	7	4

Table 13. Seventh grade analysis chart for all schools of Washington county.

Grade equiv.	Equated score	Total av.	Par. meaning	Word meaning	Av. reading	Lang. usage	Arith. reas.	Arith. comp.	Av. arith.	Literature	Social st.	Nat. sci.	Spelling
	103						1						
	102												
	101								1				
	100						1						
	99							1					
	98						1						
	97					1	1		1	1			
	96					4							
	95						1			2			
	94										1		
	93							1					
	92					1			1	7	1		11
	91	1					1	2	2	1			
	90	1		1									
	89	1				1			2		2		
	88			1		1		1		3	1		7
	87	1	1	1	1	2	5		1	4		3	
	86			2	2	1	3	2	1	3			
	85		4		1	1	3	3	1	2	1	4	4
	84	1	4	2	1	1	4	4	6	3	1	1	
	83		1		1	3	4	4	3	3	1	1	
	82	2		1		1	6	5	5	4	3	4	8
	81	1	6	1	2	2	5	2	1	3	2	3	1
	80	5	3	1	1	3	6	5	6	6	2	6	4
	79	3	3		5	2	3	4	6	6	6	9	5
11.0	78	6	2	5	2	3	11	6	7	3	2	8	17
10.9	77	3		2		2		4	3	3	1	3	4
10.8	76	4	5	4	5	3	13	8	4	1	3	7	1
10.7	75	7	2	2	5		14	6	10	6	2	5	2
10.6	74	4	4	4	10	4		8	9	6	6	4	6
9.5	73	5	4	2	4	6	7	6	12	5	8	3	4
9.4	72	6	4	7	3	6		10	13	12	5	17	
9.3	71	6	10	8	5	6	15	10	5		5	4	7
9.2	70	6	8	5	7	3	12	9	8	5	8	7	6
8.9	69	11	10	4	13	4		10	10		7	20	5
8.8	68	16	9	12	6	1	13	12	12	5	2	12	4
8.7	67	5	6	11	10	6	10	10	10		10	1	12
8.6	66	18	8	17	10	9	9	12	10	3	6	14	5

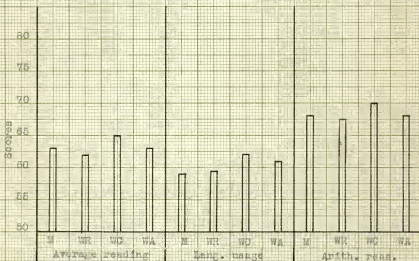
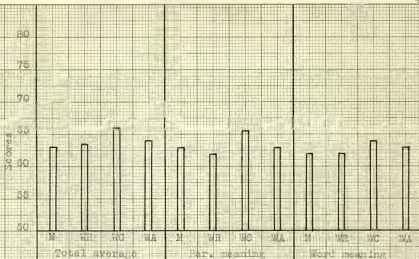


Fig. 3. Median scores for Marshall and Washington counties, seventh grades.

M = Marshall county rural schools
 WR = Washington county rural schools
 WC = Washington county city schools
 WA = Washington county all schools

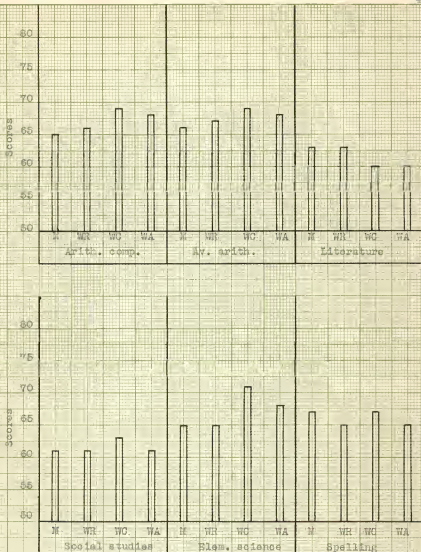


Fig. 4. Median scores for Marshall and Washington counties, seventh grades.

M = Marshall county rural schools
 WR = Washington county rural schools
 WC = Washington county city schools
 WA = Washington county all schools

Table 14. Per cent ranking of seventh Grade of Marshall County Rural Schools (127 pupils).

Grade and rank	Total : Par. : : av. : mean. :	5.0 : : 10.0 :	6.0 : : 15.0 :	7.0 : : 20.0 :	8.0 : : 25.0 :	9.0 : : 30.0 :	10.0 : : 35.0 :	11.0 : : 40.0 :	12.0 : : 45.0 :	13.0 : : 50.0 :	14.0 : : 55.0 :	15.0 : : 60.0 :	16.0 : : 65.0 :	17.0 : : 70.0 :	18.0 : : 75.0 :	19.0 : : 80.0 :	20.0 : : 85.0 :	21.0 : : 90.0 :	22.0 : : 95.0 :	23.0 : : 100.0 :	24.0 : : 105.0 :	25.0 : : 110.0 :	26.0 : : 115.0 :	27.0 : : 120.0 :	28.0 : : 125.0 :	29.0 : : 130.0 :	30.0 : : 135.0 :	31.0 : : 140.0 :	32.0 : : 145.0 :	33.0 : : 150.0 :	34.0 : : 155.0 :	35.0 : : 160.0 :	36.0 : : 165.0 :	37.0 : : 170.0 :	38.0 : : 175.0 :	39.0 : : 180.0 :	40.0 : : 185.0 :	41.0 : : 190.0 :	42.0 : : 195.0 :	43.0 : : 200.0 :	44.0 : : 205.0 :	45.0 : : 210.0 :	46.0 : : 215.0 :	47.0 : : 220.0 :	48.0 : : 225.0 :	49.0 : : 230.0 :	50.0 : : 235.0 :	51.0 : : 240.0 :	52.0 : : 245.0 :	53.0 : : 250.0 :	54.0 : : 255.0 :	55.0 : : 260.0 :	56.0 : : 265.0 :	57.0 : : 270.0 :	58.0 : : 275.0 :	59.0 : : 280.0 :	60.0 : : 285.0 :	61.0 : : 290.0 :	62.0 : : 295.0 :	63.0 : : 300.0 :	64.0 : : 305.0 :	65.0 : : 310.0 :	66.0 : : 315.0 :	67.0 : : 320.0 :	68.0 : : 325.0 :	69.0 : : 330.0 :	70.0 : : 335.0 :	71.0 : : 340.0 :	72.0 : : 345.0 :	73.0 : : 350.0 :	74.0 : : 355.0 :	75.0 : : 360.0 :	76.0 : : 365.0 :	77.0 : : 370.0 :	78.0 : : 375.0 :	79.0 : : 380.0 :	80.0 : : 385.0 :	81.0 : : 390.0 :	82.0 : : 395.0 :	83.0 : : 400.0 :	84.0 : : 405.0 :	85.0 : : 410.0 :	86.0 : : 415.0 :	87.0 : : 420.0 :	88.0 : : 425.0 :	89.0 : : 430.0 :	90.0 : : 435.0 :	91.0 : : 440.0 :	92.0 : : 445.0 :	93.0 : : 450.0 :	94.0 : : 455.0 :	95.0 : : 460.0 :	96.0 : : 465.0 :	97.0 : : 470.0 :	98.0 : : 475.0 :	99.0 : : 480.0 :	100.0 : : 485.0 :	101.0 : : 490.0 :	102.0 : : 495.0 :	103.0 : : 500.0 :	104.0 : : 505.0 :	105.0 : : 510.0 :	106.0 : : 515.0 :	107.0 : : 520.0 :	108.0 : : 525.0 :	109.0 : : 530.0 :	110.0 : : 535.0 :	111.0 : : 540.0 :	112.0 : : 545.0 :	113.0 : : 550.0 :	114.0 : : 555.0 :	115.0 : : 560.0 :	116.0 : : 565.0 :	117.0 : : 570.0 :	118.0 : : 575.0 :	119.0 : : 580.0 :	120.0 : : 585.0 :	121.0 : : 590.0 :	122.0 : : 595.0 :	123.0 : : 600.0 :	124.0 : : 605.0 :	125.0 : : 610.0 :	126.0 : : 615.0 :	127.0 : : 620.0 :	128.0 : : 625.0 :	129.0 : : 630.0 :	130.0 : : 635.0 :	131.0 : : 640.0 :	132.0 : : 645.0 :	133.0 : : 650.0 :	134.0 : : 655.0 :	135.0 : : 660.0 :	136.0 : : 665.0 :	137.0 : : 670.0 :	138.0 : : 675.0 :	139.0 : : 680.0 :	140.0 : : 685.0 :	141.0 : : 690.0 :	142.0 : : 695.0 :	143.0 : : 700.0 :	144.0 : : 705.0 :	145.0 : : 710.0 :	146.0 : : 715.0 :	147.0 : : 720.0 :	148.0 : : 725.0 :	149.0 : : 730.0 :	150.0 : : 735.0 :	151.0 : : 740.0 :	152.0 : : 745.0 :	153.0 : : 750.0 :	154.0 : : 755.0 :	155.0 : : 760.0 :	156.0 : : 765.0 :	157.0 : : 770.0 :	158.0 : : 775.0 :	159.0 : : 780.0 :	160.0 : : 785.0 :	161.0 : : 790.0 :	162.0 : : 795.0 :	163.0 : : 800.0 :	164.0 : : 805.0 :	165.0 : : 810.0 :	166.0 : : 815.0 :	167.0 : : 820.0 :	168.0 : : 825.0 :	169.0 : : 830.0 :	170.0 : : 835.0 :	171.0 : : 840.0 :	172.0 : : 845.0 :	173.0 : : 850.0 :	174.0 : : 855.0 :	175.0 : : 860.0 :	176.0 : : 865.0 :	177.0 : : 870.0 :	178.0 : : 875.0 :	179.0 : : 880.0 :	180.0 : : 885.0 :	181.0 : : 890.0 :	182.0 : : 895.0 :	183.0 : : 900.0 :	184.0 : : 905.0 :	185.0 : : 910.0 :	186.0 : : 915.0 :	187.0 : : 920.0 :	188.0 : : 925.0 :	189.0 : : 930.0 :	190.0 : : 935.0 :	191.0 : : 940.0 :	192.0 : : 945.0 :	193.0 : : 950.0 :	194.0 : : 955.0 :	195.0 : : 960.0 :	196.0 : : 965.0 :	197.0 : : 970.0 :	198.0 : : 975.0 :	199.0 : : 980.0 :	200.0 : : 985.0 :	201.0 : : 990.0 :	202.0 : : 995.0 :	203.0 : : 1000.0 :	204.0 : : 1005.0 :	205.0 : : 1010.0 :	206.0 : : 1015.0 :	207.0 : : 1020.0 :	208.0 : : 1025.0 :	209.0 : : 1030.0 :	210.0 : : 1035.0 :	211.0 : : 1040.0 :	212.0 : : 1045.0 :	213.0 : : 1050.0 :	214.0 : : 1055.0 :	215.0 : : 1060.0 :	216.0 : : 1065.0 :	217.0 : : 1070.0 :	218.0 : : 1075.0 :	219.0 : : 1080.0 :	220.0 : : 1085.0 :	221.0 : : 1090.0 :	222.0 : : 1095.0 :	223.0 : : 1100.0 :	224.0 : : 1105.0 :	225.0 : : 1110.0 :	226.0 : : 1115.0 :	227.0 : : 1120.0 :	228.0 : : 1125.0 :	229.0 : : 1130.0 :	230.0 : : 1135.0 :	231.0 : : 1140.0 :	232.0 : : 1145.0 :	233.0 : : 1150.0 :	234.0 : : 1155.0 :	235.0 : : 1160.0 :	236.0 : : 1165.0 :	237.0 : : 1170.0 :	238.0 : : 1175.0 :	239.0 : : 1180.0 :	240.0 : : 1185.0 :	241.0 : : 1190.0 :	242.0 : : 1195.0 :	243.0 : : 1200.0 :	244.0 : : 1205.0 :	245.0 : : 1210.0 :	246.0 : : 1215.0 :	247.0 : : 1220.0 :	248.0 : : 1225.0 :	249.0 : : 1230.0 :	250.0 : : 1235.0 :	251.0 : : 1240.0 :	252.0 : : 1245.0 :	253.0 : : 1250.0 :	254.0 : : 1255.0 :	255.0 : : 1260.0 :	256.0 : : 1265.0 :	257.0 : : 1270.0 :	258.0 : : 1275.0 :	259.0 : : 1280.0 :	260.0 : : 1285.0 :	261.0 : : 1290.0 :	262.0 : : 1295.0 :	263.0 : : 1300.0 :	264.0 : : 1305.0 :	265.0 : : 1310.0 :	266.0 : : 1315.0 :	267.0 : : 1320.0 :	268.0 : : 1325.0 :	269.0 : : 1330.0 :	270.0 : : 1335.0 :	271.0 : : 1340.0 :	272.0 : : 1345.0 :	273.0 : : 1350.0 :	274.0 : : 1355.0 :	275.0 : : 1360.0 :	276.0 : : 1365.0 :	277.0 : : 1370.0 :	278.0 : : 1375.0 :	279.0 : : 1380.0 :	280.0 : : 1385.0 :	281.0 : : 1390.0 :	282.0 : : 1395.0 :	283.0 : : 1400.0 :	284.0 : : 1405.0 :	285.0 : : 1410.0 :	286.0 : : 1415.0 :	287.0 : : 1420.0 :	288.0 : : 1425.0 :	289.0 : : 1430.0 :	290.0 : : 1435.0 :	291.0 : : 1440.0 :	292.0 : : 1445.0 :	293.0 : : 1450.0 :	294.0 : : 1455.0 :	295.0 : : 1460.0 :	296.0 : : 1465.0 :	297.0 : : 1470.0 :	298.0 : : 1475.0 :	299.0 : : 1480.0 :	300.0 : : 1485.0 :	301.0 : : 1490.0 :	302.0 : : 1495.0 :	303.0 : : 1500.0 :	304.0 : : 1505.0 :	305.0 : : 1510.0 :	306.0 : : 1515.0 :	307.0 : : 1520.0 :	308.0 : : 1525.0 :	309.0 : : 1530.0 :	310.0 : : 1535.0 :	311.0 : : 1540.0 :	312.0 : : 1545.0 :	313.0 : : 1550.0 :	314.0 : : 1555.0 :	315.0 : : 1560.0 :	316.0 : : 1565.0 :	317.0 : : 1570.0 :	318.0 : : 1575.0 :	319.0 : : 1580.0 :	320.0 : : 1585.0 :	321.0 : : 1590.0 :	322.0 : : 1595.0 :	323.0 : : 1600.0 :	324.0 : : 1605.0 :	325.0 : : 1610.0 :	326.0 : : 1615.0 :	327.0 : : 1620.0 :	328.0 : : 1625.0 :	329.0 : : 1630.0 :	330.0 : : 1635.0 :	331.0 : : 1640.0 :	332.0 : : 1645.0 :	333.0 : : 1650.0 :	334.0 : : 1655.0 :	335.0 : : 1660.0 :	336.0 : : 1665.0 :	337.0 : : 1670.0 :	338.0 : : 1675.0 :	339.0 : : 1680.0 :	340.0 : : 1685.0 :	341.0 : : 1690.0 :	342.0 : : 1695.0 :	343.0 : : 1700.0 :	344.0 : : 1705.0 :	345.0 : : 1710.0 :	346.0 : : 1715.0 :	347.0 : : 1720.0 :	348.0 : : 1725.0 :	349.0 : : 1730.0 :	350.0 : : 1735.0 :	351.0 : : 1740.0 :	352.0 : : 1745.0 :	353.0 : : 1750.0 :	354.0 : : 1755.0 :	355.0 : : 1760.0 :	356.0 : : 1765.0 :	357.0 : : 1770.0 :	358.0 : : 1775.0 :	359.0 : : 1780.0 :	360.0 : : 1785.0 :	361.0 : : 1790.0 :	362.0 : : 1795.0 :	363.0 : : 1800.0 :	364.0 : : 1805.0 :	365.0 : : 1810.0 :	366.0 : : 1815.0 :	367.0 : : 1820.0 :	368.0 : : 1825.0 :	369.0 : : 1830.0 :	370.0 : : 1835.0 :	371.0 : : 1840.0 :	372.0 : : 1845.0 :	373.0 : : 1850.0 :	374.0 : : 1855.0 :	375.0 : : 1860.0 :	376.0 : : 1865.0 :	377.0 : : 1870.0 :	378.0 : : 1875.0 :	379.0 : : 1880.0 :	380.0 : : 1885.0 :	381.0 : : 1890.0 :	382.0 : : 1895.0 :	383.0 : : 1900.0 :	384.0 : : 1905.0 :	385.0 : : 1910.0 :	386.0 : : 1915.0 :	387.0 : : 1920.0 :	388.0 : : 1925.0 :	389.0 : : 1930.0 :	390.0 : : 1935.0 :	391.0 : : 1940.0 :	392.0 : : 1945.0 :	393.0 : : 1950.0 :	394.0 : : 1955.0 :	395.0 : : 1960.0 :	396.0 : : 1965.0 :	397.0 : : 1970.0 :	398.0 : : 1975.0 :	399.0 : : 1980.0 :	400.0 : : 1985.0 :	401.0 : : 1990.0 :	402.0 : : 1995.0 :	403.0 : : 2000.0 :	404.0 : : 2005.0 :	405.0 : : 2010.0 :	406.0 : : 2015.0 :	407.0 : : 2020.0 :	408.0 : : 2025.0 :	409.0 : : 2030.0 :	410.0 : : 2035.0 :	411.0 : : 2040.0 :	412.0 : : 2045.0 :	413.0 : : 2050.0 :	414.0 : : 2055.0 :	415.0 : : 2060.0 :	416.0 : : 2065.0 :	417.0 : : 2070.0 :	418.0 : : 2075.0 :	419.0 : : 2080.0 :	420.0 : : 2085.0 :	421.0 : : 2090.0 :	422.0 : : 2095.0 :	423.0 : : 2100.0 :	424.0 : : 2105.0 :	425.0 : : 2110.0 :	426.0 : : 2115.0 :	427.0 : : 2120.0 :	428.0 : : 2125.0 :	429.0 : : 2130.0 :	430.0 : : 2135.0 :	431.0 : : 2140.0 :	432.0 : : 2145.0 :	433.0 : : 2150.0 :	434.0 : : 2155.0 :	435.0 : : 2160.0 :	436.0 : : 2165.0 :	437.0 : : 2170.0 :	438.0 : : 2175.0 :	439.0 : : 2180.0 :	440.0 : : 2185.0 :	441.0 : : 2190.0 :	442.0 : : 2195.0 :	443.0 : : 2200.0 :	444.0 : : 2205.0 :	445.0 : : 2210.0 :	446.0 : : 2215.0 :	447.0 : : 2220.0 :	448.0 : : 2225.0 :	449.0 : : 2230.0 :	450.0 : : 2235.0 :	451.0 : : 2240.0 :	452.0 : : 2245.0 :	453.0 : : 2250.0 :	454.0 : : 2255.0 :	455.0 : : 2260.0 :	456.0 : : 2265.0 :	457.0 : : 2270.0 :	458.0 : : 2275.0 :	459.0 : : 2280.0 :	460.0 : : 2285.0 :	461.0 : : 2290.0 :	462.0 : : 2295.0 :	463.0 : : 2300.0 :	464.0 : : 2305.0 :	465.0 : : 2310.0 :	466.0 : : 2315.0 :	467.0 : : 2320.0 :	468.0 : : 2325.0 :	469.0 : : 2330.0 :	470.0 : : 2335.0 :	471.0 : : 2340.0 :	472.0 : : 2345.0 :	473.0 : : 2350.0 :	474.0 : : 2355.0 :	475.0 : : 2360.0 :	476.0 : : 2365.0 :	477.0 : : 2370.0 :	478.0 : : 2375.0 :	479.0 : : 2380.0 :	480.0 : : 2385.0 :	481.0 : : 2390.0 :	482.0 : : 2395.0 :	483.0 : : 2400.0 :	484.0 : : 2405.0 :	485.0 : : 2410.0 :	486.0 : : 2415.0 :	487.0 : : 2420.0 :	488.0 : : 2425.0 :	489.0 : : 2430.0 :	490.0 : : 2435.0 :	491.0 : : 2440.0 :	492.0 : : 2445.0 :	493.0 : : 2450.0 :	494.0 : : 2455.0 :	495.0 : : 2460.0 :	496.0 : : 2465.0 :	497.0 : : 2470.0 :	498.0 : : 2475.0 :	499.0 : : 2480.0 :	500.0 : : 2485.0 :	501.0 : : 2490.0 :	502.0 : : 2495.0 :	503.0 : : 2500.0 :	504.0 : : 2505.0 :	505.0 : : 2510.0 :	506.0 : : 2515.0 :	507.0 : : 2520.0 :	508.0 : : 2525.0 :	509.0 : : 2530.0 :	510.0 : : 2535.0 :	511.0 : : 2540.0 :	512.0 : : 2545.0 :	513.0 : : 2550.0 :	514.0 : : 2555.0 :	515.0 : : 2560.0 :	516.0 : : 2565.0 :	517.0 : : 2570.0 :	518.0 : : 2575.0 :	519.0 : : 2580.0 :	520.0 : : 2585.0 :	521.0 : : 2590.0 :	522.0 : : 2595.0 :	523.0 : : 2600.0 :	524.0 : : 2605.0 :	525.0 : : 2610.0 :	526.0 : : 2615.0 :	527.0 : : 2620.0 :	528.0 : : 2625.0 :	529.0 : : 2630.0 :	530.0 : : 2635.0 :	531.0 : : 2640.0 :	532.0 : : 2645.0 :	533.0 : : 2650.0 :	534.0 : : 2655.0 :	535.0 : : 2660.0 :	536.0 : : 2665.0 :	537.0 : : 2670.0 :	538.0 : : 2675.0 :	539.0 : : 2680.0 :	540.0 : : 2685.0 :	541.0 : : 2690.0 :	542.0 : : 2695.0 :	543.0 : : 2700.0 :	544.0 : : 2705.0 :	545.0 : : 2710.0 :	546.0 : : 2715.0 :	547.0 : : 2720.0 :	548.0 : : 2725.0 :	549.0 : : 2730.0 :	550.0 : : 2735.0 :	551.0 : : 2740.0 :	552.0 : : 2745.0 :	553.0 : : 2750.0 :	554.0 : : 2755.0 :	555.0 : : 2760.0 :	556.0 : : 2765.0 :	557.0 : : 2770.0 :	558.0 : : 2775.0 :	559.0 : : 2780.0 :	560.0 : : 2785.0 :	561.0 : : 2790.0 :	562.0 : : 2795.0 :	563.0 : : 2800.0 :	564.0 : : 2805.0 :	565.0 : : 2810.0 :	566.0 : : 2815.0 :	567.0 : : 2820.0 :	568.0 : : 2825.0 :	569.0 : : 2830.0 :	570.0 : : 2835.0 :	571.0 : : 2840.0 :	572.0 : : 2845.0 :	573.0 : : 2850.0 :	574.0 : : 2855.0 :	575.0 : : 2860.0 :	576.0 : : 2865.0 :
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Table 15. Per cent ranking of seventh grade of Washington County Rural Schools (129 pupils).

Grade and rank	Total : av.	Par. : mean.	Words. : mean.	Av. : read.	Lang. : read.	Arith. : reas.	Arith. : comp.	Av. : arith.	Lit. : st.	Social:Elem.:Spell
11 & above	9.4	10.9	6.3	5.5	10.2	20.3	13.3	17.2	19.5	8.8 13.3 19.5
10 & above	15.6	14.1	10.9	14.9	14.1	31.2	20.3	25.0	28.1	12.5 18.8 25.0
9 & above	20.3	23.4	19.5	21.9	23.4	45.3	35.9	42.2	36.7	24.2 21.9 32.0
8.0 - 8.9	45.0	32.0	35.1	35.2	30.4	56.2	53.1	56.3	37.5	31.2 47.7 41.4
7.0 - 7.9	19.5	24.2	27.3	26.5	12.5	21.1	22.7	21.9	14.9	19.5 14.9 13.3
6.0 - 6.9	11.7	21.2	26.6	21.9	22.7	14.9	14.1	13.3	19.0	16.4 16.4 9.4
5.0 - 5.9	24.2	14.1	10.9	15.6	18.0	7.8	7.8	8.6	22.7	22.7 16.4 22.7
4.0 - 4.9	1.6	7.0	-	0.8	16.4	-	2.3	-	1.6	10.2 4.7 13.3
3.0 - 3.9	-	-	-	-	-	-	-	-	5.5	- - -

Table 16. Per cent ranking of seventh grade of Washington County City Schools (110 pupils).

Grade and rank	Total : av.	Par. : mean.	Words : mean.	Av. : read.	Lang. : usage.	Arith. : reas.	Arith. : comp.	Av. : arith.	Lit. : st.	Social : elem.	Spell : ing	
11 & above	9.1	10.9	6.4	8.2	17.3	27.3	17.3	20.0	23.6	10.9	20.0	20.1
10 & above	10.2	17.3	11.8	15.5	20.9	39.1	32.7	34.5	30.0	17.3	32.7	34.8
9 & above	33.6	30.0	21.8	24.5	30.9	53.6	46.4	49.1	35.5	27.3	57.3	41.8
8.0 - 8.9	52.7	50.0	43.6	48.1	40.0	60.0	65.5	70.9	41.9	41.8	70.0	54.6
7.0 - 7.9	21.8	16.4	26.4	20.0	20.0	10.9	23.6	17.3	5.5	18.2	15.5	19.1
6.0 - 6.9	19.1	12.7	16.4	22.7	19.1	16.4	4.5	8.2	10.9	22.7	7.3	13.6
5.0 - 5.9	5.5	15.5	13.6	7.3	10.9	2.7	5.5	3.6	31.8	13.6	5.5	10.0
4.0 - 4.9	0.9	5.5	-	1.8	10.0	-	0.9	-	7.3	3.6	1.8	2.7
3.0 - 3.9	-	-	-	-	-	-	-	-	2.7	-	-	-

Table 17. Per cent ranking of seventh grade of Washington County All Schools (238 pupils).

Grade and rank	Total : av.	Par. : mean.	Words. : mean.	Av. : read.	Lang. : usage.	Arith. : read.	Arith. : comp.	Av. : arith.	Lit. : st.	Social : Elem.	Spelling	
11 & above	9.2	10.9	6.3	6.7	13.4	23.5	15.1	18.5	21.4	9.7	16.4	23.9
10 & above	16.8	15.5	11.3	15.1	17.2	34.8	26.0	29.4	29.0	14.7	25.2	29.4
9 & above	26.5	28.1	20.6	23.1	26.9	49.2	40.8	45.4	36.1	25.6	30.2	36.6
8.0 - 9.9	47.5	42.0	39.1	41.2	34.9	62.6	58.9	63.0	39.5	45.1	37.9	47.4
7.0 - 7.9	20.6	20.4	26.9	23.5	16.0	16.4	23.1	19.7	10.5	18.9	15.1	16.0
6.0 - 6.9	15.1	17.6	21.8	22.3	21.0	15.5	9.7	10.9	14.7	19.3	12.2	11.3
5.0 - 5.9	15.5	15.1	12.2	11.8	14.7	5.5	6.7	6.3	26.9	18.5	11.3	16.8
4.0 - 4.9	1.3	6.3	-	1.3	13.4	-	1.7	-	4.2	7.1	3.4	8.4
3.0 - 3.9	-	-	-	-	-	-	-	-	4.2	-	-	-

Table 18. Comparison of percentages of seventh grade pupils in higher and lower grade placements.

Type of School	Total	Per. : words	Av. : words	Per. : arith.	Av. : arith.	Per. : read.	Av. : read.	Per. : math.	Av. : math.	Per. : lit.	Av. : lit.	Per. : sci.	Av. : sci.
Per cent of pupils ranking two grades or more above their grade placement													
M	19.7	15.0	15.7	15.7	37.0	22.0	33.9	29.9	20.5	13.9	33.9		
WR	15.6	14.1	10.9	14.9	14.1	31.2	20.3	25.0	29.1	12.6	19.8	25.0	
WC	18.2	17.3	11.8	15.5	20.9	39.1	32.7	34.5	30.0	17.3	32.7	34.5	
WA	16.8	15.5	11.5	15.1	17.2	34.8	26.0	20.4	29.0	14.7	25.2	29.4	
Per cent of pupils ranking two grades or more below their grade placement													
M	23.4	17.3	13.4	15.0	34.6	7.1	11.7	6.4	35.0	29.1	19.9	19.8	
WR	25.8	21.1	10.9	16.4	34.4	7.8	10.1	9.6	29.9	32.9	21.1	36.0	
WC	6.4	21.0	13.6	9.1	20.9	2.7	6.4	3.6	41.8	17.2	7.3	12.7	
WA	16.8	21.4	12.2	13.1	28.1	5.5	8.4	6.3	35.3	26.6	14.7	25.2	
Per cent of pupils ranking two or more grades outside their grade placement													
M	45.1	42.3	28.4	30.7	50.3	44.1	33.7	40.3	62.9	49.6	37.8	52.8	
WR	41.4	35.2	21.8	31.3	48.5	39.0	30.4	33.6	57.9	45.4	39.9	61.0	
WC	24.6	38.3	25.4	24.6	41.8	41.8	39.1	36.1	71.8	34.6	40.0	47.2	
WA	33.6	36.9	23.5	28.2	45.3	40.3	34.4	35.7	64.3	40.3	39.9	54.6	

* M = Marshall County Rural Schools

WR = Washington County Rural Schools

WC = Washington County City Schools

WA = Washington County All Schools

pile, of the 110 enrolled in the seventh grades of the city schools of Washington County ranked eighth grade or better.

The Marshall County rural schools placed 19.7 per cent of their pupils two or more grade levels above, and 23.4 per cent two or more grade levels below the eighth grade. This made a total of 43.1 per cent of the pupils ranking two or more grade levels outside the eighth grade, Table 18.

The rural schools of Washington County placed 15.6 per cent of their pupils two or more grade levels above, and 25.8 per cent, two or more grade levels below the eighth grade. This made a total of 41.4 per cent of the pupils ranking two or more grade levels outside the eighth grade. The city schools of Washington County placed 18.2 per cent of their pupils two or more grade levels above, and 6.4 per cent two or more grade levels below the eighth grade. This made a total of 24.6 per cent placed two or more grade levels outside the eighth grade. Again the rural schools of Marshall County and the city schools of Washington County had more pupils in the upper levels and fewer pupils in the lower levels than the rural schools of Washington County. The difference displayed by the city schools is large enough to indicate greater efficiency probably due to the quality of teachers and equipment.

It might also be noted that the gross grade displacement in the city schools of 24.6 per cent was considerably less than that in the schools of the two rural groups. This would seem to indicate that the grade placement is better in the city schools.

Considering the total outcome in the rural seventh grades in

the two counties the differences are minor and insignificant, with a slight reversal in favor of Washington County. Comparing these results with those found in the rural eighth grades of the two counties suggests that the unit method may be more effective with the more mature pupils who are well launched into the period of adolescence and of little value with the less mature pupils of the seventh grade.

Teachers

Since teachers play such an important part in the effectiveness of learning, data were also collected in order to compare the qualifications of the teachers in the two counties. The certification and teaching experience of the teachers of Washington and Marshall Counties will be found in Tables 19 and 20. There is a striking similarity in the two rural groups in the respect that each county had a large per cent of teachers with little or no training for the profession, and 4.8 per cent of the teachers, exactly the same in both counties, had certificates based upon 30 or more college hours. Fifty-six and seven tenths per cent of the Marshall County teachers and 45.2 per cent of the Washington County rural teachers were teaching on emergency certificates. Many of the teachers with emergency certificates had held previous certificates and had taught one or more years of school. Marshall County had 31 teachers with Normal Training Certificates and Washington County had 33. The difference in certification of teachers was too small to have had much influence in the outcome of the pupils taking the tests.

Table 19. Certification of teachers.

Kind of certifi- cate	Rural Schools		Rural Schools		City Schools	
	Marshall County	Washington County	Washington County	Washington County	Washington County	Washington County
	No.	Per cent	No.	Per cent	No.	Per cent
Degree	2	1.9			3	11.5
60 hr.	1	1.0	1	1.0	10	38.5
30 hr.	2	1.9	3	2.9		
St. Teachers			1	1.0		
1st Gr. Co.	6	5.8				
Normal Tr.	31	29.8	33	31.7	3	11.5
Elem. State	3	2.9	16	15.4	6	23.1
Emergency	59	56.7	47	45.2	3	11.5
None			3	2.9	1	3.8
Total	104		104		26	

Table 20. Teacher experience.

Years of expe- rience	Rural Schools		Rural Schools		City Schools	
	Marshall County	Washington County	Washington County	Washington County	Washington County	Washington County
	No.	Per cent	No.	Per cent	No.	Per cent
20 or more	7	6.7	1	1.0	4	15.4
10 - 19	8	7.7	3	2.9	8	30.8
5 - 9	30	28.8	16	14.4	9	34.6
1 - 4	44	42.5	38	36.5	3	11.5
None	15	14.4	47	45.2	2	7.7
Total	104		104		26	

The difference in teaching experience was quite noticeable. Of the Marshall County teachers 14.4 per cent were inexperienced, while in Washington County 45.2 per cent of the rural teachers were inexperienced. This excess of 30.8 per cent of inexperienced teachers in Washington County might account to some extent for the superior results of the tests in Marshall County.

One must keep in mind that the teacher situation was largely due to the war and should be partially a temporary condition.

Tables 19 and 20 show 50.0 per cent of the teachers in the city schools of Washington County had 60 or more college hours and that 80.8 per cent had five or more years of teaching experience. This situation added to better teaching facilities and better organization is possibly the main reason why the city schools had a much lower percentage of pupils ranking two or more grade levels below their grade placement and more pupils ranking two or more grade levels above their grade placement.

CONCLUSIONS

1. A study of the literature indicates that the unit plan is not new in teaching. It was originated early in the 19th century by Herbart and was revived in the early part of the 20th century to become the most popular method of teaching the social studies and social sciences in the elementary schools.

2. There is no single best method of teaching. Good teachers are likely to use the various methods to suit their aims and needs.

3. Leaders in American education vary in their opinions as to the results obtained by the unit method of teaching.

4. The city schools get better results than the rural schools, apparently because of better trained and more experienced teachers, better equipment, and possibly better organization.

5. Marshall County, using the unit plan, got clearly better results in the eighth grade than Washington County, using the basic text method.

6. Better results in the Marshall County eighth grades were found particularly in those subjects involving reasoning, wide reading and organization. Results varied little in subjects involving drill and memoriter procedures.

7. Almost identical results were found in the seventh grades of the two counties. This would suggest that the unit method makes little difference with seventh grade pupils, less mature and less well-launched in adolescent development.

8. The extreme range of the pupils in each grade with respect to proper grade placement as shown by the tests would indicate need for a revision of the promotion system. This condition is less marked in the city schools of Washington County.

9. In general, though they used the textbook method, the results in the city schools of Washington County were superior to those in the rural schools of either county. This is doubtless due to the distinctly better trained and more experienced teachers together with better organization and equipment.

10. The training of the teachers in the rural schools of the two counties as indicated by certification was practically identical, consequently this did not enter as a differentiating factor.

11. There was a much larger proportion of inexperienced teach-

ers in the rural schools of Washington County which might account to some degree for its poorer results in the eighth grade. Better showing in the seventh grade, however, would tend to negate such a conclusion.

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